

# Study on travel methods for virtual fairs

Hello and welcome to our user test on different travel methods in a virtual 3D environment! Through Covid-19, much of everyday life has shifted to the digital realm. We think this trend will continue in the future - especially for career information fairs and the like. In order to create a positive experience for visitors, we're testing different ways to travel in a virtual fair environment.

We are students of the TU Munich and are conducting this user study as part of our 3D User Interface Course. Thank you for taking the time to participate in our experiment! It will only take about 15 minutes.

Your data will be treated with complete confidentiality and evaluated anonymously. If you have any questions about this experiment, please contact [franziska.buck@tum.de](mailto:franziska.buck@tum.de).

\* **Erforderlich**

## Declaration of consent

The aim of our survey is to be able to better understand and evaluate the way people move in a digital 3D fair environment. Therefore, we ask our study participants to test two virtual rooms, answer some questions about the experiences and compare both movement techniques. We are also collecting data (time, collision rate) while you are using the two rooms. In the beginning of the survey, we would also like to ask you for more information about yourself to be able to include social factors (age, former experience) in the results and thus improve the evaluation. This information is stored anonymously and cannot be traced back to you. Registration is not required for participation. In accordance with data protection regulations, you also have the right to information and deletion of your personal data. You can revoke this declaration of consent at any time. To do so, please note down your participation ID and e-mail it to the research group ([franziska.buck@tum.de](mailto:franziska.buck@tum.de)) stating your wish to revoke your consent. After successful revocation, your data will be deleted.

In this study, the project team is responsible for data processing.

The legal basis for the processing of your data is your consent.

Your data will be collected exclusively for the purpose of this study and will only be used within the scope of this study. It will not be published outside of our 3D user interface course or transferred to any third party.

Your data will be stored by the project team and deleted 10 years after the end of the study. The consent to the processing of your data is voluntary, you can revoke the consent at any time without giving reasons and without disadvantages for you. You have the right to receive information about the data concerning you, also in the form of a free copy. In addition, you can request the correction or deletion of your data.

## 1. Consent to participation \*

*Wählen Sie alle zutreffenden Antworten aus.*

☐ I have read the information above and would like to participate in the survey.

## 2. Consent to data processing \*

*Wählen Sie alle zutreffenden Antworten aus.*

☐ I hereby consent to the described processing of my personal data.

## Demographics

3. Your ParticipationID (Please don't change this! If nothing is visible, contact us.)

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4. How old are you? \*

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5. Which gender do you identify with? \*

*Markieren Sie nur ein Oval.*

- ☐ male
- ☐ female
- ☐ other

6. How much time do you spend using your smartphone per day? \*

*Markieren Sie nur ein Oval.*

- ☐ None
- ☐ less than one hour
- ☐ 1 to 2 hours
- ☐ 2 to 4 hours
- ☐ more than 4 hours

7. Please indicate your familiarity with gaming on the following technical devices on a scale from 1 to 5 . \*

*Markieren Sie nur ein Oval pro Zeile.*

	1 very good	2 good	3 moderate	4 weak	5 none
PC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smartphone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
xBox	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Playstation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Switch	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. How many virtual meetings have you attended? \*

*Markieren Sie nur ein Oval.*

- ☐ none
- ☐ between 1 and 3
- ☐ between 3 and 10
- ☐ more than 10

9. Which tools have you used for those virtual meetings? \*

*Wählen Sie alle zutreffenden Antworten aus.*

- ☐ None
- ☐ Zoom
- ☐ Microsoft Teams
- ☐ Skype
- ☐ Big Blue Button
- ☐ Wonder Me

Sonstiges: ☐ \_\_\_\_\_

10. What kind of device are you using to take part in this study? Please specify the model and operating system (e.g. iPhone 8, Safari). \*

### Travel method comparison

>> Read the following instructions carefully as your task for this test is described here! <<

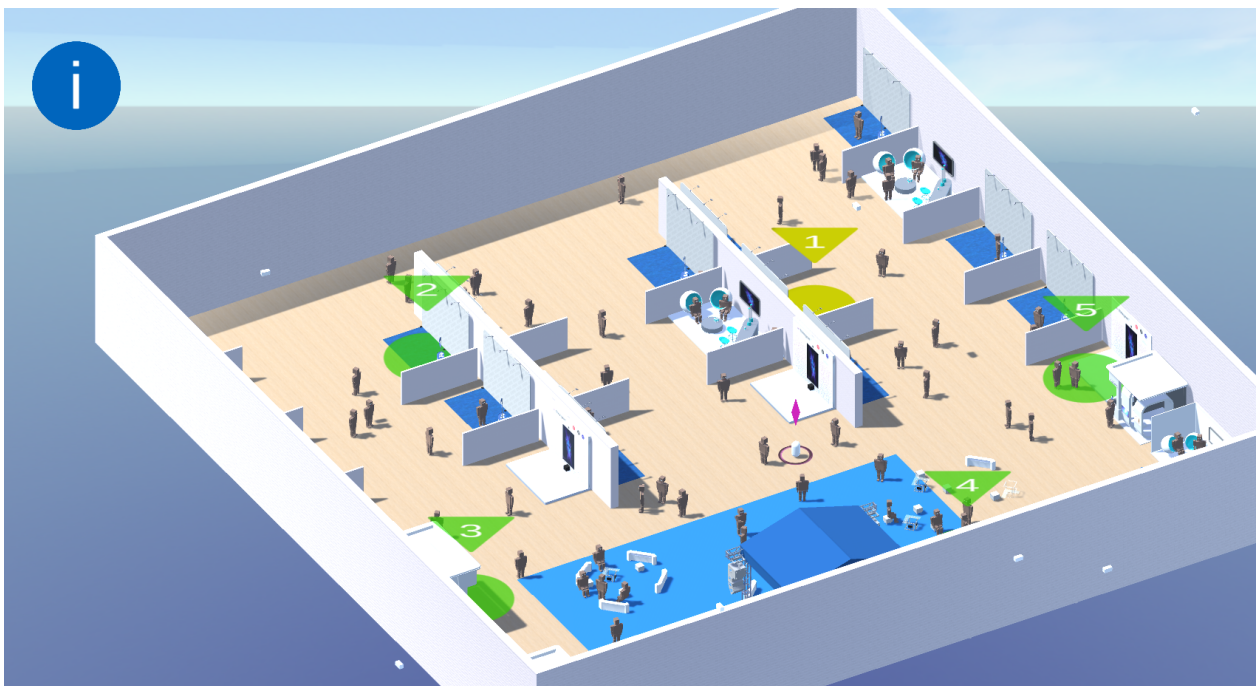
Thank you for completing the pre-survey. Next we will proceed with the main part of the study.

After you click the submit button you will be redirected to a new window displaying the virtual environment of a career fair.

Your task is to get familiar with the travel method that will be explained to you in order to navigate to five checkpoints. The checkpoints look like the one pictured below and we ask you to please follow the order indicated by their number (1 to 5). As soon as you reach a checkpoint, it disappears and you can move on to the next one. Please try not to collide with other characters or objects in the environment.

As soon as you visited all of them, you will be redirected back to our form. Please click the link to open the fair environment. Don't panic if you first just see a black screen - it needs some time to load. If you cannot see anything, please contact us: [franziska.buck@tum.de](mailto:franziska.buck@tum.de).

Image of the virtual fair containing the checkpoints



# Evaluation of the first travel method 1/2

Welcome back! We hope you enjoyed the fair flair. In the following you are asked to please indicate for each of the dimensions below how much stress you felt. Please mark on the following scales the extent to which you felt stressed or challenged by the task in the six dimensions mentioned above. The Drop down menu shows the 20 point scale with 1 and 20 representing the extremes Low to High or Good to Poor.

\* Erforderlich

1. Mental Demand: How much mental and perceptual activity was required (e.g. thinking, deciding, calculating, remembering, looking, searching, etc.)? Was the task easy or demanding, simple or complex, exacting or forgiving? (1 - low mental demand, 20 - high mental demand) \*

*Markieren Sie nur ein Oval.*

☐ 1 - Low

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☐ 9

☐ 10

☐ 11

☐ 12

☐ 13

☐ 14

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☐ 19

☐ 20 - High

2. Physical demand: How much physical activity was required (e.g. pushing, pulling, turning, controlling, activating, etc.)? Was the task easy or demanding, slow or brisk, slack or strenuous, restful or laborious? (1 - low physical demand, 20 - high physical demand) \*

*Markieren Sie nur ein Oval.*

☐ 1 - Low

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☐ 5

☐ 6

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☐ 8

☐ 9

☐ 10

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☐ 20 - High

3. Temporal demand: How much time pressure did you feel due to the rate or pace at which the tasks or task elements occurred? Was the pace slow and leisurely or rapid and frantic? (1 - low temporal demand, 20 - high temporal demand) \*

*Markieren Sie nur ein Oval.*

☐ 1 - Low

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☐ 5

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☐ 9

☐ 10

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☐ 19

☐ 20 - High

4. Effort: How hard did you have to work (mentally and physically) to accomplish your level of performance? (1 - low effort, 20 - high effort) \*

*Markieren Sie nur ein Oval.*

☐ 1 - Low

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☐ 6

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☐ 8

☐ 9

☐ 10

☐ 11

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☐ 19

☐ 20 - High



5. Performance: How successful do you think you were in accomplishing the foals of the task set by the experimenter (or yourself)? How satisfied were you with your performance in accomplishing these goals? (1 - good performance, 20 - poor performance) \*

*Markieren Sie nur ein Oval.*

☐ 1 - Good

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☐ 5

☐ 6

☐ 7

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☐ 9

☐ 10

☐ 11

☐ 12

☐ 13

☐ 14

☐ 15

☐ 16

☐ 17

☐ 18

☐ 19

☐ 20 - Poor

6. Frustration Level: How insecure, discouraged, irritated, stressed and annoyed versus secure, gratified, content, relaxed and complacent did you feel during the task? (1 - low frustration level, 20 - high frustration level) \*

*Markieren Sie nur ein Oval.*

☐ 1 - Low

☐ 2

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☐ 8

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☐ 19

☐ 20 - High

## Evaluation of the first travel method 2/2

The questionnaire consists of pairs of contrasting attributes that may apply to

Please decide spontaneously. Don't think too long about your decision to make sure that you convey your original impression. Sometimes you may not be completely sure about your agreement with a particular attribute or you may find that the attribute does not apply completely to the particular moving method. Nevertheless, please tick a circle in every line. It is your personal opinion that counts. Please remember: there is no wrong or right answer!

make sure that you convey your original impression.

particular attribute or you may find that the attribute does not apply completely

It is your personal opinion that counts. Please remember: there is no wrong or right answer!

7. Please assess the moving method now by ticking one circle per line. \*

Markieren Sie nur ein Oval.

[illegible]

8. \*

Markieren Sie nur ein Oval.

[illegible]

9. \*

Markieren Sie nur ein Oval.

[illegible]

10. \*

Markieren Sie nur ein Oval.

[illegible]

11. \*

Markieren Sie nur ein Oval.

[illegible]

12. \*

Markieren Sie nur ein Oval.

[illegible]

13. \*

Markieren Sie nur ein Oval.

	1	2	3	4	5	6	7	
conventional	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	inventive

14. \*

Markieren Sie nur ein Oval.

	1	2	3	4	5	6	7	
usual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	leading edge

### Comparison of the travel methods

Now that you tested and evaluated the first travel method, we proceed to the second one.  
After you click the submit button, a new window will open again displaying the virtual environment of the career fair. Like before, your task will be to use the travel method that will be explained to you to navigate to from checkpoint to checkpoint. The checkpoints look like the one pictured below and we ask you to please follow the order indicated by their number (1 to 5). As soon as you reach a checkpoint, it disappears and you can move on to the next one. Please try not to collide with other characters or objects in the environment.

As soon as you visited all of them, you will be redirected back to our form.  
Don't panic if you first just see a black screen - it needs some time to load. If you cannot see anything, please contact us: [franziska.buck@tum.de](mailto:franziska.buck@tum.de)

15. Your ParticipationID (Please don't change this! If nothing is visible, contact us.)

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# Evaluation of the second travel method

Now that you experienced the second travel method please indicate for each of the dimensions below how much stress you felt. Please mark on the following scales the extent to which you felt stressed or challenged by the task in the six dimensions mentioned above. The Drop down menu shows the 20 point scale with 1 and 20 representing the extremes Low to High or Good to Poor.

\* **Erforderlich**

1. Mental Demand: How much mental and perceptual activity was required (e.g. thinking, deciding, calculating, remembering, looking, searching, etc.)? Was the task easy or demanding, simple or complex, exacting or forgiving? (1 - low mental demand, 20 - high mental demand) \*

*Markieren Sie nur ein Oval.*

☐ 1 - Low

☐ 2

☐ 3

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☐ 6

☐ 7

☐ 8

☐ 9

☐ 10

☐ 11

☐ 12

☐ 13

☐ 14

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☐ 18

☐ 19

☐ 20 - High

2. Physical demand: How much physical activity was required (e.g. pushing, pulling, turning, controlling, activating, etc.)? Was the task easy or demanding, slow or brisk, slack or strenuous, restful or laborious? (1 - low physical demand, 20 - high physical demand) \*

*Markieren Sie nur ein Oval.*

☐ 1 - Low

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☐ 9

☐ 10

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☐ 18

☐ 19

☐ 20 - High

3. Temporal demand: How much time pressure did you feel due to the rate or pace at which the tasks or task elements occurred? Was the pace slow and leisurely or rapid and frantic? (1 - low temporal demand, 20 - high temporal demand) \*

*Markieren Sie nur ein Oval.*

☐ 1 - Low

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☐ 4

☐ 5

☐ 6

☐ 7

☐ 8

☐ 9

☐ 10

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☐ 15

☐ 16

☐ 17

☐ 18

☐ 19

☐ 20 - High



4. Effort: How hard did you have to work (mentally and physically) to accomplish your level of performance? (1 - low effort, 20 - high effort) \*

*Markieren Sie nur ein Oval.*

☐ 1 - Low

☐ 2

☐ 3

☐ 4

☐ 5

☐ 6

☐ 7

☐ 8

☐ 9

☐ 10

☐ 11

☐ 12

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☐ 17

☐ 18

☐ 19

☐ 20 - High

5. Performance: How successful do you think you were in accomplishing the goals of the task set by the experimenter (or yourself)? How satisfied were you with your performance in accomplishing these goals? (1 - good performance, 20 - poor performance) \*

*Markieren Sie nur ein Oval.*

☐ 1 - Good

☐ 2

☐ 3

☐ 4

☐ 5

☐ 6

☐ 7

☐ 8

☐ 9

☐ 10

☐ 11

☐ 12

☐ 13

☐ 14

☐ 15

☐ 16

☐ 17

☐ 18

☐ 19

☐ 20 - Poor

6. Frustration Level: How insecure, discouraged, irritated, stressed and annoyed versus secure, gratified, content, relaxed and complacent did you feel during the task? (1 - low frustration level, 20 - high frustration level) \*

*Markieren Sie nur ein Oval.*

☐ 1 - Low

☐ 2

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☐ 19

☐ 20 - High

## Evaluation of the second travel method 2/2

For the assessment of the moving method, please fill out the following questionnaire.

The questionnaire consists of pairs of contrasting attributes that may apply to the moving method. The circles between the attributes represent gradations between the opposites. You can express your agreement with the attributes by ticking the circle that most closely reflects your impression.

Please decide spontaneously. Don't think too long about your decision in order to make sure that you convey your original impression. Sometimes you may not be completely sure about your agreement with a particular attribute or you may find that the attribute does not apply completely to the particular moving method. Nevertheless, please tick a circle in every line. It is your personal opinion that counts. Please remember: there is no wrong or right answer!

7. Please assess the moving method now by ticking one circle per line. \*

Markieren Sie nur ein Oval.

	1	2	3	4	5	6	7	
obstructive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	supportive

8. \*

Markieren Sie nur ein Oval.

[illegible]

9. \*

Markieren Sie nur ein Oval.

[illegible]



14. \*

*Markieren Sie nur ein Oval.*

	1	2	3	4	5	6	7	
usual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	leading edge

#### Post-survey

15. Which travel method did you prefer in general? \*

*Markieren Sie nur ein Oval.*

- ☐ The avatar walks towards the position of my finger.
- ☐ The avatar walks in the direction I drag my finger.

16. Why did you prefer it? \*

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17. Which travel method would you prefer to use in a virtual meeting? \*

*Markieren Sie nur ein Oval.*

- ☐ The avatar walks towards the position of my finger.
- ☐ The avatar walks in the direction I drag my finger.

18. How likely would you be to use this environment to take part in a virtual fair or a virtual meeting? \*

Markieren Sie nur ein Oval.

	1	2	3	4	5	6	7	8	9	10	
Very unlikely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very likely

19. If you have any comments or recommendations for us or encountered any technical problems during the experiment, please let us know in the text box below. \*

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Thank  
you!

This concludes our user study on travel methods in virtual meetings. Thank you for taking the time to take part in our study!  
If you have any questions regarding the study, please contact [franziska.buck@tum.de](mailto:franziska.buck@tum.de).

20. Your ParticipationID in case you want to revoke your consent:

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