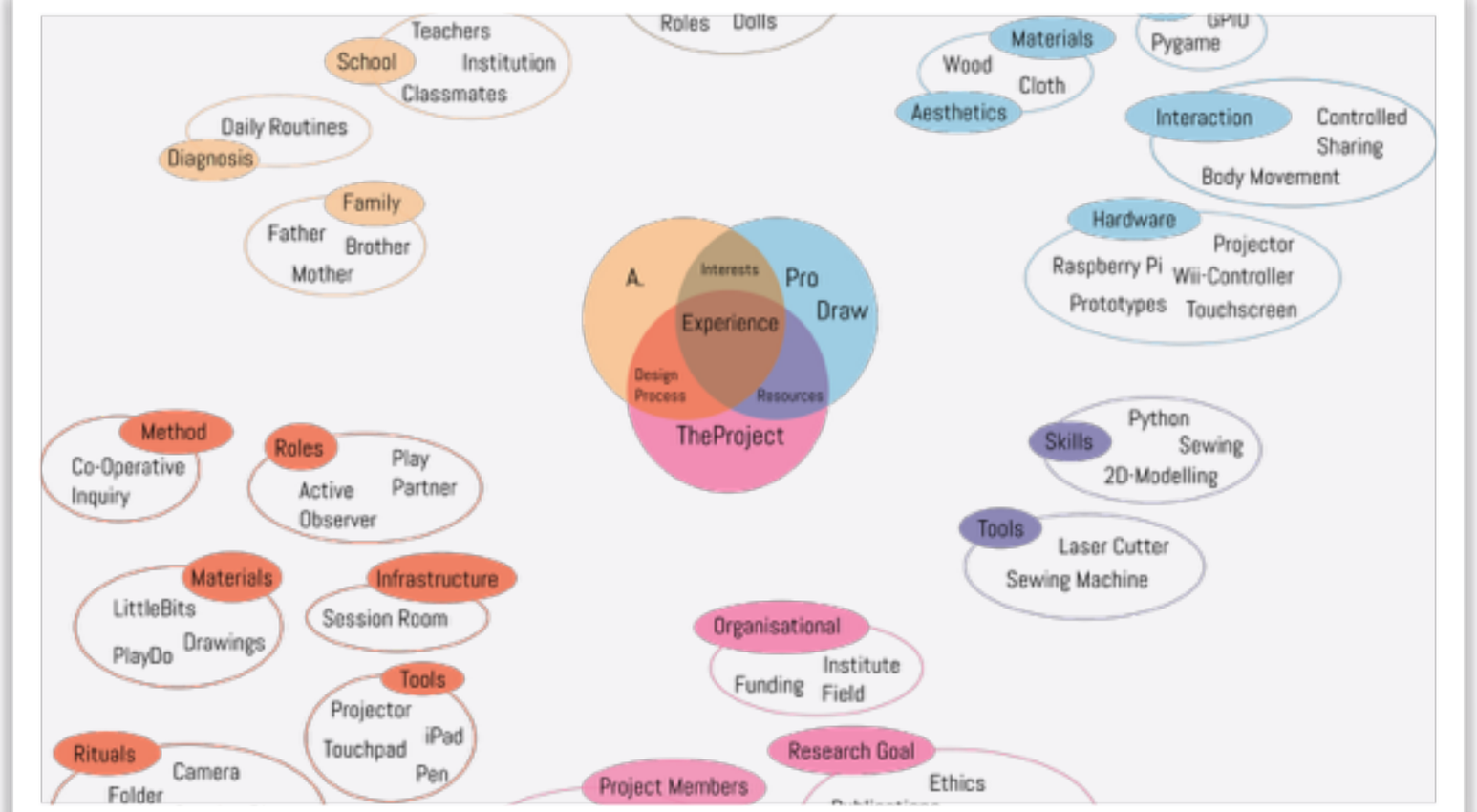

EVALUATING EXPERIENCES OF AUTISTIC CHILDREN WITH TECHNOLOGIES

Katharina Spiel — TU Wien

Experience evaluation in HCI relies heavily on researchers' empathy.

Autistic children perceive the world very differently.

We need to re-frame how we think about technology as experience.

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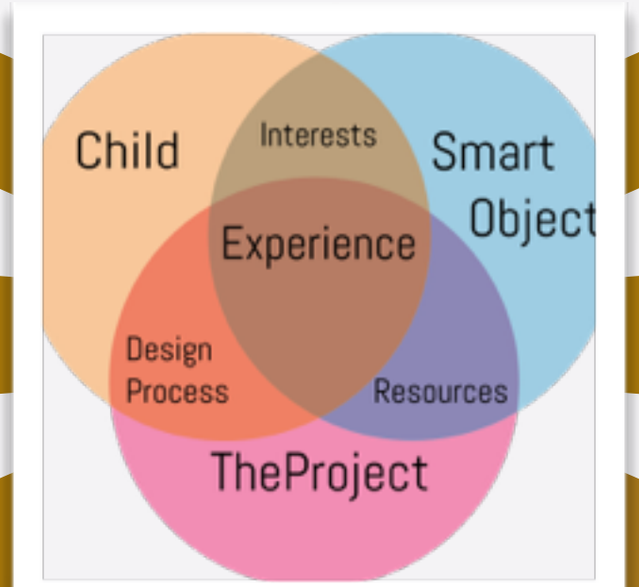


AUTISM

Diagnostic Criteria & Sense Making

Diagnostic Criteria

1. focused interests and repetitive behaviour

2. difficulties with neurotypical interaction

Fakhoury, 2015

AUTISM

Diagnostic Criteria & Sense Making

Diagnostic Criteria

1. focused interests and repetitive behaviour

2. difficulties with neurotypical interaction

De Jaegher, 2013

1. different modes of perception

2. meaningful sense making — also in repetition

Fakhoury, 2015; De Jaegher, 2013

AUTISM

Diagnostic Criteria & Sense Making

Diagnostic Criteria

1. focused interests and repetitive behaviour

2. difficulties with neurotypical interaction

De Jaegher, 2013

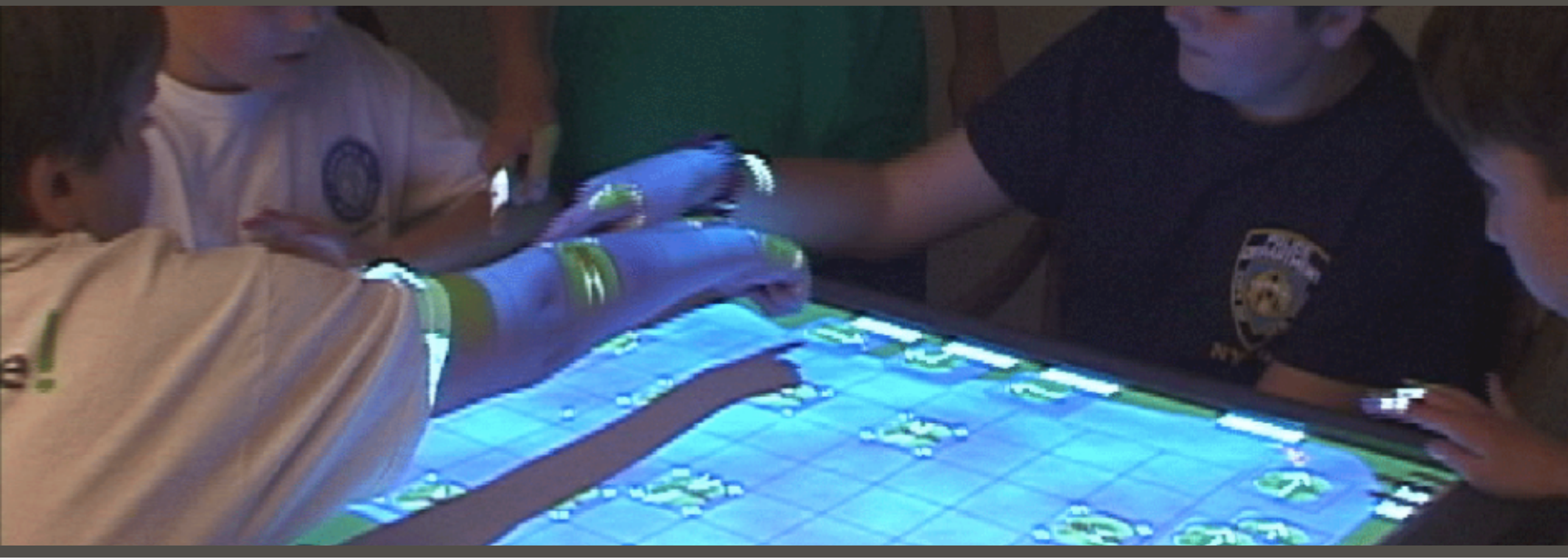
1. different modes of perception

2. meaningful sense making — also in repetition

Fakhoury, 2015; De Jaeger, 2013; Kenny et al., 2015

LOOK AT ME

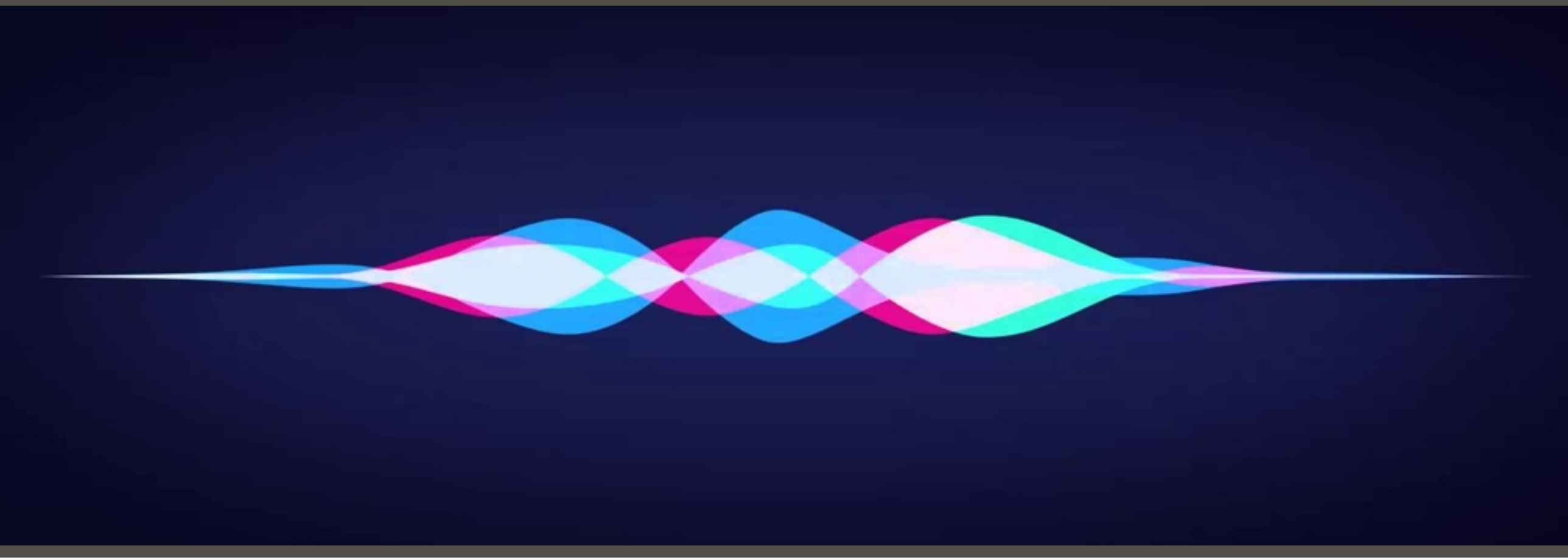
commercially available — limited user testing



SIDES

research project — functionally evaluated

Piper et al., 2006



SIRI

side effect — not intended for the user group as is

Newman, 2014

HUGGING MACHINE

Developed by Temple Grandin — fully tested

Grandin, 1999

There is a lack of technologies that are fun for autistic children and make sense in their everyday lives.

OUTSIDE THE BOX

Rethinking Assistive Technologies with Children with Autism

OUTSIDETHEBOX

Technologies for shareable positive experiences

Spiel et al., 2016; Frauenberger et al., 2016

OUTSIDE THE BOX

Rethinking Assistive Technologies with Children with Autism

OUTSIDETHEBOX

Technologies for shareable positive experiences
— but how do we evaluate them?

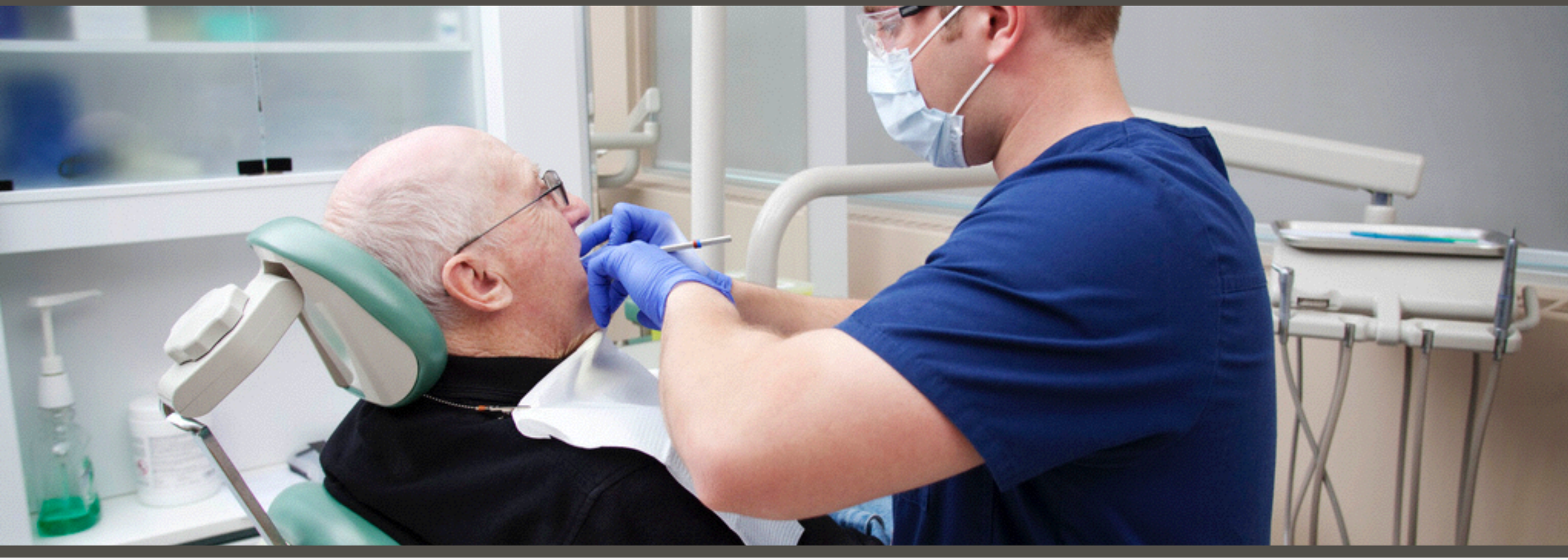
Spiel et al., 2016; Frauenberger et al., 2016

2	I found the system unnecessarily complex.		○	○	○	○	○
3	I thought the system was easy to use.		○	○	○	○	○
4	I think that I would need the support of a technical person to be able to use this system.		○	○	○	○	○
5	I found the various functions in the system were well integrated.		○	○	○	○	○
6	I thought there was too much inconsistency in this system.		○	○	○	○	○
7	I would imagine that most people would learn to use this system very quickly.		○	○	○	○	○
8	I found the system very cumbersome to use.		○	○	○	○	○

USER EXPERIENCE

with Questionnaires

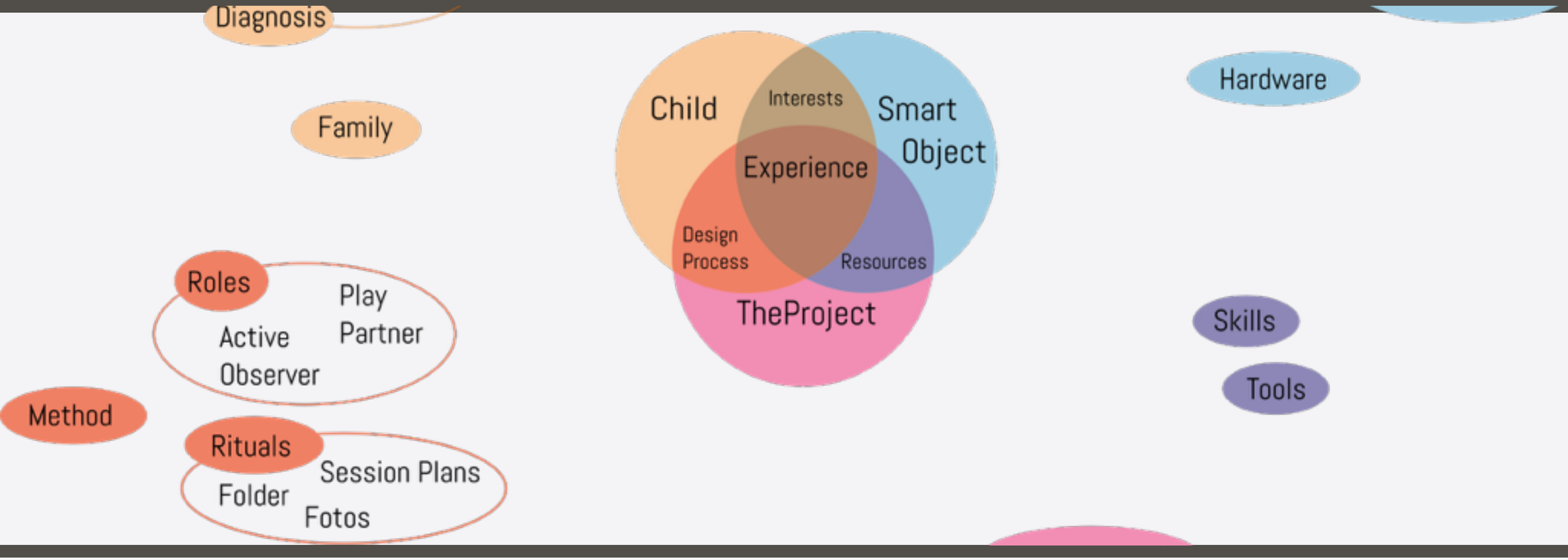
e.g., Spiel 2014



TECHNOLOGY AS EXPERIENCE

Empathic Inquiry

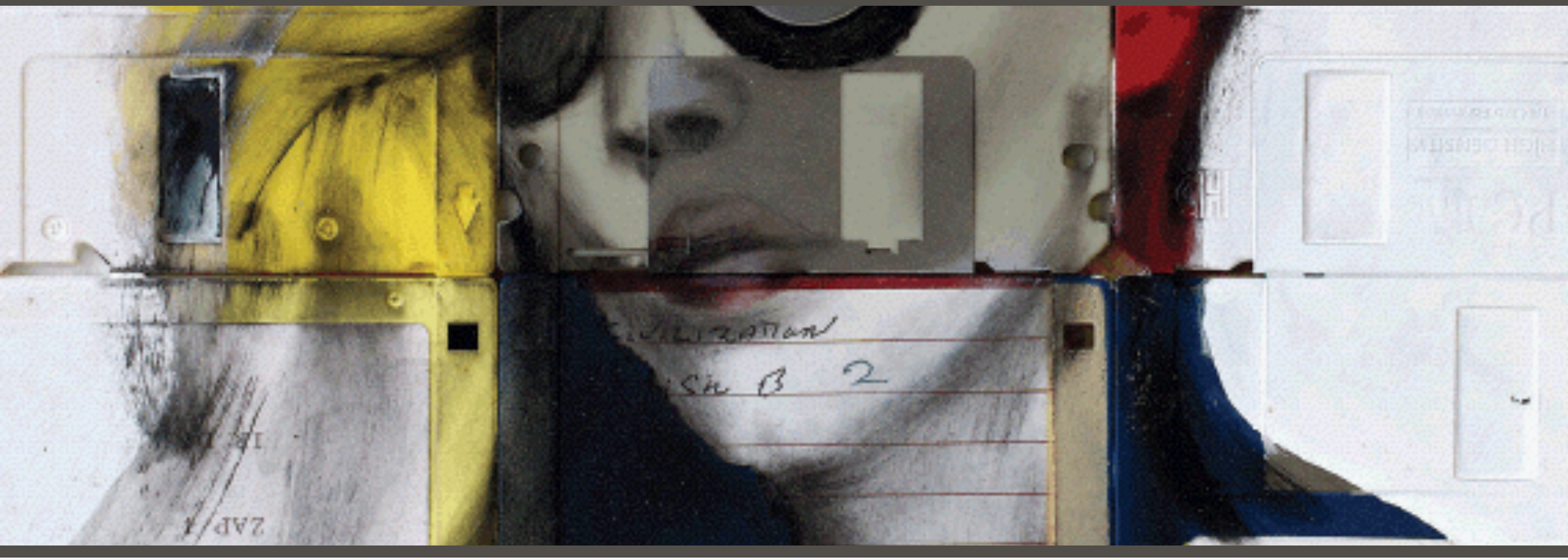
McCarthy & Wright, 2007; Wright & McCarthy, 2008



HOLISTIC EXPERIENCE

Humanistic Grounding in Actor-Network Theory and
Critical Discourse Analysis

Spiel et al., 2016 (Under Review)



HUMANISTIC HCI

Bardzell & Bardzell, 2015

FEMINIST THEORY

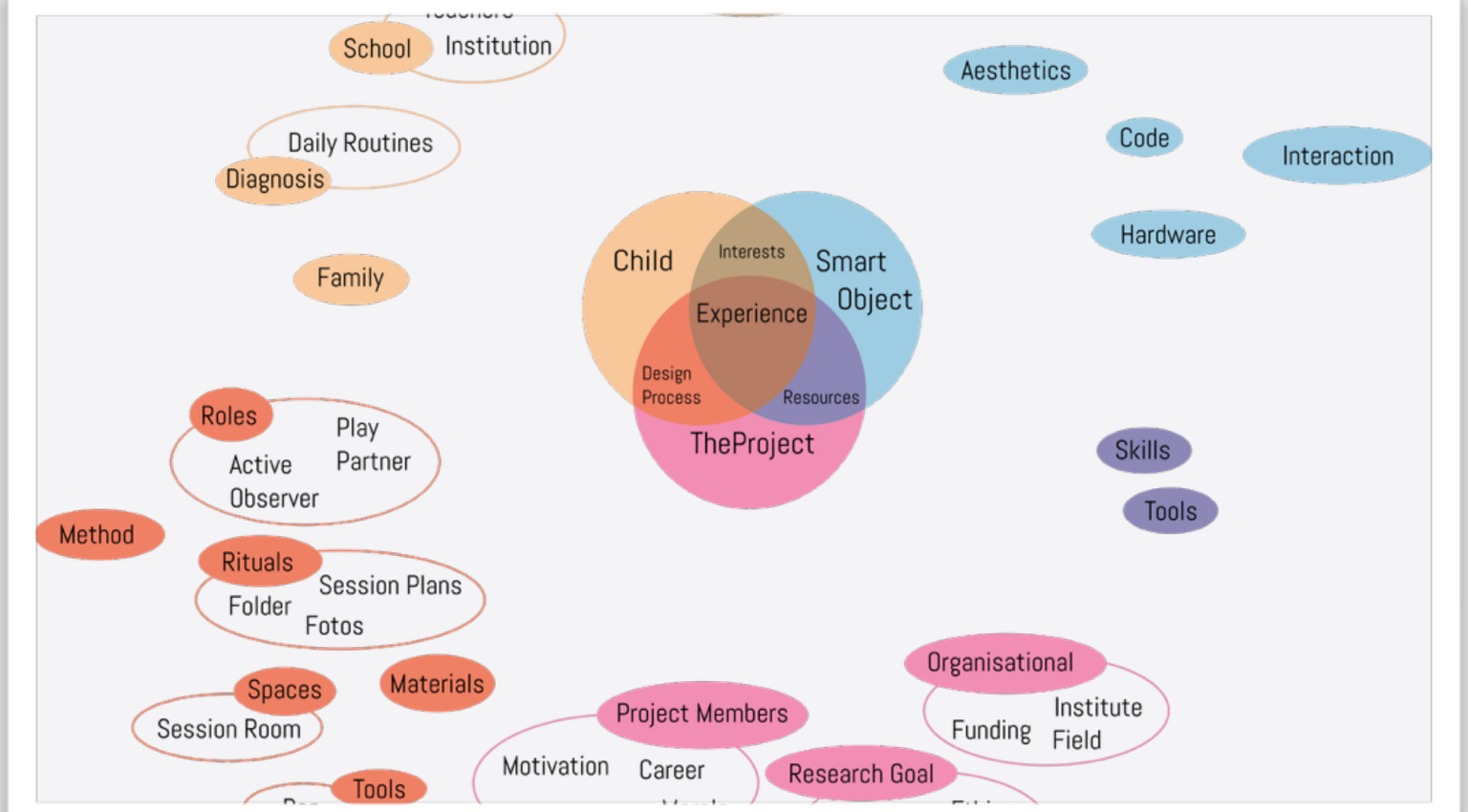
Experiences — Target Audience — Subjective Position

Supporting Emancipation

Harding, 1987

ACTOR-NETWORK THEORY (ANT)

CRITICAL DISCOURSE ANALYSIS (CDA)



METHODOLOGY

multiple perspectives through multiple sources

HOW TO PROCEED

DEFINE

Discourse &
Dispositive

HOW TO PROCEED

DEFINE

Discourse &
Dispositive

GATHER

Data to Establish
Actors

HOW TO PROCEED

DEFINE

Discourse &
Dispositive

GATHER

Data to Establish
Actors

ANALYSE

Data and Identify
Statements

HOW TO PROCEED

DEFINE

Discourse &
Dispositive

GATHER

Data to Establish
Actors

ANALYSE

Data and Identify
Statements

CONTEXTUALISE

Statements within the
Actor-Network

HOW TO PROCEED

DEFINE

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GATHER

Data to Establish Actors

ANALYSE

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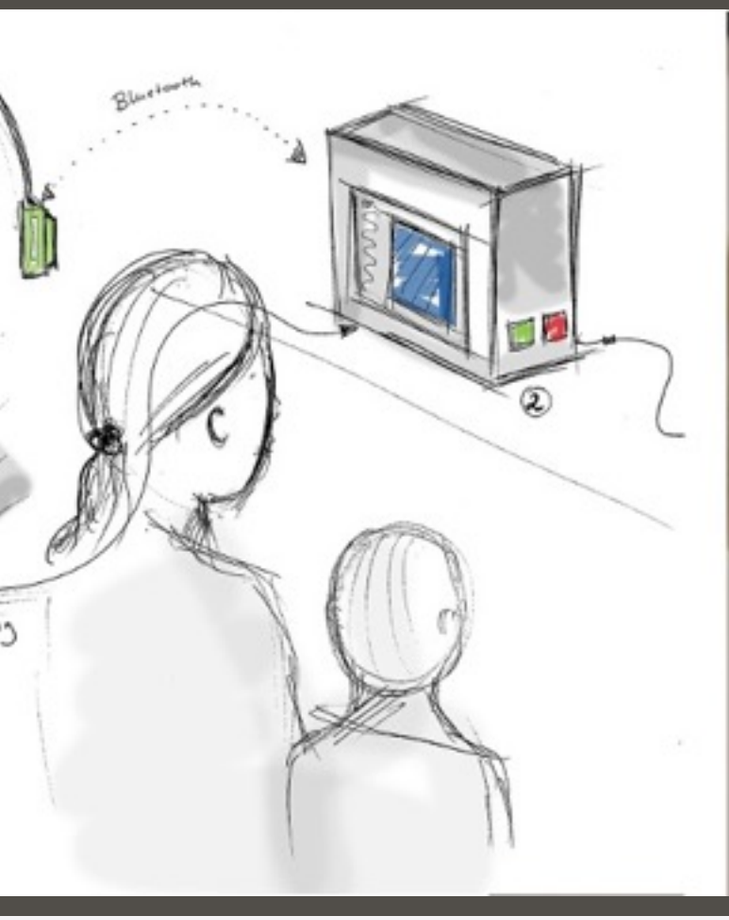
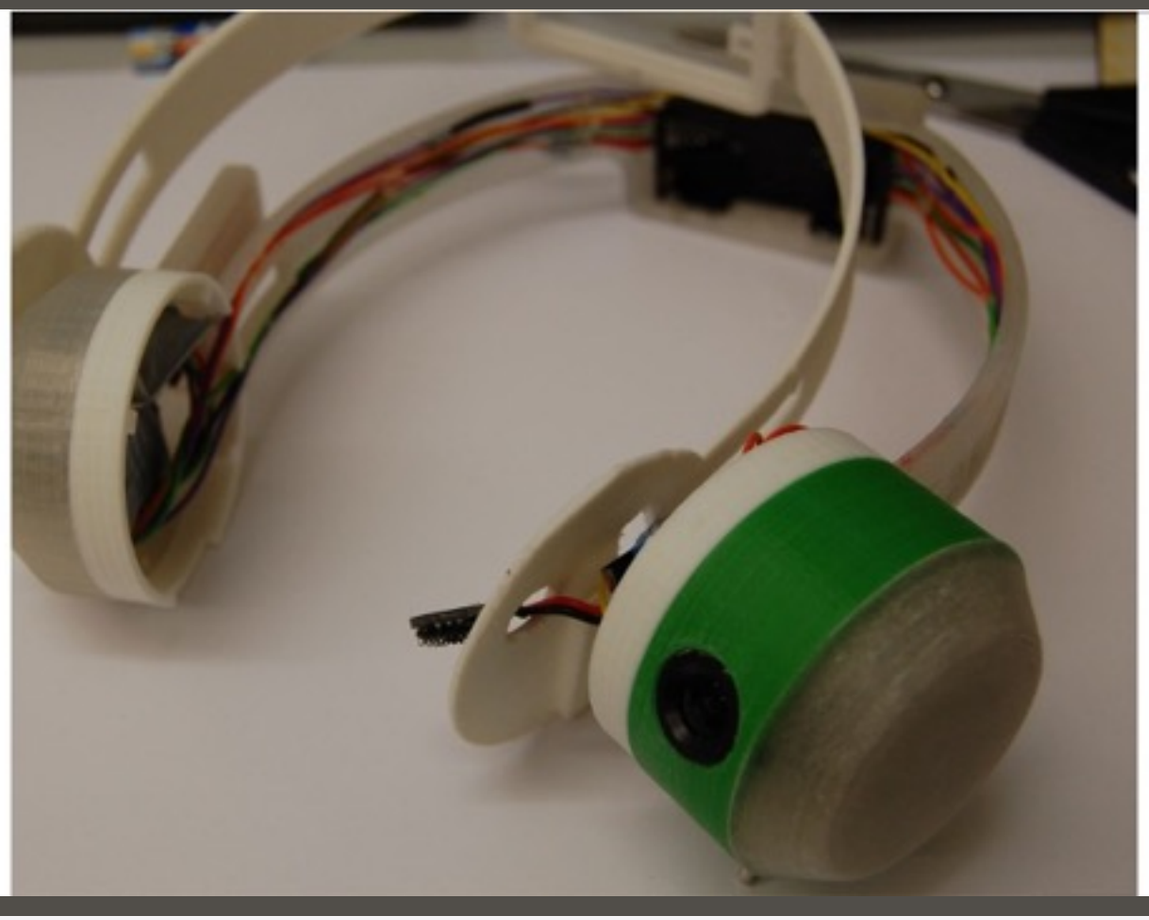
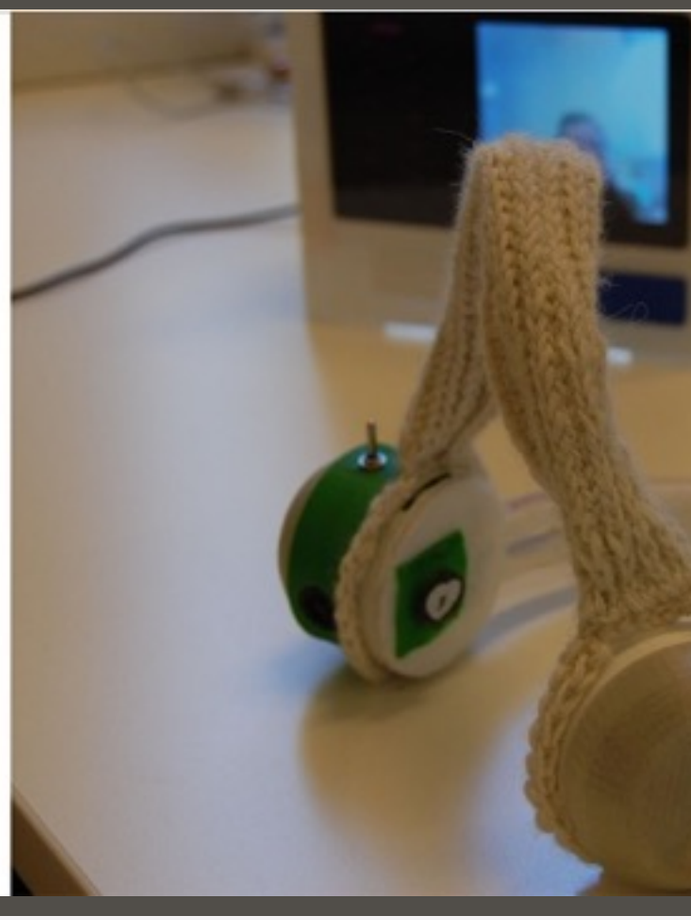
CONTEXTUALISE

Statements within the Actor-Network







CASE STUDY

H & THINKM

DIAGNOSIS: HIGH-FUNCTIONING AUTISM
AGE AT COLLABORATION: 6

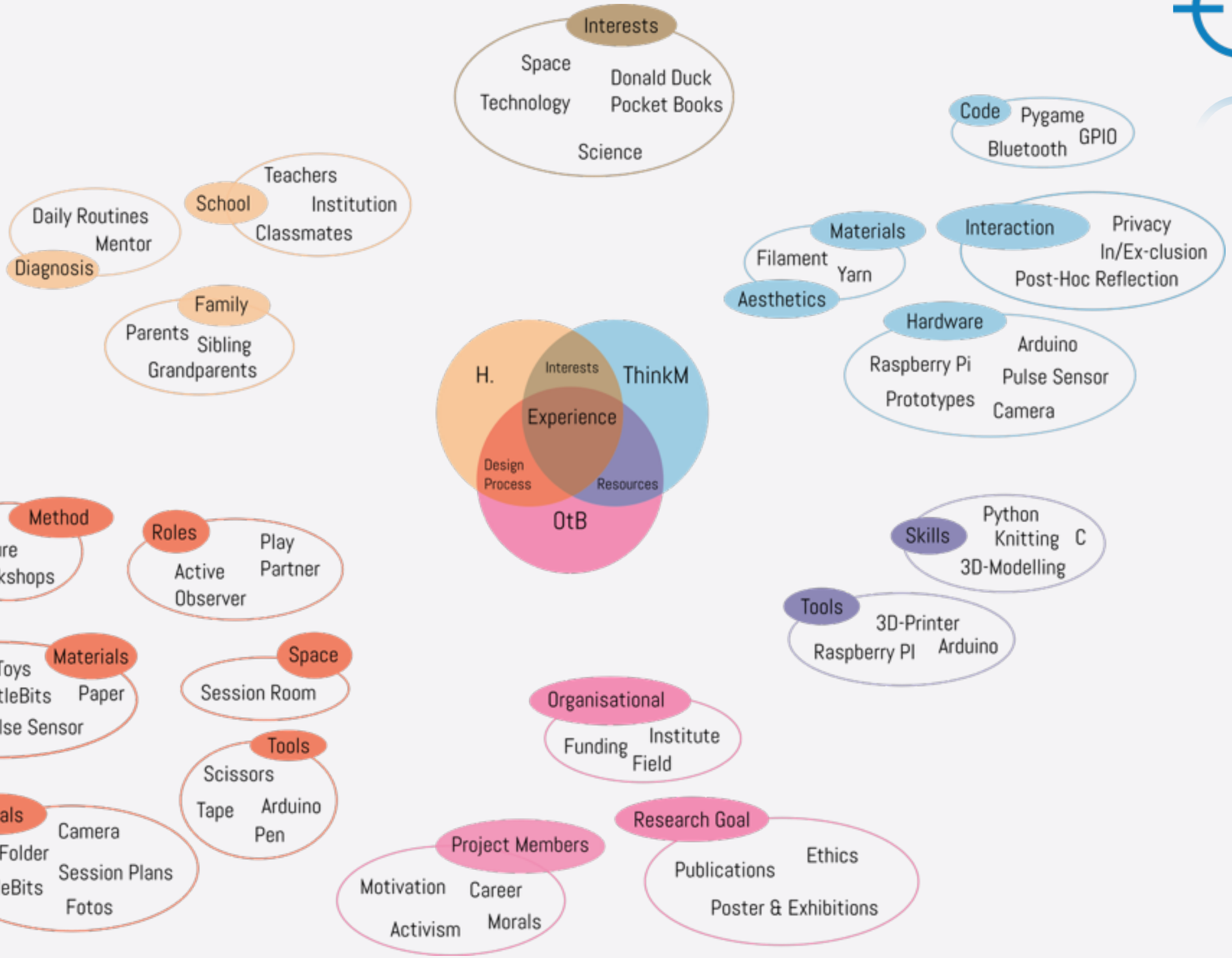
- ten design sessions and three evaluation sessions.
- very verbal
- problems with sensory processing of noise and activity levels
- occasional melt downs and explosive out-bursts
- Future Workshops
- headband and base station

Frauenberger et. al., 2015

EVALUATION

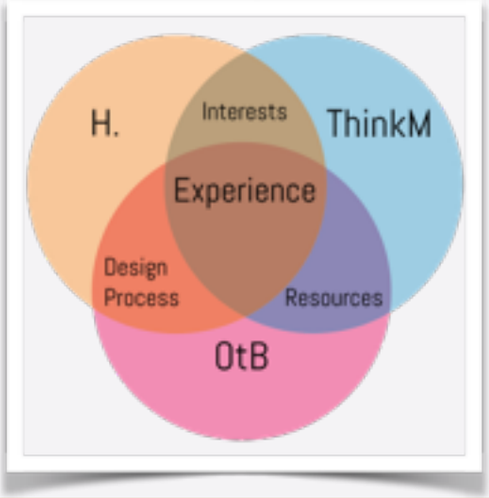
"YEAH, HE LIKES IT, BUT HE NEVER USES IT"

- PARENT


Interests
Space
Donald Duck
Technology
Pocket Books
Science
Code
Pygame
GPIO
Bluetooth
Teachers
School
Institution
Classmates
Daily Routines
Mentor
Diagnosis
Materials
Filament
Yarn
Aesthetics
Interaction
Privacy
In/Ex-clusion
Post-Hoc Reflection
Family
Parents
Sibling
Grandparents
Hardware
Arduino
Raspberry Pi
Pulse Sensor
Prototypes
Camera
H.
Interests
ThinkM
Experience
Design
Process
Resources
OtB
Method
Future
Workshops
Roles
Play
Active
Partner
Observer
Skills
Python
Knitting
C
3D-Modelling
Tools
3D-Printer
Raspberry PI
Arduino
Materials
Yarn
Toys
LittleBits
Paper
Cardboard
Pulse Sensor
Space
Session Room
Organisational
Funding
Institute
Field
Tools
Scissors
Tape
Arduino
Pen
Rituals
Camera
Folder
Session Plans
LittleBits
Fotos
Project Members
Motivation
Career
Activism
Morals
Research Goal
Ethics
Publications
Poster & Exhibitions

MULTIPLE PERSPECTIVES

Selected Data Sources

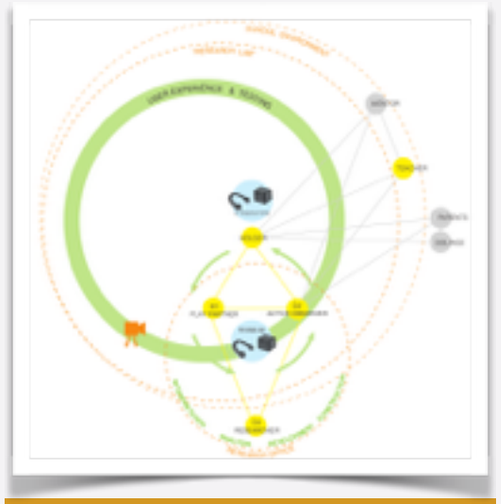


CORE ANT

Type	Data	Temporal	Actor
Text	Research Diaries	throughout	H., Project Members
Text	Ethic Questionnaire	middle	Ethics, Parents, Teachers
Text	Logs	end	ThinkM
Physical	Prototypes	middle,end	ThinkM, H., Project Members, Design…
Physical	Workshop Materials	throughout	ThinkM, Design Process…
Audio/Visual	Session Recordings	throughout	Project Members, H., School, Room…
Audio/Visual	Sketches 2D/3D	middle, end	H., Project Members, ThinkM

STATEMENTS

Selected Actors



EVALUATION

Actor	Statement	Source
Parents	H. connects ThinkM to the school environment.	evaluation session recordings
Parents	H. is proud of ThinkM.	evaluation session recordings
Teachers	H. is in a better mood the days you are here.	interviews
H.	We developed ThinkM together, you built it.	session recordings
H.	It's ok, if ThinkM doesn't work properly yet.	session recordings
ThinkM	I'm barely used.	logs, object speculation
Project Team	We need to change our data sources for evaluation.	publications

EXPERIENCE?

Facets and Perspectives

DESIGN PROCESS IMPORTANT FOR THE EXPERIENCE WITH THINKM

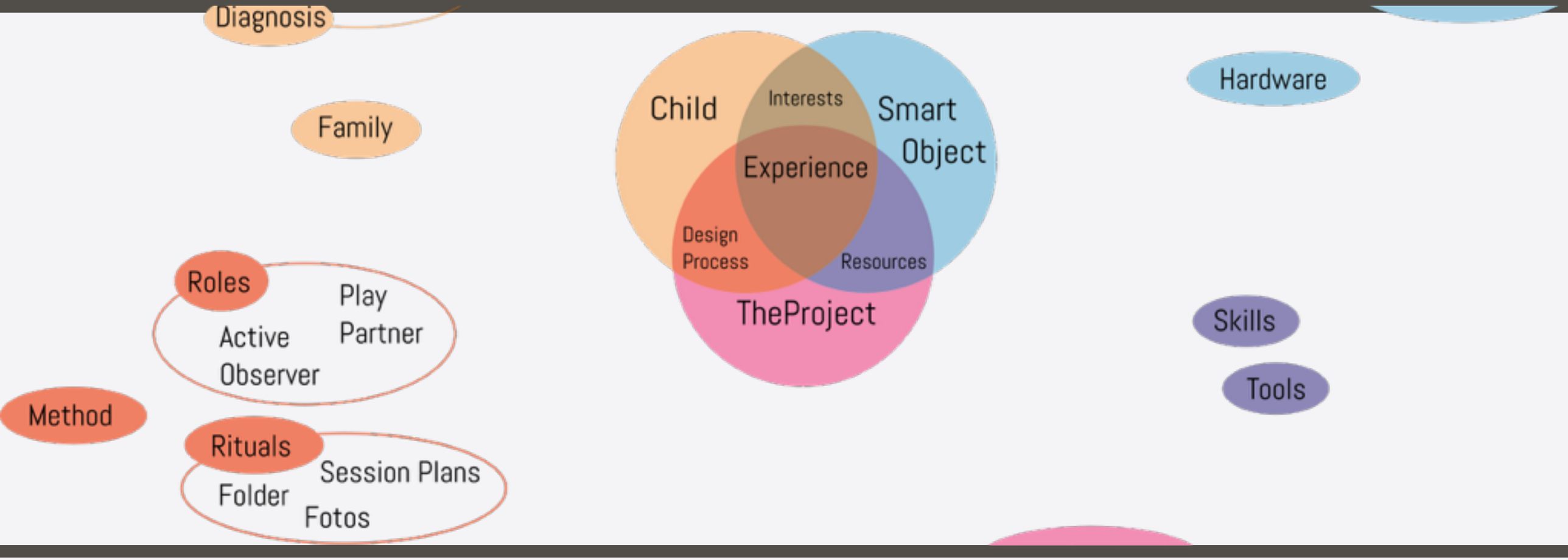
THINKM AS A TOKEN THAT REFERS TO THE DESIGN PROCESS

IN MEMENTO EXPERIENCE

Design process and object are necessarily intertwined in participatory design projects.

Experiencing the design process means experiencing part of the object.

How does this differ for other research contexts?


Diagnosis
Family
Child
Interests
Smart
Object
Experience
Design
Process
Resources
TheProject
Hardware
Roles
Play
Partner
Active
Observer
Method
Rituals
Session Plans
Folder
Fotos
Skills
Tools

YOUR WORK?

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Interests
Drawing
Gender
Pink & Purple
Roles
Dolls

School
Teachers
Institution
Classmates

Daily Routines
Diagnosis

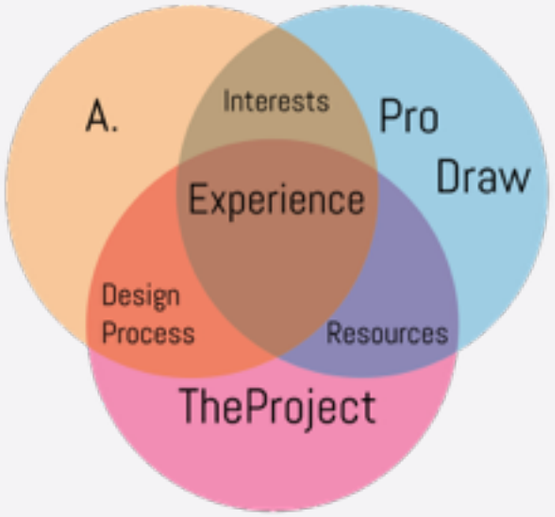
Family
Father
Brother
Mother

Code
GPIO
Pygame

Materials
Wood
Cloth
Aesthetics

Interaction
Controlled Sharing
Body Movement

Hardware
Projector
Raspberry Pi
Wii-Controller
Prototypes
Touchscreen



Method
Co-Operative Inquiry

Roles
Play Partner
Active Observer

Materials
LittleBits
PlayDo
Drawings

Space
Session Room

Tools
Projector
Touchpad
iPad
Pen

Rituals
Camera
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Fotos

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Motivation
Career
Activism
Morals

Materials

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School

Institution

Aesthetics

Code

Interaction

Daily Routines

Diagnosis

Hardware

Child

Interests

Smart Object

Experience

Design Process

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