Quality development at Heureka The Finnish Science Centre

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Heureka background

- **Finnish Science Centre Foundation 1983 -> Heureka Science Centre 1989**
- **We are a cultural and educational institution and our mission is to introduce the public to science and technology in an engaging and interactive way.**
- **Heureka's operations are subsidized by the Ministry of Education and Culture and the City of Vantaa.**

Finnish Science Centre Foundation

Founding members

- Aalto University
- Central Organisation of Finnish Trade Unions
- City of Vantaa
- Confederation of Finnish Industries, EK
- Federation of Finnish Learned Societies
- Ministry of Education and Culture
- Ministry of Employment and the Economy
- Ministry of Finance
- Trade Union of Education in Finland
- University of Helsinki

Heureka experiences

- **INSPIRES:** you can experience and learn about science and technology in an exciting hands-on environment.

- **COMMUNICATES SCIENCE:** explains science in an empowering and understandable way.

- **MOTIVATES:** enhances the motivation of students of all ages to learn and study.

- **EDUCATES:** deepens the learning experience of all visitors.

- **HAS AN IMPACT:** influences the attitudes of students and parents encouraging scientific career choices of young people.

Why do people really come to Heureka?

THEY WANT TO

- have fun
- experience something new
- learn something new

Desire to get to know yourself better and to become a better human

> They are waiting experiences
- with no stress or compulsion
- with "appropriate" challenges
- "tailored for me"
- including social interaction

> BEST EXHIBITION IS "NO EXHIBITION"

Heureka experience production

Heureka services / Number of visitors 2023

SCIENCE
EXHIBITIONS
348 000

PLANETARIUM
MOVIES
137700

SCIENCE SHOWS
61500

LEARNING
PROGRAMS
32000

EVENTS
15500

Fixed price for all services
-Adults 24/22 €
-Children 5-17 years, students 17/15 €
-below 5 years free

# We are especially known for our exhibitions

-from 1980's on - dozens of interactive science exhibitions - own productions, co-produced in consortiums and imported (localised) exhibitions
-very experienced staff
-wide perspective - from classical "cookbook exhibits" to modern immersive narrative exhibitions
-Heureka Overseas Productions Ltd - export branch, from 1996 on

Heureka is today a rare exception among science centers in Europe producing and designing most of its exhibitions by itself

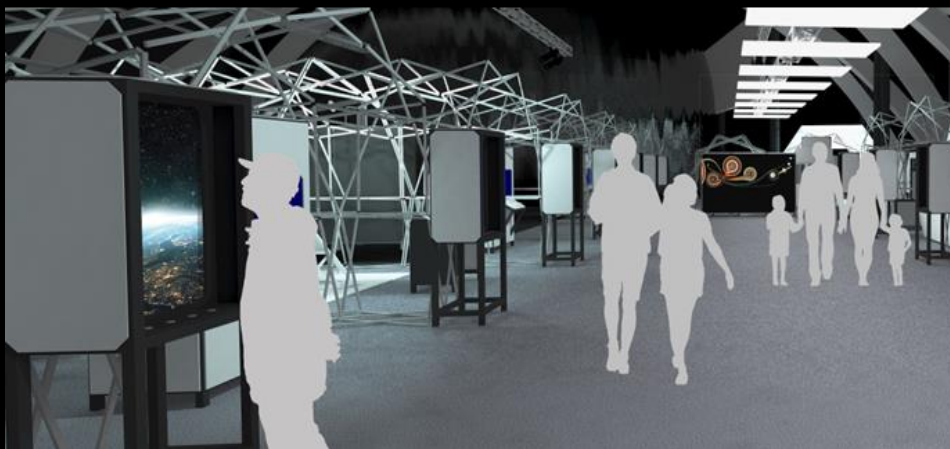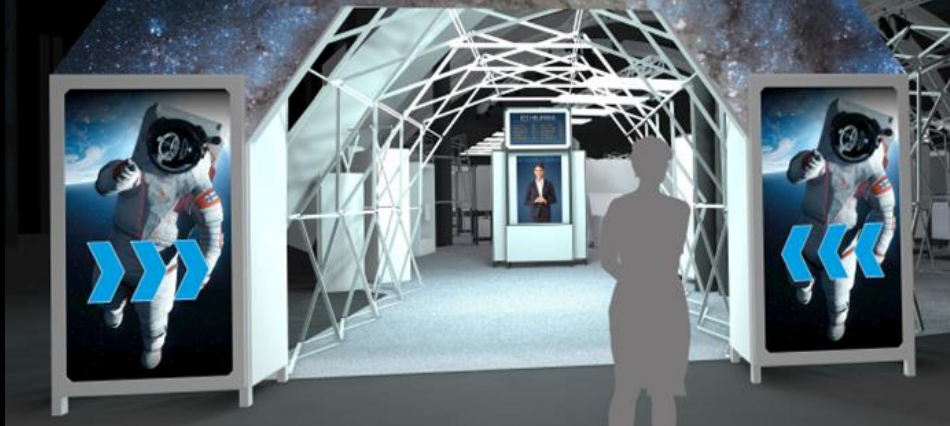The Power of Play 2023-2024
The importance of playing
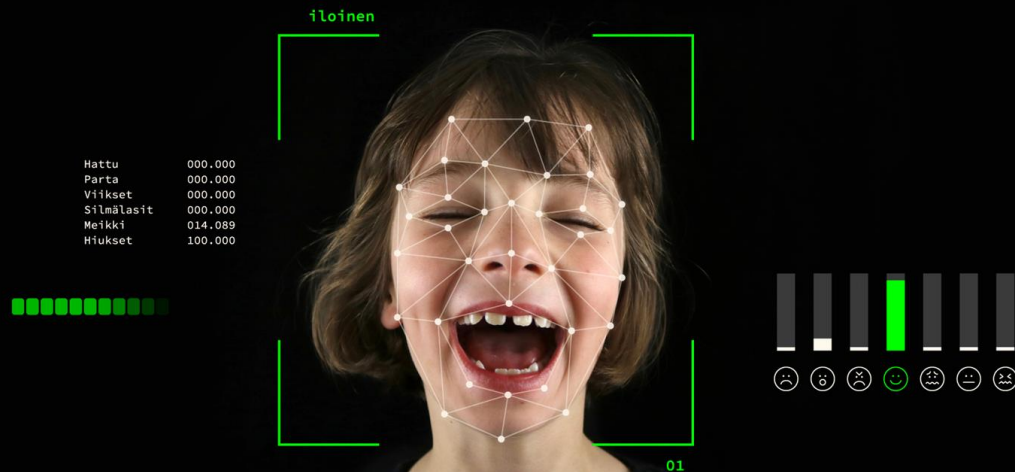
Me, Myself and AI 2022-
Artificial intelligence

MATKALLA
AVARUUDESSA

VÅR RESA I RYMDEN | OUR JOURNEY IN SPACE

10.2024-
01/2026

Other recent exhibition themes

- <u>Heureka goes crazy</u> - mental health 2013
- <u>Going Underground</u> - mining and underground construction 2014
- <u>7 siblings from the future</u> - future of Finland 2017
- <u>Mind your brain</u> - brain health 2018
- <u>Circular factory</u> - circular economy 2019
- <u>Wild Wild Wood</u> - wood materials 2020
- <u>Facing Disasters</u> - resilience 2021
- <u>Me, myself and AI</u> - artificial intelligence 2022
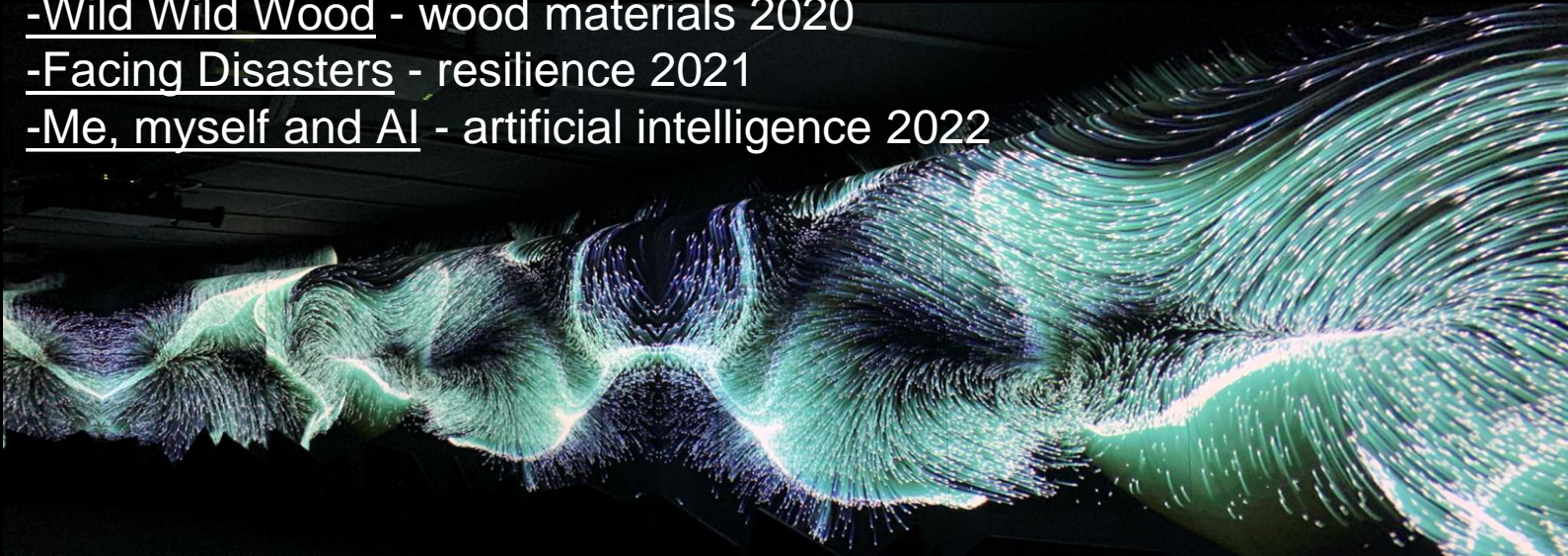
Planetarium

-135 seats
-8-12 shows a day rotating 3-4 films (between 11 am to 7:15 pm)
-average film 25 min.

Events

Science Night
Family days

Space weeks
Robo weeks

Science Night Live!

H 18:
Halloween
Valentine's day

Halloween
Heurekassa

H18

Heurekassa tapahtuu outoja asioita
Pe 3.11. | 19–24 | K18
Liput 15 € ennakkoon | 17 € ovelta
Osta nyt: heureka.fi

Learning programs

Idea workshop
Maker Space

Science camps
Science clubs
Laboratories

Science shows

Rat basketball

Premises

-about 3000 m2 of exhibitions
-two halls for temporary exhibitions
(Vaulted hall and Cube hall),
-Cylinder hall for contemporary thematic
exhibitions and
-Pillar hall for Heureka "Classics"
-Galilei science park outside
-Planetarium
-Three laboratories and a Makerspace
-Science Theatre
-SHOP
-Restaurant
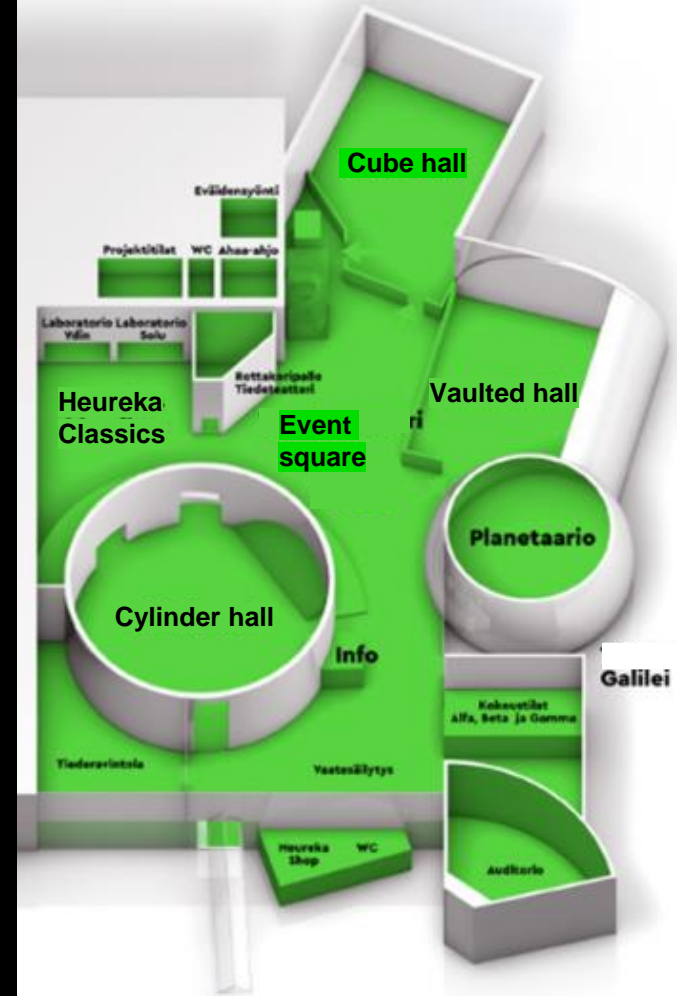
Quality of our experiences / Features of science exhibitions

"Art is a lie that enables us to realize truth."
Pablo Picasso

Exhibitions / Informal learning

What do visitors learn when they visit an exhibition?

- Knowledge and skills
- Awareness of entities
- New perspectives
- Motivation and interest
- Social learning

"Interactives and visitor learning" by J.Falk et. al. in Curator, April 2004

The Exploratorium, San Francisco

Observations as a source

what's going on in the world,
what's going on in me,
how do the events manifest?
"Experiences informed by science, inspired by art and guided by visitor encounter"

Interesting approaches

Visitor orientation - Me, myself and I
Novelty - surprising perspectives

Interaction

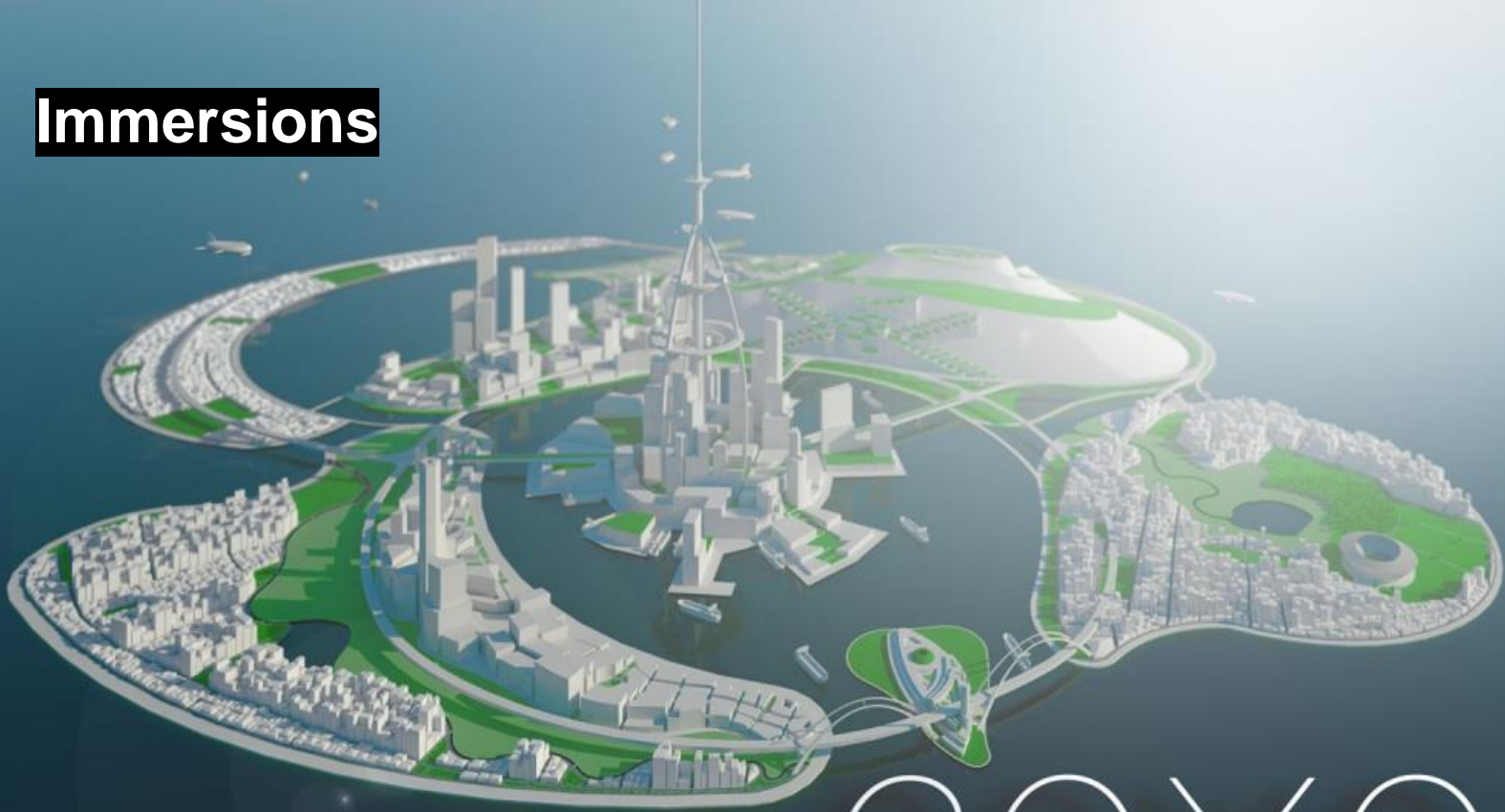Making together
Different visitor profiles
Multi-sensory experience

Evoke emotions

Emotions are an important part of learning

Immersions

Embedding the content to stories

20X0
A JOURNEY INTO THE FUTURE
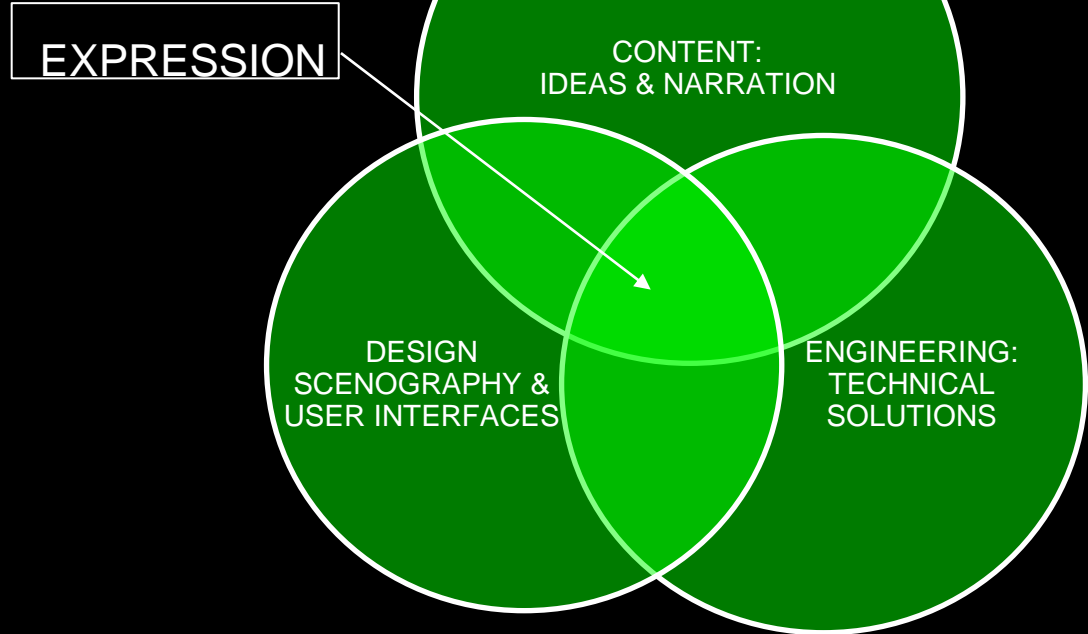
Exhibit design - Accessibility

Meaningful tasks (max 3 minutes)
and clear user interfaces

Exhibition Design / Exhibit Expression

Content is the king, but...

Knowledge management in Heureka
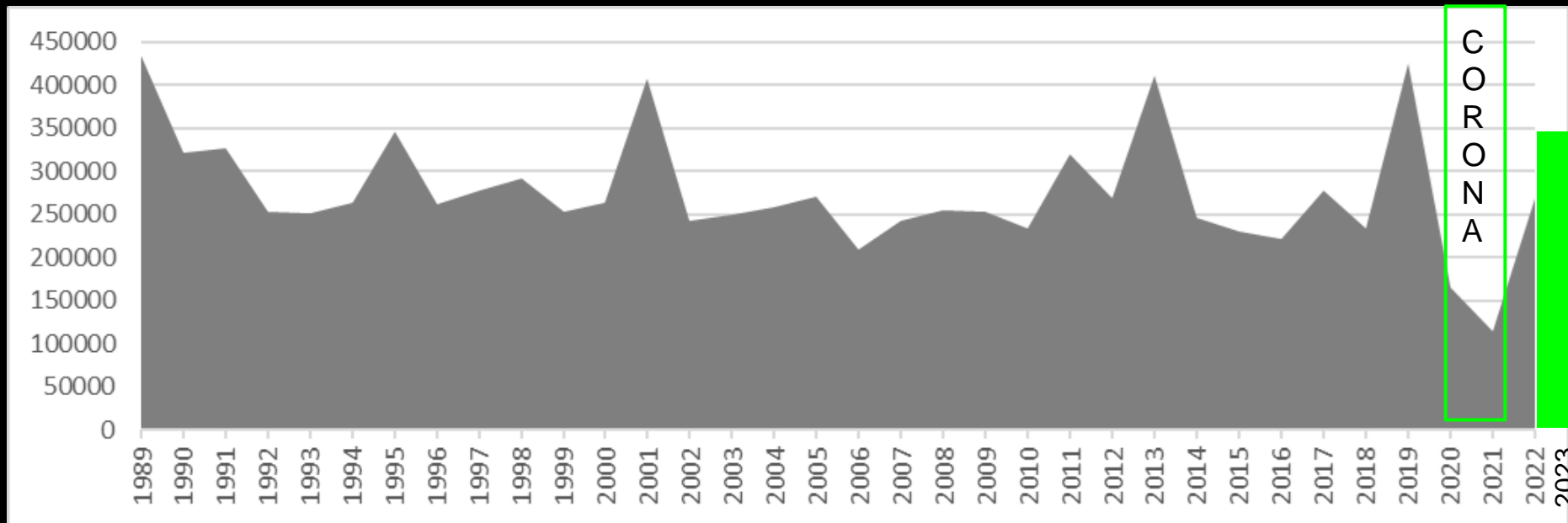
Heureka / Annual amount of visitors

Knowledge management status

-We are in the early steps of our knowledge management development

<u>-We make</u>

- over 1000 visitor surveys every year (peak seasons)
- front-end studies in the beginning phase of every exhibition design project (qualitative interviews, about 50)
- a separate survey of every exhibition after opening -exhibition feedback target >4.0 (1-5 scale)

<u>-Things we would like to know better</u>

- How well our exhibitions are performing (visit time, malfunctions…)
- How well certain single (key) exhibits perform (usage, capacity…)
- >more and relevant quantitative data to supplement qualitative information
- What do the visitors get (learning…)
- Need for supporting services (guidance…)?
- ->What kind of indicators we should develop?
- ->What kind of data we really need to be able to analyse these issues?

Exhibition data

-Need for better understanding of the performance and quality of our exhibitions & services

-We are currently collecting usage data from some exhibits

-Data collected from exhibitions
- Heureka Classics
- Me, myself and AI
- The Power of Play
- Facing Disasters (closed 01/2024)

Data collection / Cases

Case 1: Total amount of visitors

Data: Daily amount of visitors 2023 (visitors2023.xlsx)

Questions:

-seasonal fluctuations,

-day of the week variation,

-which statistical variables best describe the importance of visitor data for services

Case 2: Heureka Classics exhibition

-Long time, permanent exhibition
-Data: language selection button presses (finnish, swedish, english, russian, easy finnish)
-Data: Classics.xlsx
-Questions: actual number of users, language policy (do we need all these languages)

Case 3: Facing Disaster exhibition / Hello! exhibit

-Entry level resilience
-Task: record a greeting to the
exhibition visitors and share it
Data: Natural disasters.xlsx
-Questions: usage, completion rate?

Case 4: The Power of Play / Electric Roulette exhibit

-Daring play exhibit
-Task: Put your hands on the table and wait who gets electrocuted
-Data: Power_of_Play.xlsx (LV17)
-Questions: very popular exhibition
> use, capacity?

Case 5: The Power of Play / Tail skipping exhibit

-Task: *Step into the round play area and press the button in the middle. Jump over the ray of light.*
-Data: Power_of_Play.xlsx (LV18)
-Questions: very popular exhibition
> use, capacity?

Case 6: Me, myself and AI / Poetry machine exhibit

-Simple generative AI language model
-Task: generate a poem phrase by phrase with help of AI
-Data: Me_myself_and_AI.xlsx
Questions: quite a long task > completion rate? capacity? Saturation?

Case 7: Me, myself and AI / Mind reader exhibit

-Early stage AI form 1950's
-Task: Compete with AI, AI learn your behavior step by step, 100 steps
-Data: Me_myself_and_AI.xlsx
Questions: quite a long task
> completion rate?
-addictiveness > restarts
> capacity? saturation?
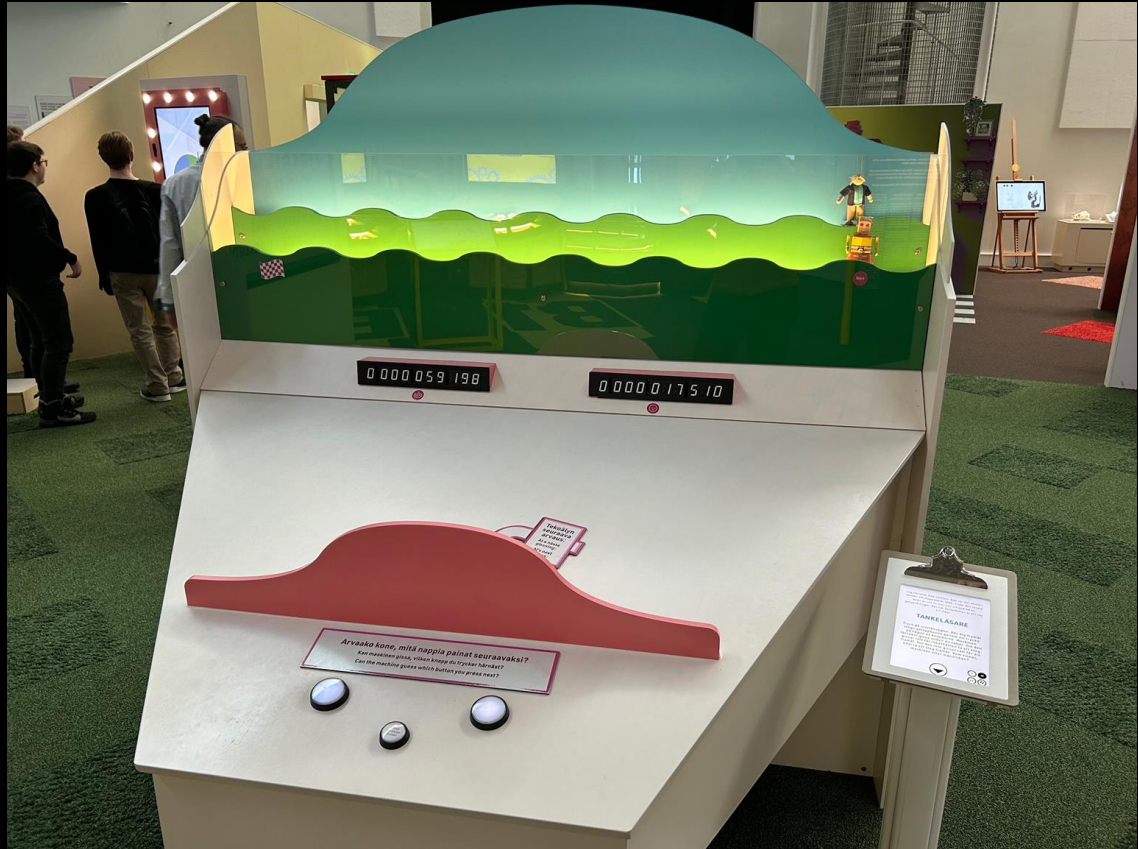
Thank you!

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