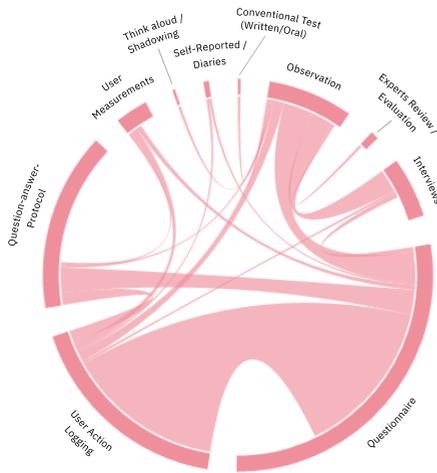


User-Centered Evaluation Framework for AR Applications

Andrea Picardi (andrea.picardi@polimi.it), Giandomenico Caruso (giandomenico.caruso@polimi.it)

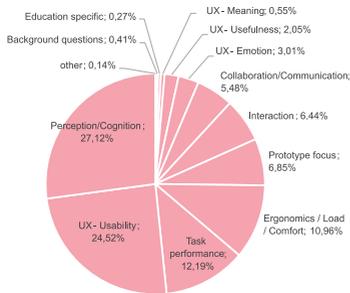
Department of Mechanical Engineering, Politecnico di Milano, 20156 Milano, Italy

How to read the framework



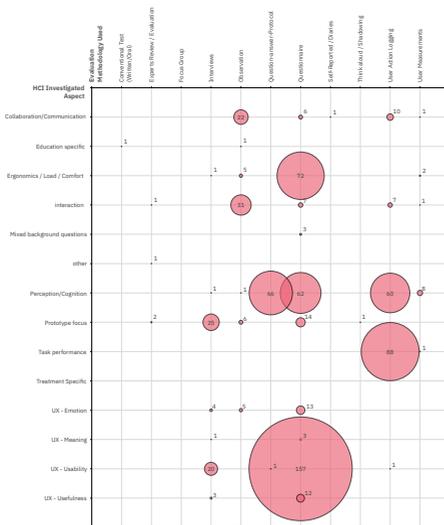
Methodologies used correlation chart

Correlation chart between methodologies used, the width of the flows corresponds to the number of times the methodology has been used. The external arches correspond to the total use within the domain/field.



Investigated HCI aspects pie

Repartition of the HCI aspects investigated within the domain/field.



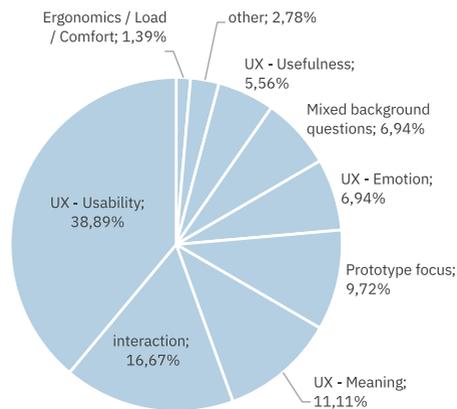
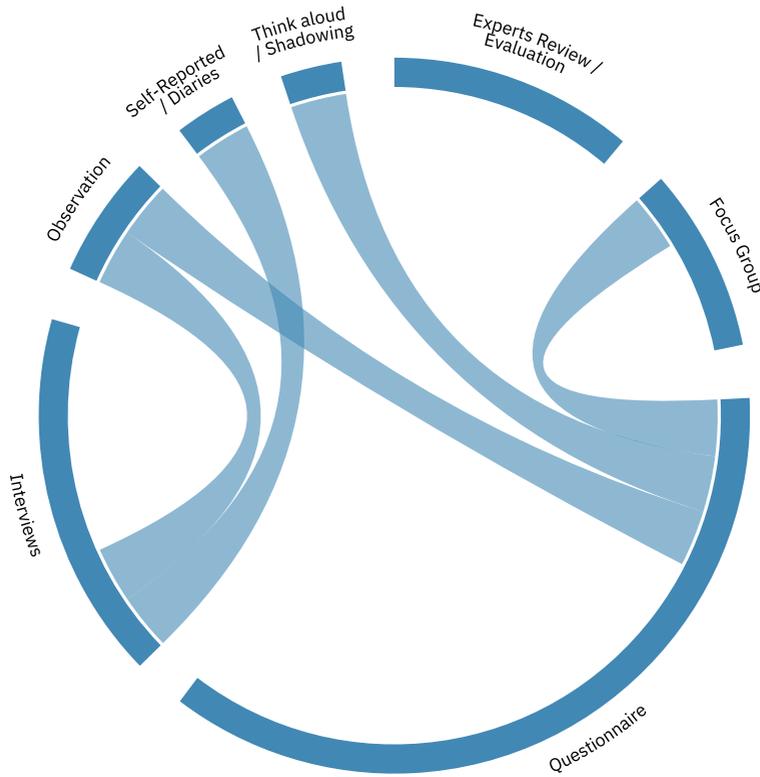
Method Used & Aspects matrix

Bubble graph that puts in correlation the method used for each HCI aspect within the domain. Here we can easily see if one pair is more used than the other through the size of each bubble.

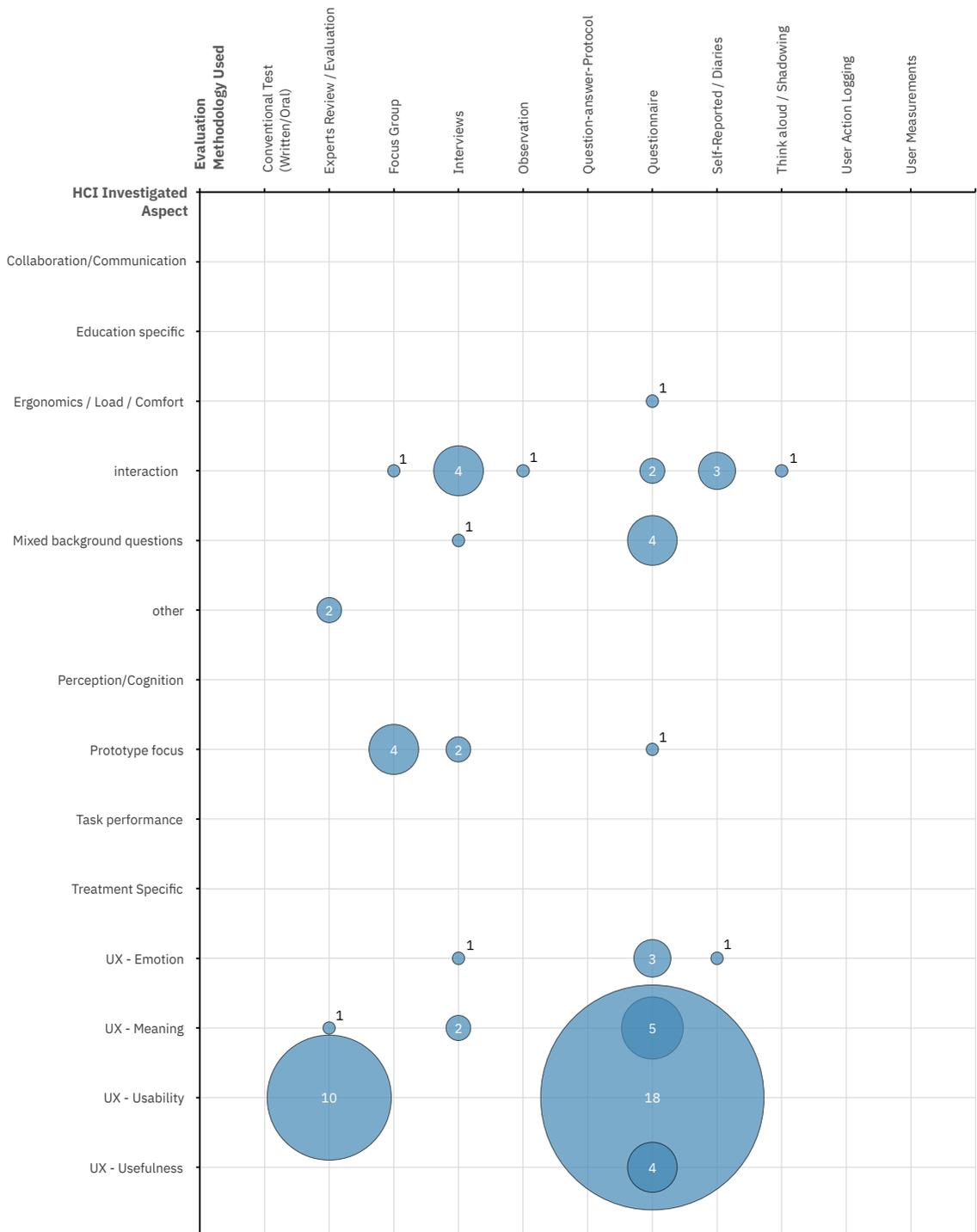
Section A – Reference tables: Domain and Fields

Business & Services	4	Generic Interface	40
Advertising / Product preview		Calibration	
Fashion / Makeup		On site collaboration	
Retail		Info presentation / visualization	
Communication & Telepresence	10	Interactions & Ergonomics	
Remote Help		Perception	
Telepresence & Remote collaboration		Tangible Interface	
Telepresence Surgery		Health Care & Medicine	50
Cultural & Tourism	14	Elderly / Disables Help	
Commercial exploration & discovery		Emergency	
Heritage exploration & discovery		Personal Help	
Museum & Exhibitions		Phobia Treatment	
Education & Training	20	Rehabilitation	
Design, Engineering and Architecture		Surgery	
History		Training	
Languages		Industry	58
Music		Assembly	
Orientation		Design & Engineering	
Other		Logistics	
PA		Maintenance	
Science subjects		Manufacturing	
Serious game		Training	
Special needs education		Navigation & Driving	64
Entertainment	30	Driving	
Gaming		Info / Annotations AR & Remote viewing	
Narrative experience		Inside orientation & space navigation	
Field Operations	36	Outside orientation & space navigation	
Archaeological		Remote orientation & navigation (i.e., on map)	
CSI		Other	72
Military Operations		Generic Perception on AR (Expectations / acceptance)	
On site planning / maintenance		Generic Perception on AR - Immersion / motivation	
		Generic Perception on AR - Privacy	
		Generic Perception on AR - State of the art	
		human/robot/AI interaction	
		Security	

Section B - Correlation charts Business & Services



Section C - Method Used & Aspects Matrix Business & Services



Section D – Lookup Table: Business & Services

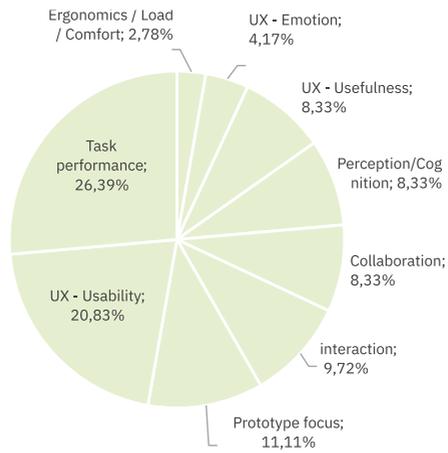
Ergonomics / Load / Comfort	1	1,39%
Questionnaire		
adapted from previous/similar research		
A Mixed Reality Virtual Clothes Try-On System by Yuan et al. (10.1109/TMM.2013.2280560)	1	1,39%
interaction	12	16,67%
Interviews		
semi-structured	3	4,17%
structured	1	1,39%
Self-Reported / Diaries		
Self-reported data / Diaries	3	4,17%
Questionnaire		
Technology Acceptance Model (TAM)		
Unspecified	1	1,39%
7 Likert scale	1	1,39%
Observation		
evaluators observations		
on material recorded	1	1,39%
Focus Group		
Paper wireframe creation with users	1	1,39%
Think aloud / Shadowing		
Shadowing	1	1,39%
Mixed background questions	5	6,94%
Questionnaire		
custom-made		
1 to 5 scale	2	2,78%
closed ended question/s	1	1,39%
remote survey		
online survey	1	1,39%
Interviews		
structured	1	1,39%
other	2	2,78%
Experts Review / Evaluation		
Digital Ethnography	2	2,78%

Prototype focus	7	9,72%
Focus Group		
Post-test focus group	3	4,17%
Paper wireframe creation with users	1	1,39%
Interviews		
structured		
7 Likert scale	1	1,39%
semi-structured	1	1,39%
Questionnaire		
remote survey		
online survey	1	1,39%
UX - Emotion	5	6,94%
Questionnaire		4,17%
Technology Acceptance Model (TAM)		
Unspecified	1	1,39%
7 Likert scale	1	1,39%
adapted from previous/similar research		
A Mixed Reality Virtual Clothes Try-On System by Yuan et al. (10.1109/TMM.2013.2280560)	1	1,39%
Interviews		
semi-structured	1	1,39%
Self-Reported / Diaries	1	1,39%
Self-reported data / Diaries	1	1,39%
UX - Meaning	8	11,11%
Questionnaire		
adapted from previous/similar research		
A Mixed Reality Virtual Clothes Try-On System by Yuan et al. (10.1109/TMM.2013.2280560)	2	2,78%
Technology Acceptance Model (TAM)		
Unspecified	1	1,39%
7 Likert scale	1	1,39%
custom-made		
1 to 5 scale	1	1,39%
Interviews		
structured	2	2,78%
Experts Review / Evaluation		
Heuristic evaluation	1	1,39%

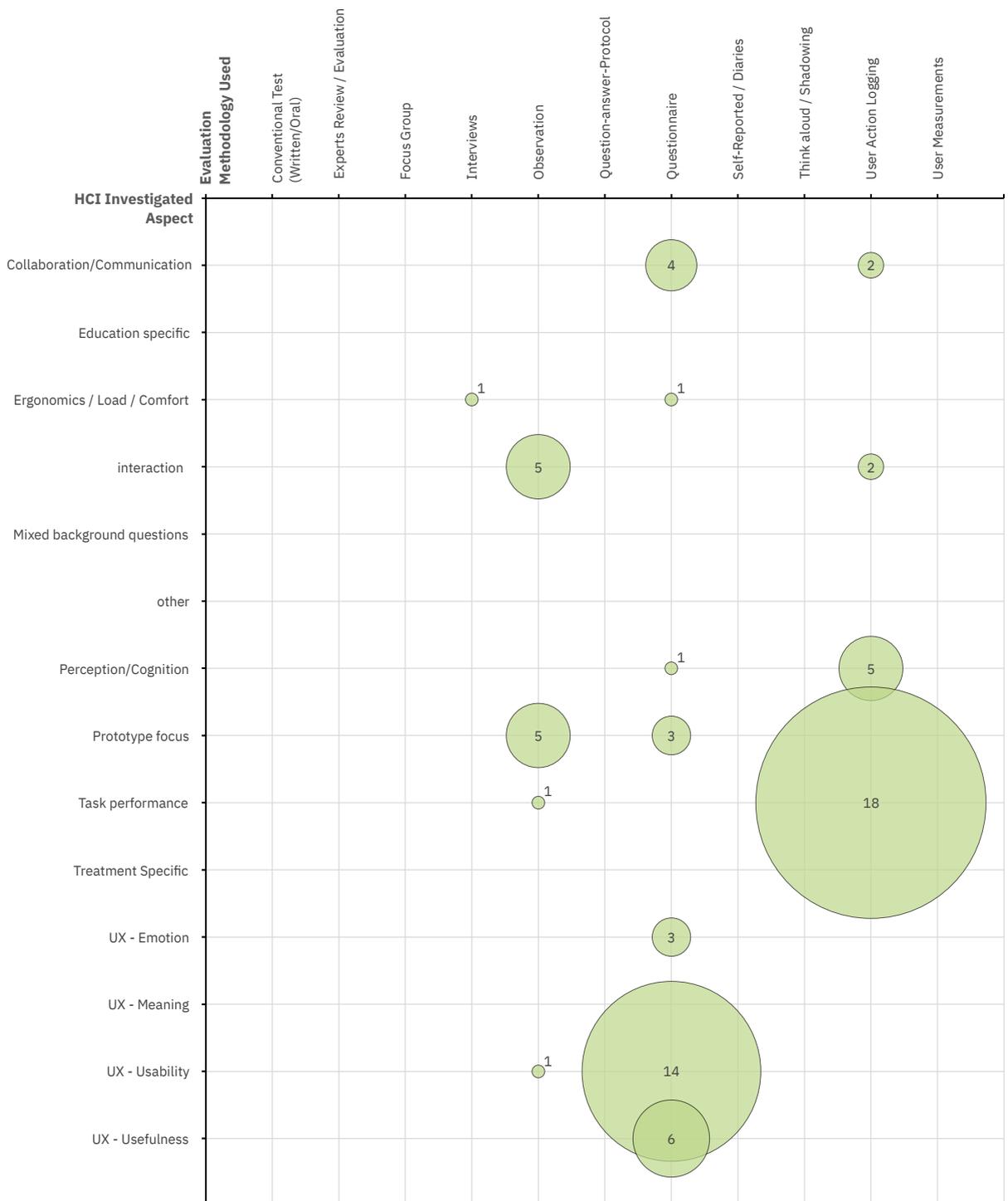
UX - Usability	28	38,89%
Questionnaire		
Technology Acceptance Model (TAM)		
7 Likert scale	5	6,94%
Unspecified	2	2,78%
custom-made		
5 Likert scale	5	6,94%
adapted from previous/similar researches		
A Mixed Reality Virtual Clothes Try-On System by Yuan et al. (10.1109/TMM.2013.2280560)	4	5,56%
remote survey		
online survey	2	2,78%
Experts Review / Evaluation		
Heuristic evaluation	10	13,89%
UX - Usefulness	4	5,56%
Questionnaire		
Technology Acceptance Model (TAM)		
Unspecified	1	1,39%
7 Likert scale	1	1,39%
adapted from previous/similar researches		
A Mixed Reality Virtual Clothes Try-On System by Yuan et al. (10.1109/TMM.2013.2280560)	1	1,39%
remote survey		
online survey	1	1,39%

Section B - Correlation charts

Communication



Section C - Method Used & Aspects Matrix Communication



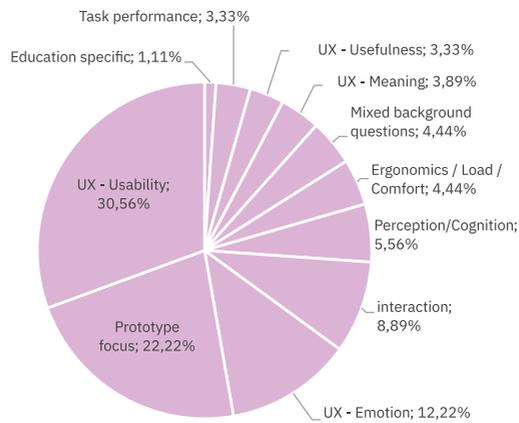
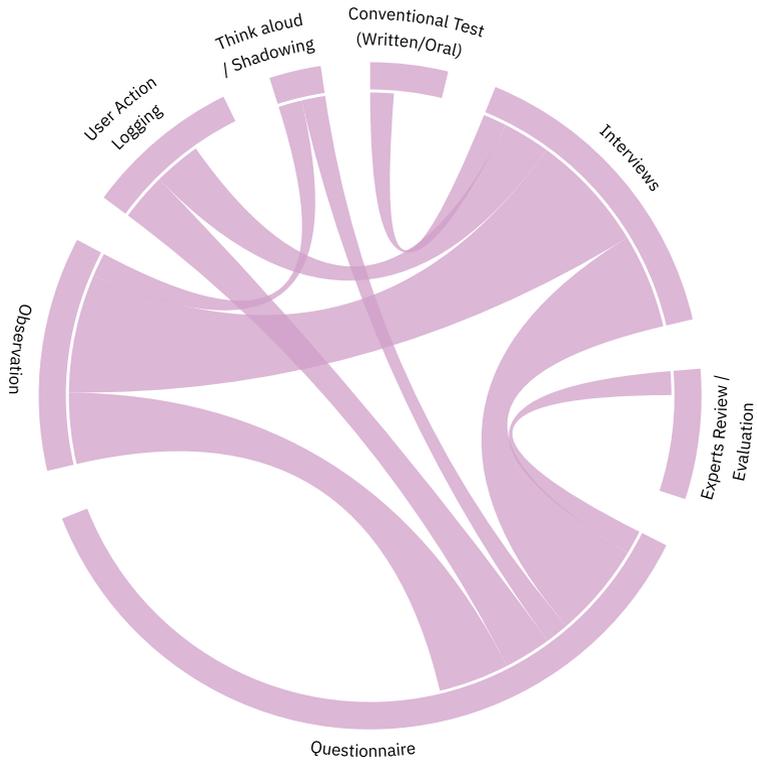
Section D – Lookup Table: Communication

Collaboration/Communication	6	8,33%
Questionnaire		
custom-made		
7 Likert scale	3	4,17%
1 to 7 scale bipolar scale	1	1,39%
User Action Logging		
tracking logs	2	2,78%
Ergonomics / Load / Comfort	2	2,78%
Interviews		
closed response (during evaluation)	1	1,39%
Questionnaire		
custom-made		
1 to 3 scale	1	1,39%
interaction	7	9,72%
Observation		
evaluators observations	5	6,94%
User Action Logging		
tracking logs	2	2,78%
Perception/Cognition	6	8,33%
User Action Logging		
evaluators count/measure	3	4,17%
tracking logs	1	1,39%
evaluators timing	1	1,39%
Questionnaire		
custom-made		
closed ended question/s	1	1,39%
Prototype focus	8	11,11%
Observation		
evaluators observations	4	5,56%
comments collection during test	1	1,39%
Questionnaire		
custom-made		
open ended question/s	2	2,78%
7 Likert scale	1	1,39%
Task performance	19	26,39%

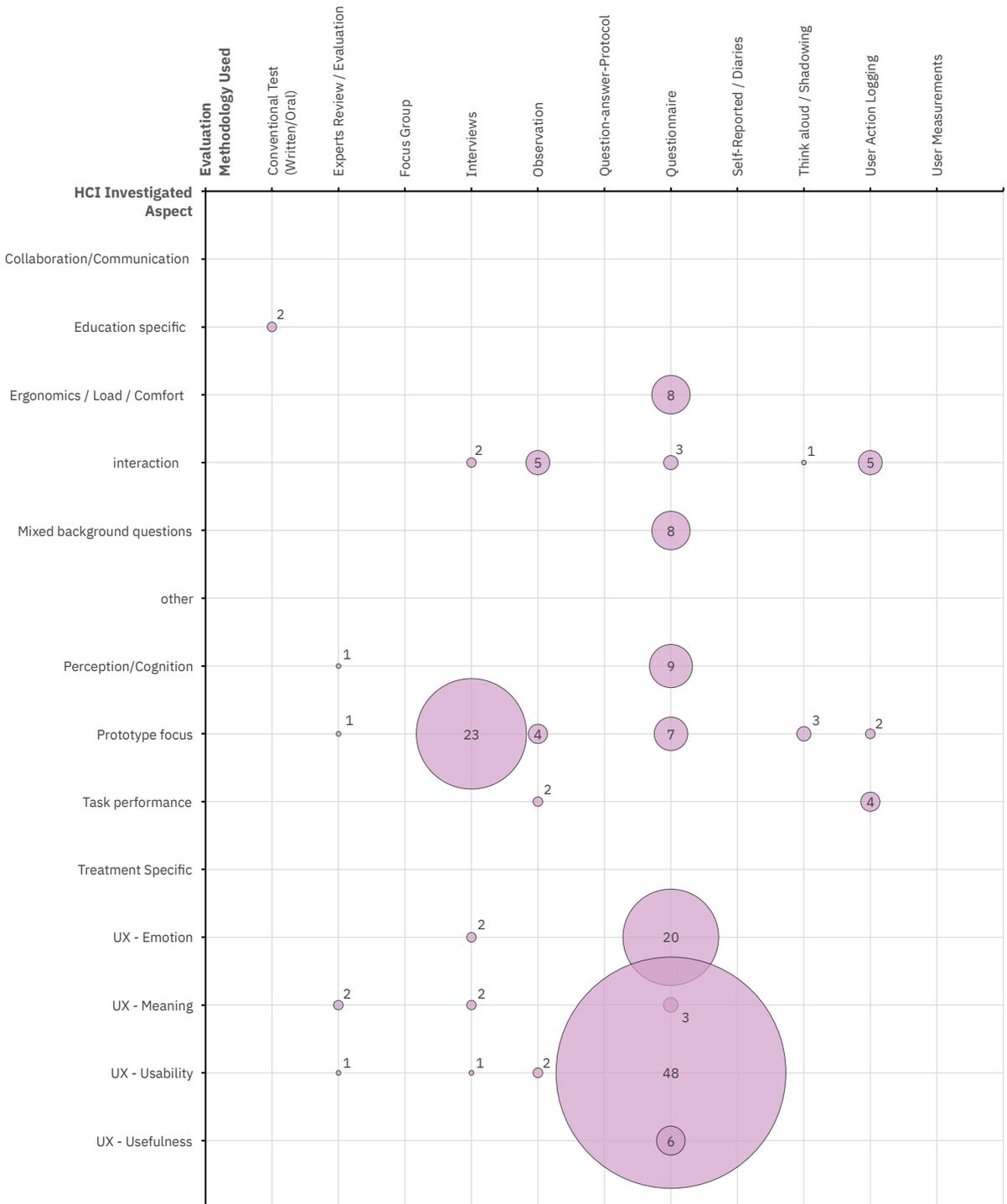
User Action Logging		
tracking logs	15	20,83%
evaluators count/measure	2	2,78%
evaluators timing	1	1,39%
Observation		
evaluators observations	1	1,39%
UX - Emotion	3	4,17%
Questionnaire		
custom-made		
7 Likert scale	2	2,78%
3 Separate Propositions (disagree/neutral/strongly agree)	1	1,39%
UX - Usability	15	20,83%
Questionnaire		
custom-made		
7 Likert scale	7	9,72%
order items	3	4,17%
1 to 5 scale	2	2,78%
3 Separate Propositions (disagree/neutral/strongly agree)	1	1,39%
open ended question/s	1	1,39%
Observation		
evaluators observations	1	1,39%
UX - Usefulness	6	8,33%
Questionnaire		
custom-made		
7 Likert scale	3	4,17%
open ended question/s	2	2,78%
3 Separate Propositions (disagree/neutral/strongly agree)	1	1,39%

Section B - Correlation charts

Cultural & Tourism



Section C - Method Used & Aspects Matrix Cultural & Tourism



Section D – Lookup Table: Cultural & Tourism

Education specific	2	1,11%
Conventional Test (Written/Oral)		
test with evaluation given by teacher (PRE + Post -> Control + Experiment group)	1	0,56%
test with evaluation given by teacher	1	0,56%
Ergonomics / Load / Comfort	8	4,44%
Questionnaire		
NASA TLX		
7 Likert	5	2,78%
custom-made		
5 Likert scale	2	1,11%
Unified Theory of Acceptance and Use of Technology (UTAUT2)		
7 Likert scale	1	0,56%
interaction	16	8,89%
User Action Logging		
system logs	5	2,78%
Observation		
evaluators observations	5	2,78%
Questionnaire		
Technology Acceptance Model (TAM)		
7 Likert scale	2	1,11%
Unified Theory of Acceptance and Use of Technology (UTAUT2)		
7 Likert scale	1	0,56%
Interviews		
semi-structured	2	1,11%
Think aloud / Shadowing		
Think aloud on prototype	1	0,56%
Mixed background questions	8	4,44%
Questionnaire		
custom-made		
closed ended question/s	3	1,67%
1 to 5 scale	2	1,11%
opposite adjectives (1 to 4 scale)	1	0,56%
Technology Acceptance Model (TAM)		
7 Likert scale	1	0,56%
adapted from previous/similar research		
The Development and Evaluation of a Survey to Measure User Engagement - 5 Likert scale	1	0,56%

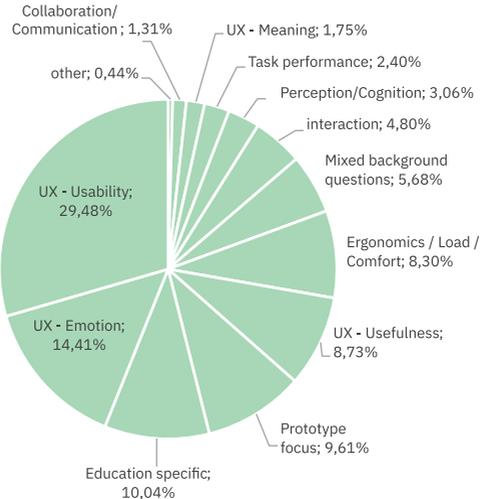
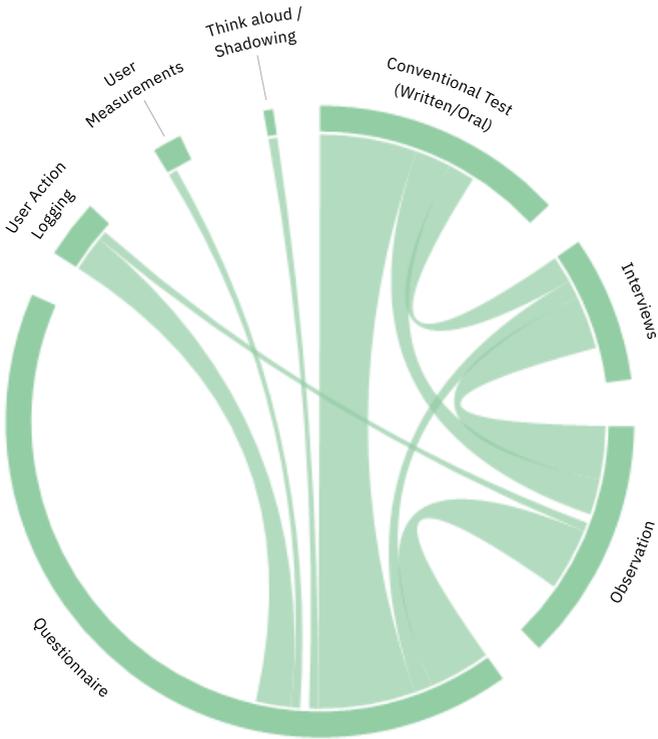
Perception/Cognition	10	5,56%
Questionnaire		
custom-made		
7 Likert scale	2	1,11%
opposite adjectives (1 to 4 scale)	1	0,56%
5 Likert scale	1	0,56%
presence questionnaire		
Regenbrecht and Schubert (2002) - 7 Likert scale	4	2,22%
Santa Barbara Sense of Direction (SBSOD)	1	0,56%
Experts Review / Evaluation		
Heuristic evaluation	1	0,56%
Prototype focus	40	22,22%
Interviews		
semi-structured		
open ended question/s	9	5,00%
unspecified	5	2,78%
recorded	2	1,11%
unstructured	5	2,78%
remote interview		
semi-structured phone interview	1	0,56%
structured		
Close-Ended Questions	1	0,56%
Questionnaire		
custom-made		
1 to 5 scale	4	2,22%
7 Likert scale	2	1,11%
5 Likert scale	1	0,56%
Observation		
evaluators observations		
unspecified	3	1,67%
on material recorded	1	0,56%
Think aloud / Shadowing		
Think aloud on task		
unspecified	2	1,11%
Think aloud on prototype		
unspecified	1	0,56%
User Action Logging		
system logs		
unspecified	2	1,11%

Experts Review / Evaluation		
Heuristic evaluation	1	0,56%
Task performance	6	3,33%
<hr/>		
User Action Logging		
system logs	4	2,22%
Observation		
evaluators coded/structured observations on material recorded	2	1,11%
UX - Emotion	22	12,22%
<hr/>		
Questionnaire		
custom-made		
1 to 5 scale	4	2,22%
5 Likert scale	4	2,22%
opposite adjectives (1 to 4 scale)	2	1,11%
7 Likert scale	2	1,11%
Unified Theory of Acceptance and Use of Technology (UTAUT2)		
7 Likert scale	4	2,22%
adapted from previous/similar research		
The Development and Evaluation of a Survey to Measure User Engagement - 5 Likert scale	2	1,11%
Technology Acceptance Model (TAM)		
7 Likert scale	2	1,11%
Interviews		
semi-structured		
recorded	1	0,56%
open ended question/s	1	0,56%
UX - Meaning	7	3,89%
<hr/>		
Questionnaire		
custom-made		
opposite adjectives (1 to 4 scale)	1	0,56%
5 Likert scale	1	0,56%
Unified Theory of Acceptance and Use of Technology (UTAUT2)		
7 Likert scale	1	0,56%
Experts Review / Evaluation		
Experts Interview	2	1,11%
Interviews		
semi-structured		
open ended question/s	2	1,11%

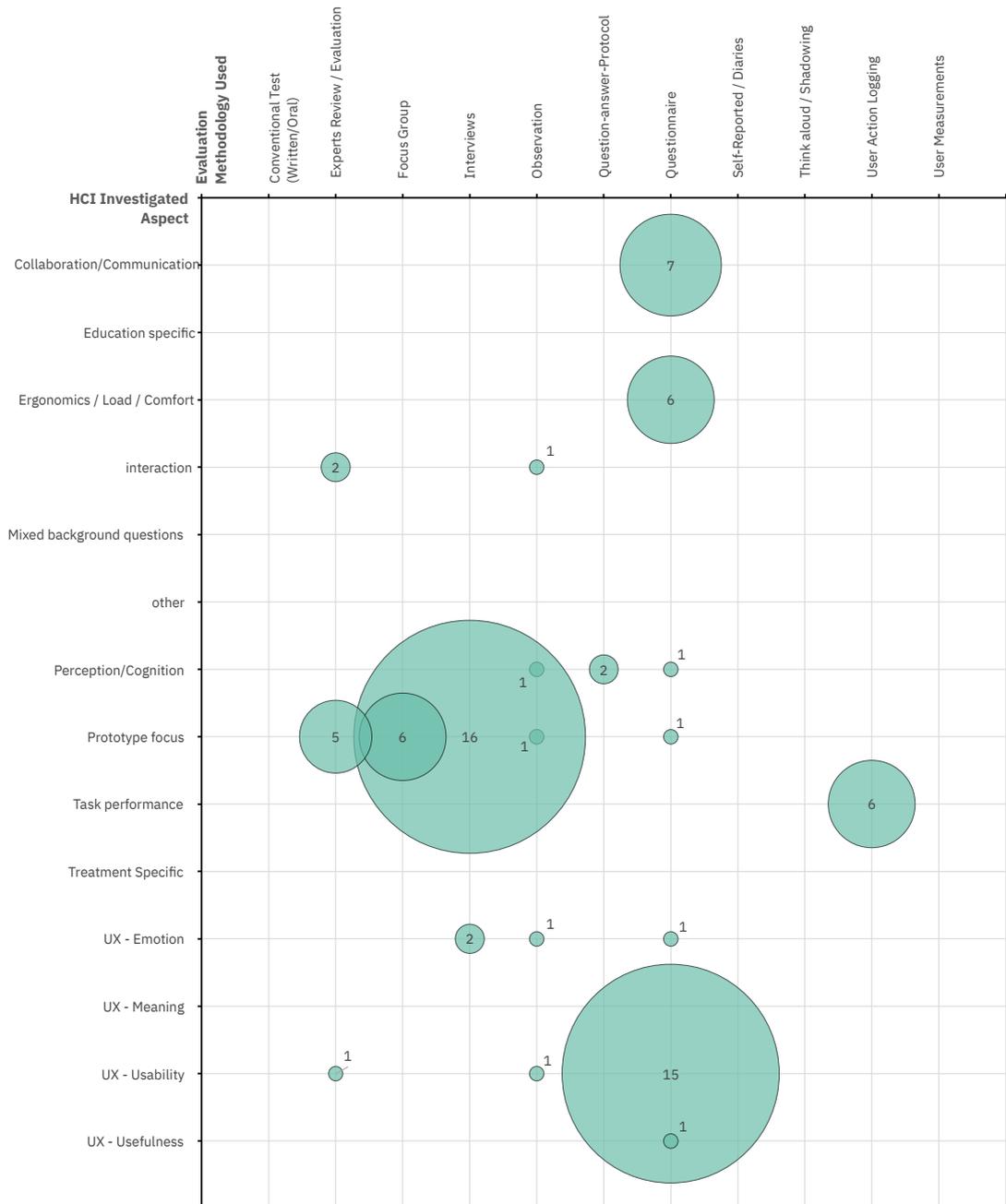
UX - Usability	55	30,56%
Questionnaire		
custom-made		
5 Likert scale	18	10,00%
1 to 5 scale	5	2,78%
opposite adjectives (1 to 4 scale)	3	1,67%
7 Likert scale	3	1,67%
closed ended question/s	1	0,56%
Technology Acceptance Model (TAM)		
7 Likert scale	4	2,22%
Ben Schneiderman's acceptance test		
5 Likert scale	3	1,67%
System Usability Scale (SUS)		
5 Likert scale	3	1,67%
presence questionnaire		
Regenbrecht and Schubert (2002) - 7 Likert scale	3	1,67%
adapted from previous/similar research		
The Development and Evaluation of a Survey to Measure User Engagement - 5 Likert scale	3	1,67%
Unified Theory of Acceptance and Use of Technology (UTAUT2)		
7 Likert scale	1	0,56%
NASA TLX		
7 Likert	1	0,56%
N/D		
N/D	3	1,67%
Observation		
evaluators observations	2	1,11%
Experts Review / Evaluation		
Heuristic evaluation	1	0,56%
Inter-views		
semi-structured	1	0,56%
UX - Usefulness	6	3,33%
Questionnaire		
custom-made		
5 Likert scale	2	1,11%
1 to 5 scale	1	0,56%
Technology Acceptance Model (TAM)		
7 Likert scale	2	1,11%
System Usability Scale (SUS)		
5 Likert scale	1	0,56%

Section B - Correlation charts

Education & Training



Section C - Method Used & Aspects Matrix Education & Training



Section D – Lookup Table: Education & Training

Collaboration/Communication	6	1,31%
Observation		
evaluators coded/structured observations	3	0,66%
Questionnaire		
Computer-Mediated Collaborative Learning: An Empirical Evaluation 5 Likert scale	3	0,66%
Education specific	46	10,04%
Conventional Test (Written/Oral)		
test with evaluation given by teacher	8	1,75%
test with evaluation given by teacher (Control + Experiment groups)	7	1,53%
test with evaluation given by teacher (PRE + POST evaluation)	6	1,31%
test with evaluation given by teacher (PRE + Post -> Control + Experiment group)	3	0,66%
Questionnaire		
custom-made		
graded questions	10	2,18%
5 Likert scale	1	0,22%
6 Likert scale	1	0,22%
Flow experience questionnaire by Chang et al. (2012) 5 Likert scale	2	0,44%
Education specific Questionnaire Pintrich's Motivated Strategies for Learning Questionnaire (MSLQ)	1	0,22%
Observation		
evaluators observations		
on material recorded	2	0,44%
unspecified	2	0,44%
evaluators coded/structured observations	2	0,44%
Interviews		
semi-structured	1	0,22%
Ergonomics / Load / Comfort	38	8,30%
Questionnaire		
Wearability Levels (WL) scale Knight et al.		
Visual Effects scales (VES) - 1 to 5 scale	6	1,31%
comfort rating scales (CRS) - 1 to 5 scale	6	1,31%
Borg RPE - 1 to 5 scale	1	0,22%
Borg-CR10 - 1 to 5 scale	1	0,22%
custom-made		
5 Likert scale	5	1,09%

6 Likert scale	1	0,22%
Intrinsic Motivation Inventory (IMI)		
5 Likert scale	1	0,22%
Likert 7 scale	1	0,22%
7 Likert polar terms scale	1	0,22%
QUIM (Quality In Use Integrated Measurement)	2	0,44%
Education specific Questionnaire		
Learning Attitude towards Ecosystems (LATE) - 5 Likert scale	1	0,22%
based on The ebb and flow of online learning by Pearce (10.1016/j.chb.2004.02.019) - 5 Likert scale	1	0,22%
Flow State Scale (FSS)		
5 Likert scale	2	0,44%
Questionnaire for User Interface and Satisfaction (QUIS)		
12 Likert scale	1	0,22%
Bipolar Laddering (BLA system)	1	0,22%
Interviews		
structured	5	1,09%
NASA TLX	5	1,09%
User Measurements		
Heart Rate Variability (HRV)	2	0,44%
interaction	22	4,80%
Observation	11	2,40%
evaluators observations	6	1,31%
evaluators coded/structured observations	5	1,09%
unspecified	4	0,87%
on material recorded	1	0,22%
Questionnaire		
custom-made		
5 Likert scale	3	0,66%
7 Likert scale	2	0,44%
Flow State Scale (FSS)		
5 Likert scale	1	0,22%
Technology Acceptance Model (TAM)		
Unspecified	1	0,22%
Education specific Questionnaire		
Keller's Instructional Materials Motivation Survey (IMMS)	1	0,22%
Think aloud / Shadowing		
Think aloud on prototype	2	0,44%
Interviews		

with proxy users			
semi-structured	1	0,22%	
Mixed background questions	26	5,68%	
<hr/>			
Questionnaire			
custom-made			
closed ended question/s	10	2,18%	
5 Likert scale	2	0,44%	
7 Likert scale	2	0,44%	
graded questions	1	0,22%	
1 to 6 scale	1	0,22%	
Intrinsic Motivation Inventory (IMI)			
5 Likert scale	1	0,22%	
Computer-Mediated Collaborative Learning: An Empirical Evaluation			
5 Likert scale	1	0,22%	
remote survey			
email survey - closed question/s	1	0,22%	
System Usability Scale (SUS)			
5 Likert scale	1	0,22%	
Bipolar Laddering (BLA system)	1	0,22%	
Flow experience questionnaire by Chang et al. (2012)			
5 Likert scale	1	0,22%	
Interviews			
later coded			
structured evaluation from evaluators with 1 to 5 scale	2	0,44%	
Observation			
evaluators observations	2	0,44%	
other	2	0,44%	
<hr/>			
Self-Reported / Diaries			
Participants artefacts (notebooks, emails, drawings, produced materials etc.)	2	0,44%	
Perception/Cognition	14	3,06%	
<hr/>			
Questionnaire			
custom-made			
5 Likert scale	8	1,75%	
presence questionnaire			
by Slater et al. (1994) - reduced version	2	0,44%	
Flow State Scale (FSS)			
5 Likert scale	2	0,44%	

Interviews		
with proxy users		
structured	1	0,22%
semi-structured	1	0,22%
Prototype focus	44	9,61%
<hr/>		
Questionnaire		
custom-made		
open ended question/s	12	2,62%
closed ended question/s	3	0,66%
5 Likert scale	3	0,66%
7 Likert scale	1	0,22%
remote survey		
email survey - closed question/s	3	0,66%
Interviews		
with proxy users		
unstructured - unformal	3	0,66%
structured	3	0,66%
semi-structured	2	0,44%
un-structured	2	0,44%
semi-structured	4	0,87%
later coded		
unstructured interview later coded in topics	1	0,22%
Observation	6	1,31%
evaluators observations	3	0,66%
evaluators coded/structured observations	2	0,44%
on material recorded	1	0,22%
comments collection during test	1	0,22%
Think aloud / Shadowing	1	0,22%
Think aloud on prototype	1	0,22%
Task performance	11	2,40%
<hr/>		
User Action Logging		
evaluators count/measure	5	1,09%
evaluators timing		
unspecified	2	0,44%
on material recorded	1	0,22%
system logs	2	0,44%
Observation		
evaluators coded/structured observations		
on material recorded	1	0,22%

UX - Emotion**66 14,41%****Questionnaire**

custom-made

5 Likert scale	8	1,75%
7 Likert scale	6	1,31%
closed ended question/s	3	0,66%
open ended question/s	2	0,44%
Likert 4	1	0,22%

Education specific Questionnaire

adapted from Evaluating the Usability of an Augmented Reality Based Educational Application by Aleven et al. (10.1007/978-3-642-13388-6 34) (Likert 5)	4	0,87%
Keller's Instructional Materials Motivation Survey (IMMS)	2	0,44%
Learning Attitude towards Ecosystems (LATE) - 5 Likert scale	1	0,22%

Intrinsic Motivation Inventory (IMI)

5 Likert scale	2	0,44%
Likert 7 scale	1	0,22%
7 Likert polar terms scale	1	0,22%

Bipolar Laddering (BLA system)

4 0,87%

Flow State Scale (FSS)

5 Likert scale	3	0,66%
----------------	---	-------

Technology Acceptance Model (TAM)

Unspecified	3	0,66%
-------------	---	-------

QUIM (Quality In Use Integrated Measurement)

2 0,44%

Questionnaire for User Interface and Satisfaction (QUIS)

8 Likert scale	1	0,22%
10 Likert scale	1	0,22%

Post-Study System Usability Questionnaire (PSSUQ)

1 0,22%

System Usability Scale (SUS)

1 0,22%

remote survey

email survey - closed question/s	1	0,22%
----------------------------------	---	-------

ISO 9241

ISONORM part 10 - 5 Likert	1	0,22%
----------------------------	---	-------

Interviews

with proxy users

semi-structured	3	0,66%
structured	1	0,22%

later coded

unstructured interview later coded in topics	2	0,44%
--	---	-------

structured

2 0,44%

8 1,75%

Observation			
evaluators coded/structured observations	7	1,53%	
on material recorded	4	0,87%	
evaluators observations	1	0,22%	
User Measurements			
Galvanic Skin Response (GSR)	1	0,22%	
UX - Meaning	8	1,75%	
<hr/>			
Questionnaire			
custom-made			
7 Likert scale	6	1,31%	
Technology Acceptance Model (TAM)			
Unspecified	1	0,22%	
Interviews			
later coded			
unstructured interview later coded in topics	1	0,22%	
UX - Usability	135	29,48%	
<hr/>			
Questionnaire			
custom-made			
5 Likert scale	22	4,80%	
7 Likert scale	6	1,31%	
open ended question/s	4	0,87%	
1 to 10 scale	4	0,87%	
Likert 4	2	0,44%	
closed ended question/s	2	0,44%	
6 Likert scale	2	0,44%	
1 to 5 scale	1	0,22%	
ISO 9241			
part 11	19	4,15%	
ISONORM part 10 - 5 Likert	7	1,53%	
Education specific Questionnaire			
adapted from Evaluating the Usability of an Augmented Reality Based Educational Application by Aleven et al. (10.1007/978-3-642-13388-6 34) (Likert 5)	6	1,31%	
Keller's Instructional Materials Motivation Survey (IMMS)	1	0,22%	
Learning Attitude towards Ecosystems (LATE) - 5 Likert scale	1	0,22%	
based on The ebb and flow of online learning by Pearce (10.1016/j.chb.2004.02.019) - 5 Likert scale	1	0,22%	
Technology Acceptance Model (TAM)			
Unspecified	6	1,31%	
7 Likert scale	1	0,22%	
System Usability Scale (SUS)			

5 Likert scale	3	0,66%
Unspecified	2	0,44%
QUIM (Quality In Use Integrated Measurement)	5	1,09%
Post-Study System Usability Questionnaire (PSSUQ)		
Unspecified	3	0,66%
7 Likert scale	2	0,44%
Bipolar Laddering (BLA system)	4	0,87%
Intrinsic Motivation Inventory (IMI)		
5 Likert scale	2	0,44%
Likert 7 scale	1	0,22%
7 Likert polar terms scale	1	0,22%
Usability Satisfaction Questionnaires		
5 Likert scale	4	0,87%
Questionnaire for User Interface and Satisfaction (QUIS)		
6 Likert scale	1	0,22%
5 Likert scale	1	0,22%
11 Likert scale	1	0,22%
13 Likert scale	1	0,22%
Flow State Scale (FSS)		
5 Likert scale	3	0,66%
Computer-Mediated Collaborative Learning: An Empirical Evaluation		
5 Likert scale	2	0,44%
Interviews		
later coded		
unstructured interview later coded in topics	3	0,66%
with proxy users		
semi-structured	3	0,66%
structured		
Unspecified	2	0,44%
NASA TLX	1	0,22%
Observation		
evaluators coded/structured observations		
Unspecified	2	0,44%
on material recorded	1	0,22%
evaluators observations	1	0,22%
User Action Logging	1	0,22%
system logs	1	0,22%
	40	8,73%

UX - Usefulness

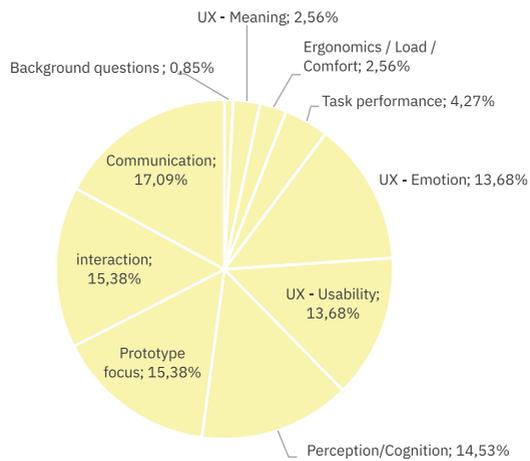
Questionnaire

custom-made		
5 Likert scale	9	1,97%
closed ended question/s	3	0,66%
open ended question/s	1	0,22%
Likert 4	1	0,22%
1 to 10 scale	1	0,22%
1 to 5 scale	1	0,22%
Technology Acceptance Model (TAM)		
Unspecified	3	0,66%
7 Likert scale	1	0,22%
Education specific Questionnaire		
adapted from Evaluating the Usability of an Augmented Reality Based Educational Application by Aleven et al. (10.1007/978-3-642-13388-6 34) (Likert 5)	2	0,44%
Learning Attitude towards Ecosystems (LATE) - 5 Likert scale	1	0,22%
Intrinsic Motivation Inventory (IMI)		
Likert 7 scale	1	0,22%
7 Likert polar terms scale	1	0,22%
Usability Satisfaction Questionnaires		
5 Likert scale	2	0,44%
Questionnaire for User Interface and Satisfaction (QUIS)		
9 Likert scale	1	0,22%
7 Likert scale	1	0,22%
Post-Study System Usability Questionnaire (PSSUQ)		
7 Likert scale	1	0,22%
Unspecified	1	0,22%
ISO 9241		
part 11	1	0,22%
Bipolar Laddering (BLA system)	1	0,22%
QUIM (Quality In Use Integrated Measurement)	1	0,22%
System Usability Scale (SUS)		
5 Likert scale	1	0,22%

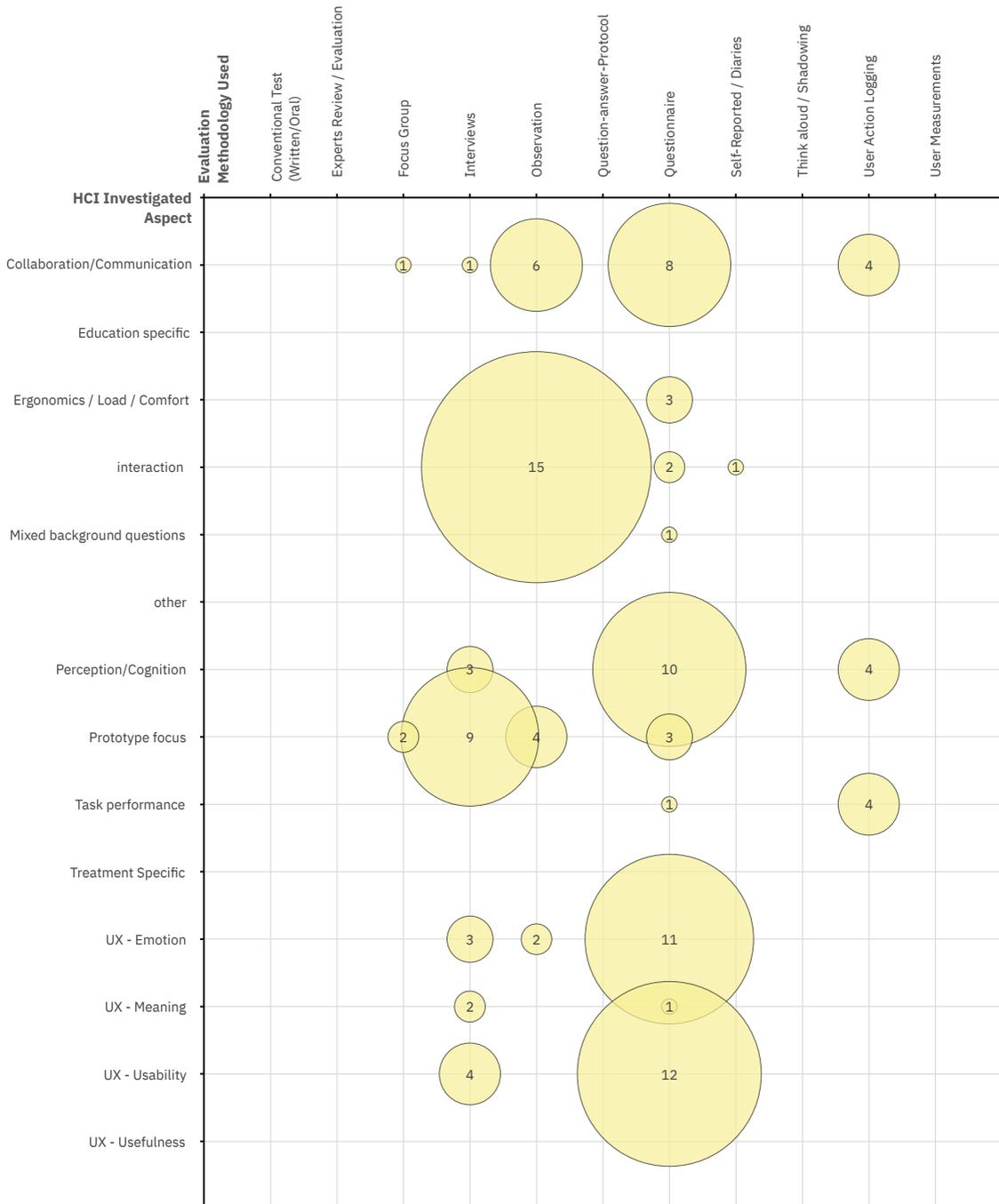
Interviews

with proxy users		
semi-structured	2	0,44%
unstructured - unformal	1	0,22%
structured	1	0,22%
semi-structured	1	0,22%

Section B - Correlation charts Entertainment



Section C - Method Used & Aspects Matrix Entertainment



Section D – Lookup Table: Entertainment

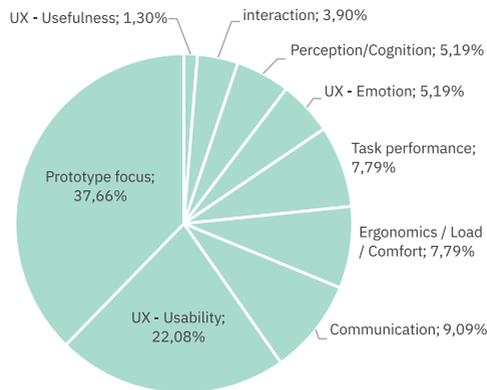
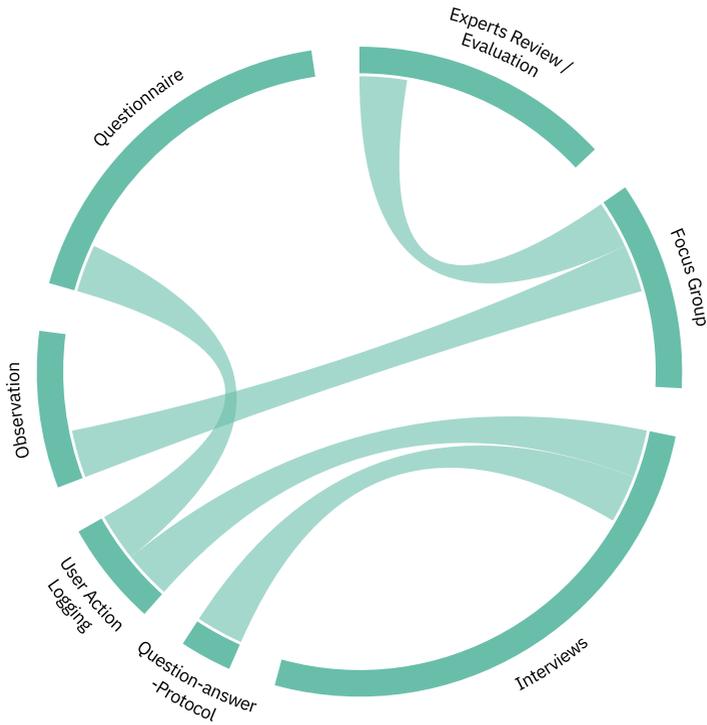
Collaboration/Communication	20	17,09%
Questionnaire		
custom-made		
7 Likert scale	4	3,42%
5 Likert scale	4	3,42%
Observation		
evaluators observations		
on material recorded	2	1,71%
unspecified	2	1,71%
evaluators coded/structured observations	2	1,71%
User Action Logging		
system logs	4	3,42%
Focus Group		
Post-test focus group	1	0,85%
Interviews		
semi-structured	1	0,85%
Ergonomics / Load / Comfort	3	2,56%
Questionnaire		
custom-made		
5 Likert scale	2	1,71%
1 to 7 scale	1	0,85%
interaction	18	15,38%
Observation		
evaluators observations		
unspecified	7	5,98%
on material recorded	5	4,27%
evaluators coded/structured observations		
on material recorded	3	2,56%
Questionnaire		
GameFlow questionnaire		
Likert Ordinal scale	1	0,85%
custom-made		
5 Likert scale	1	0,85%
Self-Reported / Diaries		
Participants artefacts (notebooks, emails, drawings, produced materials etc.)	1	0,85%

Mixed background questions	1	0,85%
Questionnaire		
custom-made		
closed ended question/s	1	0,85%
Perception/Cognition	17	14,53%
Questionnaire		
custom-made		
5 Likert scale	3	2,56%
open ended question/s	2	1,71%
1 to 7 scale	2	1,71%
closed response multi-item	1	0,85%
7 Likert scale	1	0,85%
presence questionnaire		
MEC-SPQ - Likert Ordinal	1	0,85%
User Action Logging		
system logs	4	3,42%
Interviews		
semi-structured	3	2,56%
Prototype focus	18	15,38%
Interviews		
unstructured	5	4,27%
semi-structured	2	1,71%
unstructured post-experiment discussion	1	0,85%
structured	1	0,85%
Observation		
evaluators observations	4	3,42%
Questionnaire		
custom-made		
open ended question/s	2	1,71%
5 Likert scale	1	0,85%
Focus Group		
Post-test focus group	2	1,71%
Task performance	5	4,27%
User Action Logging		
system logs	3	2,56%
evaluators timing	1	0,85%
Questionnaire		
custom-made		
graded questions	1	0,85%

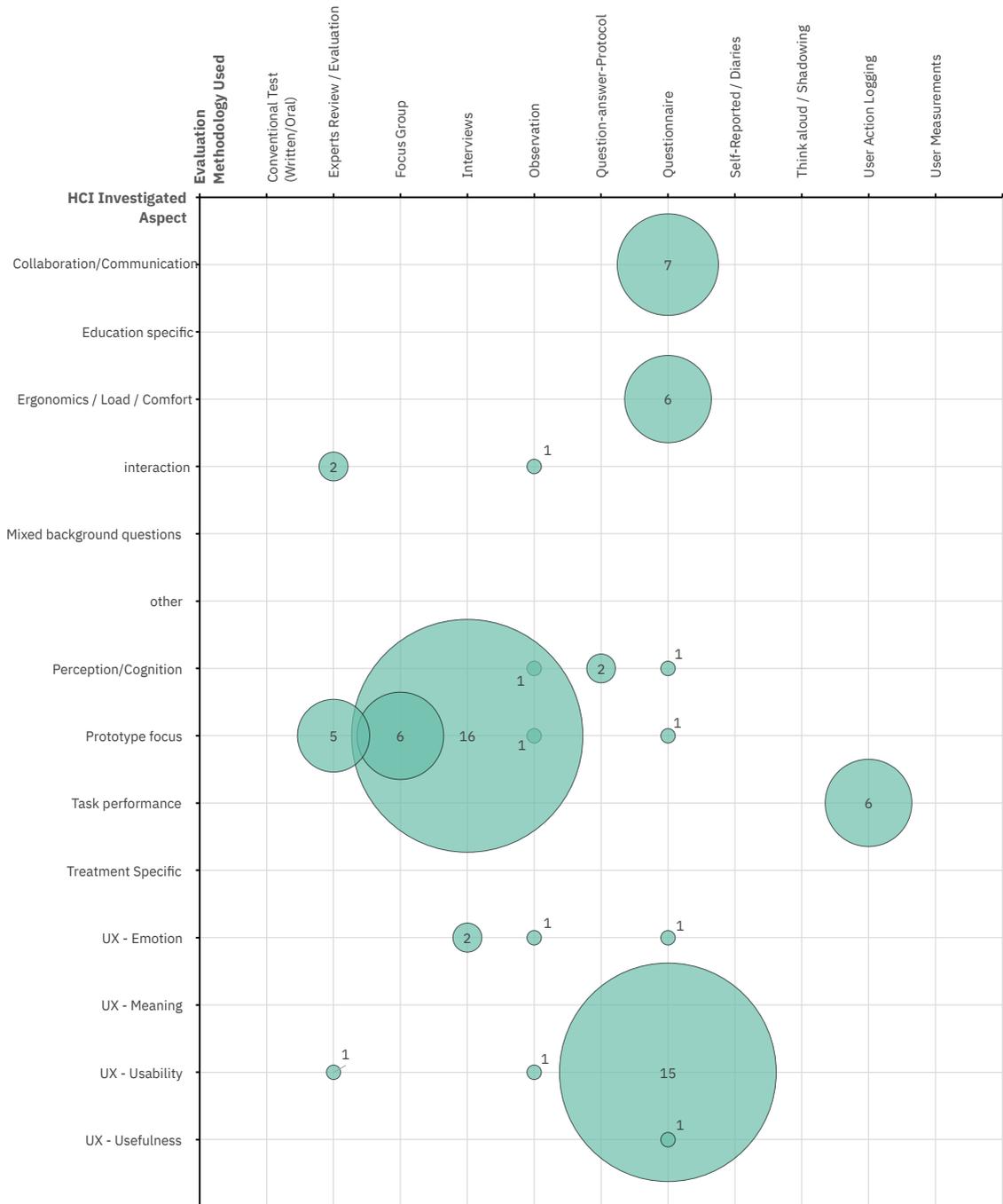
UX - Emotion	16	13,68%
Questionnaire		
custom-made		
7 Likert scale	5	4,27%
5 Likert scale	2	1,71%
1 to 7 scale	1	0,85%
System Usability Scale (SUS)	2	1,71%
Intrinsic Motivation Inventory (IMI)	1	0,85%
Likert Ordinal scale	1	0,85%
Interviews		
unstructured	2	1,71%
unstructured post-experiment discussion	1	0,85%
Observation		
evaluators observations		
on material recorded	1	0,85%
evaluators coded/structured observations		
on material recorded	1	0,85%
UX - Meaning	3	2,56%
Interviews		
semi-structured		
recorded	2	1,71%
Questionnaire		
custom-made		
7 Likert scale	1	0,85%
UX - Usability	16	13,68%
Questionnaire		
custom-made		
5 Likert scale	5	4,27%
7 Likert scale	2	1,71%
open ended question/s	1	0,85%
closed ended question/s	1	0,85%
System Usability Scale (SUS)	3	2,56%
Interviews		
unstructured post-experiment discussion	2	1,71%
semi-structured	2	1,71%

Section B - Correlation charts

Field Operations



Section C - Method Used & Aspects Matrix Field Operations



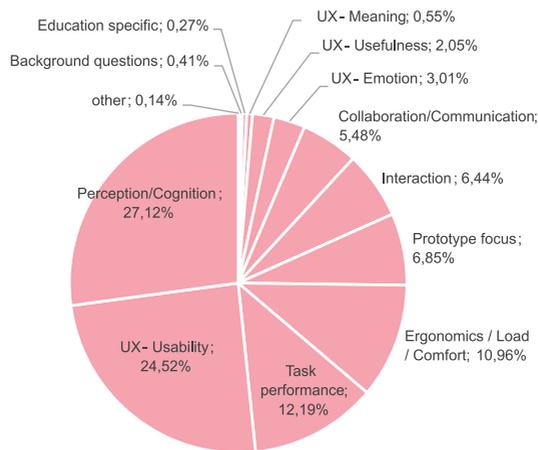
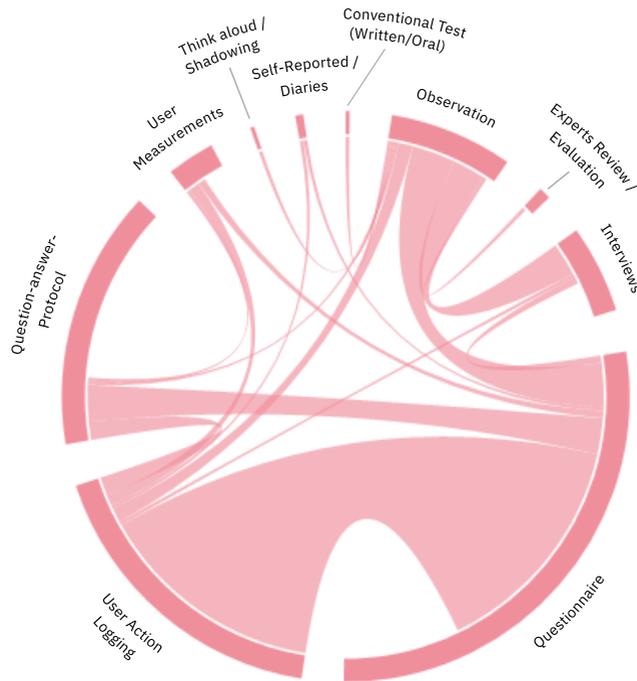
Section D – Lookup Table: Field Operations

Collaboration/Communication	7	9,09%
Questionnaire		
Education specific Questionnaire		
Evaluation method for computer supported collaborative learning (CSCL) by Spada et al. ¹ - 5 Likert	7	9,09%
Ergonomics / Load / Comfort	6	7,79%
Questionnaire		
NASA TLX		
7 Likert	5	6,49%
Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology by D. Davis (10.2307/249008)		
5 Likert scale	1	1,30%
interaction	3	3,90%
Experts Review / Evaluation		
Cognitive Walkthrough	2	2,60%
Observation		
evaluators observations	1	1,30%
Perception/Cognition	4	5,19%
Question-answer-Protocol		
open response (during evaluation)	1	1,30%
closed response (during evaluation)	1	1,30%
Observation		
evaluators observations		
on material recorded	1	1,30%
Questionnaire		
custom-made		
7 Likert scale	1	1,30%
Prototype focus	29	37,66%
Interviews		
unstructured post-experiment discussion	11	14,29%
unstructured	3	3,90%
structured	2	2,60%
Focus Group		
Post-test focus group	6	7,79%
Experts Review / Evaluation		

Heuristic evaluation	3	3,90%
Tasks analysis	1	1,30%
Cognitive Walkthrough	1	1,30%
Observation		
evaluators observations	1	1,30%
Questionnaire		
custom-made		
7 Likert scale	1	1,30%
Task performance	6	7,79%
<hr/>		
User Action Logging		
system logs	3	3,90%
tracking logs	1	1,30%
evaluators count/measure	1	1,30%
evaluators timing	1	1,30%
UX - Emotion	4	5,19%
<hr/>		
Interviews		
unstructured post-experiment discussion	2	2,60%
Questionnaire		
custom-made		
7 Likert scale	1	1,30%
Observation		
evaluators observations	1	1,30%
UX - Usability	17	22,08%
<hr/>		
Questionnaire	15	19,48%
Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology by D. Davis (10.2307/249008)		
5 Likert scale	8	10,39%
custom-made	6	7,79%
7 Likert scale		
NASA TLX	1	1,30%
7 Likert		
Experts Review / Evaluation		
Heuristic evaluation	1	1,30%
Observation		
evaluators observations	1	1,30%
UX - Usefulness	1	1,30%
<hr/>		
Questionnaire		
custom-made		
7 Likert scale	1	1,30%

Section B - Correlation charts

Generic Interface



Section C - Method Used & Aspects Matrix Generic Interface



Section D – Lookup Table: Generic Interface

Collaboration/Communication	40	5,49%
Observation		
evaluators coded/structured observations	12	1,65%
on material recorded	7	0,96%
unspecified	5	0,69%
evaluators observations		
unspecified	7	0,96%
on material recorded	3	0,41%
User Action Logging		
tracking logs	5	0,69%
system logs	5	0,69%
Questionnaire		
custom-made		
10 Likert scale	2	0,27%
1 to 7 scale	1	0,14%
adapted from previous/similar research		
Rico and Brewster. Usable gestures for mobile interfaces: evaluating social acceptability	2	0,27%
Some Advantages of Video Conferencing Over High-quality Audio Conferencing: Fluency and Awareness of Attentional Focus. By Daly-Jones et al. (10.1006/ijhc.1998.0195) - 1 to 7 scale with polar terms	1	0,14%
User Measurements		
eye tracking	1	0,14%
Self-Reported / Diaries		
Participant's artefacts (notebooks, emails, drawings, produced materials etc.)	1	0,14%
Education specific	2	0,27%
Conventional Test (Written/Oral)		
test with evaluation given by teacher	1	0,14%
Observation		
evaluators observations		
on material recorded	1	0,14%
Ergonomics / Load / Comfort	80	10,97%
Questionnaire		
custom-made		
7 Likert scale	19	2,61%
5 Likert scale	10	1,37%
closed response multi-item	3	0,41%
order items	3	0,41%
9 Likert scale	2	0,27%
open comments	1	0,14%

closed ended question/s	1	0,14%
NASA TLX		
100 scale	11	1,51%
RTLX version (Raw)- 100 scale	5	0,69%
Unspecified	5	0,69%
7 Likert	5	0,69%
modify Likert	4	0,55%
ISO 9241		
part 9 - 2000(E)	2	0,27%
Simulator Sickness Questionnaire (SSQ)		
5 Likert scale	1	0,14%
Observation		
evaluators observations		
unspecified	4	0,55%
on material recorded	1	0,14%
User Measurements		
Heart Rate Variability (HRV)	1	0,14%
Galvanic Skin Response (GSR)	1	0,14%
Interviews		
structured		
based on SIE's ease of use	1	0,14%
interaction	47	6,45%
<hr/>		
Observation		
evaluators observations	19	2,61%
unspecified	13	1,78%
on material recorded	6	0,82%
evaluators coded/structured observations		
on material recorded	9	1,23%
unspecified	3	0,41%
User Action Logging		
evaluators count/measure		
on material recorded	4	0,55%
system logs	1	0,14%
tracking logs	1	0,14%
evaluators timing		
on material recorded	1	0,14%

Questionnaire			
custom-made			
7 Likert scale	2	0,27%	
Unspecified	1	0,14%	
adapted from previous/similar research			
Emotional intensity: Measurement and theoretical implications by Bachorowski & Braaten (1994) - 1 to 5 scale	2	0,27%	
Questionnaire for User Interface and Satisfaction (QUIS)			
7 Likert	1	0,14%	
presence questionnaire			
by Witmer and Singer (1998) - 7 Likert	1	0,14%	
Experts Review / Evaluation			
Tasks analysis	1	0,14%	
User Measurements			
eye tracking	1	0,14%	
Mixed background questions	3	0,41%	
<hr/>			
Questionnaire			
custom-made			
closed ended question/s	2	0,27%	
Unspecified	1	0,14%	
N/D	1	0,14%	
<hr/>			
Questionnaire			
custom-made			
Unspecified	1	0,14%	
other	1	0,14%	
<hr/>			
Experts Review / Evaluation			
Tasks analysis	1	0,14%	
Perception/Cognition	198	27,16%	
<hr/>			
Question-answer-Protocol			
open response (during evaluation)	45	6,17%	
closed response (during evaluation)	17	2,33%	
Virtual element finding/ matching	4	0,55%	
Questionnaire			
custom-made			
7 Likert scale	14	1,92%	
open ended question/s	7	0,96%	
5 Likert scale	7	0,96%	
-3 to +3 scale	5	0,69%	
closed ended question/s	4	0,55%	
1 to 5 scale	4	0,55%	
10 Likert scale	3	0,41%	

order items	1	0,14%
Unspecified	1	0,14%
11 Likert scale	1	0,14%
1 to 7 scale	1	0,14%
presence questionnaire		
IPQ version -3 to +3 scale	4	0,55%
by Witmer and Singer (1998) - 7 Likert	1	0,14%
Questionnaire for User Interface and Satisfaction (QUIS)		
7 Likert	3	0,41%
Simulator Sickness Questionnaire (SSQ)		
5 Likert scale	2	0,27%
illusion evaluation questionnaire by Pusch, Martin, and Coquillard		
1 to 7 scale	2	0,27%
adapted from previous/similar research		
Some Advantages of Video Conferencing Over High-quality Audio Conferencing: Fluency and Awareness of Attentional Focus. By Daly-Jones et al. (10.1006/ijhc.1998.0195) - 1 to 7 scale with polar terms	1	0,14%
ITU-R BT - Methodology for the Subjective Assessment of the Quality of Television Pictures		
1 to 5 scale	1	0,14%
User Action Logging		
evaluators count/measure		
unspecified	19	2,61%
on material recorded	1	0,14%
system logs	18	2,47%
evaluators timing	15	2,06%
tracking logs	7	0,96%
User Measurements		
eye accommodation	2	0,27%
gait tracking		
Force plate balance	1	0,14%
Electromyography (EMG)	1	0,14%
grasping / press force	1	0,14%
Heart Rate Variability (HRV)	1	0,14%
Electroencephalography (EEG)	1	0,14%
eye tracking	1	0,14%
Interviews	1	0,14%
structured	1	0,14%
Observation	1	0,14%
evaluators observations	1	0,14%

Prototype focus	48	6,58%
Interviews		
unstructured	12	1,65%
unstructured post-experiment discussion	4	0,55%
semi-structured	4	0,55%
structured		
open ended question/s	2	0,27%
based on SIE's ease of use	1	0,14%
custom-made		
-3 to +3 scale	1	0,14%
Questionnaire		
custom-made		
open ended question/s	5	0,69%
7 Likert scale	3	0,41%
order items	2	0,27%
open comments	2	0,27%
1 to 10 scale	1	0,14%
5 Likert scale	1	0,14%
Observation		
evaluators observations	6	0,82%
Experts Review / Evaluation	2	0,27%
Tasks analysis	1	0,14%
Experts Interview	1	0,14%
Think aloud / Shadowing	1	0,14%
Think aloud on prototype	1	0,14%
Task performance	89	12,21%
User Action Logging		
system logs	39	5,35%
tracking logs	36	4,94%
evaluators timing	8	1,10%
unspecified	6	0,82%
on material recorded	2	0,27%
evaluators count/measure	5	0,69%
on material recorded	3	0,41%
unspecified	2	0,27%
User Measurements	1	0,14%
Electroencephalography (EEG)	1	0,14%

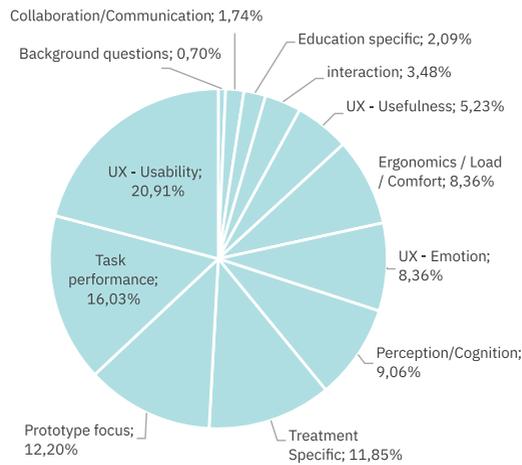
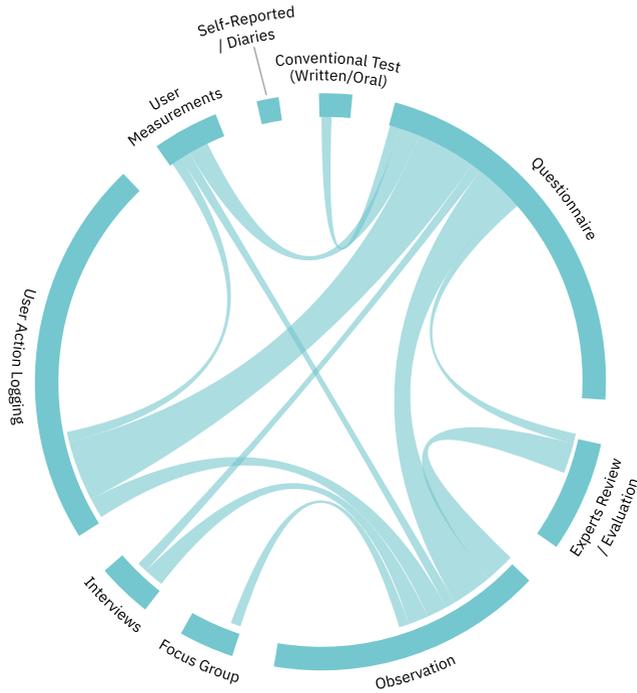
UX - Emotion		22	3,02%
Questionnaire			
custom-made			
7 Likert scale		7	0,96%
opposed adjective Likert 5 scale		3	0,41%
5 Likert scale		1	0,14%
9 Likert scale		1	0,14%
Simulator Sickness Questionnaire (SSQ)			
5 Likert scale		1	0,14%
Observation			
evaluators coded/structured observations			
on material recorded		2	0,27%
unspecified		1	0,14%
evaluators observations			
unspecified		2	0,27%
Interviews			
structured			
based on SIE's ease of use		1	0,14%
7 Likert scale		1	0,14%
unstructured post-experiment discussion		1	0,14%
semi-structured		1	0,14%
UX - Meaning			
Questionnaire			
custom-made			
5 Likert scale		1	0,14%
opposed adjective Likert 5 scale		1	0,14%
7 Likert scale		1	0,14%
Interviews			
unstructured post-experiment discussion		1	0,14%
UX - Usability			
Questionnaire			
custom-made			
7 Likert scale		63	8,64%
5 Likert scale		20	2,74%
order items		19	2,61%
1 to 5 scale		7	0,96%
1 to 7 scale		6	0,82%
closed response multi-item		4	0,55%
Unspecified		4	0,55%
10 Likert scale		3	0,41%
9 Likert scale		3	0,41%

-3 to +3 scale	3	0,41%
1 to 10 scale	2	0,27%
balanced scale: -2 -1 +1 +2	2	0,27%
open comments	1	0,14%
opposed adjective Likert 5 scale	1	0,14%
3 Separate Propositions (Not Acceptable/Acceptable/Excellent)	1	0,14%
closed ended question/s	1	0,14%
10 Likert scale polar terms	1	0,14%
7 Likert polar terms scale	1	0,14%
adapted from previous/similar research		
Assessing dimensions of perceived visual aesthetics of web sites by Lavie and Tractinsky (2004) - 1 to 5 scale	4	0,55%
Some Advantages of Video Conferencing Over High-quality Audio Conferencing: Fluency and Awareness of Attentional Focus. By Daly-Jones et al. (10.1006/ijhc.1998.0195) - 1 to 7 scale with polar terms	3	0,41%
ISO 9241	4	0,55%
part 9 - 2000(E)		
NASA TLX		
100 scale	1	0,14%
RTLX version (Raw)- 100 scale	1	0,14%
7 Likert	1	0,14%
Simulator Sickness Questionnaire (SSQ)		
5 Likert scale	1	0,14%
Interviews		
structured	11	1,51%
7 Likert scale	4	0,55%
based on SIE's ease of use	3	0,41%
rank items	2	0,27%
unspecified	2	0,27%
unstructured	5	0,69%
unstructured post-experiment discussion	2	0,27%
semi-structured	2	0,27%
User Action Logging		
system logs	1	0,14%
Question-answer-Protocol		
open response (during evaluation)	1	0,14%

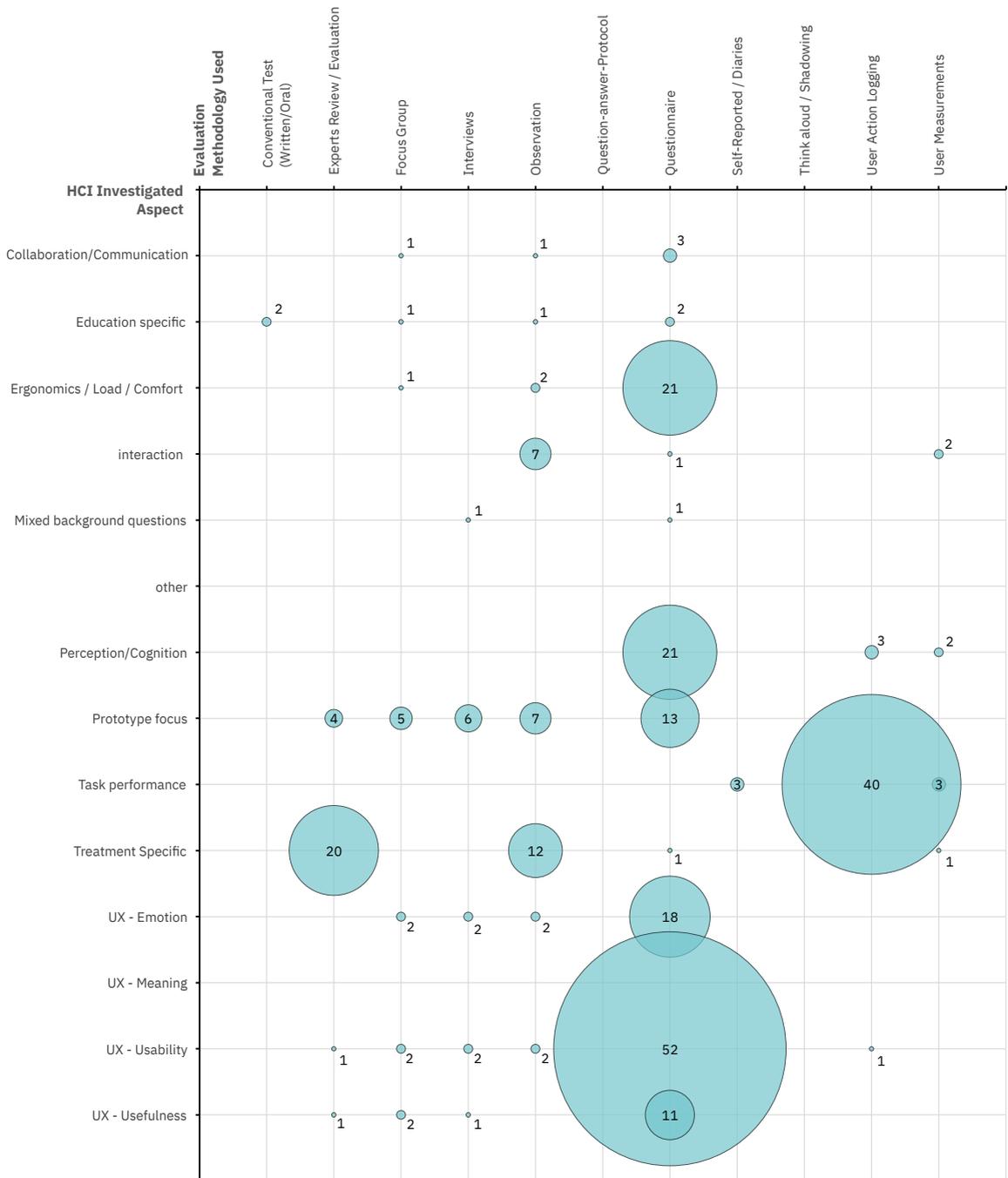
UX - Usefulness	15	2,06%
<hr/>		
Questionnaire		
custom-made		
7 Likert scale	6	0,82%
closed response multi-item	2	0,27%
5 Likert scale	2	0,27%
9 Likert scale	1	0,14%
1 to 7 scale	1	0,14%
Interviews		
semi-structured	1	0,14%
unstructured	1	0,14%
structured		
7 Likert scale	1	0,14%

Section B - Correlation charts

Health Care & Medicine



Section C - Method Used & Aspects Matrix Health Care & Medicine



Section D – Lookup Table: Health Care & Medicine

Collaboration/Communication	5	1,74%
Questionnaire		
custom-made		
6 Likert	2	0,70%
5 Likert with proxy users	1	0,35%
Focus Group		
Pre focus group	1	0,35%
Observation		
evaluators coded/structured observations		
on material recorded	1	0,35%
Education specific	6	2,09%
Conventional Test (Written/Oral)		
test with evaluation given by teacher (PRE + POST evaluation)	2	0,70%
Questionnaire		
custom-made		
graded questions	2	0,70%
Focus Group		
Pre focus group	1	0,35%
Observation		
evaluators observations	1	0,35%
Ergonomics / Load / Comfort	24	8,36%
Questionnaire		
NASA TLX		
7 Likert	5	1,74%
100 scale	4	1,39%
custom-made		
1 to 10 scale	2	0,70%
open ended question/s	1	0,35%
6 Likert	1	0,35%
Profile of Mood States questionnaire (POMS)	4	1,39%
Intrinsic Motivation Inventory (IMI)	2	0,70%
5 Likert scale		
Usability Satisfaction Questionnaires		
7 Likert	1	0,35%
System Usability Scale (SUS)		
5 Likert scale	1	0,35%

Observation			
evaluators observations	2	0,70%	
Focus Group	1	0,35%	
Pre focus group	1	0,35%	
interaction	10	3,48%	
Observation	7	2,44%	
evaluators observations			
on material recorded	2	0,70%	
evaluators coded/structured observations			
on material recorded	3	1,05%	
User Measurements			
eye tracking	2	0,70%	
Questionnaire			
custom-made			
5 Likert scale	1	0,35%	
Mixed background questions	2	0,70%	
Interviews			
with proxy users			
semi-structured	1	0,35%	
Questionnaire			
custom-made			
closed ended question/s	1	0,35%	
Perception/Cognition	26	9,06%	
Questionnaire			
custom-made			
5 Likert scale	10	3,48%	
6 Likert	2	0,70%	
1 to 100 scale	1	0,35%	
presence questionnaire			
by Slater et al. (1994) - 1 to 7 scale	6	2,09%	
Treatment / Rehabilitation specific Questionnaire			
base on VRUSE—a computerized diagnostic tool: for usability evaluation of virtual/synthetic environment systems by S. Roy - 5 Likert scale	2	0,70%	
User Action Logging			
tracking logs	2	0,70%	
system logs	1	0,35%	
User Measurements	2	0,70%	
grasping / press force	1	0,35%	
eye tracking	1	0,35%	

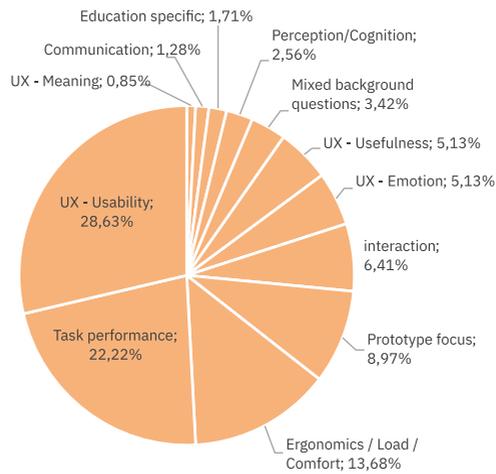
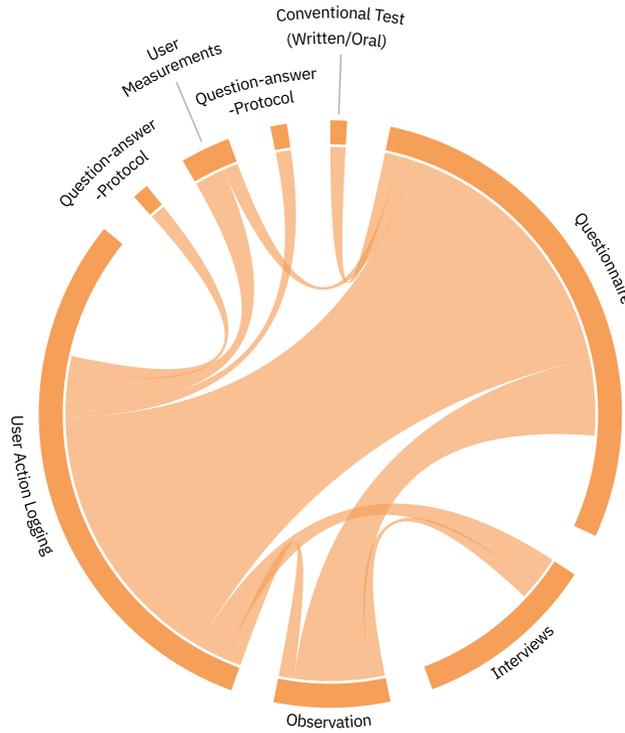
Prototype focus	35	12,20%
Questionnaire		
custom-made		
open ended question/s	5	1,74%
1 to 10 scale	3	1,05%
5 Likert with proxy users	2	0,70%
5 Likert scale	1	0,35%
6 Likert	1	0,35%
AttrakDiff		
Second Version	1	0,35%
Observation		
evaluators observations	6	2,09%
evaluators coded/structured observations		
on material recorded	1	0,35%
Interviews		
semi-structured	3	1,05%
unstructured post-experiment discussion	2	0,70%
with proxy users		
semi-structured	1	0,35%
Focus Group		
Post-test focus group	3	1,05%
workshop with students	1	0,35%
Pre focus group	1	0,35%
Experts Review / Evaluation		
Experts Interview	3	1,05%
Cognitive Walkthrough	1	0,35%
Task performance	46	16,03%
User Action Logging		
tracking logs	34	11,85%
system logs	6	2,09%
Self-Reported / Diaries		
Self-reported data / Diaries	3	1,05%
User Measurements		
Electromyography (EMG)	2	0,70%
eye tracking	1	0,35%

Treatment Specific	34	11,85%
Experts Review / Evaluation		
Treatment / Rehabilitation specific tests Experts Evaluation		
Anxiety Disorders Interview Schedule (ADIS-IV)	4	1,39%
Subjective units of discomfort scale (SUDS) (1 to 10 scale) (pre and post therapy)	4	1,39%
modified The Fear of Spiders Questionnaire (8 Likert) (pre and post therapy)	2	0,70%
Presence and reality judgment (open ended) (pre and post therapy)	2	0,70%
Spider Phobia Beliefs Questionnaire (SPBQ) (1 to 100 scale) (pre and post therapy)	2	0,70%
Target Behaviors (adapted from Marks & Mathew 1979) (1 to 10 scale) (pre and post therapy)	2	0,70%
Measures regarding expectations and-satisfaction with the treatment (1 to 7 scale) (pre and post therapy)	1	0,35%
Degree of belief in catastrophic thoughts (1 to 100 scale) (pre and post therapy)	1	0,35%
unspecified	1	0,35%
Fear and avoidance scales (1 to 10 scale) (pre and post therapy)	1	0,35%
Observation		
Treatment / Rehabilitation specific tests Experts Evaluation		
Behavior Avoidance Test (Bat) (pre and post therapy)	4	1,39%
Standard functional tests (box & blocks, Rancho)	1	0,35%
Wolf Motor Arm Test (pre/post-test)	1	0,35%
Berg Balance Scale (BBS)	1	0,35%
The Fugl-Meyer Upper Extremity Motor Performance Section Test (pre/post-test)	1	0,35%
clinical measurements on motor rehabilitation	1	0,35%
Working Alliance Inventory (WAI)	1	0,35%
Objective Structured Assessment Technical Skills (OSATS) (1 to 5 scale)	1	0,35%
short Falls Efficacy Scale-International (FES-I)	1	0,35%
User Measurements		
gait tracking		
GAITRite system	1	0,35%
Questionnaire		
Treatment / Rehabilitation specific Questionnaire		
DASH questionnaire (pre/post-test)	1	0,35%
UX - Emotion	24	8,36%
Questionnaire		
custom-made		
6 Likert	6	2,09%
5 Likert with proxy users	3	1,05%
1 to 10 scale	1	0,35%
5 Likert scale	1	0,35%
Treatment / Rehabilitation specific Questionnaire		
base on VRUSE—a computerized diagnostic tool: for usability evaluation of virtual/synthetic environment systems by S. Roy - 5 Likert scale	4	1,39%

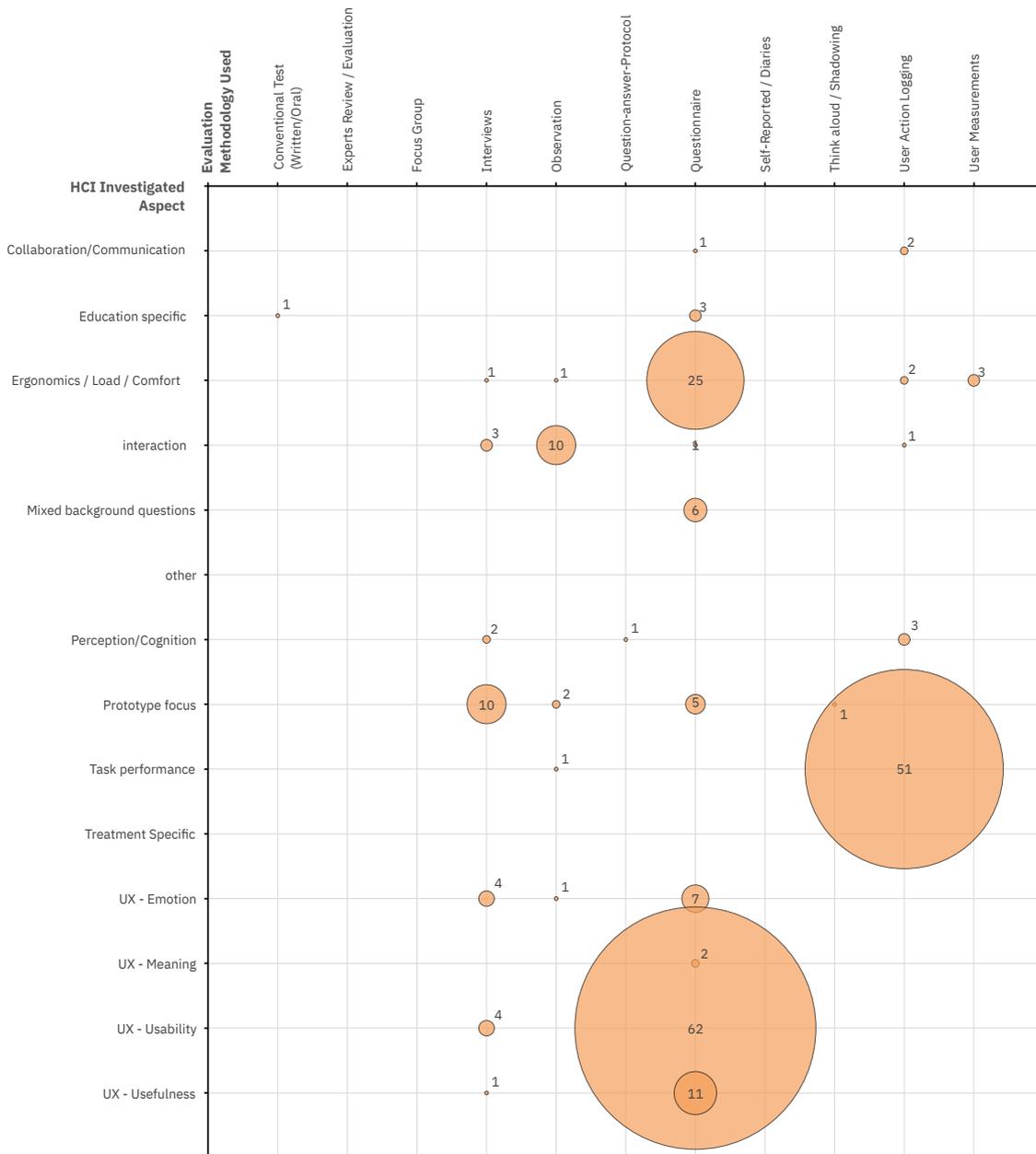
AttrakDiff			
Second Version	2	0,70%	
Intrinsic Motivation Inventory (IMI)			
5 Likert scale	1	0,35%	
Interviews			
unstructured post-experiment discussion	1	0,35%	
structured			
7 Likert scale	1	0,35%	
Focus Group			
Post test focus group	2	0,70%	
Observation			
evaluators observations	1	0,35%	
evaluators coded/structured observations			
on material recorded	1	0,35%	
UX - Usability	60	20,91%	
Questionnaire			
custom-made			
5 Likert scale	12	4,18%	
6 Likert	9	3,14%	
1 to 5 scale	6	2,09%	
open ended question/s	3	1,05%	
1 to 10 scale	2	0,70%	
Usability Satisfaction Questionnaires			
7 Likert	6	2,09%	
Treatment / Rehabilitation specific Questionnaire			
base on VRUSE—a computerized diagnostic tool: for usability evaluation of virtual/synthetic environment systems by S. Roy - 5 Likert scale	6	2,09%	
System Usability Scale (SUS)			
5 Likert scale	4	1,39%	
NASA TLX			
7 Likert	1	0,35%	
100 scale	1	0,35%	
Intrinsic Motivation Inventory (IMI)			
5 Likert scale	1	0,35%	
AttrakDiff			
Second Version	1	0,35%	

Interviews			
with proxy users			
semi-structured	1	0,35%	
structured			
7 Likert scale	1	0,35%	
Focus Group			
Pre focus group	1	0,35%	
Post test focus group	1	0,35%	
Observation			
evaluators observations	2	0,70%	
Experts Review / Evaluation			
Experts Interview	1	0,35%	
User Action Logging			
system logs	1	0,35%	
UX - Usefulness	15	5,23%	
<hr/>			
Questionnaire			
custom-made			
5 Likert scale	6	2,09%	
6 Likert	2	0,70%	
5 Likert with proxy users	1	0,35%	
System Usability Scale (SUS)			
5 Likert scale	2	0,70%	
Focus Group			
Pre focus group	1	0,35%	
Post test focus group	1	0,35%	
Experts Review / Evaluation			
Experts Interview	1	0,35%	
Interviews			
with proxy users			
semi-structured	1	0,35%	

Section B - Correlation charts Industry



Section C - Method Used & Aspects Matrix Industry



Section D – Lookup Table: Industry

Collaboration/Communication	3	1,28%
User Action Logging		
evaluators count/measure	2	0,85%
Questionnaire		
custom-made		
1 to 7 scale	1	0,43%
Education specific	4	1,71%
Questionnaire		
custom-made		
graded questions	2	0,85%
5 Likert scale	1	0,43%
Conventional Test (Written/Oral)		
test with evaluation give by teacher (Control + Experiment groups)	1	0,43%
Ergonomics / Load / Comfort	32	13,68%
Questionnaire		
custom-made		
7 Likert scale	6	2,56%
order items	1	0,43%
9 Likert scale	1	0,43%
10 Likert scale polar terms	1	0,43%
1 to 5 scale	1	0,43%
5 Likert scale	1	0,43%
NASA TLX		
100 scale	7	2,99%
Cornell Musculoskeletal Discomfort Questionnaires (CMDQ)	3	1,28%
Sensitivity scale questionnaire by Detlev von Zerssen	2	0,85%
EZ-Scale	2	0,85%
User Measurements		
Heart Rate Variability (HRV)	3	1,28%
User Action Logging		
tracking logs	2	0,85%
Interviews		
structured		
8 Likert scale	1	0,43%
Observation		
evaluators observations	1	0,43%

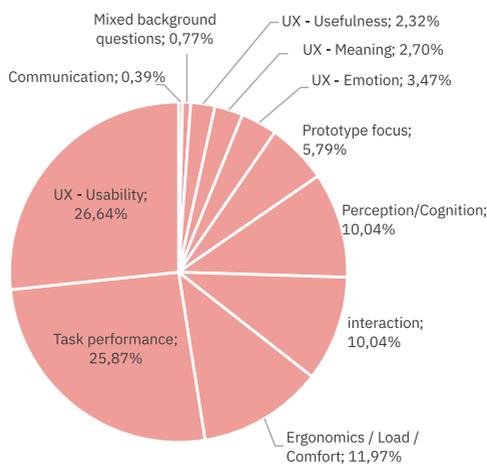
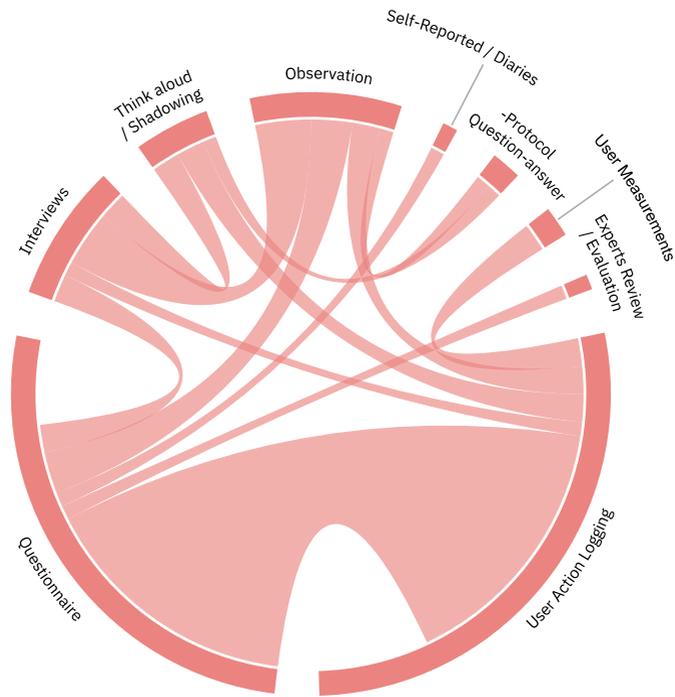
interaction	15	6,41%
Observation		
evaluators observations		
unspecified	8	3,42%
on material recorded	2	0,85%
Interviews		
semi-structured	1	0,43%
unstructured	1	0,43%
structured		
6 Likert scale	1	0,43%
User Action Logging		
tracking logs	1	0,43%
Questionnaire		
custom-made		
9 Likert scale	1	0,43%
Mixed background questions		
Questionnaire		
custom-made		
5 Likert scale	2	0,85%
1 to 7 scale	2	0,85%
closed ended question/s	1	0,43%
1 to 5 scale	1	0,43%
Post Experiment Questionnaire for UX for MARs by Olsson et al. (10.1007/978-1-4614-4205-9_9)	2	0,85%
Perception/Cognition		
User Action Logging		
evaluators count/measure	1	0,43%
tracking logs	1	0,43%
evaluators timing	1	0,43%
Interviews		
structured		
9 Likert scale	1	0,43%
7 Likert scale	1	0,43%
Question-answer-Protocol		
closed response (during evaluation)	1	0,43%
Prototype focus		
Interviews		
semi-structured		
open ended question/s	2	0,85%
unstructured post-experiment discussion	3	1,28%

unstructured	2	0,85%
structured		
6 Likert scale	1	0,43%
Questionnaire		
custom-made		
open ended question/s	4	1,71%
open comments	1	0,43%
Post Experiment Questionnaire for UX for MARs by Olsson et al. (10.1007/978-1-4614-4205-9_9)	3	1,28%
Observation		
comments collection during test	2	0,85%
Think aloud / Shadowing		
Think aloud on task	1	0,43%
Task performance	52	22,22%
<hr/>		
User Action Logging	51	21,79%
tracking logs	16	6,84%
evaluators count/measure		
unspecified	11	4,70%
on material recorded	2	0,85%
evaluators timing		
unspecified	10	4,27%
on material recorded	2	0,85%
system logs	10	4,27%
Observation		
evaluators observations		
on material recorded	1	0,43%
UX - Emotion	12	5,13%
<hr/>		
Questionnaire		
custom-made		
10 Likert scale polar terms	3	1,28%
open ended question/s	1	0,43%
7 Likert scale	1	0,43%
1 to 5 scale	1	0,43%
5 Likert scale	1	0,43%
Interviews		
unstructured post-experiment discussion	4	1,71%
Observation	1	0,43%
evaluators observations	1	0,43%

UX - Meaning		2	0,85%
Questionnaire			
custom-made			
5 Likert scale		2	0,85%
UX - Usability		66	28,63%
Questionnaire			
custom-made			
5 Likert scale		27	11,54%
7 Likert scale		7	2,99%
9 Likert scale		6	2,56%
order items		4	1,71%
open ended question/s		3	1,28%
10 Likert scale polar terms		2	0,85%
1 to 5 scale		2	0,85%
1 to 7 scale		1	0,43%
6 Likert scale		1	0,43%
Perceived Usefulness Perceive Ease of Use (PUEU)		5	2,14%
Post-Study System Usability Questionnaire (PSSUQ)			
7 Likert scale		2	0,85%
Post Experiment Questionnaire for UX for MARs by Olsson et al. (10.1007/978-1-4614-4205-9_9)		1	0,43%
After-Scenario Questionnaire (ASQ)			
7 Likert scale		1	0,43%
NASA TLX			
100 scale		1	0,43%
Interviews			
structured			
5 Likert scale		1	0,43%
10 Likert scale		1	0,43%
unstructured post-experiment discussion		1	0,43%
semi-structured		1	0,43%
UX - Usefulness		12	5,13%
Questionnaire			
custom-made			
5 Likert scale		4	1,71%
7 Likert scale		2	0,85%
1 to 5 scale		2	0,85%
1 to 7 scale		2	0,85%
Perceived Usefulness Perceive Ease of Use (PUEU)		1	0,43%
Interviews		1	0,43%
semi-structured		1	0,43%
-		1	0,43%

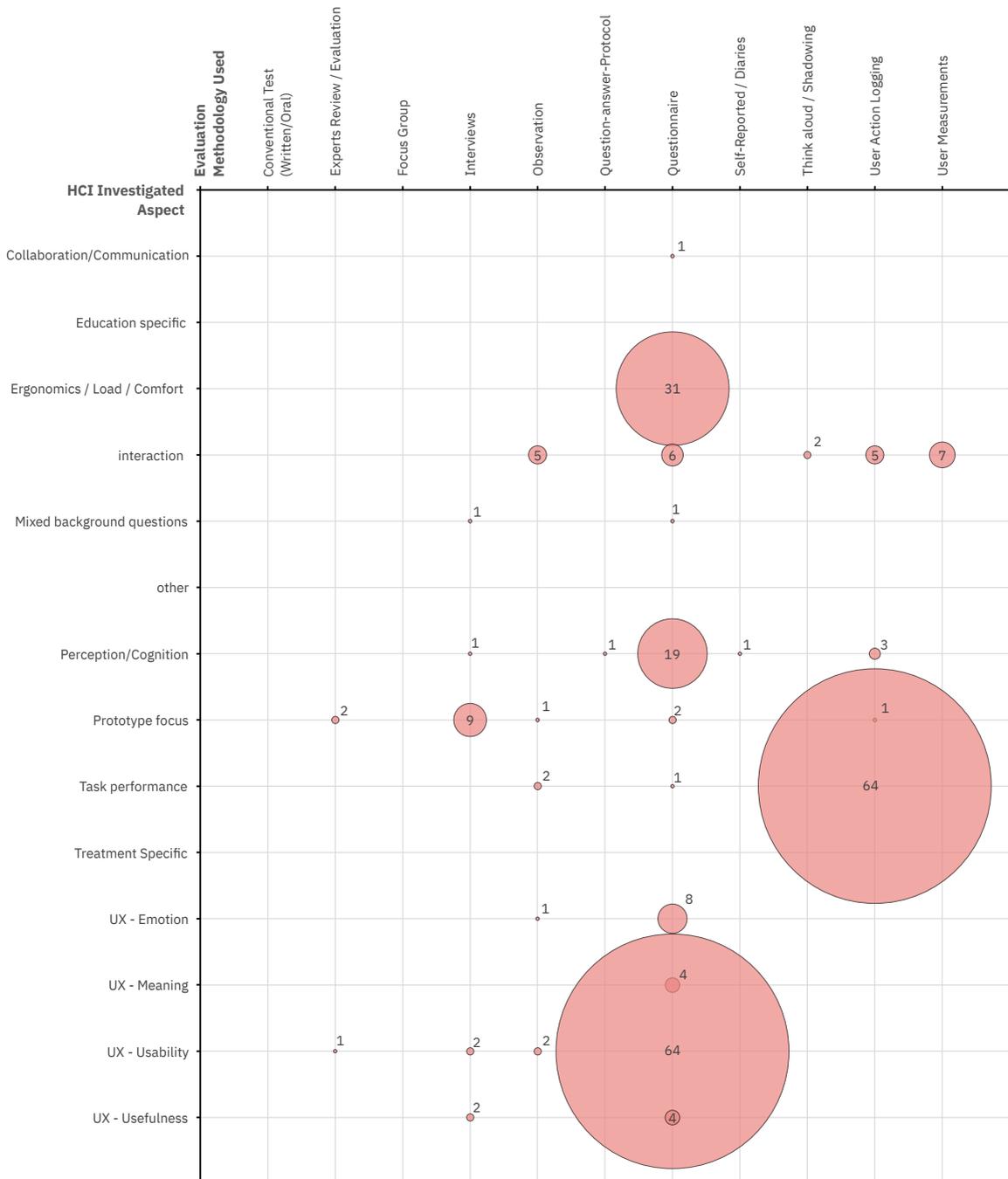
Section B - Correlation charts

Navigation & Driving



Section C - Method Used & Aspects Matrix

Navigation & Driving



Section D – Lookup Table: Navigation & Driving

Collaboration/Communication	1	0,39%
Questionnaire		
Unified Theory of Acceptance and Use of Technology (UTAUT2)		
7 Likert scale	1	0,39%
Ergonomics / Load / Comfort	31	11,97%
Questionnaire		
NASA TLX		
100 scale	11	4,25%
unweighted	3	1,16%
custom-made		
5 Likert scale	5	1,93%
1 to 5 scale	1	0,39%
1 to 6 scale	1	0,39%
ISO 9241		
part 9 - with only one Fatigue category (7 Likert)	5	1,93%
Unified Theory of Acceptance and Use of Technology (UTAUT2)		
7 Likert scale	2	0,77%
System Usability Scale (SUS)		
7 Likert scale	1	0,39%
Short Feedback Questionnaire (SFQ)		
5 Likert scale	1	0,39%
Rating Scale for Mental Effort (RSME)		
-	1	0,39%
interaction	25	10,04%
Questionnaire		
custom-made		
-3 to +3 scale	4	1,54%
Unified Theory of Acceptance and Use of Technology (UTAUT2)		
7 Likert scale	2	0,77%
Post Experiment Questionnaire for UX for MARs by Olsson et al. (10.1007/978-1-4614-4205-9_9)	1	0,39%
User Measurements	7	2,70%
eye tracking	7	2,70%
Observation		
evaluators observations	4	1,54%

evaluators coded/structured observations on material recorded	1	0,39%
User Action Logging		
tracking logs	5	1,93%
Think aloud / Shadowing		
Think aloud on prototype	1	0,39%
Shadowing	1	0,39%
Mixed background questions	2	0,77%
Interviews	1	0,39%
semi-structured	1	0,39%
Questionnaire		
Technical self-efficacy (TSE) Questionnaire	1	0,39%
Perception/Cognition	25	10,04%
Questionnaire		
custom-made		
5 Likert scale	5	1,93%
closed ended question/s	3	1,16%
7 Likert scale	2	0,77%
-3 to +3 scale	2	0,77%
6 Likert	1	0,39%
presence questionnaire		
by Witmer and Singer (1998) - 7 Likert	6	2,32%
Post Experiment Questionnaire for UX for MARs by Olsson et al. (10.1007/978-1-4614-4205-9_9)	1	0,39%
User Action Logging		
tracking logs	3	1,16%
Self-Reported / Diaries		
Factor-Referenced Cognitive Tests (Paperfolding test)	1	0,39%
Interviews		
structured		
1 to 6 scale	1	0,39%
Question-answer-Protocol		
closed response (during evaluation)	1	0,39%

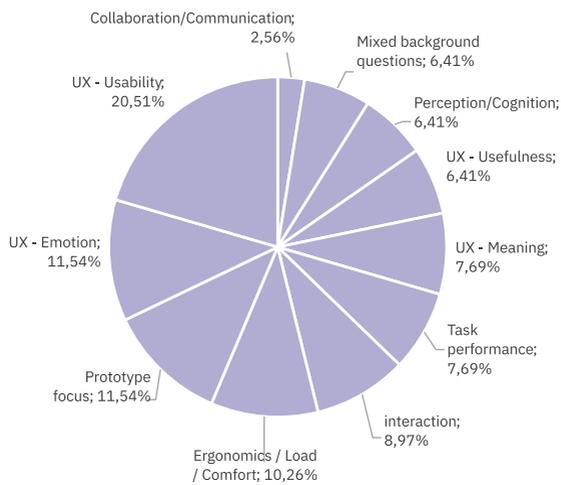
Prototype focus	15	5,79%
Interviews		
semi-structured		
open ended question/s	3	1,16%
unspecified	2	0,77%
unstructured	3	1,16%
unstructured post-experiment discussion	1	0,39%
Experts Review / Evaluation		
Experts Interview	2	0,77%
Questionnaire		
custom-made		
open ended question/s	1	0,39%
closed ended question/s	1	0,39%
User Action Logging		
tracking logs	1	0,39%
Observation		
evaluators observations	1	0,39%
Task performance	67	25,87%
User Action Logging		
system logs	39	15,06%
tracking logs	24	9,27%
evaluators count/measure		
on material recorded	1	0,39%
Observation		
evaluators observations	1	0,39%
evaluators coded/structured observations	1	0,39%
Questionnaire		
custom-made		
-3 to +3 scale	1	0,39%
UX - Emotion	9	3,47%
Questionnaire		
custom-made		
1 to 6 scale	2	0,77%
6 Likert	1	0,39%
order items	1	0,39%
5 Likert scale	1	0,39%
Software Usability Measurement Inventory (SUMI)		
1 to 3 scale	2	0,77%
Short Feedback Questionnaire (SFQ)		
5 Likert scale	1	0,39%

Observation			
evaluators observations	1	0,39%	
UX - Meaning	4	2,70%	
Questionnaire	4	2,70%	
Post Experiment Questionnaire for UX for MARs by Olsson et al. (10.1007/978-1-4614-4205-9_9)	2	1,16%	
Unified Theory of Acceptance and Use of Technology (UTAUT2)			
7 Likert scale	2	0,77%	
custom-made			
6 Likert	2	0,77%	
UX - Usability	69	26,64%	
Questionnaire			
custom-made			
5 Likert scale	9	3,47%	
7 Likert scale	6	2,32%	
-3 to +3 scale	5	1,93%	
6 Likert	5	1,93%	
1 to 5 scale	4	1,54%	
1 to 6 scale	4	1,54%	
order items	3	1,16%	
closed response multi-item	3	1,16%	
Software Usability Measurement Inventory (SUMI)			
1 to 3 scale	10	3,86%	
System Usability Scale (SUS)			
7 Likert scale	4	1,54%	
Short Feedback Questionnaire (SFQ)			
5 Likert scale	3	1,16%	
ISO 9241			
part 9 - with only one Fatigue category (7 Likert)	3	1,16%	
NASA TLX			
100 scale	2	0,77%	
presence questionnaire			
by Witmer and Singer (1998) - 7 Likert	2	0,77%	
Unified Theory of Acceptance and Use of Technology (UTAUT2)			
7 Likert scale	1	0,39%	

Interviews			
unstructured		1	0,39%
structured			
2 to 6 scale		1	0,39%
Observation			
evaluators observations		2	0,77%
Experts Review / Evaluation			
Experts Interview		1	0,39%
UX - Usefulness		6	2,32%
<hr/>			
Questionnaire			
custom-made			
6 Likert		2	0,77%
-3 to +3 scale		1	0,39%
System Usability Scale (SUS)			
7 Likert scale		1	0,39%
Interviews			
unstructured		2	0,77%

Section B - Correlation charts

Other



Section C - Method Used & Aspects Matrix Other



Section D – Lookup Table: Other

Collaboration/Communication	2	2,56%
Interviews		
semi-structured	1	1,28%
Questionnaire		
remote survey		
online survey - Likert 7 scale	1	1,28%
Ergonomics / Load / Comfort	8	10,26%
Questionnaire		
NASA TLX		
modify Likert	5	6,41%
custom-made		
7 Likert scale	2	2,56%
Observation		
evaluators observations	1	1,28%
interaction	7	8,97%
User Action Logging		
tracking logs	2	2,56%
Observation		
evaluators observations	2	2,56%
on material recorded	1	1,28%
Questionnaire		
remote survey		
online survey - polar choice	1	1,28%
custom-made		
7 Likert scale	1	1,28%
Interviews		
semi-structured	1	1,28%
Mixed background questions	5	6,41%
Questionnaire		
remote survey		
online survey - closed ended question/s	2	2,56%
online survey - 7 Likert scale	1	1,28%
Interviews		
semi-structured	1	1,28%
Observation		
evaluators observations	1	1,28%

Perception/Cognition	5	6,41%
Questionnaire		
custom-made		
7 Likert scale	4	5,13%
remote survey		
online survey - Likert 7 scale	1	1,28%
Prototype focus	9	11,54%
Questionnaire		
remote survey		
online survey - 7 Likert scale	3	3,85%
online survey - Likert 7 scale	3	3,85%
online survey - open ended question/s	2	2,56%
online survey - open / closed ended question/s	1	1,28%
Task performance	6	7,69%
User Action Logging		
tracking logs	4	5,13%
evaluators count/measure		
on material recorded	2	2,56%
UX - Emotion	9	11,54%
Questionnaire		
remote survey		
online survey - Likert 7 scale	3	3,85%
online survey - open / closed ended question/s	1	1,28%
custom-made		
Unspecified	1	1,28%
7 Likert scale	1	1,28%
Intrinsic Motivation Inventory (IMI)		
5 Likert scale	1	1,28%
Observation		
evaluators observations	1	1,28%
evaluators coded/structured observations	1	1,28%
UX - Meaning	6	7,69%
Questionnaire		
AttrakDiff		
First Version - 5 item bipolar scale	3	3,85%
remote survey		
online survey - Likert 7 scale	1	1,28%
online survey - 7 Likert scale	1	1,28%
custom-made: un-specificized	1	1,28%

UX - Usability	16	20,51%
Questionnaire		
custom-made		
1 to 5 scale	3	3,85%
7 Likert scale	2	2,56%
Unspecified	1	1,28%
remote survey		
online survey - 7 Likert scale	1	1,28%
online survey - open / closed ended question/s	1	1,28%
online survey - Likert 7 scale	1	1,28%
NASA TLX		
modify Likert	1	1,28%
Interviews		
semi-structured	6	7,69%
UX - Usefulness	5	6,41%
Questionnaire		
remote survey		
online survey - Likert 7 scale	2	2,56%
online survey - 7 Likert scale	1	1,28%
Intrinsic Motivation Inventory (IMI)		
5 Likert scale	1	1,28%
Interviews		
semi-structured	1	1,28%

