Usability Testing for Building Performance Simulation Tools

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ABSTRACT

The tools for building performance simulations are numerous and sometimes lack assistance during the design phases.

- People who use them sometimes lack information about these programs to better choose them.
- It is in this specific context that our study takes all its importance.

KEYWORDS

Usability, usability testing, usability attribute, software program, user experience, human computer interaction, software, gaming, simulation Tools, building performance

PROBLEM

- Construction performance simulation tools are sometimes difficult to use.
- There is not really a usability test model today for testing software.
- The main instrument for evaluating software performance and satisfaction is the usability test.
- Usability tests are intended to facilitate the choice of simulation tools and their future designs.

OBJECTIVE/HYPOTESIS

- Improve and validate the support quality of building simulation software for decision making during the design phase
- Literature Review
- Identify key parameters of usability.

AUDIENCE

Architect; Engineers; Software Developer

RESEARCH QUESTION

Are Usability Tests for Building performance Simulation Tools Existing?

ORIGINALITY

Our Categorization Diagram who propose to users a choice in function of the test that they wanted to realise.

Our own questions of system usability scale

We wanted to do a survey to have users experience

METHODOLOGY

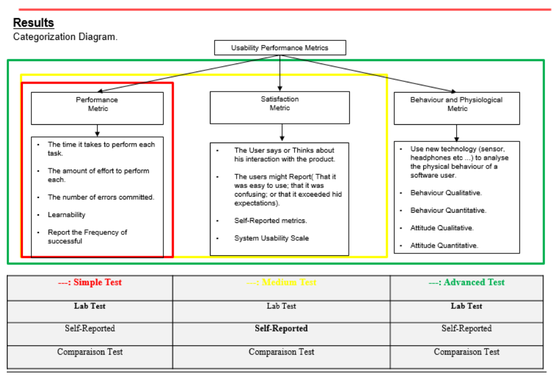
1. The simple test is a basic test that is essentially performed in the laboratory. It may test the performance qualities of the software.
2. The Medium Test consists of two parts:

At first it performs the simple test, then it performs a satisfaction test. The satisfaction test is mainly a feedback from users of the software who give their opinion on the usability of the software.

3. The Advanced Test is a Test that consists of three parts

RESULTS

Categorization Diagram



Time task

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6
Participant 1	300	147	213	10	123	147
Participant 2	256	75	231	12	145	185
Participant 3	152	48	256	284	301	169
Participant 4	124	300	254	200	299	147
Participant 5	89	234	23	300	244	160
Participant 6	96	165	21	145	245	132
Participant 7	22	84	36	130	111	42
Participant 8	230	65	156	102	333	132
Participant 9	360	85	198	123	222	220
Participant 10	40	189	187	154	102	125
Participant 11	156	145	30	25	145	148
Participant 12	245	123	10	261	11	789
Participant 13	268	213	121	274	14	165
Participant 14	85	258	456	258	12	147
Participant 15	201	265	258	265	16	145
Participant 16	14	254	300	254	60	123
Participant 17	35	412	147	320	35	75
Participant 18	11	256	132	456	200	100
Participant 19	156	85	45	214	32	99
Participant 20	300	64	56	236	10	33
NB(COUNT)	20	20	20	20	20	20
Standard deviation	108,20205	98,453983	117,88643	113,74083	110,62645	153,77094
Mean	157	173,35	156,5	201,15	133	164,15
Median	154	156	151,5	225	117	146
90% Confidence Interval	39,796764	36,21142	43,358683	41,833929	40,688457	56,557022

Criteria an sub-criteria

Comprehensive usability scale

Comprehensive Usability Scale

	Disagree					Agree
1. Do you think that maturity is important in a Building performance simulation tools?		1	2	3	4	5
2. The importance of Fault tolerance fault is it important for you?		1	2	3	4	5
3. Recoverability is it a usability criteria for you ?		1	2	3	4	5
4.Reliability compliance is it important for you ?		1	2	3	4	5
5.How important are you to Analysability of your software?		1	2	3	4	5
6.How important are you to changeability of your software?		1	2	3	4	5
7.How important are you to Stability of your software?		1	2	3	4	5
8. The stability of your software is it a usability criteria for you?		1	2	3	4	5
9. The maintenability compliance is it important for you?		1	2	3	4	5
10.How important are you to suitability accuracy ?		1	2	3	4	5
11.How important are you to interoperability of your software?		1	2	3	4	5
12. The security of your building performance simulation tools is it important?		1	2	3	4	5

CONCLUSION

This work allowed me to exploit a new field that I did not know and which is unknown or unknown by people

The importance of this work is that it can allow the audience to easily choose their software because now a tool exists to compare and choose the best.

Resources

- Attia, S., & Andersen, M. (2013). Measuring the Usability, Efficiency and Effectiveness of CAAD Tools and Applications.
- Weaver, A. L., Kizakevich, P. N., Stoy, W., Magee, J. H., Ott, W., & Wilson, K. (2002). Usability analysis of VR simulation software. Studies in health technology and informatics, 567-569.

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