



## GET-OUT AND INTERACT

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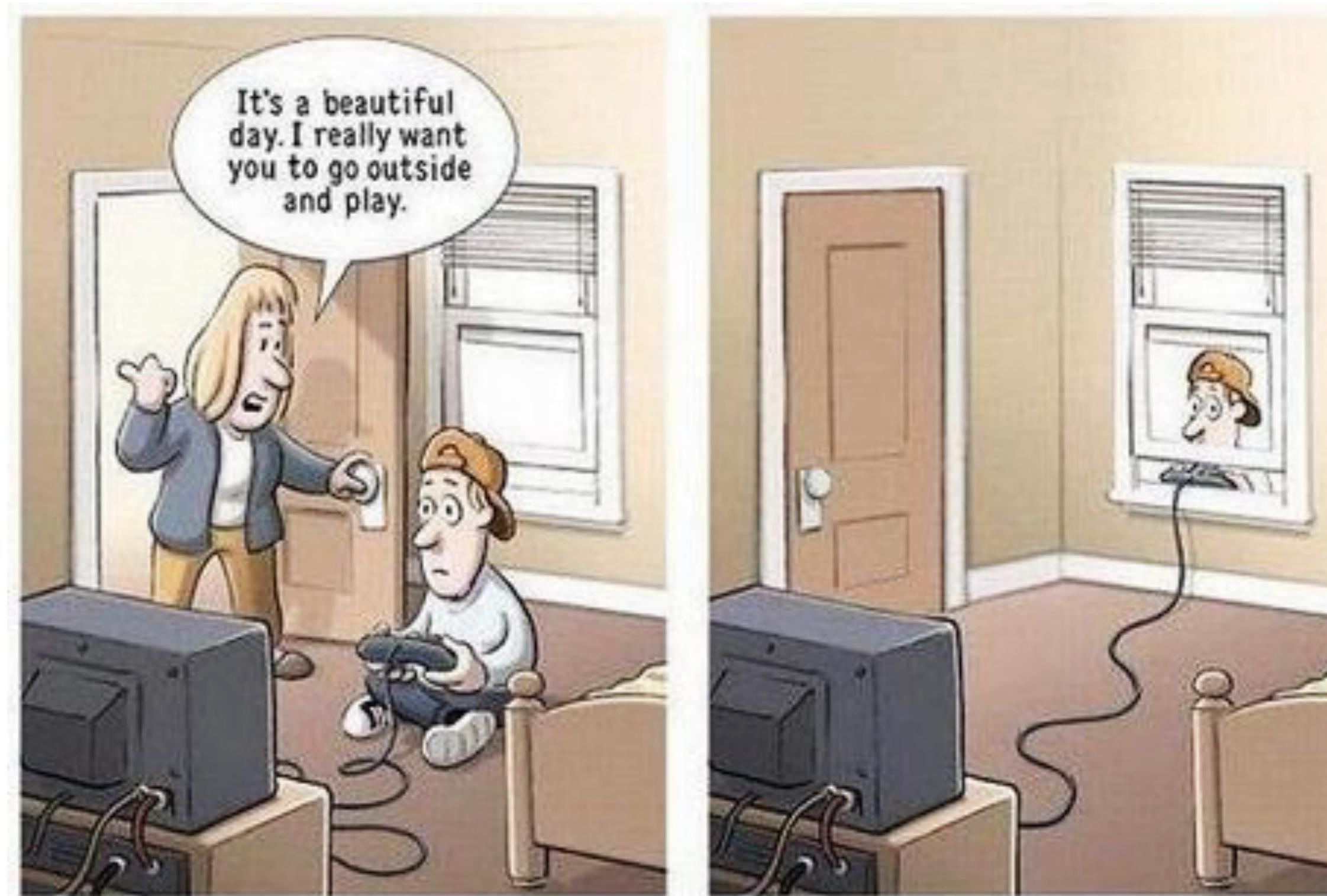
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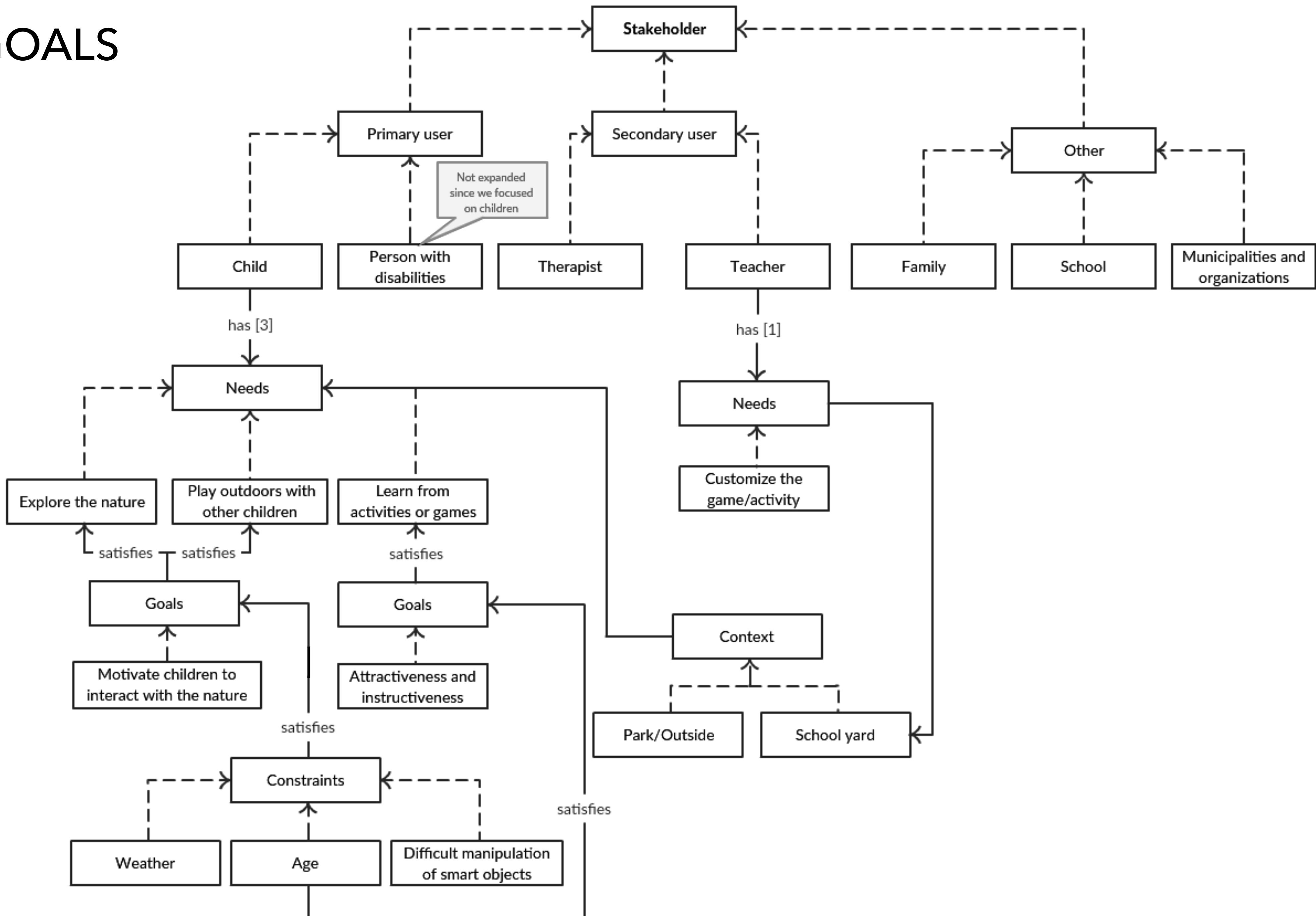
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# THE PROBLEM

Nowadays children are sometimes too exposed to displays and technology...



# NEEDS AND GOALS



# STATE OF THE ART



Head-Up Games (HUGs) are outdoor pervasive games for children that exploit embedded gaming technologies to encourage physical activity and social engagement



PULSE® is a a post with a button on its top, that can be set in a park



ABBOT is a smart toy provided with a camera that has been developed around four main functions: image capturing, shake and movement sensitivity, colored feedback and data transmission

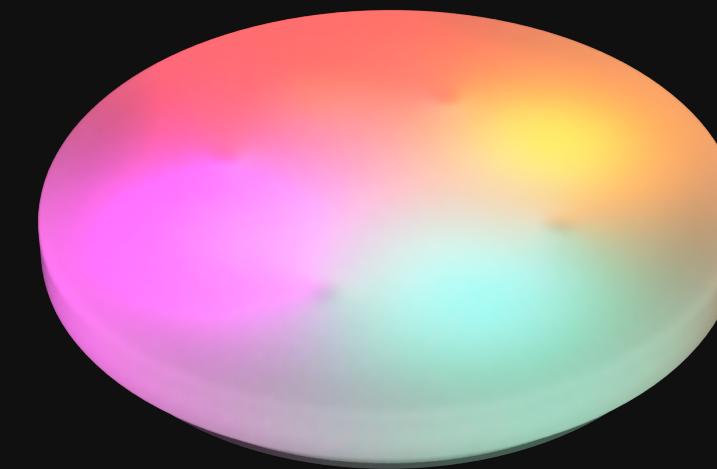
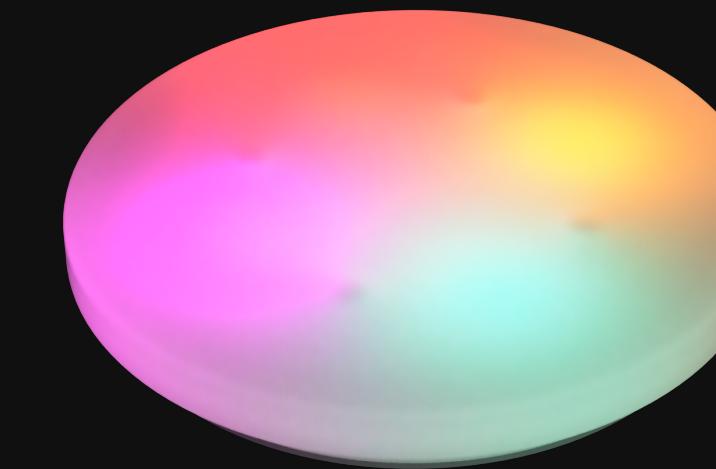
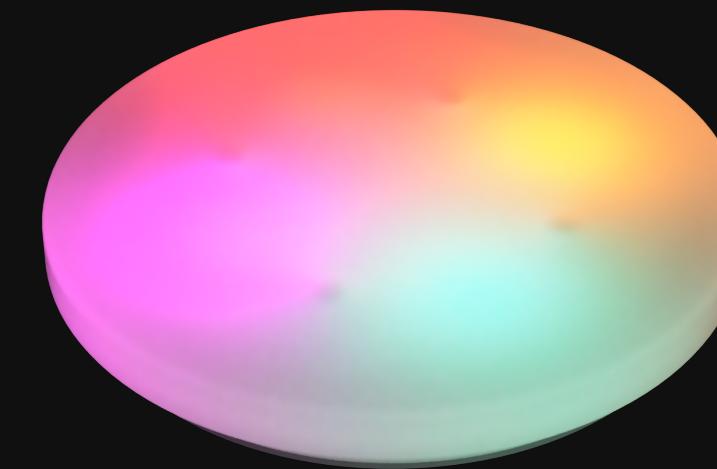
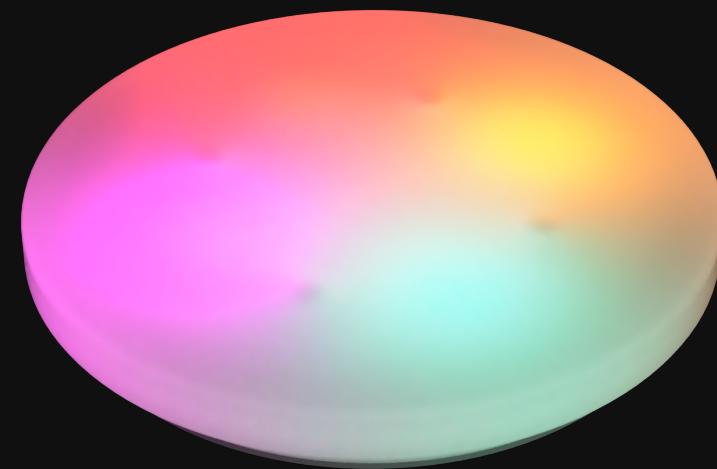
# THE SOLUTION

## A SMART DEVICE

To motivate children to interact with the nature while enjoying

## A GAME

That has to be attractive and instructive and make children explore the nature



# SMART DEVICE



## COMPOSITION

A band with a micro controller plus 4 bright buttons, 2 speakers for 5-8 years-old children (also inclusive)

## INTERACTION PARADIGM

Touch-based with light and sound

## INTERFACES

- Light
- Sound
- Touch

# GAME

## TREASURE HUNT

Each tree tells a chapter of a story.

Based on some clues the children find the next tree in order to know the next part of the story.

When the children reach the end, they learn the educative moral of the story.

# MAIN SCENARIOS



A 5 years-old girl that goes to the park with his father in the occasion of a treasure hunt proposed by an organization



A science teacher who tests her students organizing an ad hoc treasure hunt in the school yard

# IMPLEMENTATION

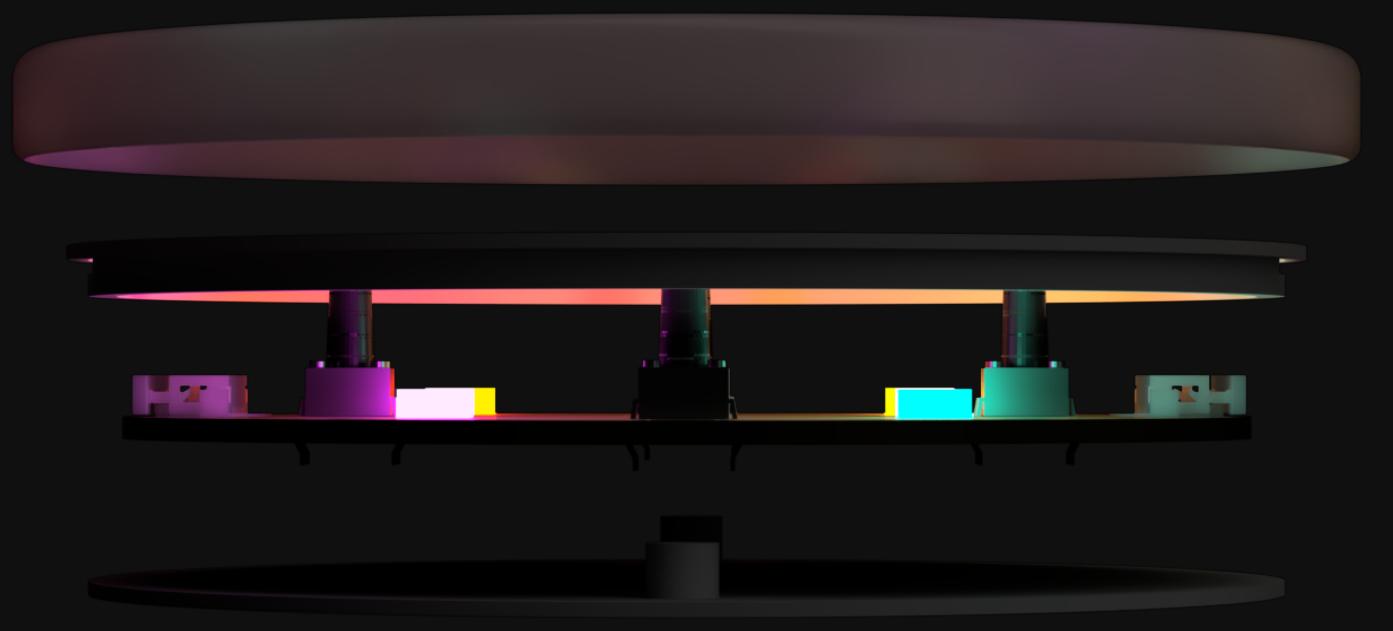


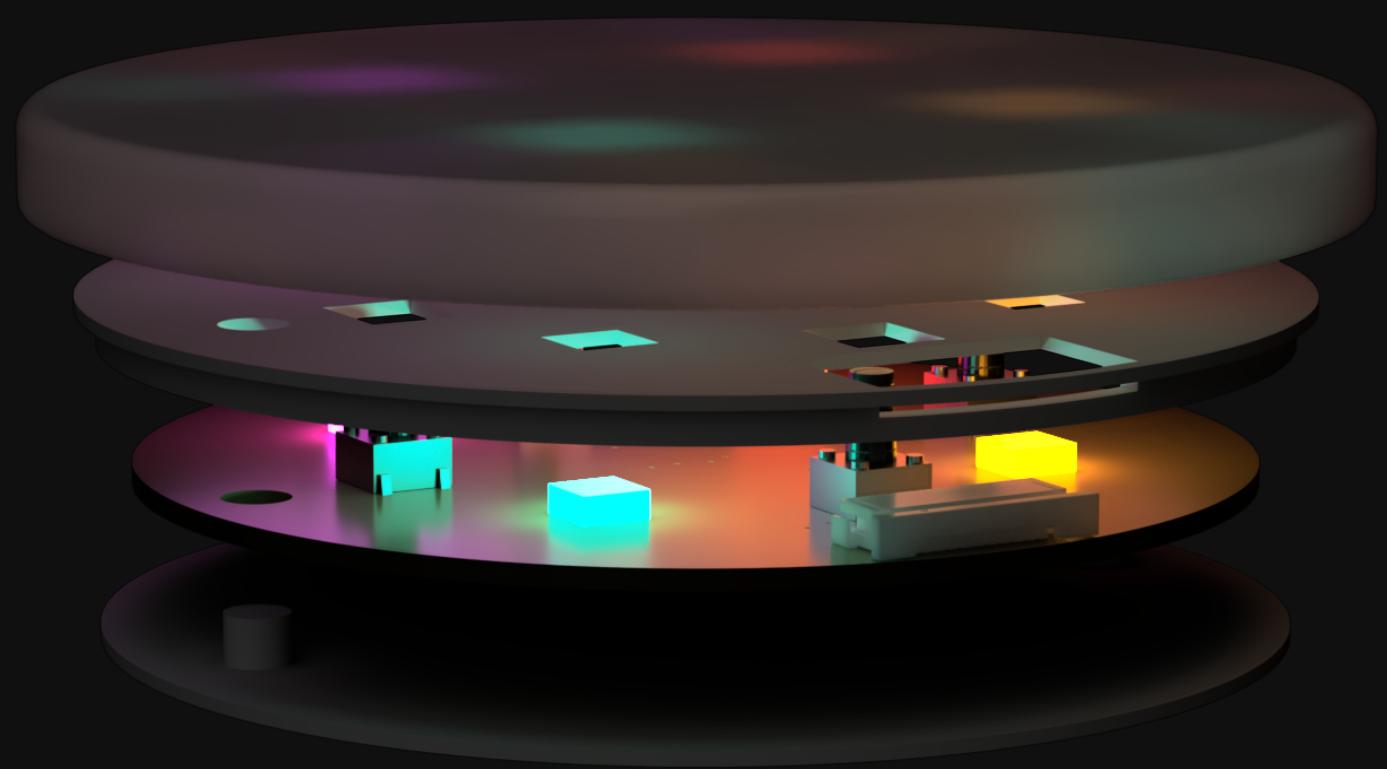
## HARWARE

- Band (Neoprene fabric)
- 4 disks (DOTs) -> 4 LEDs + 4 buttons on custom PCB
- 2 speakers
- Single-board computer (Raspberry Pi Zero W) on custom PCB Hat
- 10000mAh Power Bank

## SOFTWARE

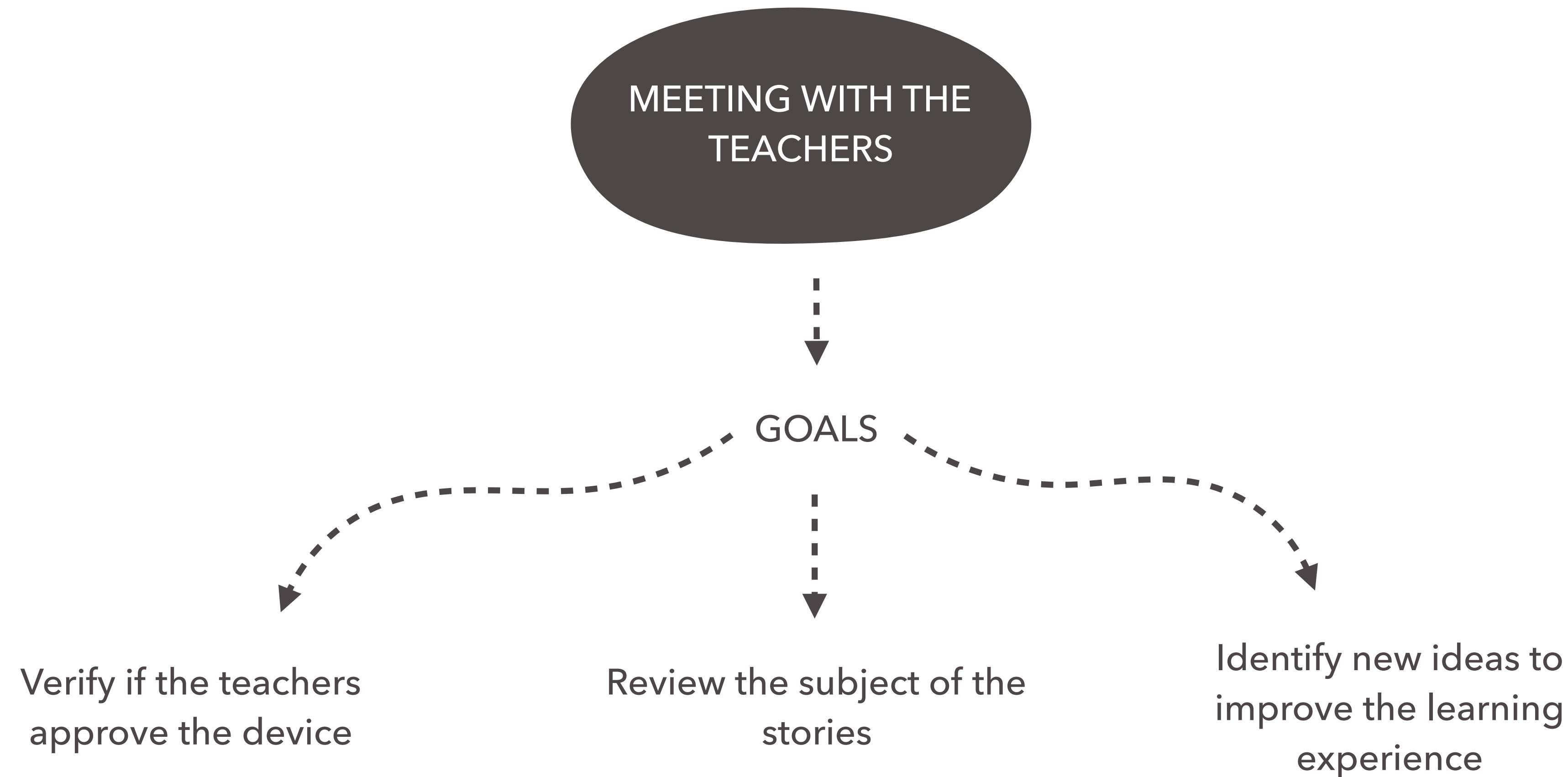
- Raspberry Pi operative system (Raspbian).
- Python (version 3.7)
- Customizable (Custom File with JSON Syntax)





# USER STUDY

19/12/2018 @ BAREGGIO (MI), 21/01/2019 @ CORNAREDO (MI)

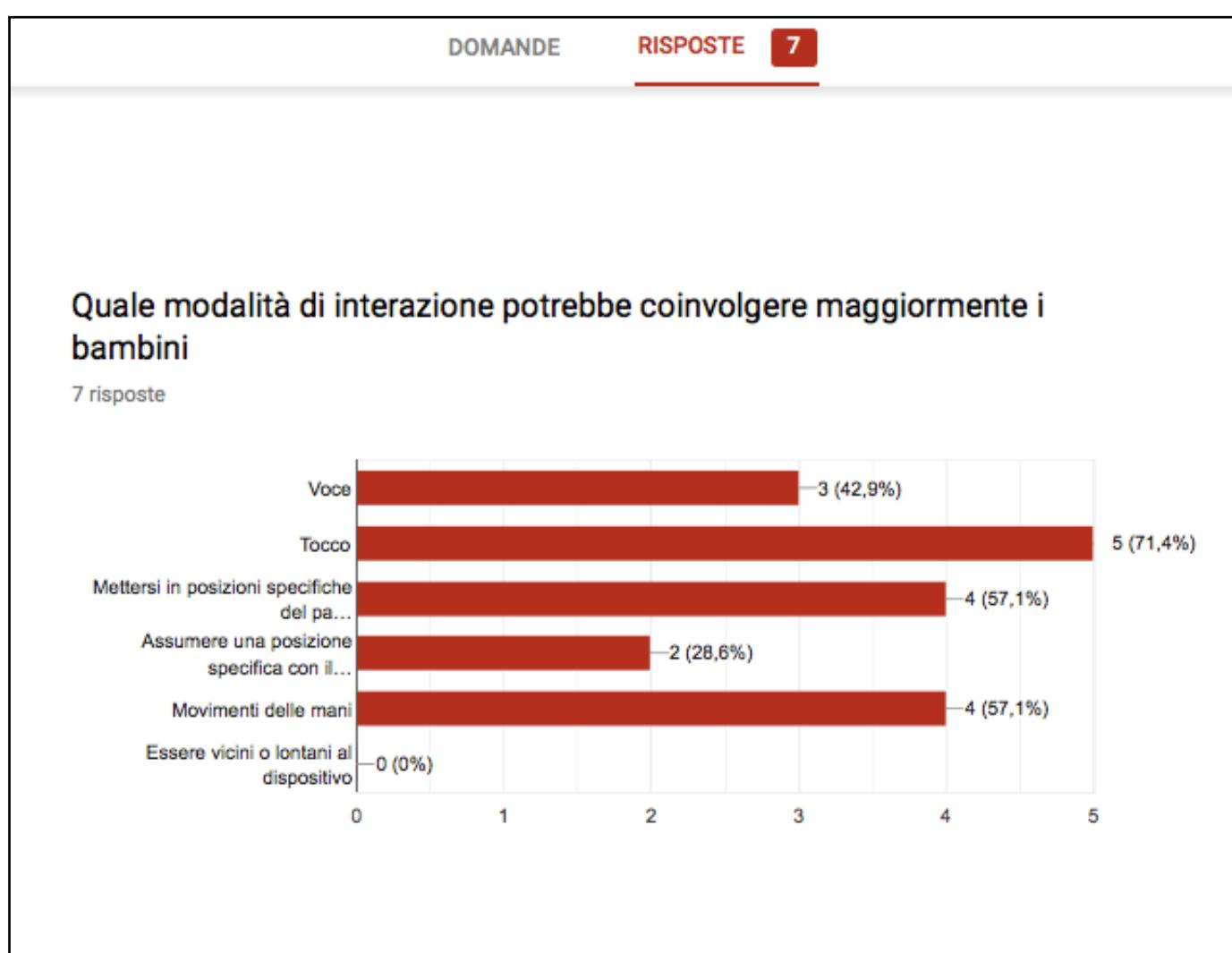


# INTERVIEWS WITH TEACHERS



## EXECUTION

- Questionnaires
- Gaia Demo
- Focus Group

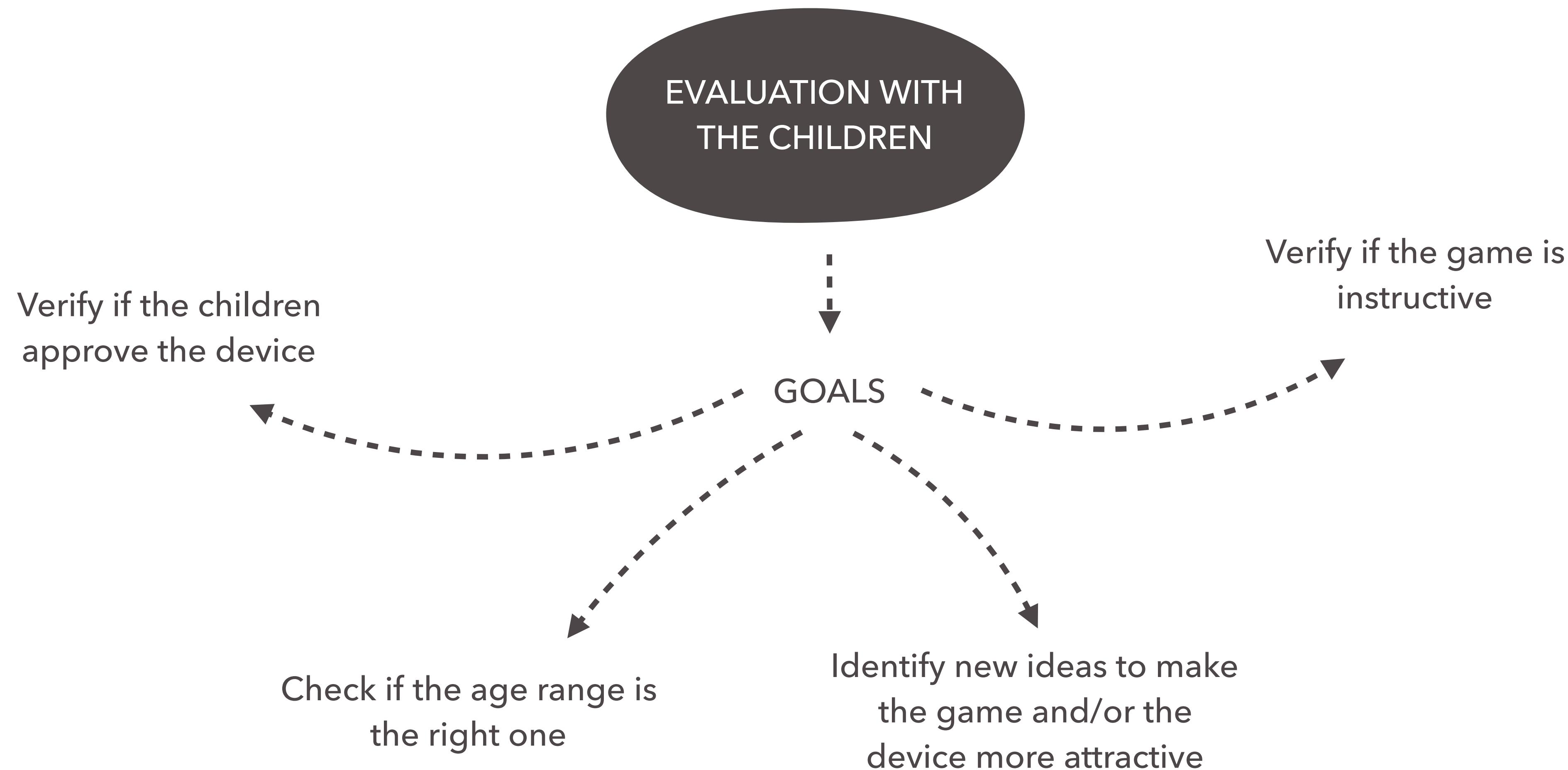


## RESULTS

- Support for “structured activities”
- Proposal of other activities
- Positive about our game and story

# USER STUDY

24/01/2019 FULL DAY @ BAREGGIO (MI), CORNAREDO (MI)



# EVALUATION WITH THE CHILDREN



## EXECUTION

- Introduction
- Outdoor playing with GAIA
- Questionnaires and interviews

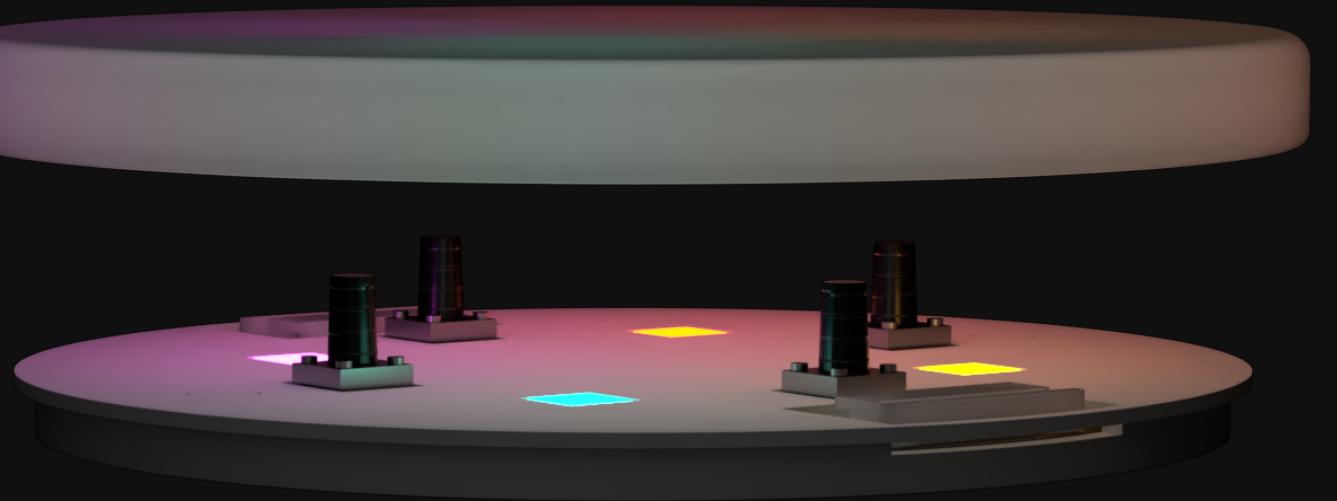


## RESULTS

- Fascinated and attracted by the device (lights and sounds)
- Positive comments on the game
- Suggestion to improve the game and add others
- Willing to continue exploring the nature

## CHALLENGES

- Huge range of activities
- Adaptable for different kind of users and environment
- Different purpose

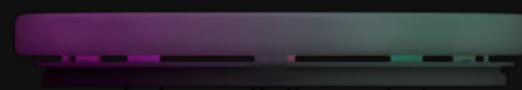
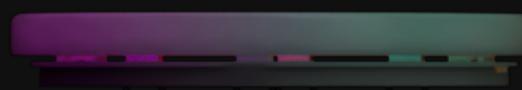


## CHALLENGES

- Combine fun with learning
- Build the device from scratch

# FUTURE WORK

- RFID Cards representing characters, settings or other elements of the story, in order to adapt it to the user
- Possibility to implement many other new games
- Interacting with other smart objects in the park (ex. ABBOT)
- Capacitive fabric instead of buttons
- Study the need of person with disabilities
- Visual tool for teachers and therapists to configure GAIA





# THANKS FOR THE ATTENTION

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