

# Supplementary Materials

The sections that follow provide the Likert-scale questionnaire, the results obtained with questionnaire’s answers and the Focus group interview questions:

## 1 Likert-scale questionnaire

### VR authoring tool experience - Likert-scale questionnaire

E-mail \*

Name: \*

Through your experience with the authoring tool, does it presented the guideline "Adaptation and commonality"?

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

Through your experience with the authoring tool, does it presented the guideline "Automation"?

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

Through your experience with the authoring tool, does it presented the guideline "Customization"?

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

Through your experience with the authoring tool, does it presented the guideline "Documentation and tutorials"?

1 2 3 4 5

Totally disagree ○ ○ ○ ○ ○ Totally agree

Through your experience with the authoring tool, does it presented the guideline "Immersive authoring"?

1 2 3 4 5

Totally disagree ○ ○ ○ ○ ○ Totally agree

Through your experience with the authoring tool, does it presented the guideline "Immersive feedback"?

1 2 3 4 5

Totally disagree ○ ○ ○ ○ ○ Totally agree

Through your experience with the authoring tool, does it presented the guideline "Metaphors"?

1 2 3 4 5

Totally disagree ○ ○ ○ ○ ○ Totally agree

Through your experience with the authoring tool, does it presented the guideline "Movement freedom"?

1 2 3 4 5

Totally disagree ○ ○ ○ ○ ○ Totally agree

Through your experience with the authoring tool, does it presented the guideline "Optimization and diversity balance"?

1 2 3 4 5

Totally disagree ○ ○ ○ ○ ○ Totally agree

Through your experience with the authoring tool, does it presented the guideline "Democratization"?

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

Through your experience with the authoring tool, does it presented the guideline "Real-time feedback"?

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

Through your experience with the authoring tool, does it presented the guideline "Reutilization"?

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

Through your experience with the authoring tool, does it presented the guideline "Sharing and collaboration"?

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

Through your experience with the authoring tool, does it presented the guideline "Visual programming"?

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

Place here commentaries and observations done through the execution of the experiment, which may include system errors, challenges and interesting functions:

## 2 Design guidelines ranking and intuitiveness global level

The Figure below shows how the guidelines ranking scores and the intuitiveness global level related to the Omniverse evaluation were obtained. The equations described in Figure 4 were used on the Excel spreadsheet to calculate these values.

Figura A.1: Excel spreadsheet table with the values exported from the Likert-scale questionnaire about NVIDIA Omniverse evaluation

		DESIGN GUIDELINES ( $G_i$ )													
PARTICIPANTS OF THE EXPERIMENT ( $p$ )	Px	DG1	DG2	DG3	DG4	DG5	DG6	DG7	DG8	DG9	DG10	DG11	DG12	DG13	DG14
	P1	3	4	5	1	4	2	1	4	1	4	5	3	4	1
	P2	4	2	5	4	5	3	1	3	3	2	1	5	3	4
	P3	5	4	4	2	3	4	2	3	2	5	5	5	5	1
	P4	4	1	3	1	4	1	1	1	1	2	3	3	5	1
	P5	3	4	4	3	5	3	3	4	2	4	4	4	5	1
	P6	4	1	5	1	5	2	2	4	1	5	4	5	5	1
$\bar{G}$		4	3	4,5	1,5	4,5	2,5	1,5	3,5	1,5	4	4	4,5	5	1
$F$		45													

## 3 Focus group interview questions

For the focus group interview, eighteen questions were made to the participants:

1. Which were your biggest difficulties during the experiment with Omniverse?
2. In your opinion, which were the most easy-to-use features in Omniverse?
3. Did you already use any tool similar to Omniverse before?
4. How was the process of answering the Likert-scale questionnaire?

5. Which process did you use to identify the guidelines in Omniverse during the experiment?
6. Which guidelines were the most easy to find in Omniverse?
7. Which guidelines were the most difficult to find in Omniverse?
8. In your opinion, which were the strengths of the design guidelines that should be maintained?
9. In your opinion, which were the weaknesses of the design guidelines that should be improved?
10. Do you think the fact that we were unable to use the virtual reality devices in the experiment affected your opinion about the guidelines? How?
11. In your perception, are there other design guidelines to VR authoring tools that are not covered in the list?
12. In your perception, do the guidelines have different weights concerning intuitiveness?
13. Are the design guidelines self-explanatory?
14. Would you use the guidelines to evaluate other similar tools?
15. Would you propose any changes concerning the guidelines organization?
16. Which future research and next steps concerning the design guidelines evolution would you suggest?
17. How much do you think the technical issues influenced your impressions on the experiment?
18. Would you have additional commentaries?