

The Participant Journey Map for Playful Interaction in (semi-)Public Spaces

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What steps does a (potential) participant go through before, during and after deciding whether or not to participate?

What (design) factors influence the choices that are made?

I. the Participant Journey Map

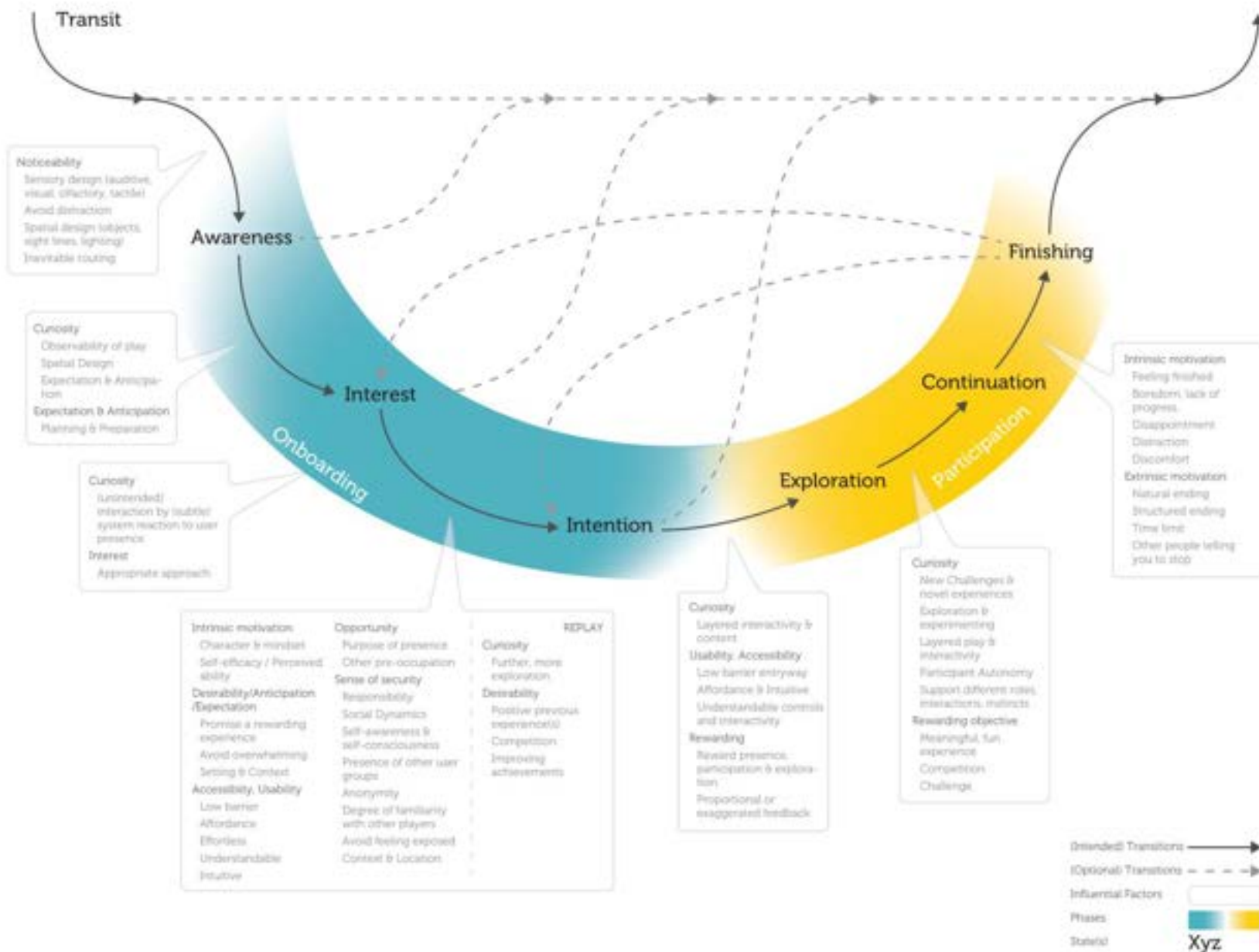
- Review related research
+
Insights from our previous work and research
+
Expert interviews
- Observations
+
Evaluation
- from Theory to Tool

II. Influential Factors

- Ending Experiences
- User Experience over Time
- Self-similarity vs. Abstraction

the Participant Journey Map for Interactive Augmented Play Spaces

Mast, D., de Vries, S. I., Broekens, J., & Verbeek, F. (2021). the Participant Journey Map: Understanding the Design of Interactive Augmented Play Spaces. *Frontiers in Computer Science*, 3, 45.



Participant Journey Map Validation

Observations in situ

Museon & Naturalis

6 exhibits

covert observation

naturalistic behaviour

5 days between August and November 2021

672 individual play encounters



Analysis

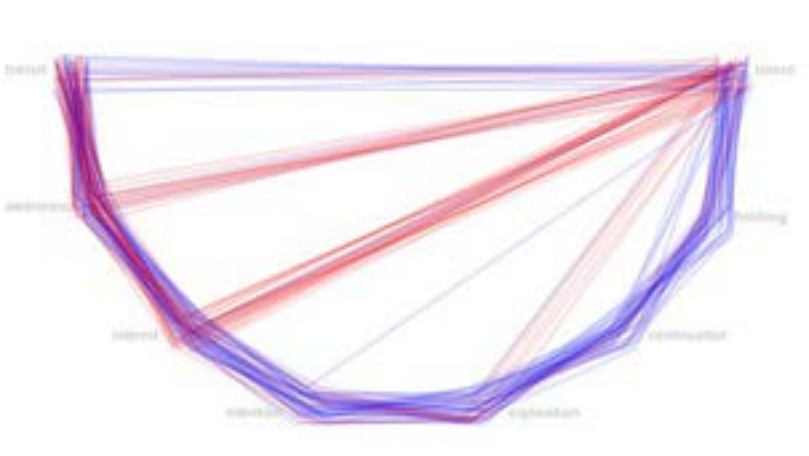
all observation data (black),
split by age group:

children (blue) (estimated age <18)

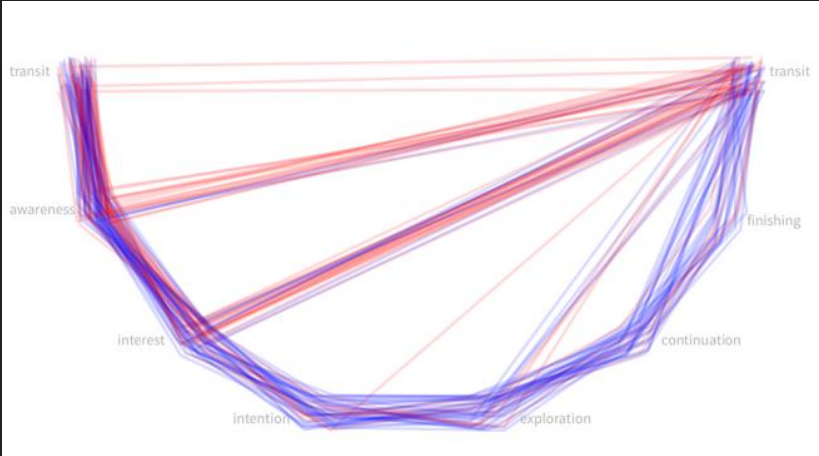
adults (red)

conditional probabilities

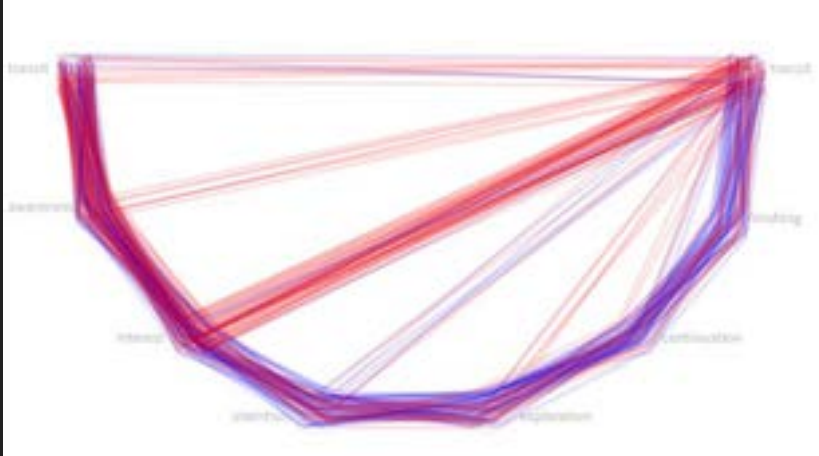
	n	n	n	P (Interest Awareness)	n	P (Intention Interest)	n	P (Exploration Intention)	n	P (Continuation Exploration)	n	P (Continuation Finishing)
	Child Adult All	Child Adult All	Child Adult All		Child Adult All		Child Adult All		Child Adult All		Child Adult All	
All exhibits (Sum of all exhibits)	320	289	257	0,889	233	0,907	208	0,893	156	0,750	120	0,769
	352	311	237	0,762	135	0,570	117	0,867	77	0,658	64	0,831
	672	600	494	0,823	368	0,745	325	0,883	233	0,717	184	0,790
Dance Along	49	40	38	0,950	36	0,947	35	0,972	34	0,971	30	0,882
	50	47	34	0,723	10	0,294	10	1,000	5	0,500	5	1,000
	99	87	72	0,828	46	0,639	45	0,978	39	0,867	35	0,897
Sperm Race	45	45	42	0,933	34	0,810	34	1,000	30	0,882	17	0,567
	44	41	26	0,634	9	0,346	8	0,889	5	0,625	5	1,000
	89	86	68	0,791	43	0,632	42	0,977	35	0,833	22	0,629
Life after Death	58	55	55	1,000	48	0,873	44	0,917	44	1,000	42	0,955
	97	89	82	0,921	34	0,415	30	0,882	25	0,833	21	0,840
	155	144	137	0,951	82	0,599	74	0,902	69	0,932	63	0,913
Music Memory	82	70	61	0,871	59	0,967	57	0,966	26	0,456	15	0,577
	74	59	48	0,814	45	0,938	39	0,867	19	0,487	16	0,842
	156	129	109	0,845	104	0,954	96	0,923	45	0,469	31	0,689
Floor Circle	68	63	45	0,714	43	0,956	30	0,698	14	0,467	10	0,714
	72	65	40	0,615	33	0,825	27	0,818	20	0,741	14	0,700
	140	128	85	0,664	76	0,894	57	0,750	34	0,596	24	0,706
Drum Game	18	16	16	1,000	13	0,813	8	0,615	8	1,000	6	0,750
	15	10	7	0,700	4	0,571	3	0,750	3	1,000	3	1,000
	33	26	23	0,885	17	0,739	11	0,647	11	1,000	9	0,818



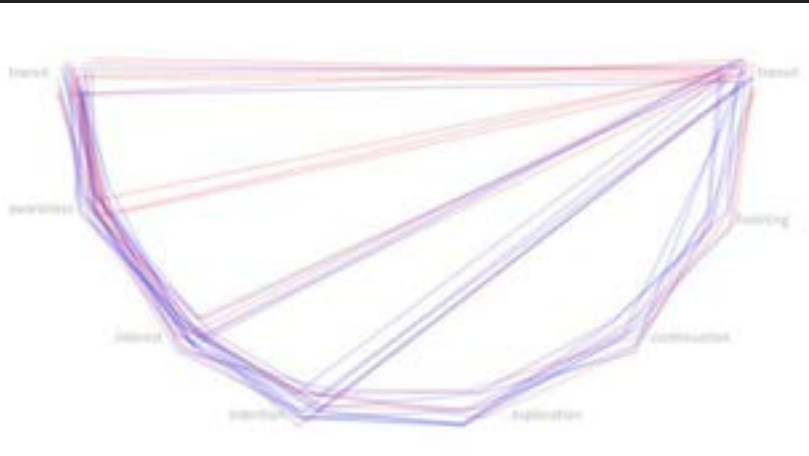
Dance Along



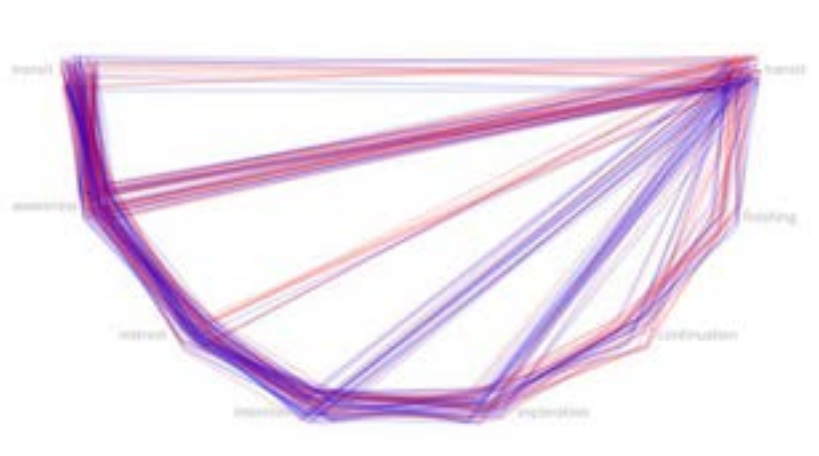
Sperm Race



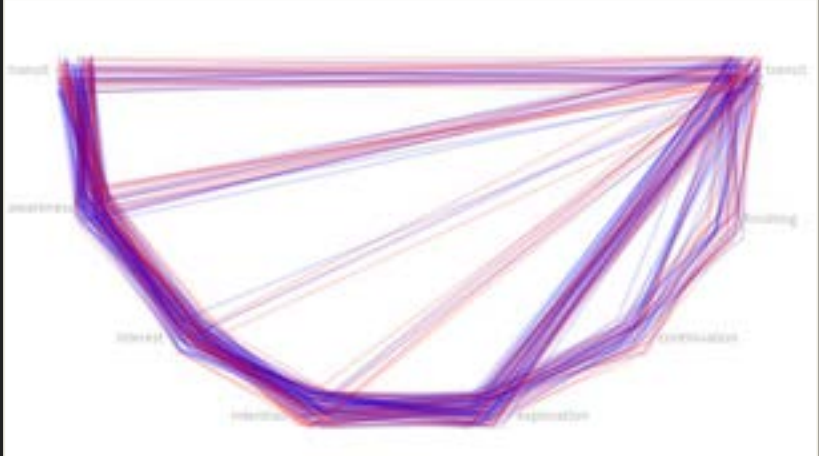
Life after Death



Drum Game



Floor Circle

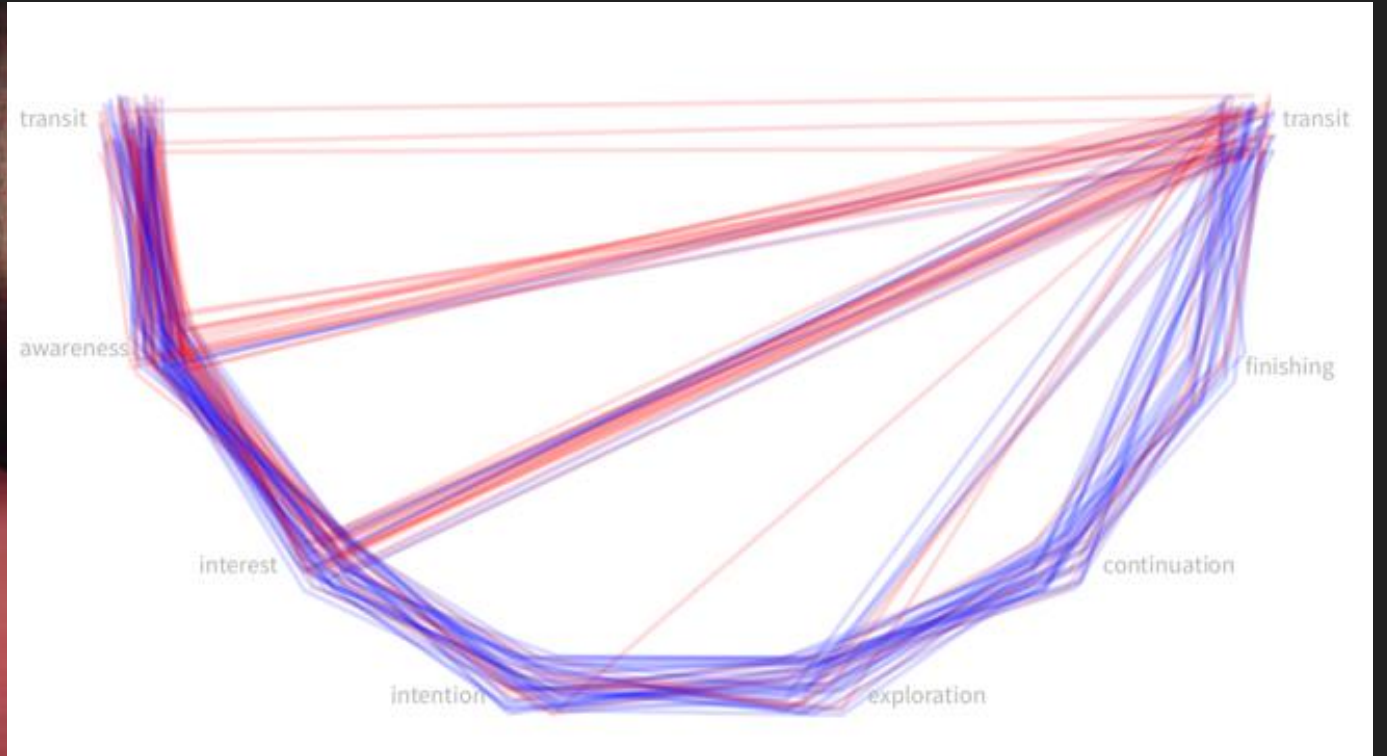


Music Memory

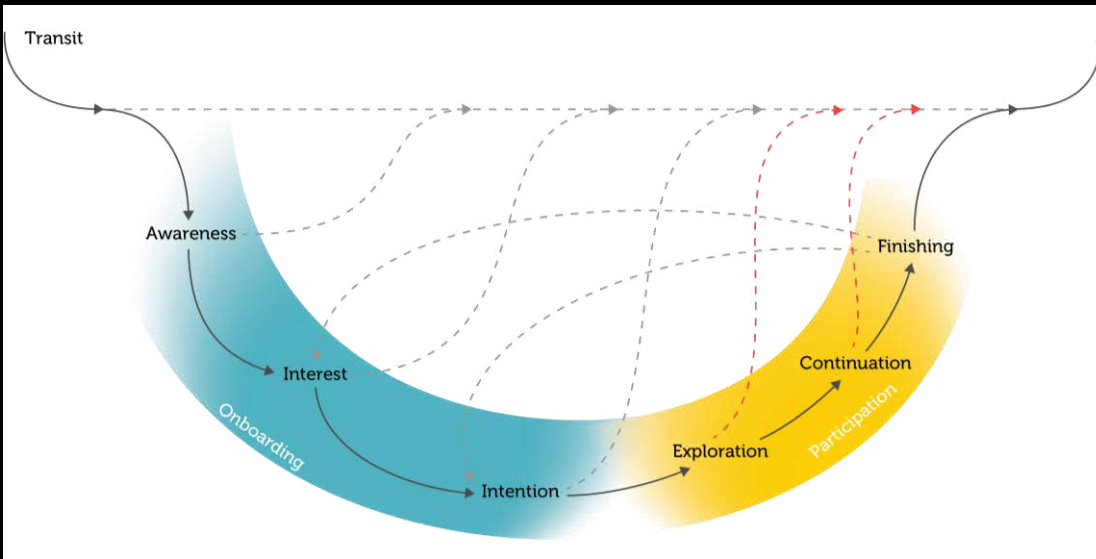
children (blue)

adults (red)

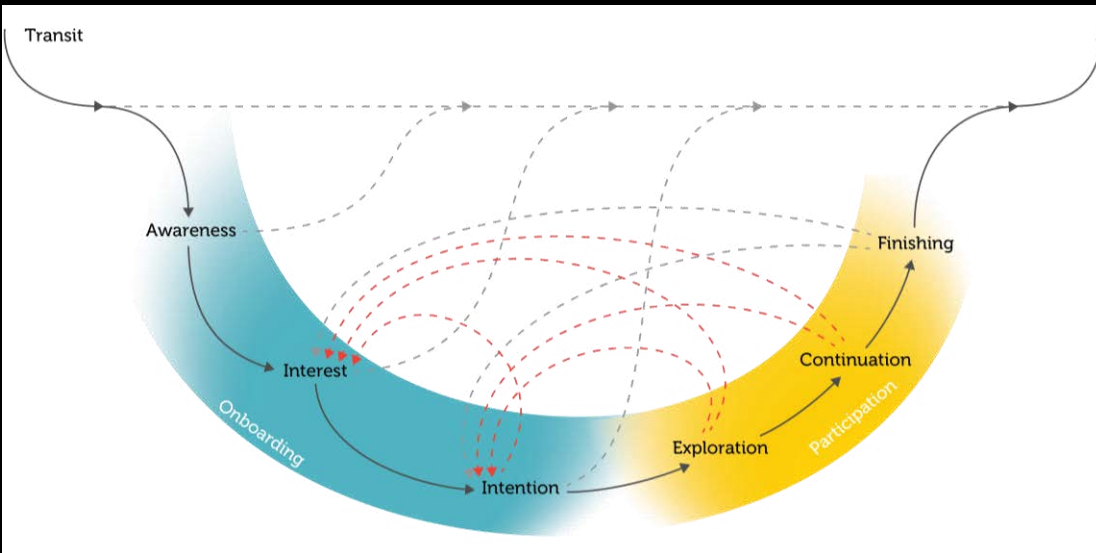
Sperm Race



children (blue) adults (red)



extra paths from Exploration and Continuation to Transit



extra replay paths

Realistic representation of participant behavior

Useful for indicating stagnations and progressions in participation flow

Support identification of influencing design and contextual factors

Extra paths

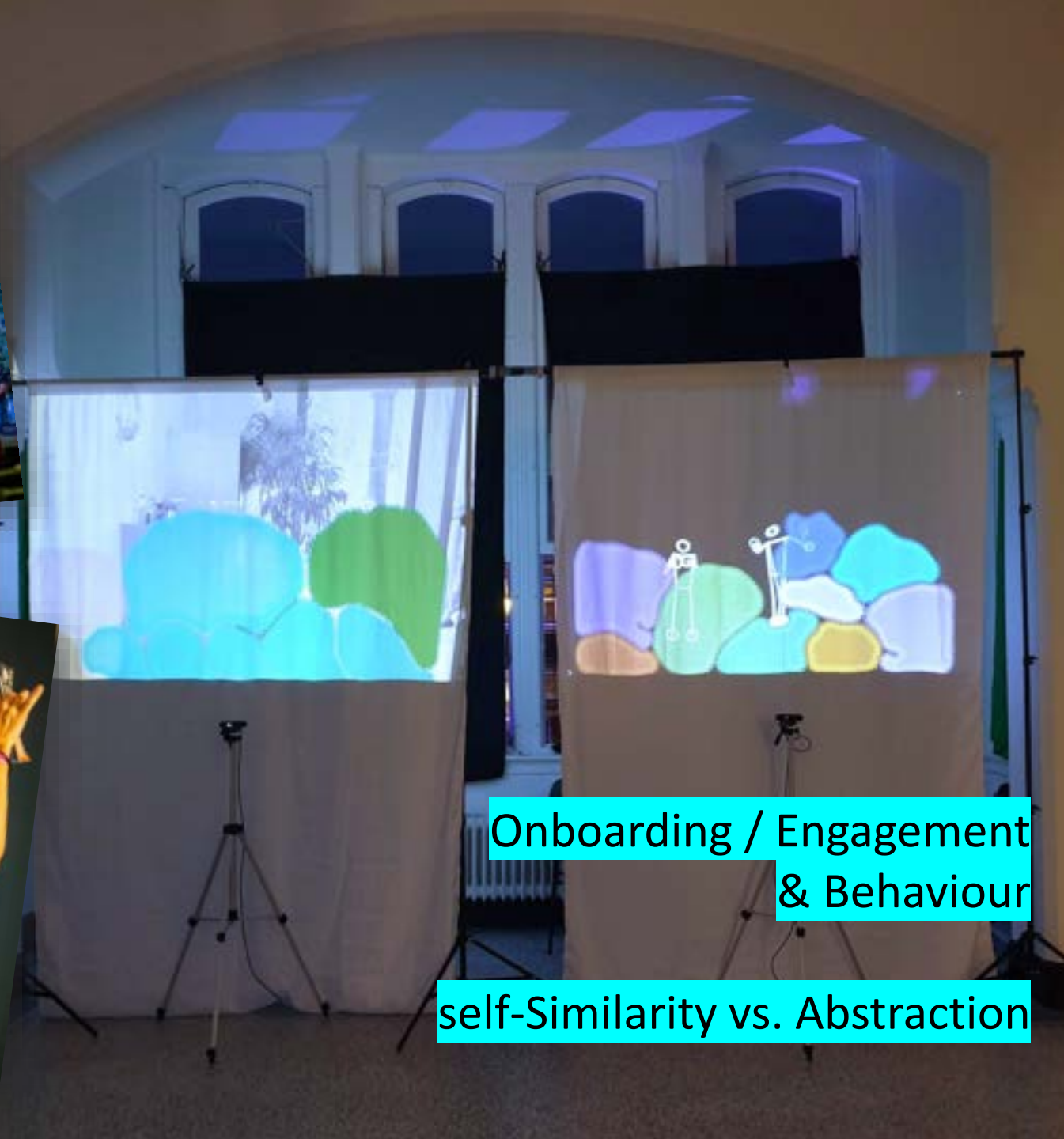
“The Participant Journey map is a well-grounded, valuable and realistic framework for evaluating and understanding participation with situated interactive play.”



Influential design & contextual factors
+ working mechanisms



@ Nacht van
Ontdekkingen, Leiden



Onboarding / Engagement
& Behaviour

self-Similarity vs. Abstraction

Influential design & contextual factors & working mechanisms



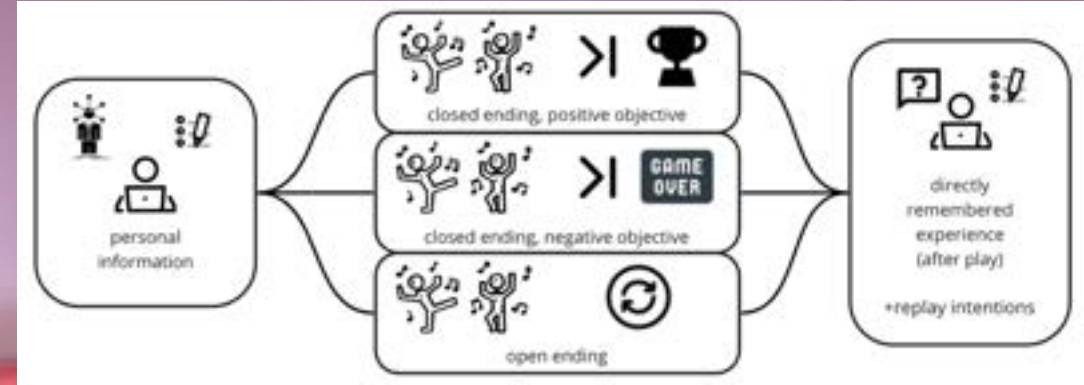
Play Endings & Experiences

Longitudinal Retrospective
Remembered Experiences

@ CORPUS

Play Endings & Experiences

Longitudinal Retrospective Remembered Experiences



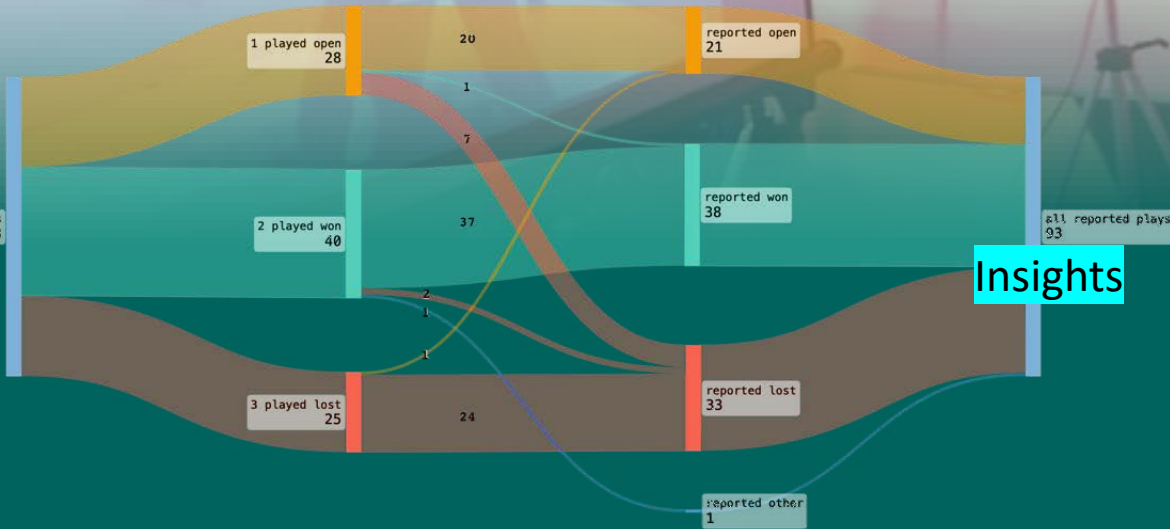
Results

Positive relation between UX & Replay Attitude

Differences between played and reported play-endings

Players who played an open ending, more often reported to have played a closed ending

Players who played an open ending, scored lower on UEQ-Stimulation



Insights

Ask participants about their (experienced)played condition!

Open-ended play does not (automatically) lead to positive UX
facilitate goal-setting

the Participant Journey Map from Theory to Tool



Research-Practice Gap

Stakeholder Feedback

RQ1 - What is the potential of the PJM for practitioners, professionals, and HCI/UX designers?

PJM Translations for Design (Education) Practice

RQ2 - In what form is the PJM useful for HCI/UX design education?

RQ3 - What did we learn about translating research to practice through translating the PJM into (various iterations of) a design tool?

Four cohorts – original PJM + three canvas iterations



ONBOARDING

Transit > Awareness > Interest > Intention > Exploration > Continuation > Finishing

State of Awareness - Description

A visitor is aware of the exhibit.
A visitor notices the exhibit by sensing (seeing, hearing, feeling, or even smelling) it.

Influential Factors

Curiosity
- Unintended interaction by (subtle) system reaction to user presence
Interest
- Appropriate approach (different user groups/demographics, roles, system complexity)
Noticeability
- Attention – sensory design
- Spatial design – Steering behaviour & Inevitable routing
- Avoid distraction

Desired Behaviour

How does a visitor behave when they get into this state?

Design Questions

- How do visual and auditory elements capture attention and make people aware of your exhibit?
- How does the exhibit use color, lighting, and sound to capture attention? Are there distractions nearby that limit this? (for example something else that makes a lot of sound, bright surroundings that influence visibility)
- If the installation is (partly) hidden, are there other cues (signs, guides, colors, visuals, moving or auditory elements ...) that make people aware of its existence?
- When the space is crowded, how does the physical design of the exhibit enable people to notice it? (height, dimensions, shape).
- When the exhibit is not used by another visitor, how do people know it exists?

Object Design

Features

What features in the design of your exhibit support visitors to notice it?

Flaws

What prevents visitors from noticing your object?

Fixes

How can you fix this?

Spatial Design & Context

Features

What spatial features support visitors in noticing your exhibit?

Flaws

What spatial features prevent visitors from noticing your installation?

Fixes

How can you fix this?

the Participant Journey Map



the Participant Journey Map

When people encounter an interactive system in a specific space, they move through different states of engagement. The PJM is a framework that provides structured insights into the different participation phases and influential factors for each phase (Awareness, Interest, Intention, Exploration, Continuation, and Finishing) and the overall experience. It is a tool for designers to understand the user's journey and to design the experience accordingly. The structure of the PJM resembles that of customer and experience journey maps. It includes the process (journey) that a person (potential participant) goes through in order to reach a goal (participating in an interactive experience) in a specific space.

The PJM consists of five phases, two underlying states, transitions between them and (design) factors that influence these transitions. The underlying phase contains the states Awareness, Interest and Intention. The Participation phase contains the states Exploration, Continuation and Finishing.

Evaluate your concept based on the six states of participation in the canvas for each state. This helps to improve your final design and make sure of the final design to put into your own report or reflection.

Return the PJM to booklets to share at the end of the 8th week.

Participant Journey Map Phases, States, Descriptions and Behaviour

Phase	State	Description	Behaviour
Onboarding	Awareness	A visitor is aware of the exhibit.	A visitor notices the exhibit by seeing, hearing, looking or even touching it.
	Interest	A visitor is interested in the exhibit.	A visitor shows interest in the exhibit, by standing still or moving closer and observing the exhibit. There are two modes of interest: Passive Interest: merely observing the exhibit, Active Interest: reaching to the exhibit by commenting, drawing or providing feedback.
Participation	Intention	A visitor wants to participate but doesn't yet.	A visitor waits for an opportunity to join or another visitor to finish the game. A visitor doesn't join yet because of (perceived) lack of space (optimal opportunities) for them to join. A visitor looks for the optimal moment to approach the exhibit but doesn't get around to it. E.g., a visitor looking for a buddy to start a game but doesn't try to touch anything.
	Exploration	A visitor becomes a participant.	A visitor attempts to interact with the exhibit by touching a part of it, or interacting directly in the exhibit. E.g., a visitor trying to press the 'start' button on the system. The visitor's actions are controlled by the system.

Installation Name	Group Number
Installation Description	
Installation Visuals	

PJM-canvas bookle

ONBOARDING

Transit > Awareness > Interest > Intention > Exploration > Continuation > Finishing

State of Awareness - Description A visitor is aware of the exhibit. A visitor notices the exhibit by seeing, hearing, looking, or even touching it.	Influential Factors Curiosity → Intrigued interaction by (multi-) system reaction to user presence Interest → Engaging approach (different user graphics/demographics, role, system complexity) Reliability → Quality of sensory design → Quality of lighting behaviour (timeliness, meeting → needs detection)	Desired Behaviour How does a visitor behave when they get into this state?
Design Questions → How to attract and sustain attention and make people aware of your exhibit? → How does the exhibit use light, lighting and sound to capture attention? Are there directions nearby that lead that? (for example something that makes a lot of sound, bright surroundings that influence visibility) → What are the main (and hidden) uses or other cues (signs, guides, colors, sounds, moving or auditory elements...)? that make people aware of your exhibit? → When the space is crowded, how does the physical design of the exhibit enable people to notice it? (height, dimensions, shape) → Where the exhibit is not used by another visitor, how can people know it?	Object Design Features: What features in the design of your exhibit support visitors in noticing it? Flaws: What prevents visitors from noticing your exhibit? Fixes: How can you fix that?	
Spatial Design & Context Features: What spatial features support visitors in noticing your exhibit? Flaws: What spatial features prevent visitors from noticing your exhibit? Fixes: How can you fix that?		

ONBOARDING

Transit > Awareness > Interest > Intention > Exploration > Continuation > Finishing

State of Interest - Description A visitor is interested in the exhibit. A visitor shows interest in the exhibit, by standing still or moving closer and observing the exhibit. There are two modes of interest: Passive Interest: merely observing the exhibit, Active Interest: reaching to the exhibit by commenting, drawing or providing feedback.	Influential Factors Curiosity → Intrigued interaction by (multi-) system reaction to user presence Interest → Engaging approach (different user graphics/demographics, role, system complexity) Reliability → Quality of sensory design → Quality of lighting behaviour (timeliness, meeting → needs detection) Seeing other people play / interact often	Desired Behaviour How does a visitor behave when they get into this state?
Design Questions → How does your exhibit design and spatial layout allow possibility to see other people who are currently using it? → Is it clear to passersby what the exhibit does and what experience it promises? → How does the content or subject of your exhibit speak interest of passersby? → When the exhibit is not used (idle), how does it give an impression to passersby that it's active? (for example a screen or otherwise mode) → When the interactivity or experience is not (fully) visible to passersby on the outside, how does your exhibit communicate what it does? (for example, sounds, visible, video, audio)	Object Design Features: What features in the design of your system support visitors in becoming interested? Flaws: What prevents visitors from becoming interested? Fixes: How can you fix that?	
Spatial Design & Context Features: What spatial and contextual features (location, physical characteristics) support passersby to become interested in your system? Flaws: What spatial and contextual features prevent visitors from becoming interested? Fixes: How can you fix that?		

ONBOARDING

Transit > Awareness > Interest > Intention > Exploration > Continuation > Finishing

State of Intention - Description A visitor has the intention to interact with the exhibit. A visitor wants to participate but doesn't yet. A visitor waits for an opportunity to join or another visitor to finish their game. A visitor looks for the optimal moment to approach the exhibit but doesn't get around to it. E.g., a visitor looking for a buddy to start a game but doesn't try to touch anything.	Influential Factors Intrinsic motivation → Intrinsic Curiosity Self-efficacy / Perceived ability Desirability: Expectations & Beliefs → Positive & meaningful experiences → Avoid uncertainty → Setting & Context Usability: Accessibility → Low barriers → Affordances → Clear & consistent → Intuitive / Unambiguous / Intuitive	Desired Behaviour How does a visitor behave when they get into this state?
Design Questions → How do you promise a safe experience where visitors will feel confident but not exposed and embarrassed? (for example, do they feel too much pressure, being asked to play others?) → How does your object indicate that you're in? → Can passersby make a sense that you're available for participation? → How do you make participation boundaries, intuitive and effortless? → How does your object appeal to different types of users?	Object Design Features: What features in the design of your system support visitors in becoming interested? Flaws: What prevents visitors from wanting to use your system? Fixes: How can you fix that?	
Spatial Design & Context Features: What spatial and contextual features (location, physical characteristics) support visitors in wanting to use your system? Flaws: What spatial and contextual features prevent visitors from wanting to use your system? Fixes: How can you fix that?		

PARTICIPATION

Transit > Awareness > Interest > Intention > Exploration > Continuation > Finishing

State of Exploration - Description A visitor attempts to interact with the exhibit, by touching a part of it, or interacting directly in the exhibit. E.g., a visitor trying to press the 'start' button on the system. The visitor's actions are controlled by the system. A visitor becomes a participant and starts to interact with the exhibit and engages to control and content.	Influential Factors Usability & Accessibility → Low barriers strategy → Affordances, intuitive → Unambiguous controls and interactivity Rewarding → Reward progression, satisfaction & exploration → Physiological or augmented feedback	Desired Behaviour How does a visitor behave when they get into this state?
Design Questions → How is the system designed to be intuitive and easy to start using? → Does your system have intuitive affordances (do you use lighting, sound or visual cues to indicate correct or incorrect interaction with high feedback cues)? → How do you ensure that users feel capable of using the system? → How does someone start using your system?	Object Design Features: What features in the design of your system support exploration? Flaws: What prevents exploration? What prevents people from wanting to use your system? Fixes: How can you fix that?	
Spatial Design & Context Features: What are spatial and contextual features (location, physical characteristics) that support exploration? Flaws: What are spatial and contextual features prevent exploration? Fixes: How can you fix that?		

PARTICIPATION

Transit > Awareness > Interest > Intention > Exploration > Continuation > Finishing

State of Continuation - Description The participant continues interaction, repeats actions, deeper engagement beyond exploration. A participant continues using the interface after initial exploration. Several consecutive operations are performed, beyond the exploration.	Influential Factors Curiosity → How it begins to feel excitement → Exploration & Experimenting → Feedback loops and interactivity → Multiple autonomy → Support different skills, experience, interests Rewarding → Absorbed / fun experience → Competition → Challenge → High promises and expectations	Desired Behaviour How does a visitor behave when they get into this state?
Design Questions → How does your system feel like an exploration? → Does using your interface give a meaningful & enjoyable experience? → How does your system feel like an exploration? → How does your system offer something new or useful after exploration? → How do you avoid boredom or disappointment? → Does your system support different ways of using it, different purposes or user roles? → Is there a form of competition, challenge or individual mastery? → Does the installation give the participant autonomy via their own freedom to use?	Object Design Features: What features in the design of your system support continuation? Flaws: What prevents continuation? Fixes: How can you fix that?	
Spatial Design & Context Features: What are spatial and contextual features (location, physical characteristics) that support continuation? Flaws: What are spatial and contextual features prevent continuation? Fixes: How can you fix that?		

PARTICIPATION

Transit > Awareness > Interest > Intention > Exploration > Continuation > Finishing

State of Finishing - Description The participant has the intention to stop participating. A participant left behind the exhibit's content. A participant finishes the narrative of a (discovery) game or achieves the goal.	Influential Factors Intrinsic motivation → Fun / Exciting → Completion / Sense of progress → Achievement → Satisfaction → Belonging → Social interaction → Other people (to go to stop)	Desired Behaviour How does a visitor behave when they get into this state?
Design Questions → How do you avoid participants becoming bored or disappointed? → How do you avoid participants after product use? → Does your installation have a designed space or defined ending? → How does this work and how is this communicated? → Can they get their own goals? → Does the participant know what the objective or goal of your system is? → Are there risks that make the participants and their journey too well, not talking in the installation? What are those risks?	Object Design Features: What features in the design of your system that support a good ending experience? Flaws: What prevents a good ending experience? Fixes: How can you fix that?	
Spatial Design & Context Features: What are spatial and contextual features (location, physical characteristics) that support continuation? Flaws: What are spatial and contextual features prevent continuation? Fixes: How can you fix that?		

The Participant Journey Map for Playful Interaction in (semi-)Public Spaces

Understanding the
design of
interactive play
spaces



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Participation
Patterns of 6
museum exhibits

