

# Change your Perspective

## Interaction with Open Data in Virtual/Augmented Reality

Think Tank, May 3<sup>rd</sup> 2016, Malmö, Sweden



# I. VR Introduction

Augmented vs Virtual Reality

Terminology: Immersion vs Presence

Virtual Reality in more detail + use cases

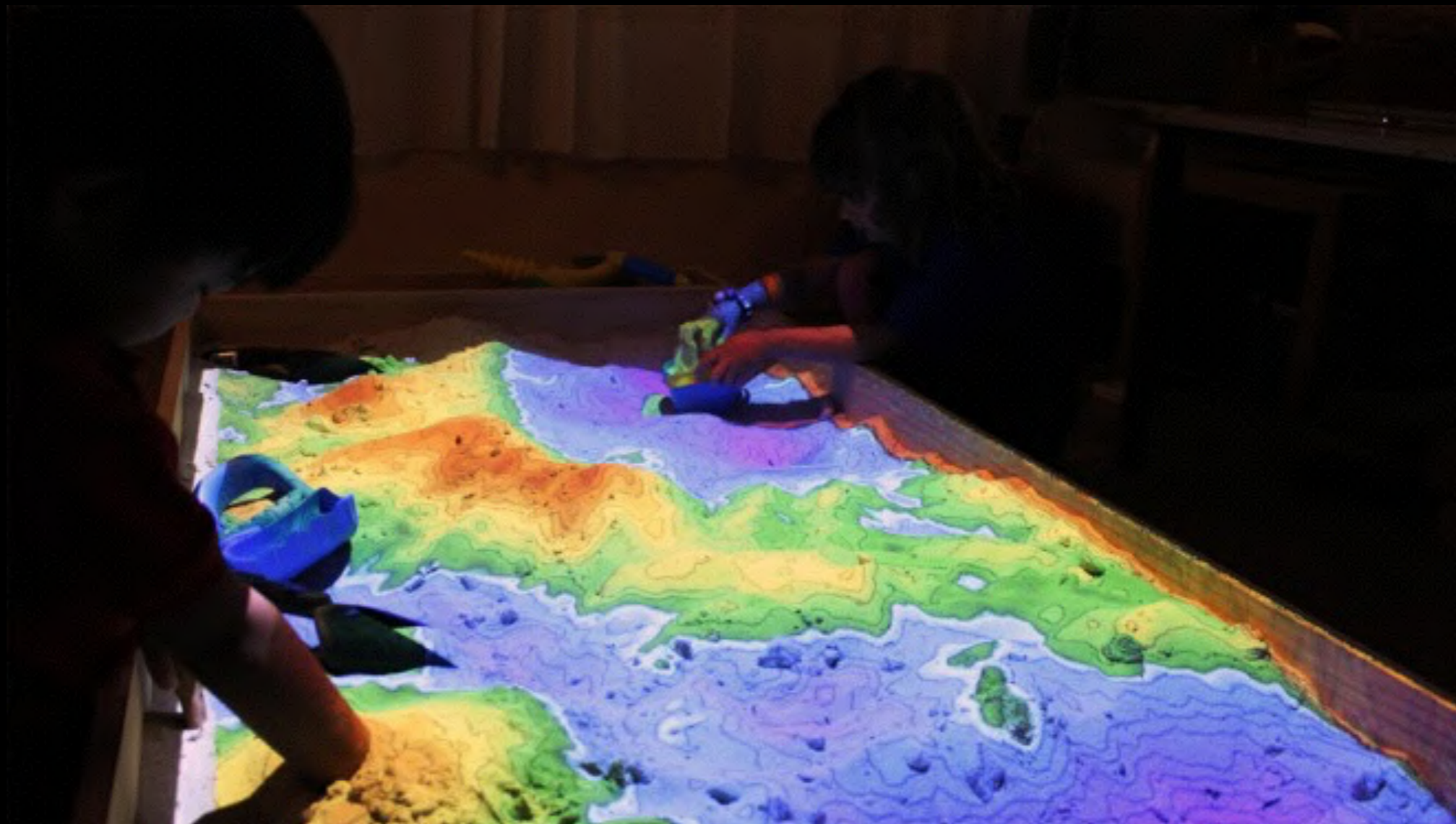
# II. Interaction with Open Data in Virtual Reality

# III. Interaction with Open Data in Augmented Reality

# I. VR Introduction

## Augmented Reality (AR)

Extending (“*augmenting*”) the real, physical world by adding digital information.



## Virtual Reality (VR)

Creation of a truly virtual world. A differentiation between what is real and what is not is often difficult.



via [bit.ly/VRFocus-Vive-Promising](https://bit.ly/VRFocus-Vive-Promising)



via [bit.ly/BI-Vive-FirstImpress](https://bit.ly/BI-Vive-FirstImpress)

## **Immersion**

“Immersion refers to the objective level of sensory fidelity a VR system provides.”

## **Presence**

“Presence refers to a user’s subjective psychological response to a VR system.”

User feels like being **in** the virtual world.



# CAVE: Cave Automatic Virtual Environment



via [bit.ly/IMG-Wiki-CAVE](https://bit.ly/IMG-Wiki-CAVE)

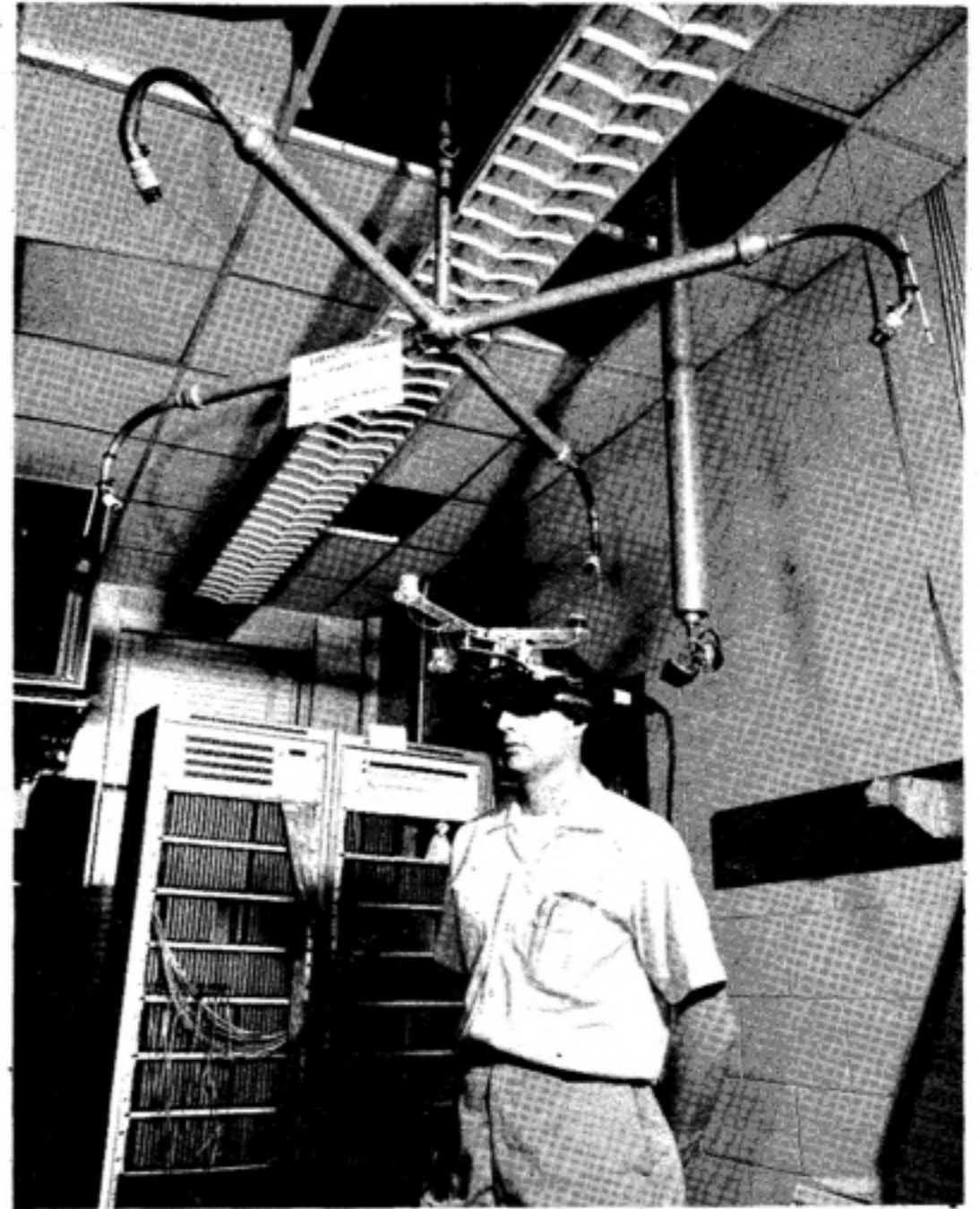
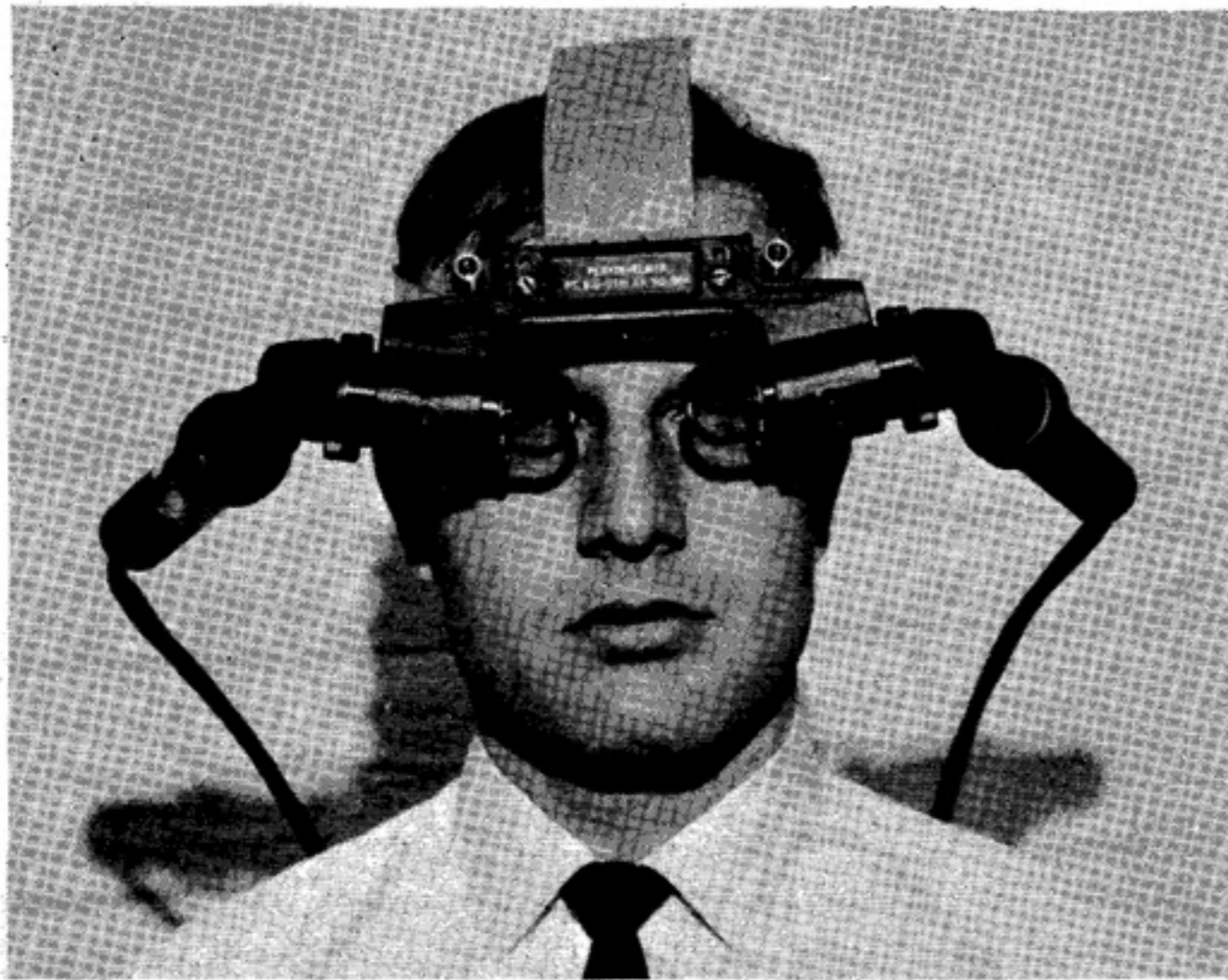
# HMD: Head-Mounted Display



via [bit.ly/IMG-Wiki-HMD](https://bit.ly/IMG-Wiki-HMD)



The very first VR/AR HMD by I. Sutherland:  
"The Sword of Damocles"



via [bit.ly/HMD-Sutherland68](https://bit.ly/HMD-Sutherland68) and [bit.ly/HMD-Sutherland-VideoDemo](https://bit.ly/HMD-Sutherland-VideoDemo)

# Oculus VR



# HTC Vive and PlayStation VR



via [bit.ly/Vive-DevFuture](http://bit.ly/Vive-DevFuture)



via [bit.ly/PS-VR](http://bit.ly/PS-VR)



# Google Cardboard



via [bit.ly/VR-GoogleCardboard](http://bit.ly/VR-GoogleCardboard)



# VR and the museum of the future



# Kentucky Route Zero: The Entertainment

HARRY:  
I was in a bar ...



# Netflix via Gear VR



# Titans of Space





# OccultUs by Simon de Diesbach – Designing for alternate reality



# Oculus: Story Studio - Henry



via [bit.ly/OVR-StoryStudio-Henry](https://bit.ly/OVR-StoryStudio-Henry) and [bit.ly/OVR-StoryStudio-Intro](https://bit.ly/OVR-StoryStudio-Intro)



## Jaunt VR: The future of cinematic VR



via [bit.ly/JauntVR](http://bit.ly/JauntVR) and [bit.ly/NFS-JauntVR](http://bit.ly/NFS-JauntVR)



# Archaeological Data visualized with HTC Vive Dev Kit in UE4



via [bit.ly/Vive-DF-Archaeology](https://bit.ly/Vive-DF-Archaeology)



## II. Interaction with Open Data in Virtual Reality

Head-mounted display

Interaction

Open Data

Motion controls

Virtual Reality

Data Visualization

Immersion



Select the soundtrack

- Dream Player
- Mars and Stars
- The Living Physicist
- Unforgettable Fire
- French Story



Subtitle: Nisa Reflections

Colour:

- white
- blue
- green
- red
- gray
- black

SAMSUNG





### Tangible User Interfaces "Context-aware to-do lists"

Recent research has shown that Smart Home systems, interplay between software and hardware, in particular sensor technology can enhance human living situation in many different ways. There are often significant drawbacks though, e.g. the dimension of applied technologies, which is caused by the overall proprietary approach of system providers.

However, there are open and easily accessible sensor technologies - with Arduino leading the way - which might offer the same features as closed ones. Open Smart Home solutions may provide automated mechanisms to ease the everyday living routine, while setting up a stable foundation that is easily expandable.

#### The Scenario

The project "Context aware to-do lists" should use the existing home management, applying an open Smart Home approach. The system will be equipped with a personal computer, e.g. a tablet computer or a smartphone, which will present the tasks according to the room the resident is currently in.

Tasks can be created in different ways. In the future, the Smart Home is able to recognize patterns of the resident and will create tasks accordingly. Additionally, the Smart Home will be able to remind the resident to finish activities in the house, e.g. to turn off the stove, through the usage of motion and temperature and open markets tasks can also be added eventually.



#### Specifications

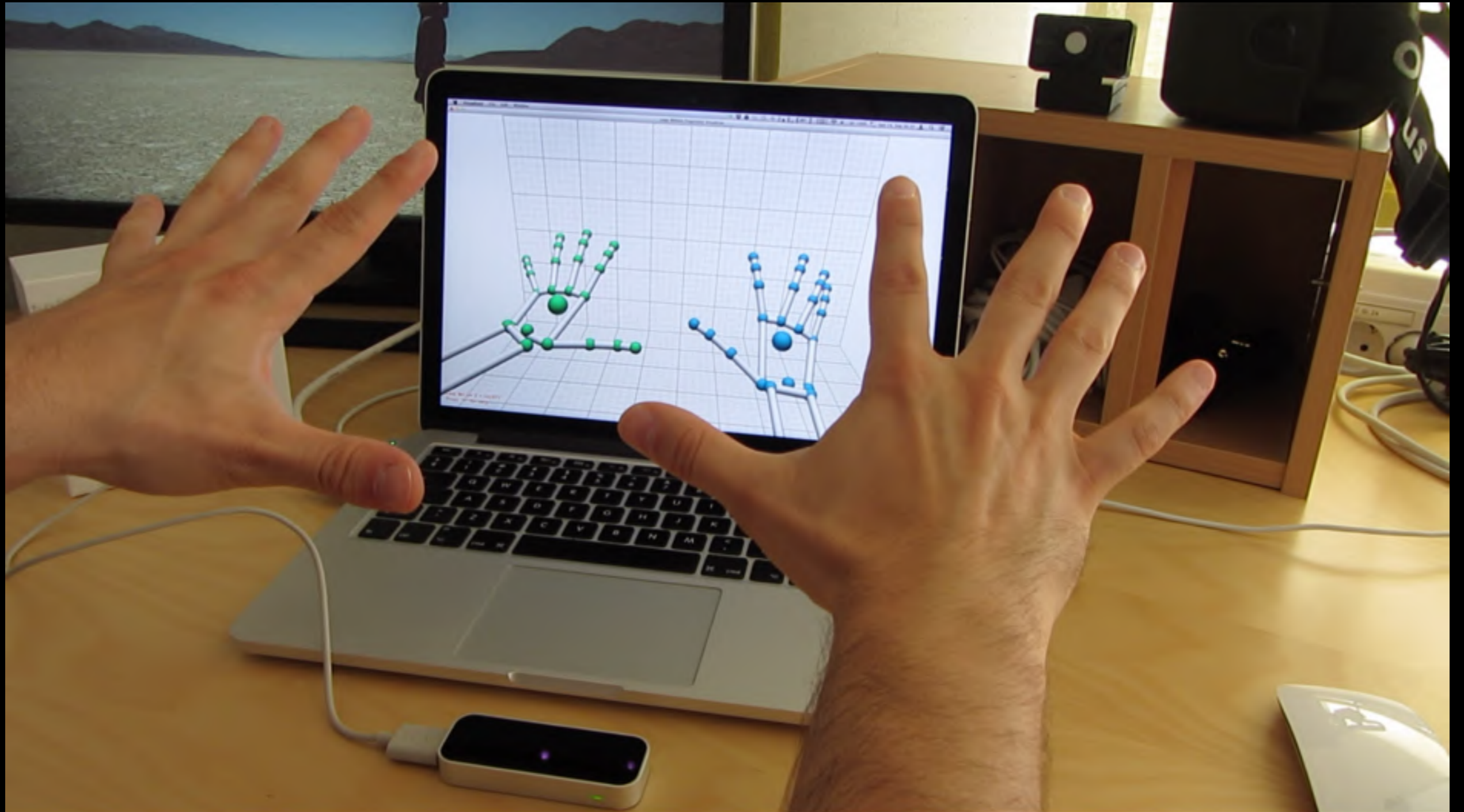
- Home Unit
  - run on each Smart Home
  - technical basis: Raspberry Pi
- Mobile Units
  - placed at each door
  - communicate with Home Unit via radio or wirelessly
  - equipped with battery sensor
  - Activation of user changes the room → triggers change within the to-do lists

Linnéuniversitetet













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The Free Encyclopedia

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# Växjö

From Wikipedia, the free encyclopedia

Coordinates: 56°52′37″N 14°48′33″E﻿ / ﻿56.877°N 14.809°E﻿ / 56.877; 14.809

**Växjö** ([ˈvɛːkːɨ̌ːɔː]) is a [city](#) and the seat of [Växjö Municipality](#), [Kronoberg County](#), [Sweden](#). It had 63,479 inhabitants as of 2013,<sup>[1]</sup> out of a [municipal](#) population of 85,000. It is the administrative, cultural and industrial centre of [Kronoberg County](#), and the [episcopal see](#) of the [Diocese of Växjö](#). The town is home to [Linnaeus University](#).

## Contents [hide]

- Etymology
- History
- Demography
- Environmental policy
- Notable locations
- Climate
- Notable natives
- Sports clubs
- References
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## Etymology [edit]

The city's name is believed to be constructed from the words "våg" (road) and "sjö" (lake), meaning the road over the frozen [Växjö Lake](#) that farmers took in the winter to get to the marketplace that later became the city.

## History [edit]



Växjö Cathedral

In contrast to what was believed a century ago,<sup>[2]</sup> there is no evidence of a special pre-Christian significance of the site. The [pagan cultic center](#) of [Varend](#) may have been located at Hov, a nearby village.<sup>[3][4]</sup>

The city has been an [Episcopal see](#) since the 12th century, but did not get its city charter until 1342, issued by [Magnus Eriksson](#). During the Middle Ages Växjö did not have many pious institutions. A [Franciscan](#) monastery was established in 1485. There was a [hospital of the Holy Ghost](#), first mentioned in 1318. In the 14th century Växjö got its first school, [Växjö katedralskola](#). In 1643 it received [gymnasium](#) status.

At the beginning of [Gustav Eriksson's](#) war of liberation, the peasantry joined forces under the guidance of the union-hostile bishop [Ingemar Pedersson](#), the mountain men and the peasantry of [Dalarna](#), [Hälsingland](#) and [Gästrikland](#), who urged fidelity to the their

## Växjö, Sweden



Coat of arms

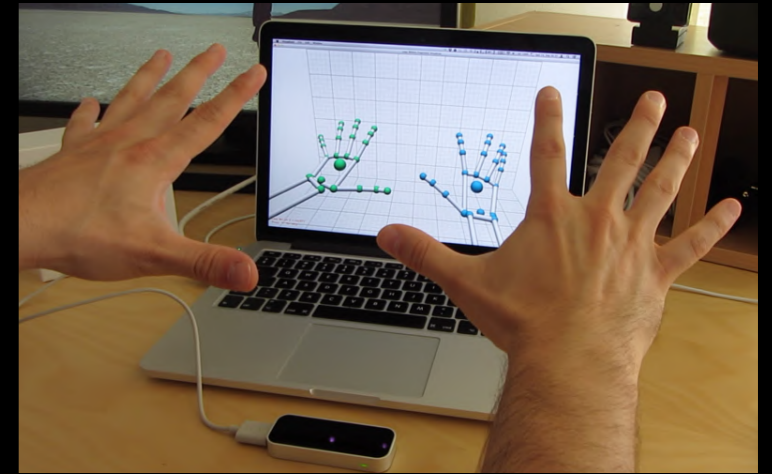




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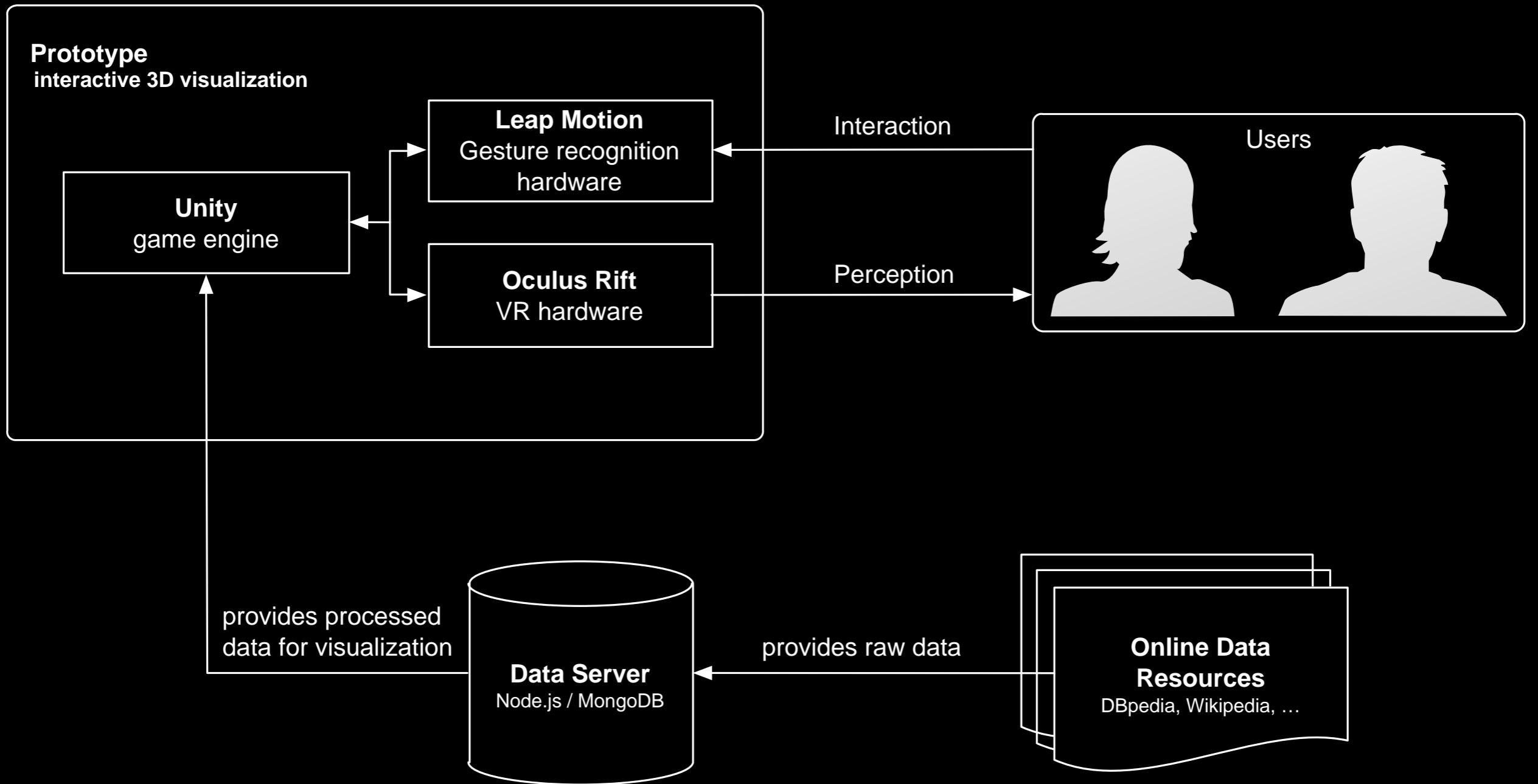


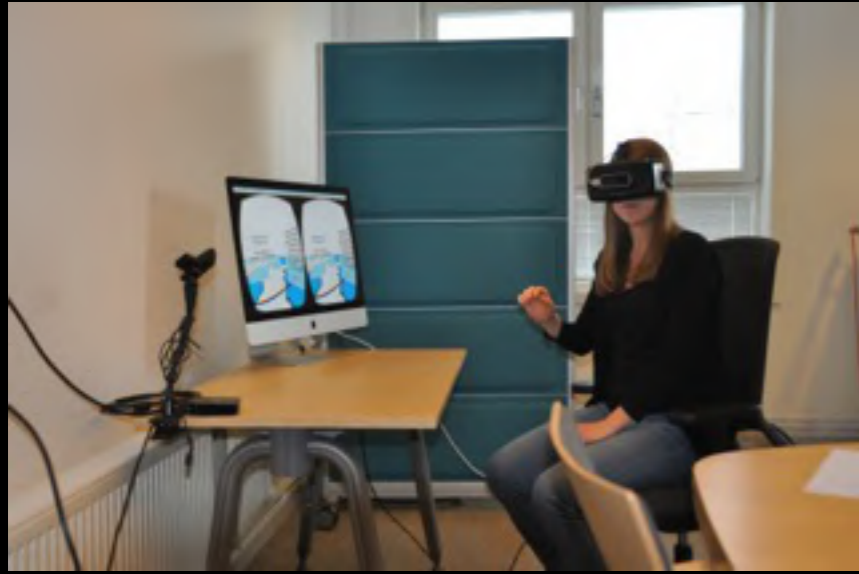
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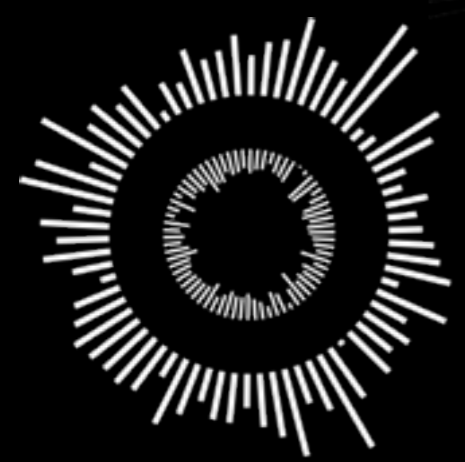










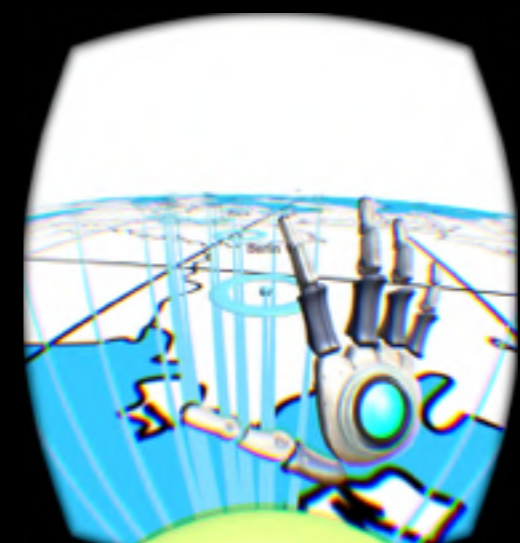
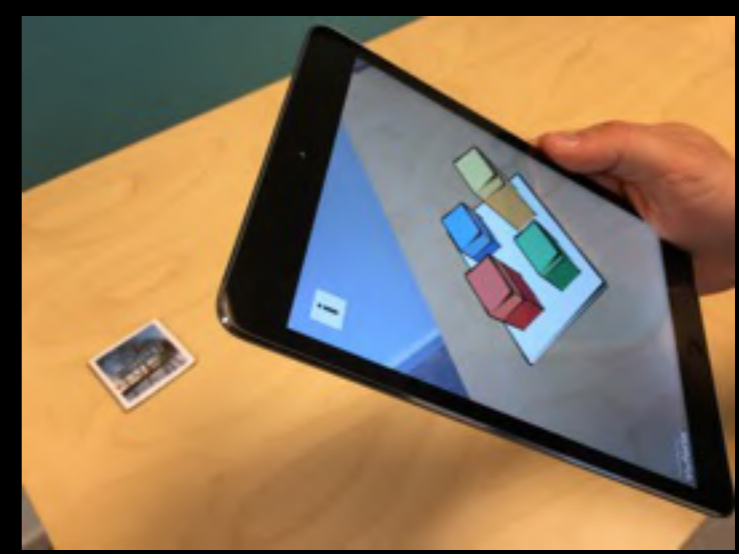
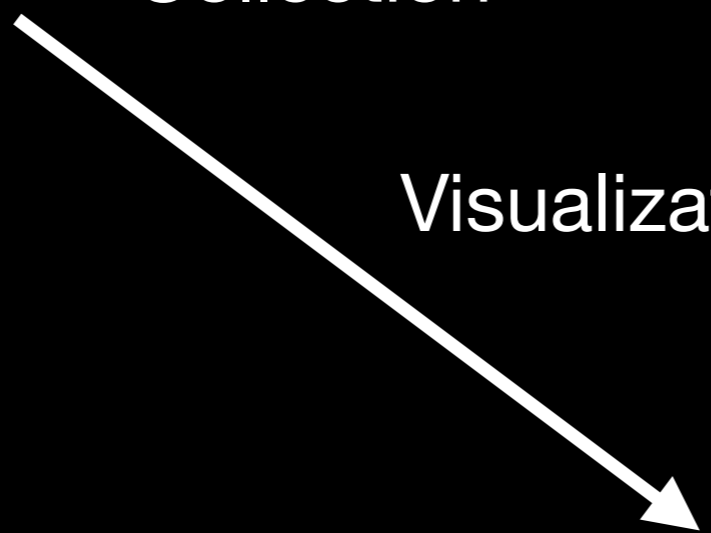


OPEN KNOWLEDGE

Collection

Visualization

Interaction





### III. Interaction with Open Data in Augmented Reality

# PEAR - Augmented Reality for Public Engagement



(2) Discussion and open data.  
Discussions evolve on Twitter, and  
votes are collected/counted over time.



(1) Raise your voice.  
Tweet **@Vaxjokommen** and  
**#votingOption** using your  
Twitter account.



(3) Explore the results.  
View and interactively explore  
the latest voting results  
by scanning the AR marker.



# PEAR - Augmented Reality for Public Engagement

## 3D bar (cuboid) chart

Each cuboid represents 1 voting  
option:

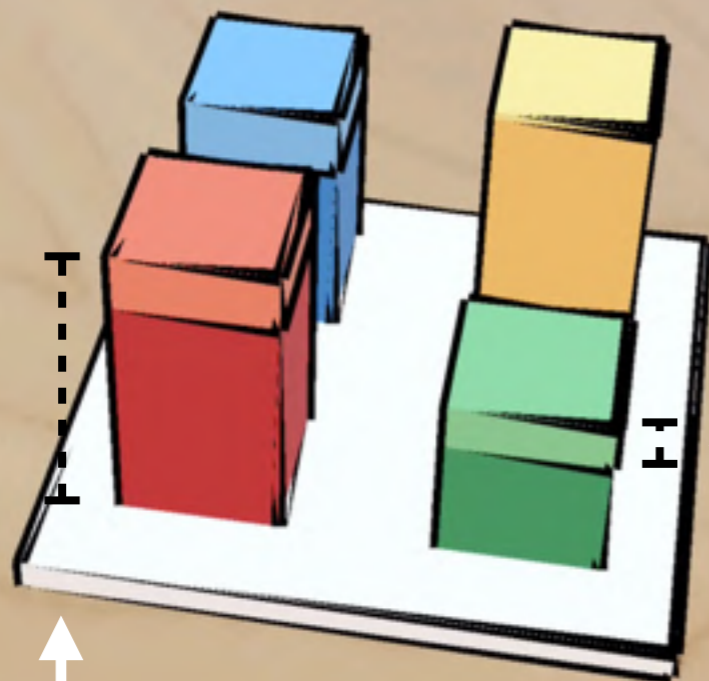
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[#matringsbergkristineberg](#)

[#odlaRingsbergKristineberg](#)

[#parkeringsringsbergkristineberg](#)





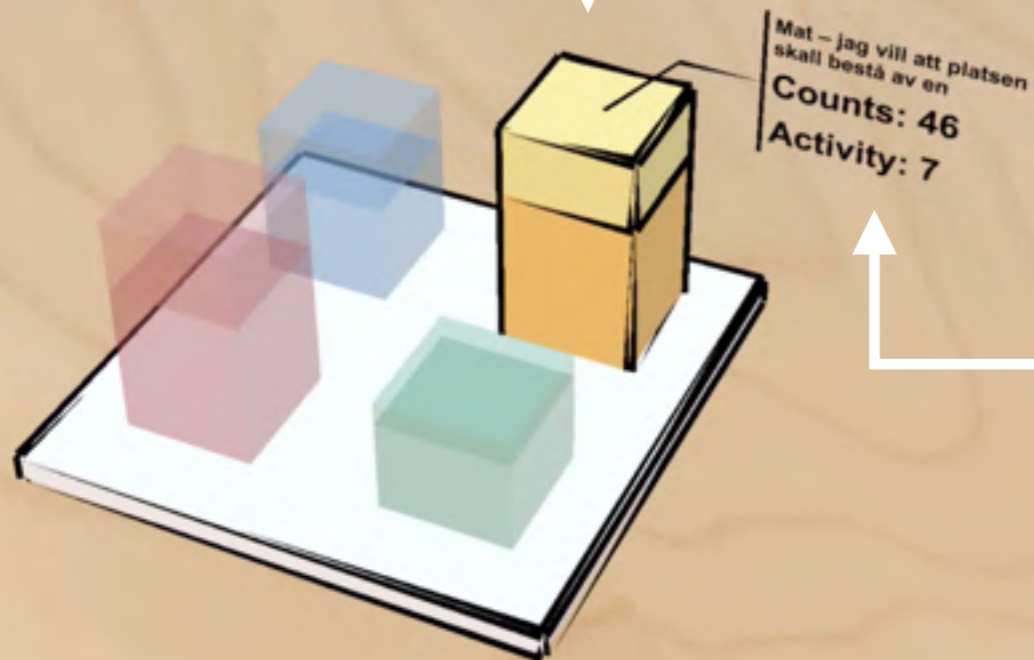
## PEAR - Augmented Reality for Public Engagement

Top part of the cuboid indicated the recent activity for a voting option.

Overall height of the cuboid indicates the sum all all votes.



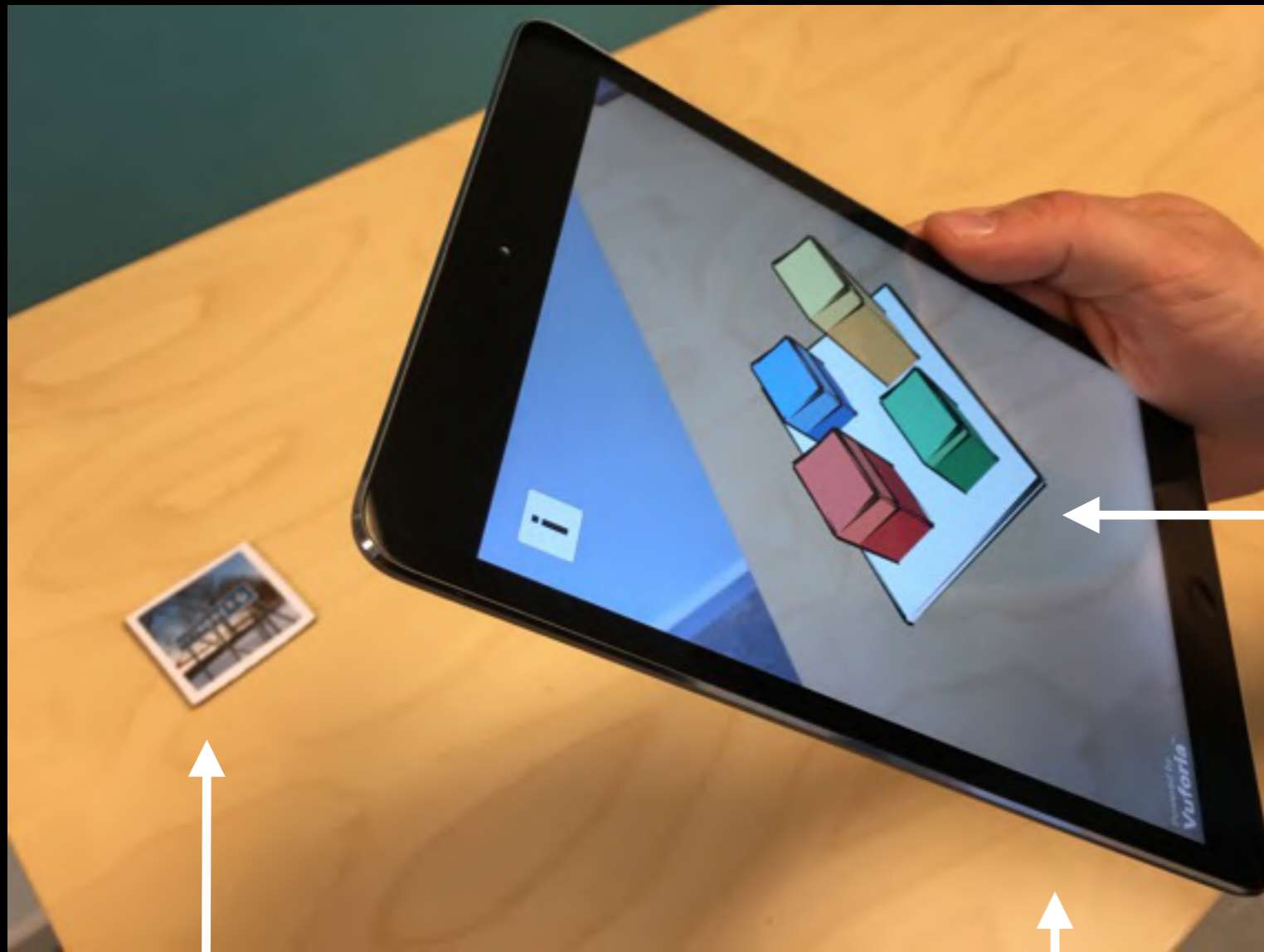
# PEAR - Augmented Reality for Public Engagement



Tapping with the finger on a cuboid...

... will reveal more information about this, selected, voting option directly attached to the cuboid.

# PEAR - Augmented Reality for Public Engagement



(3) Digital chart appears on screen, illustrating the latest voting results.

(1) Marker for Augmented Reality (AR)

(2) Tablet (or smart phone) pointing to a "AR Marker"



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PGP Fingerprint: E826 C9FF 1701 0BAC  
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