

Sensing Audience at the ADE: now and future challenges of interactive spaces

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on behalf of David Ayman Shamma



with





DISTRIBUTED & INTERACTIVE SYSTEMS

- We research technology and how people uses it to interact and communicate
- We build systems and test them with users

TECHNOLOGY OF TEXTILE

BYBORRE



YARNS

Natural

- Wool
- Hennep
- Cotton
- Silk

Synthetic

- Polyester
- Nylon
- Acrylic

Other

- Soy
- Bamboo
- Corn

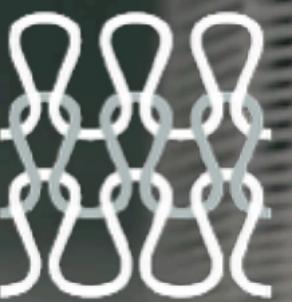
MACHINE

Weaving (Dornier)



MACHINE

Circular knitting (Santoni)

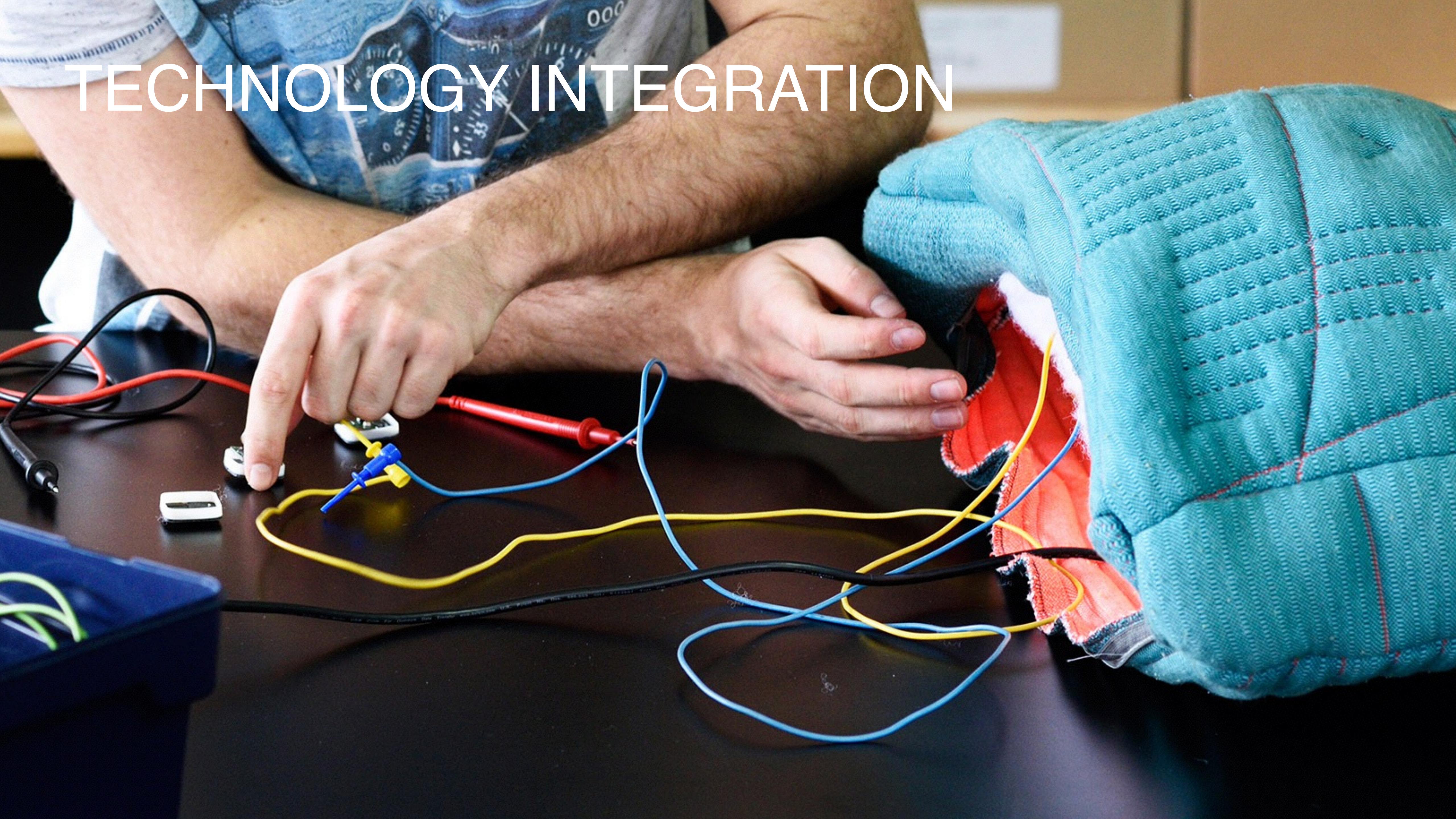


PROGRAMMING

Pixel to Needle



TECHNOLOGY INTEGRATION



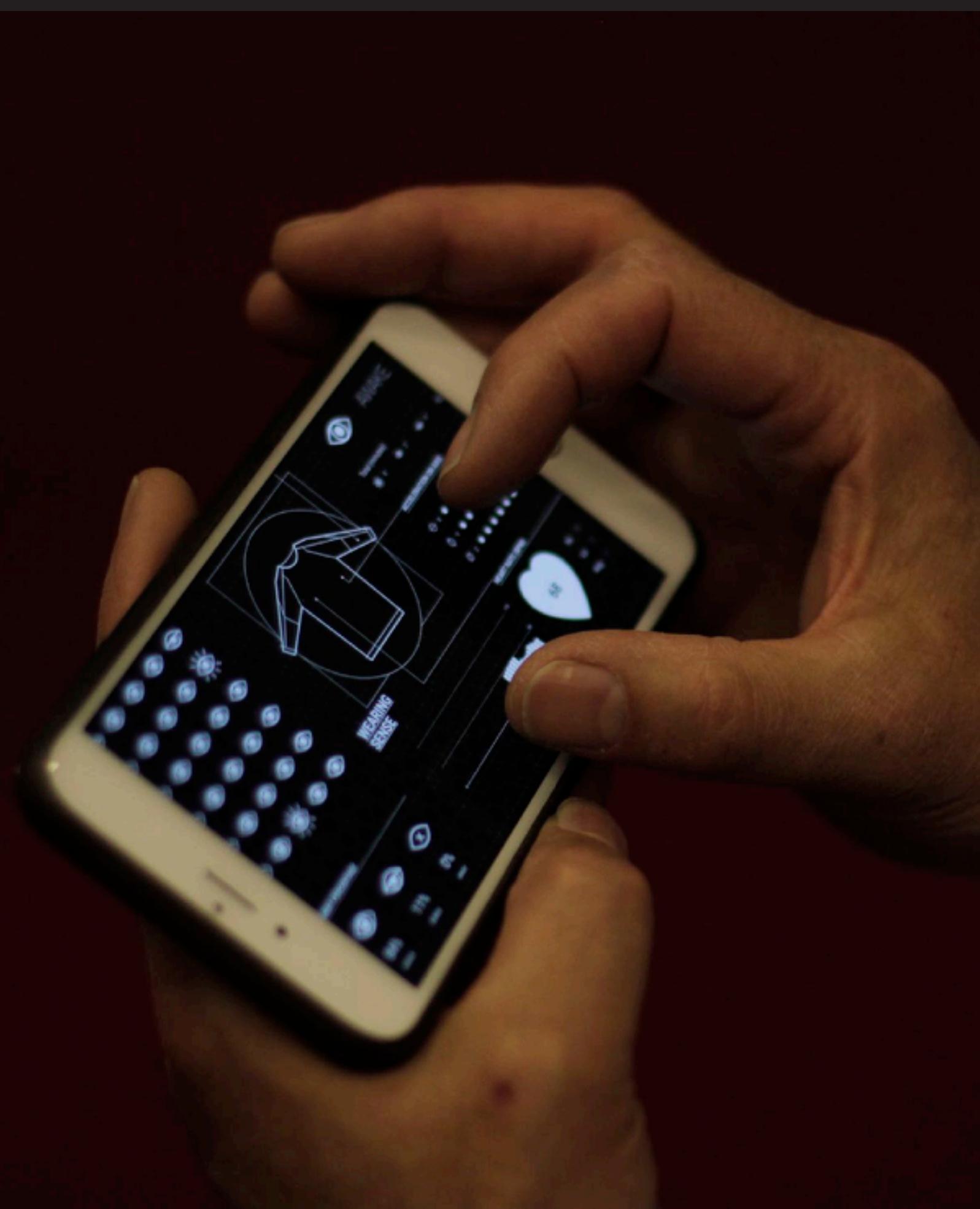
SOCIAL EXPERIMENT 1

(Lecture Case Study)



Performance

A single actor presents while the audience is measured.

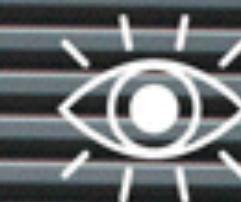


SENSOR TO SWEATER

GSR, HRM, Acceleration

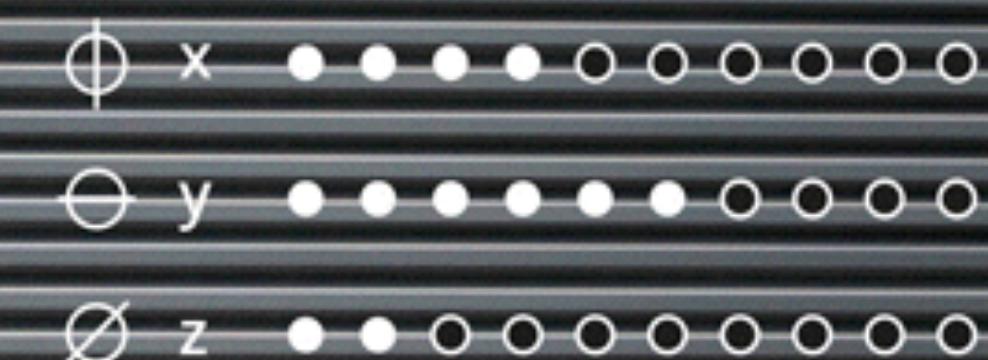


BORRE ENGAGEMENT

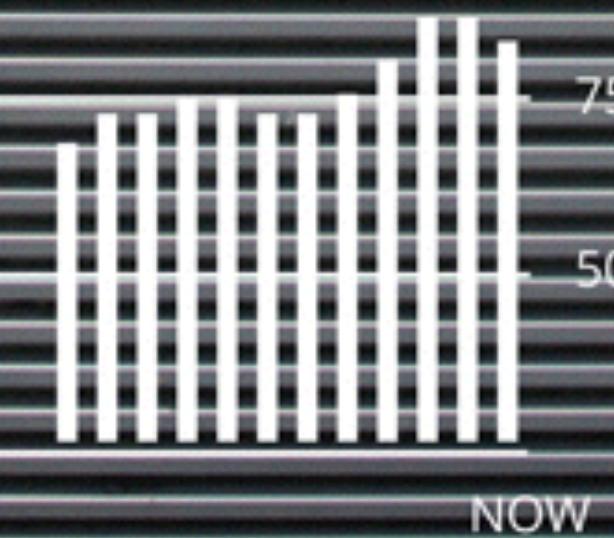


ENGAGED

ACCELERATION ON AXIS



HEART RATE (BPM)

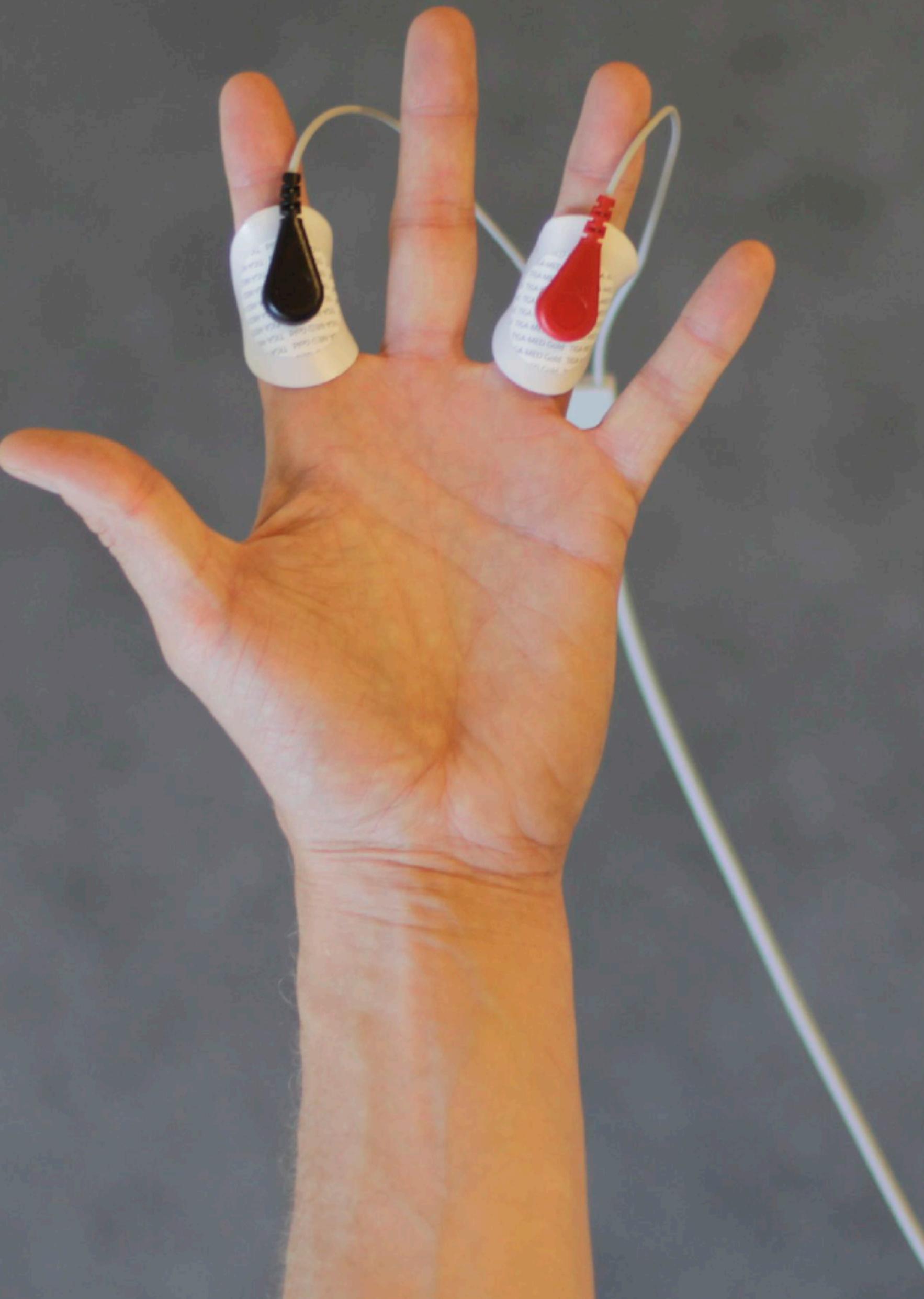


Hi: 108

Lo: 52

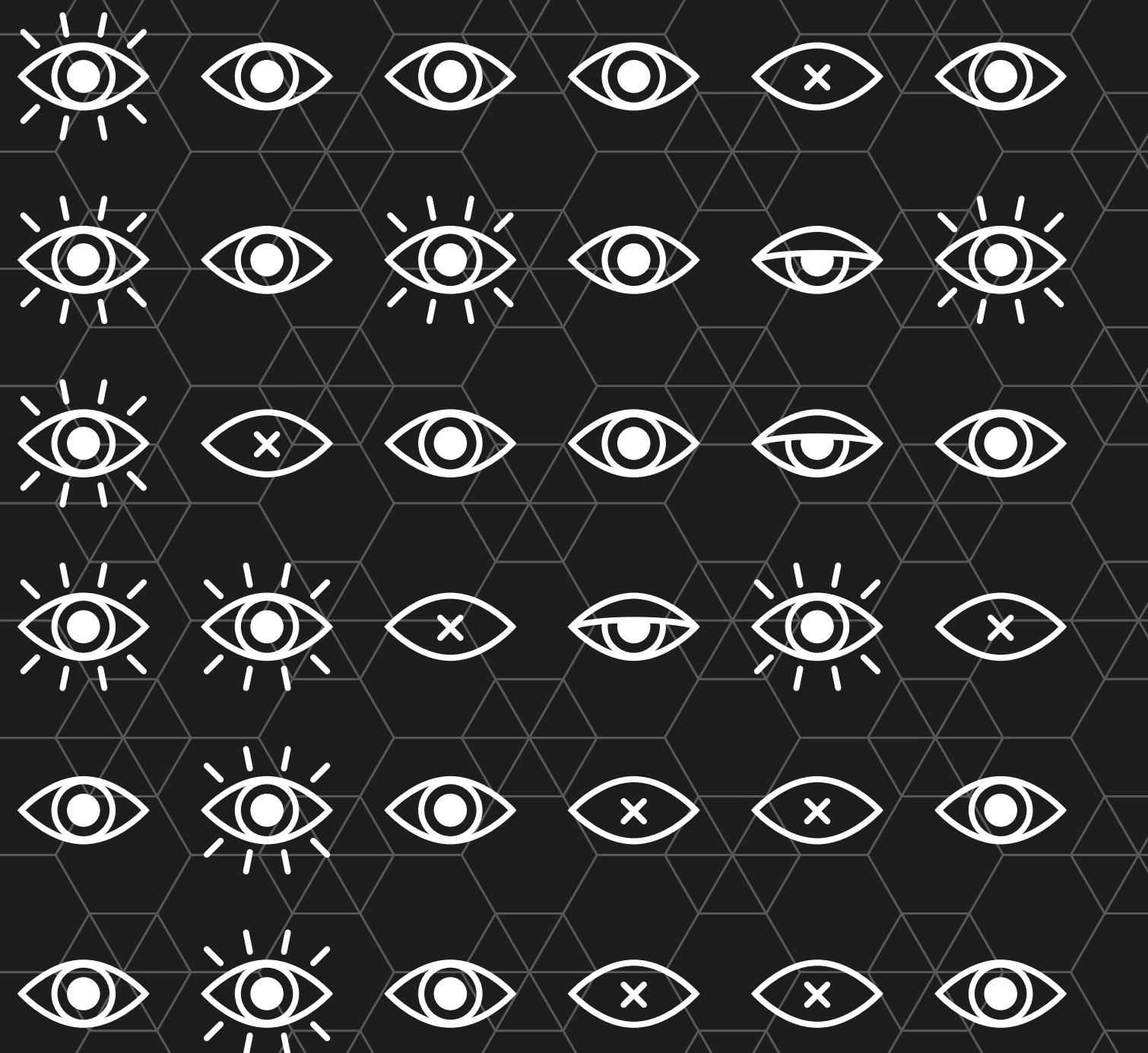
Avg: 70

AUDIENCE ENGAGEMENT

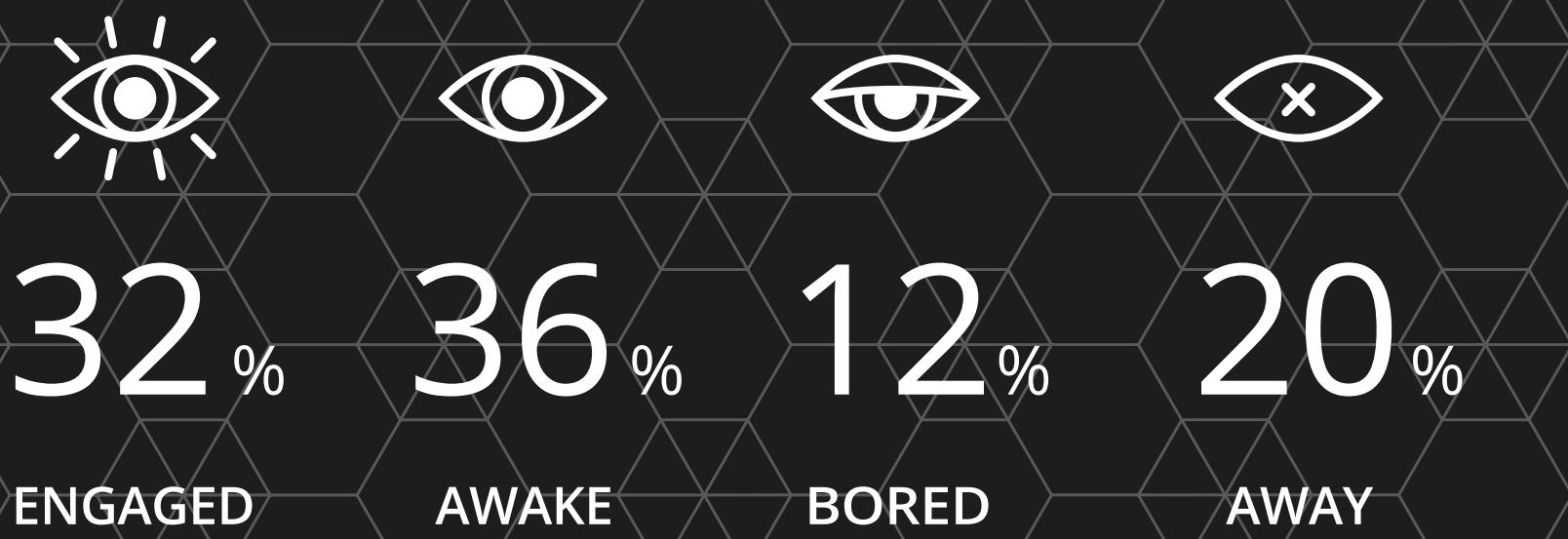


Alternative to Video

AUDIENCE ENGAGEMENT



AUDIENCE ENGAGEMENT PERCENTAGE



BORRE ENGAGEMENT

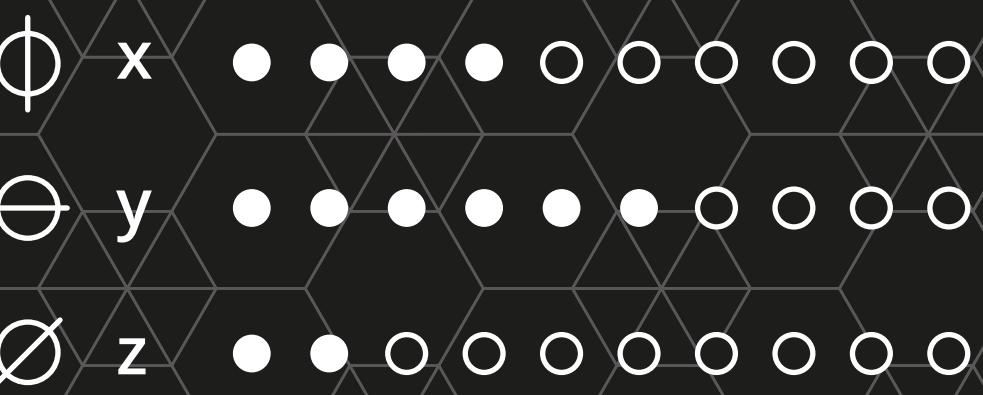


ENGAGED

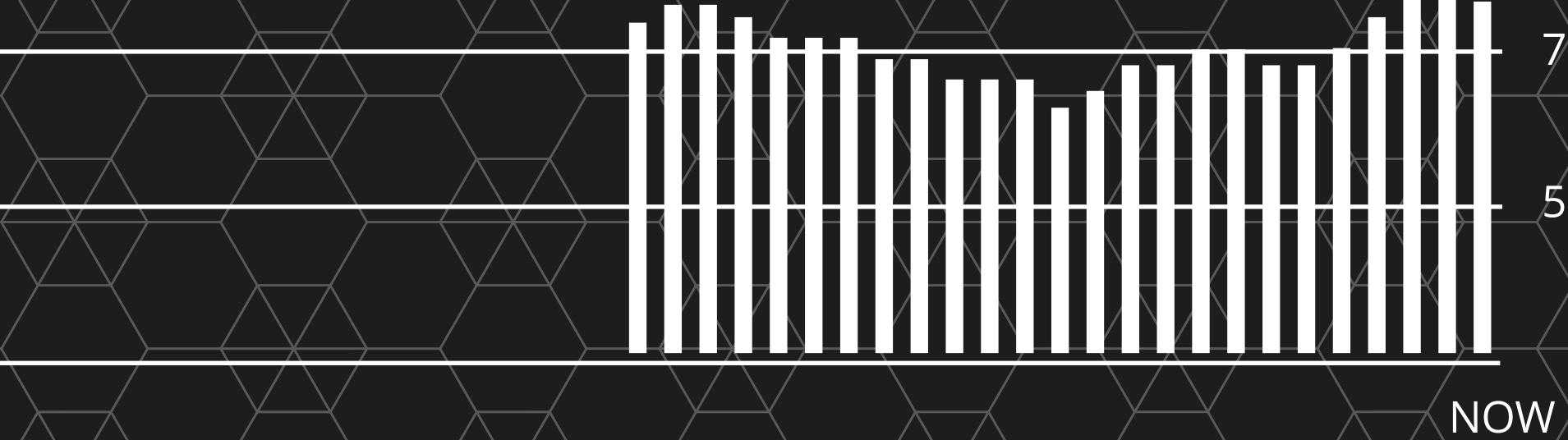
Total (minutes)

Eye 5' Eye 10' Eye 3' Eye 1'

ACCELERATION ON AXIS



HEART RATE (BPM)



Hi: 108

Lo: 72

Avg: 83

<https://vimeo.com/140198523>

SOCIAL EXPERIMENT 2

(The Club of the Future)



Clubbing is an experience of the senses...

...what if the club itself sensed us and talked back?

<https://www.redbull.tv/video/AP-1QJ3YTJCW1W11/playrooms>

What were we looking for?

- **Understand what people do in the club**
 - Recognise dancing
 - Count people in rooms
 - Follow people in the space
- **Make the club react to people**
 - Visual and sound stimuli
- **Put guests at the centre of the experience!**

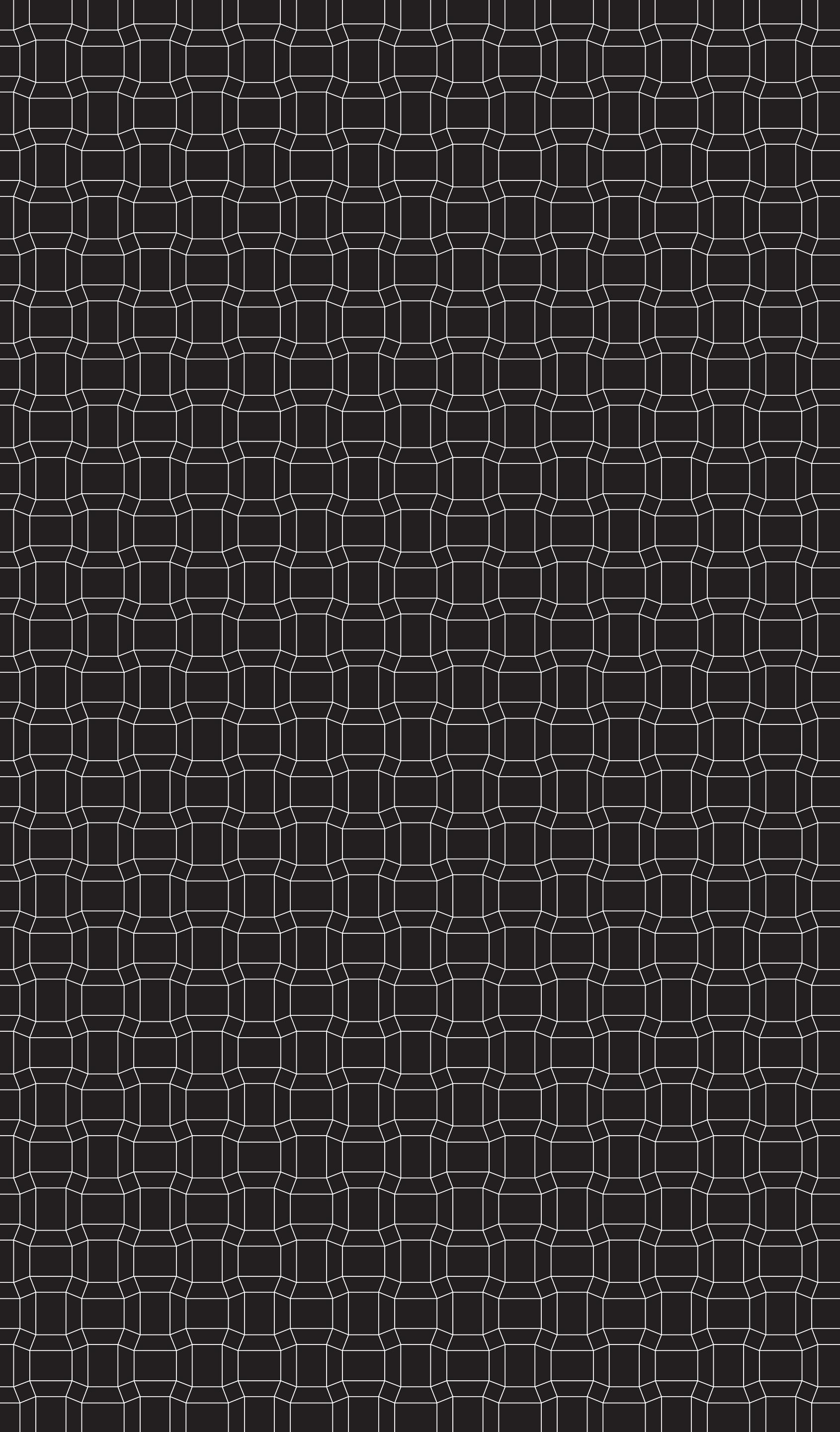
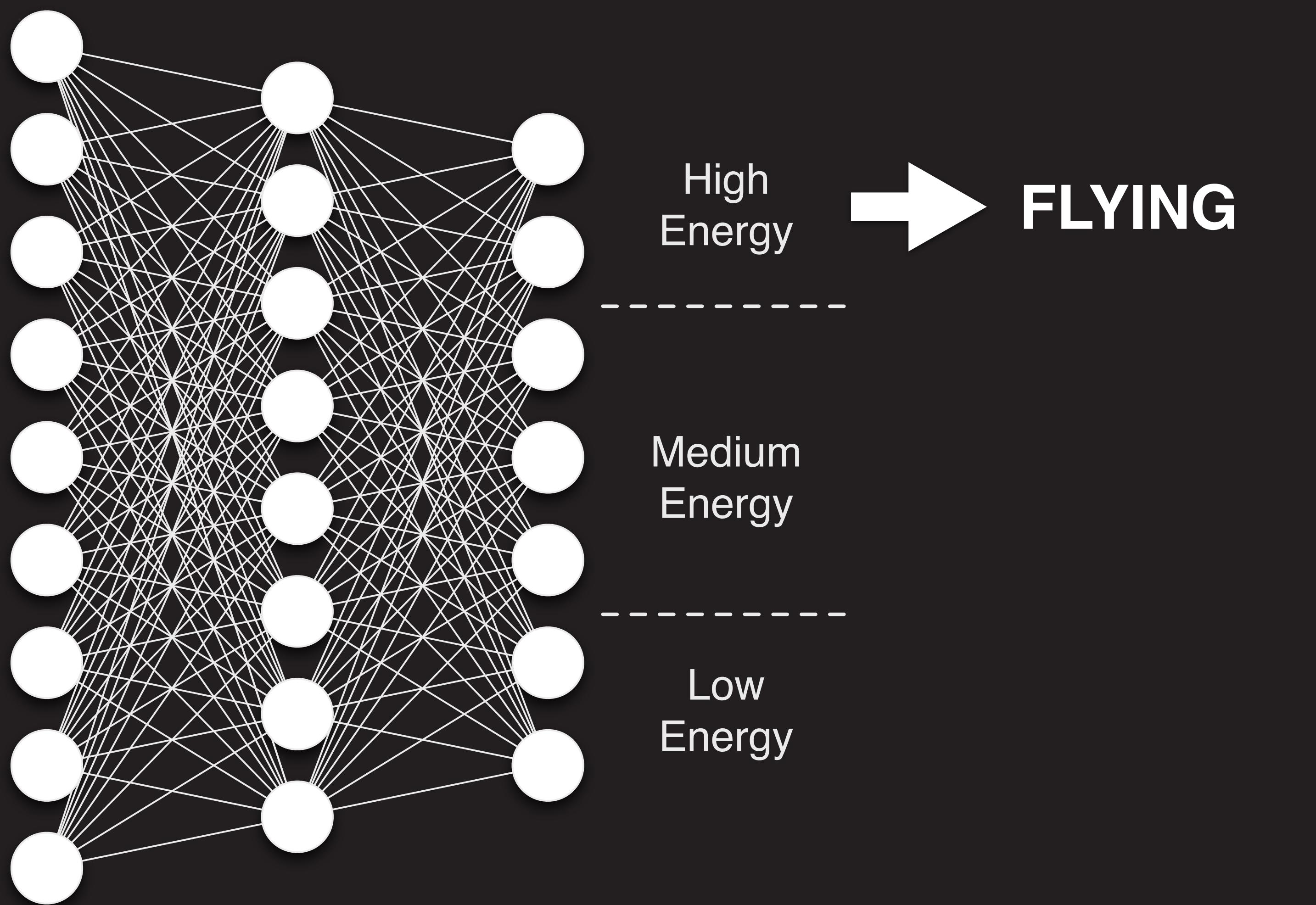
We tested a lot...



We even danced...

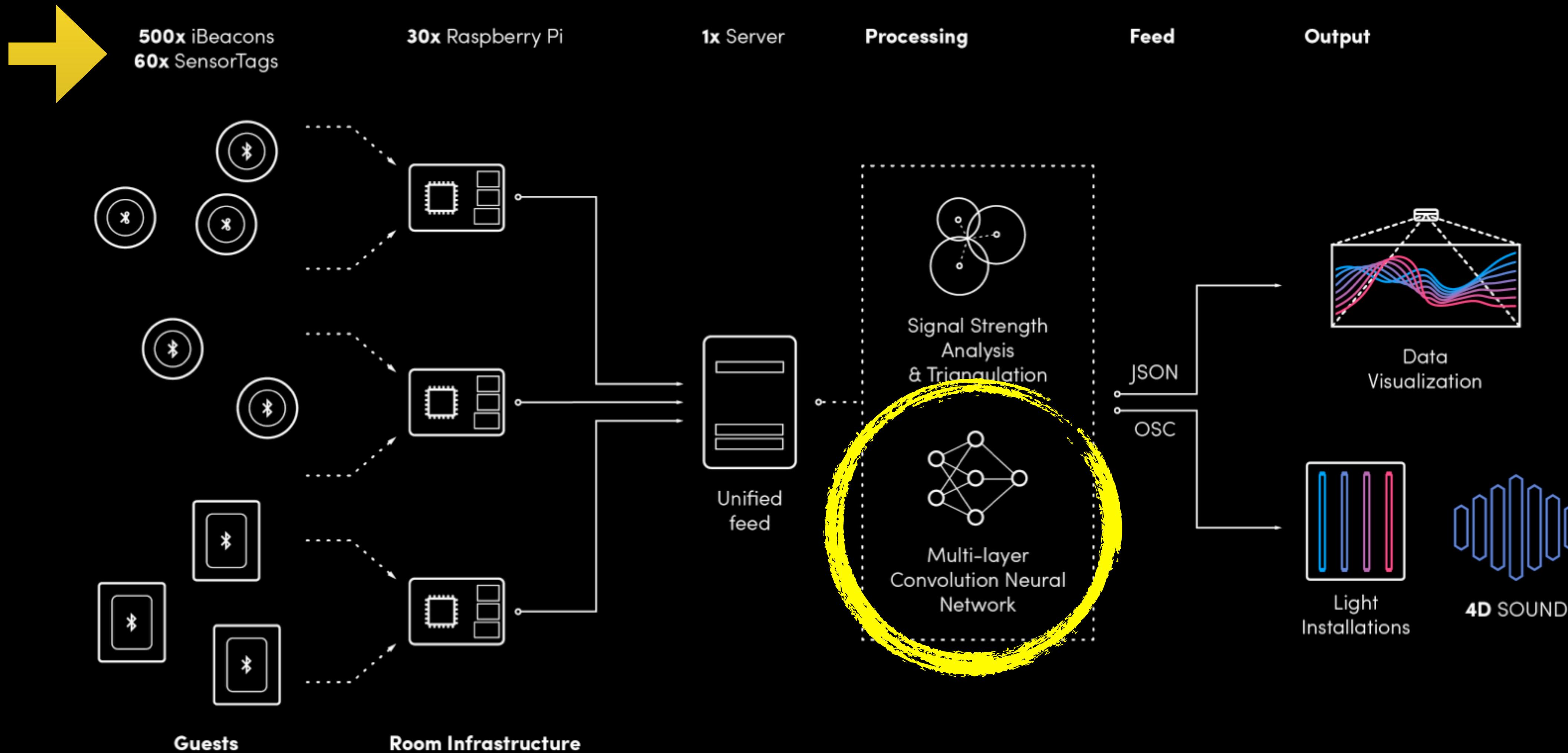


Dance recognition AI



DATA PIPELINE

Data collection, processing & interpretation



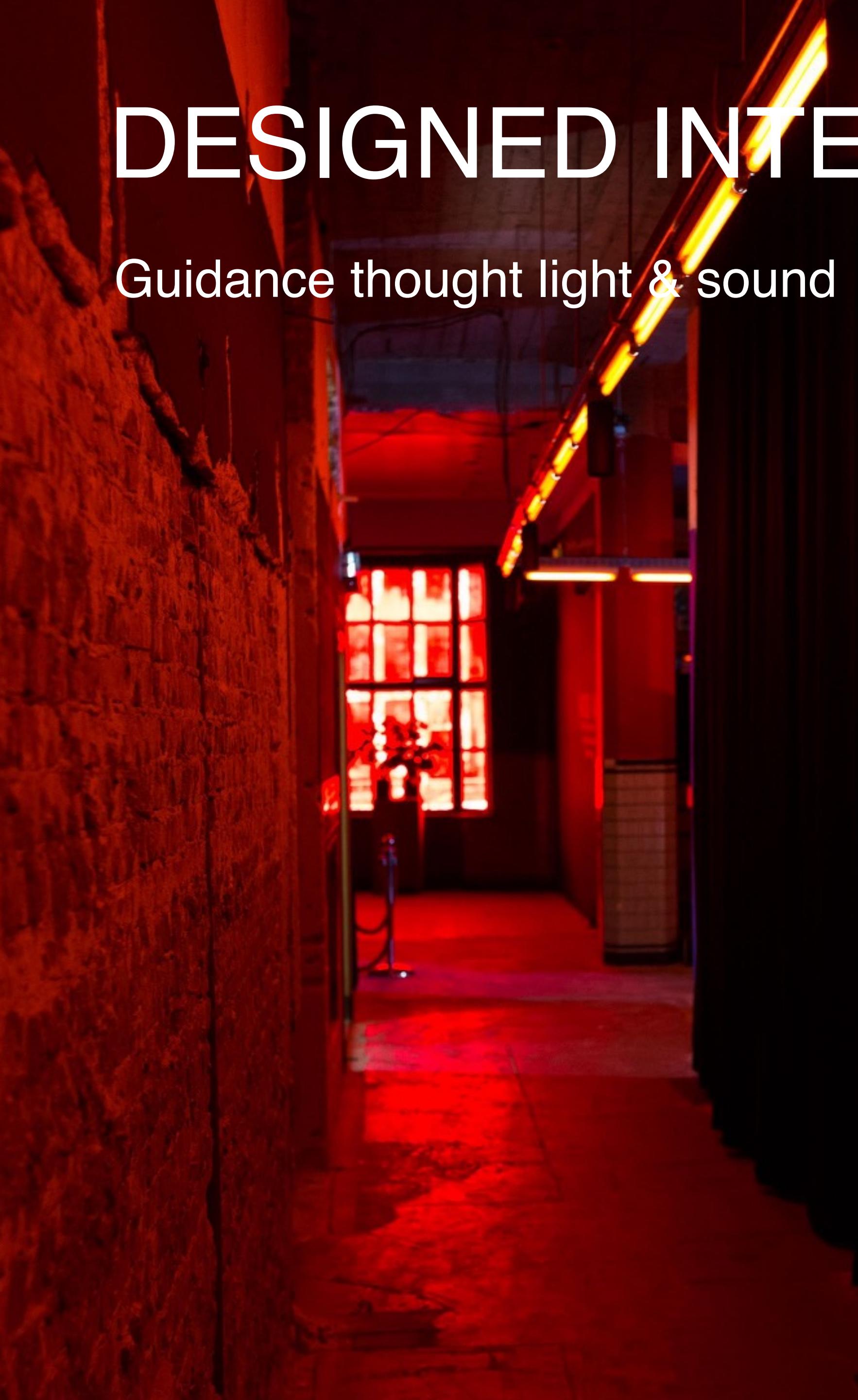
And the day came

SELECTED ARTISTS

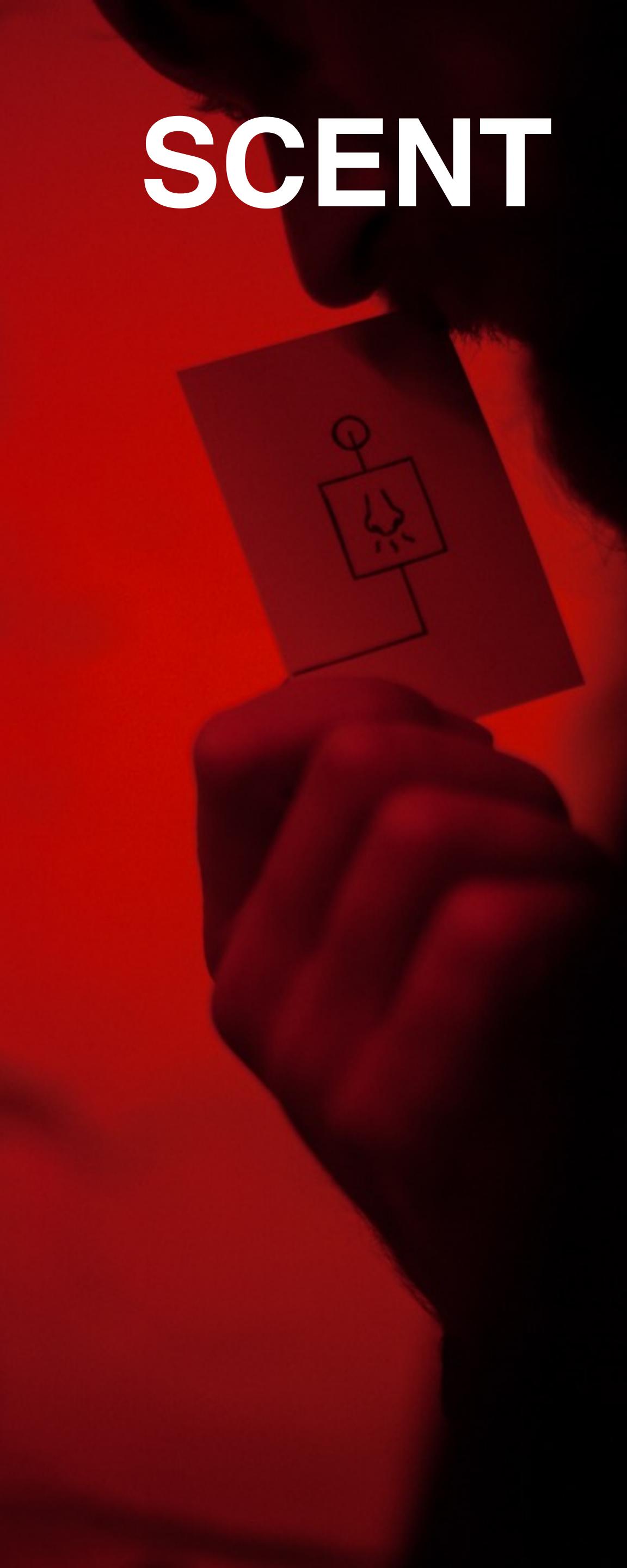


DESIGNED INTERACTIONS

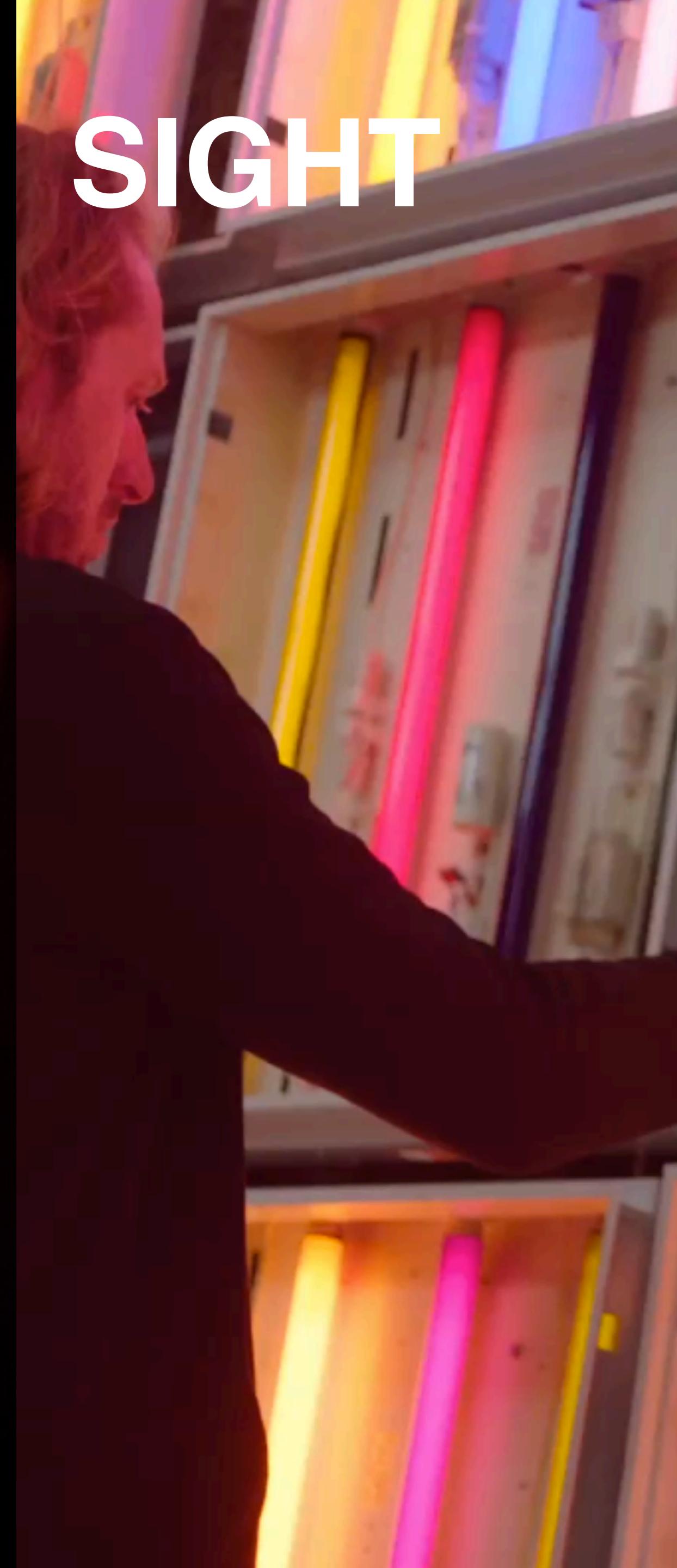
Guidance thought light & sound



SCENT



SIGHT



TASTE

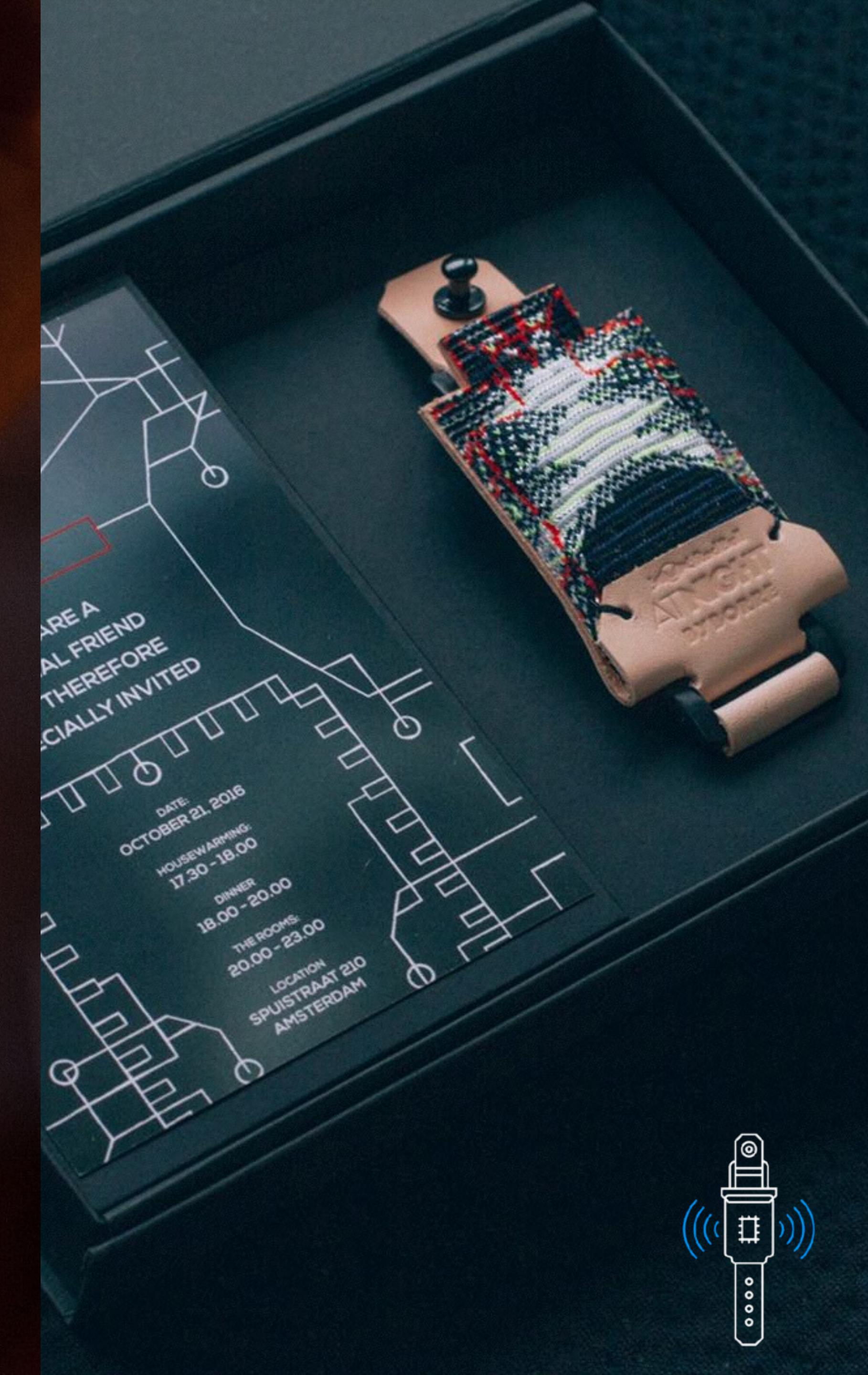


SOUND



EXPERIENCE, BLE TECH, & KNIT BRACELETS

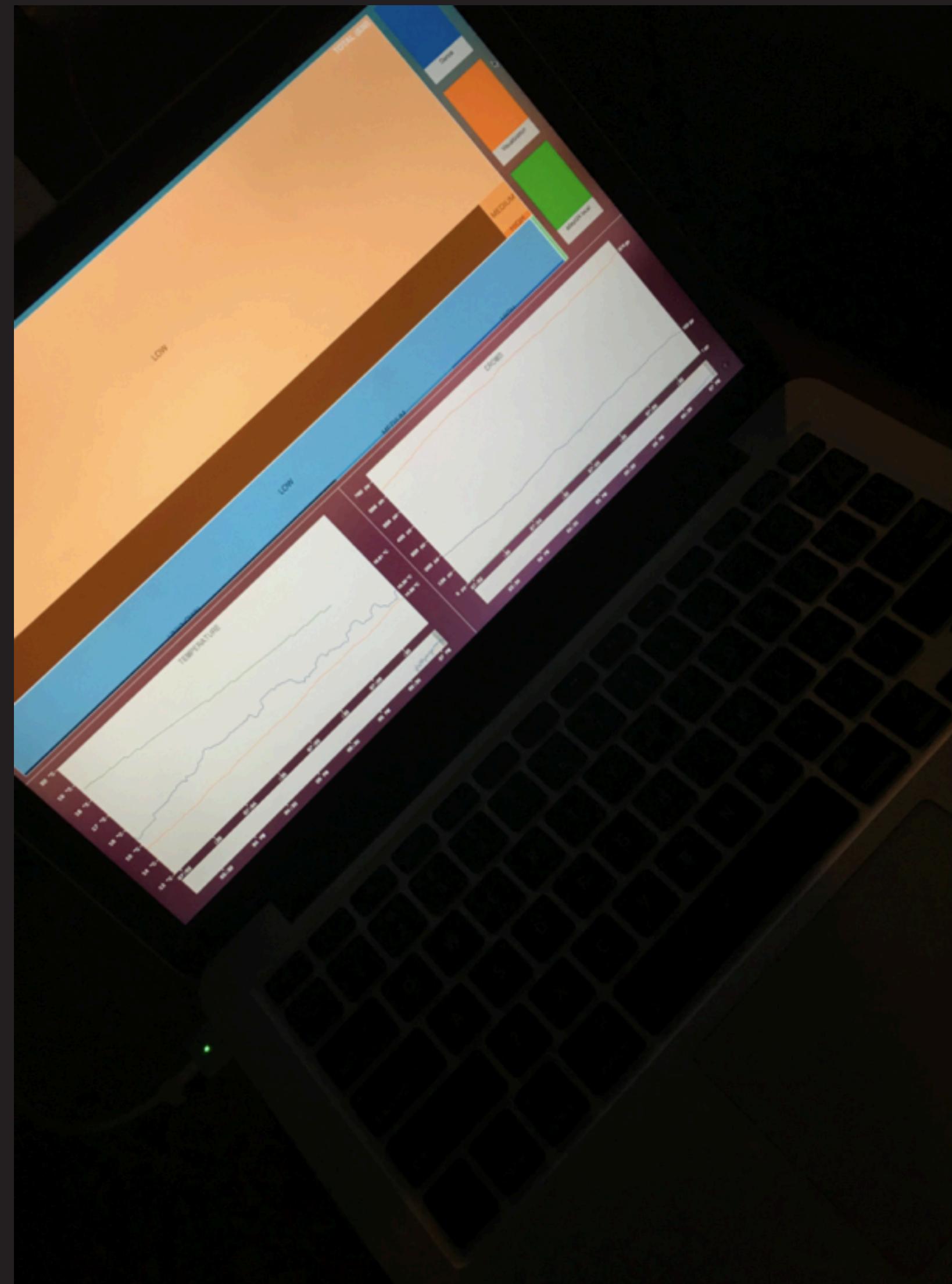
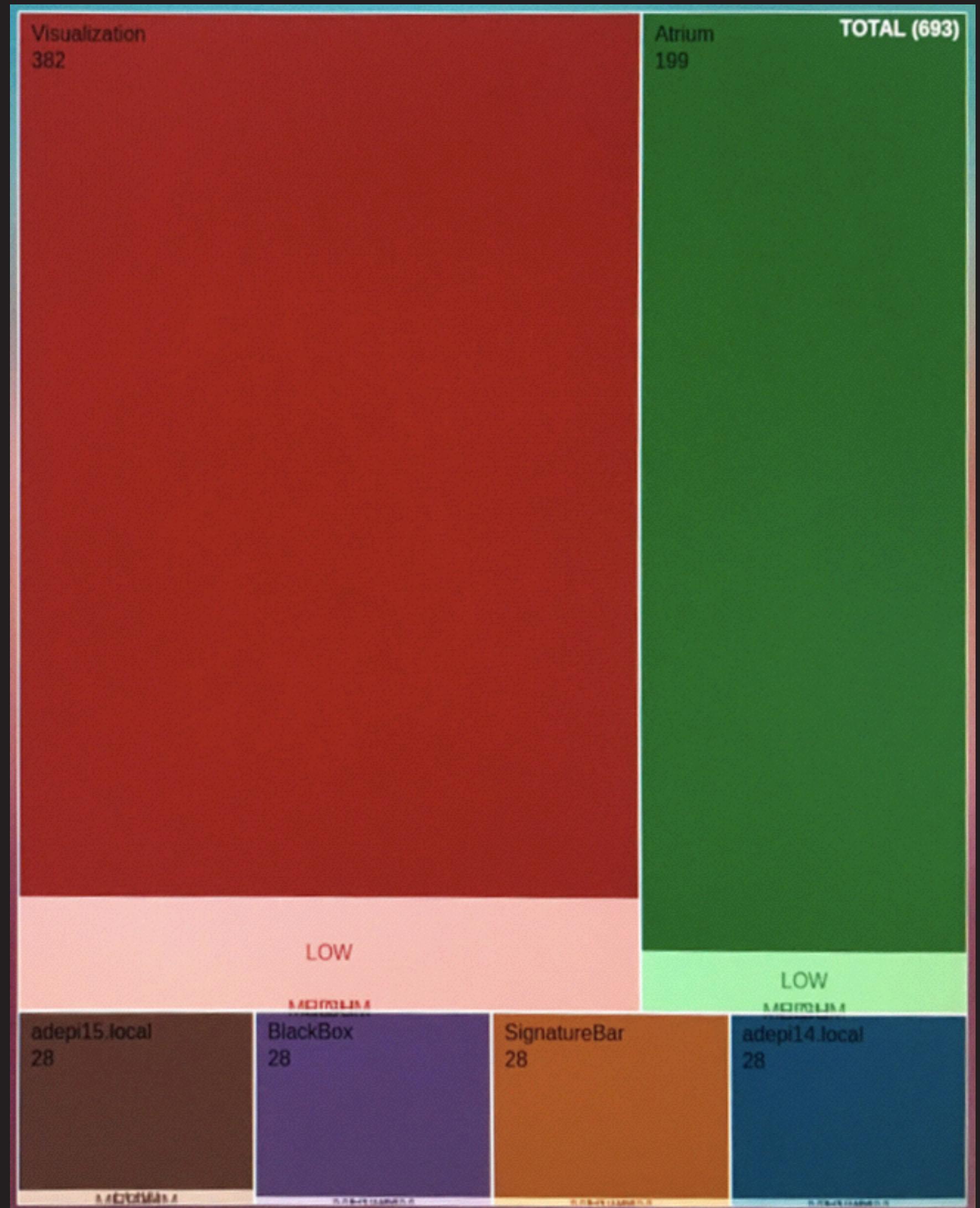
Sensing Location and Energy Level





AT NIGHT

PEOPLE HAD FUN!



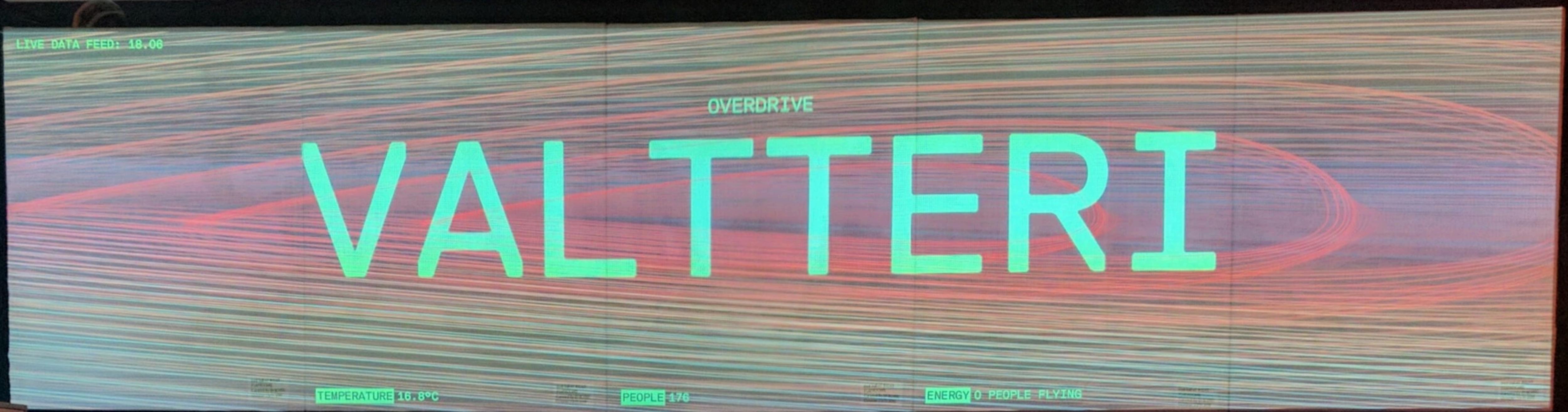
DATA TO HUMANS

Giving the club a voice



LIVE VISUALIZATION

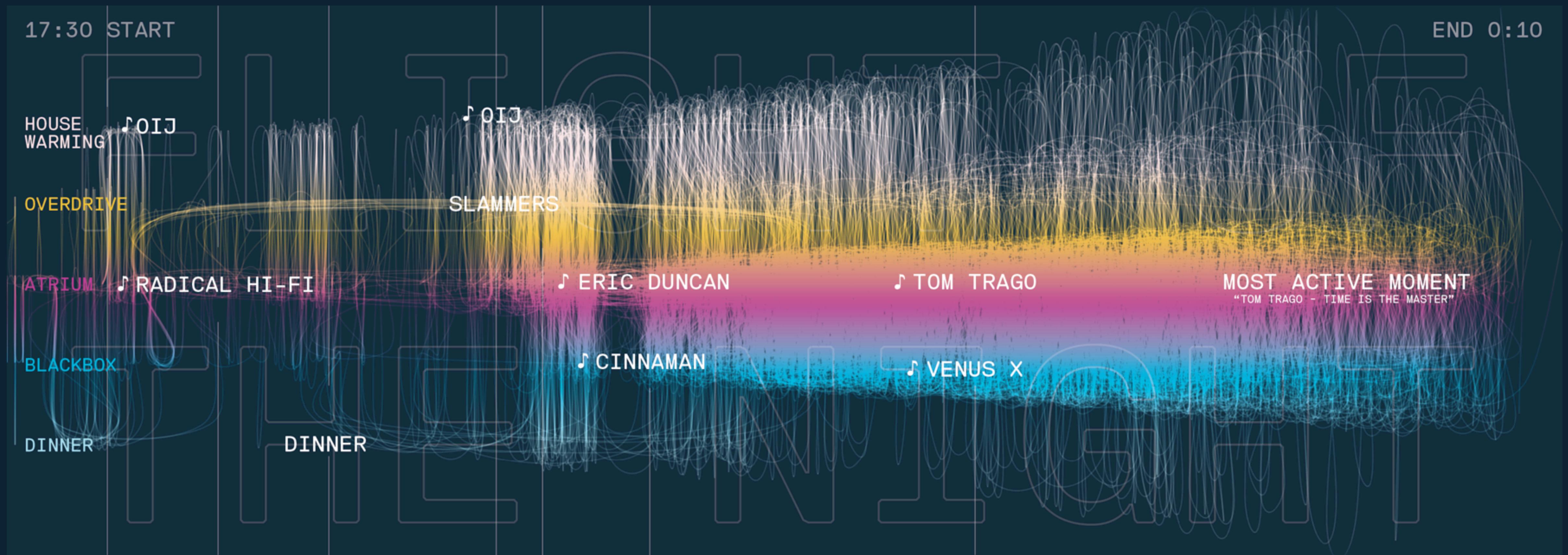
Creating Meaningful Data Summaries



Then, the party was over, but our work was not

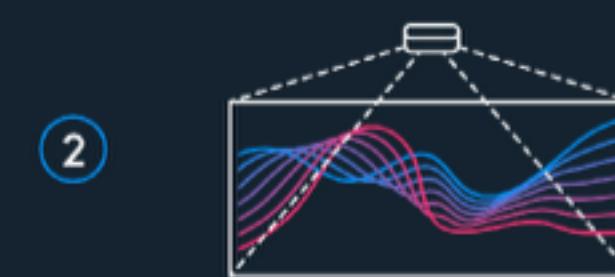
EXPERIENCE SUMMARY

Guest > Data > Club Energy > Flight of the Night



EXPERIENCE SUMMARY

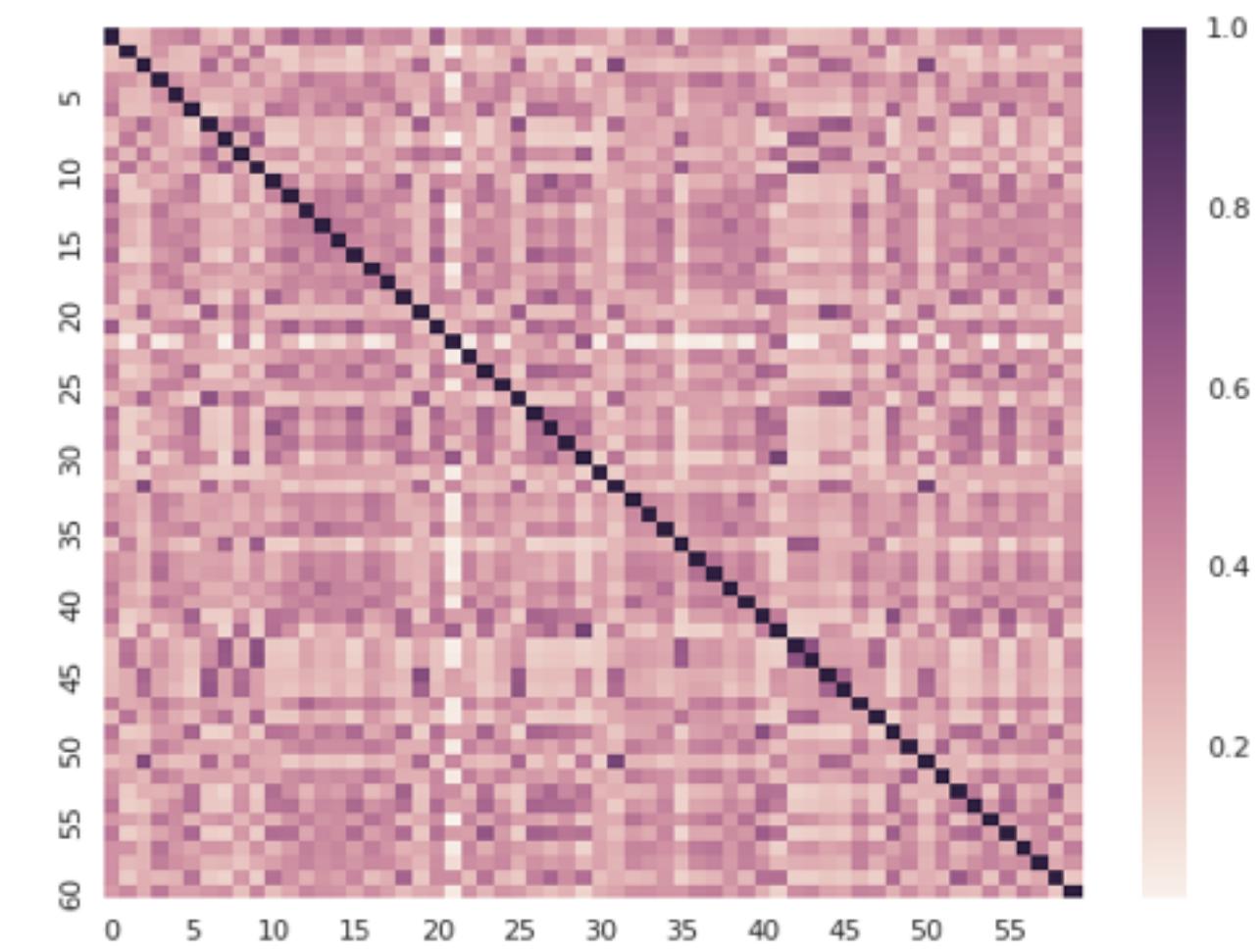
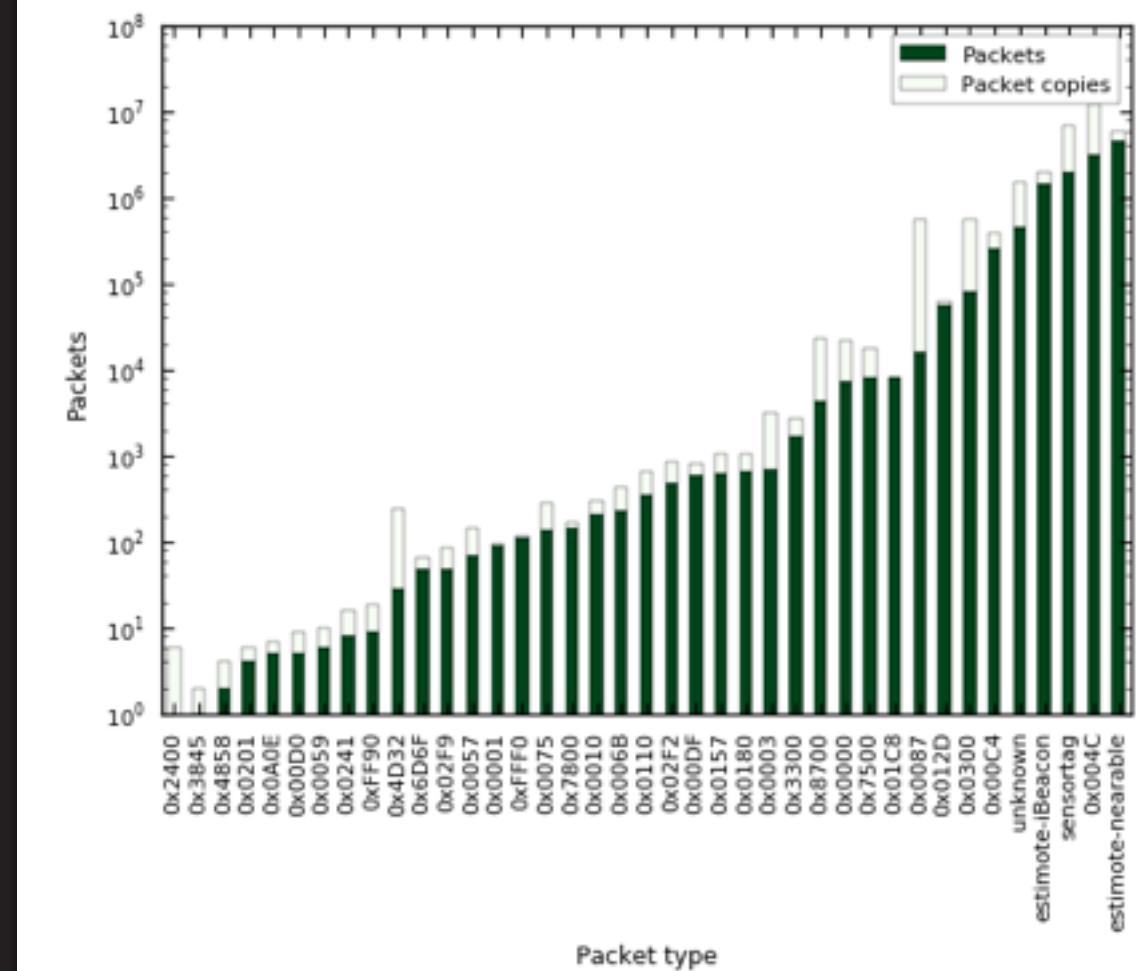
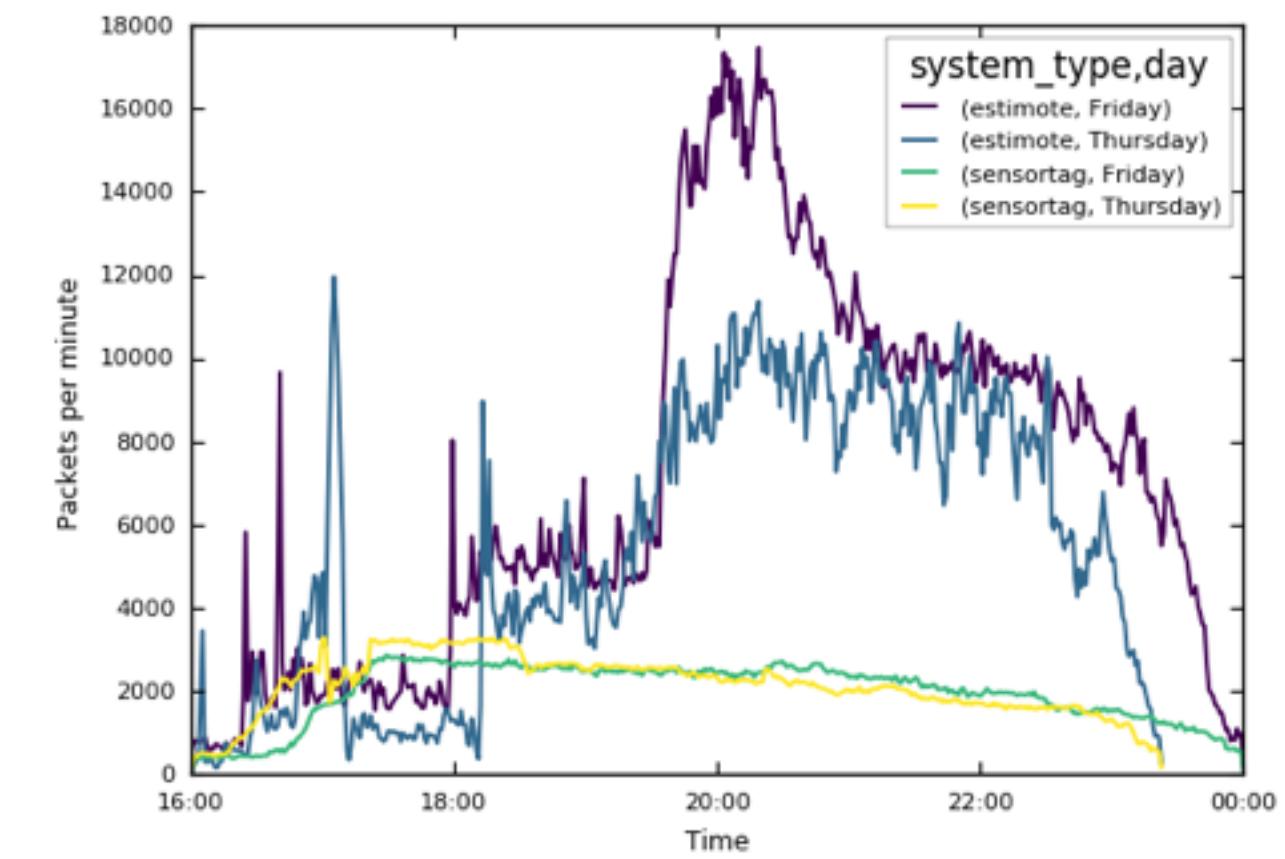
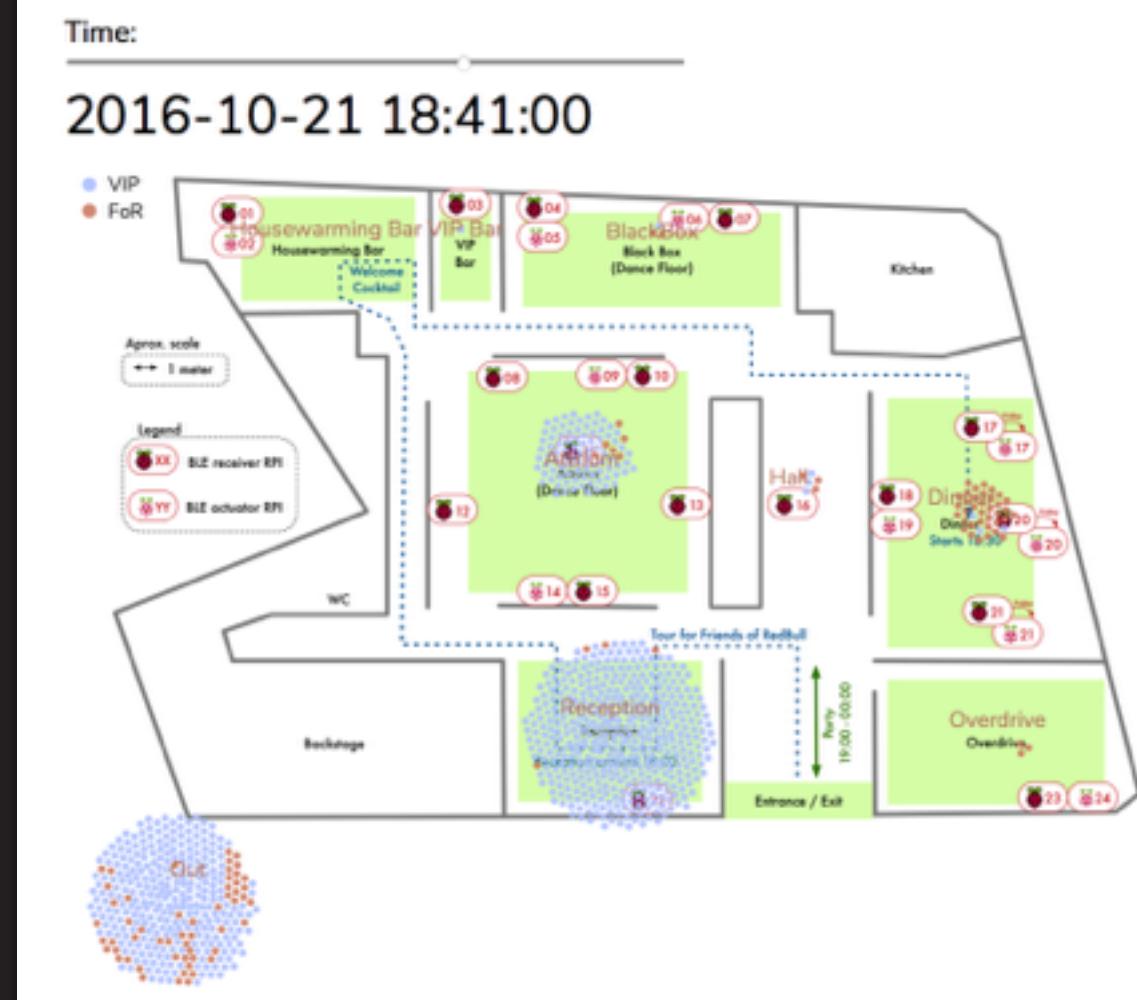
Club Energy > Data Visualisation > Pixel to Needle > Scarf



Lots of resulting data

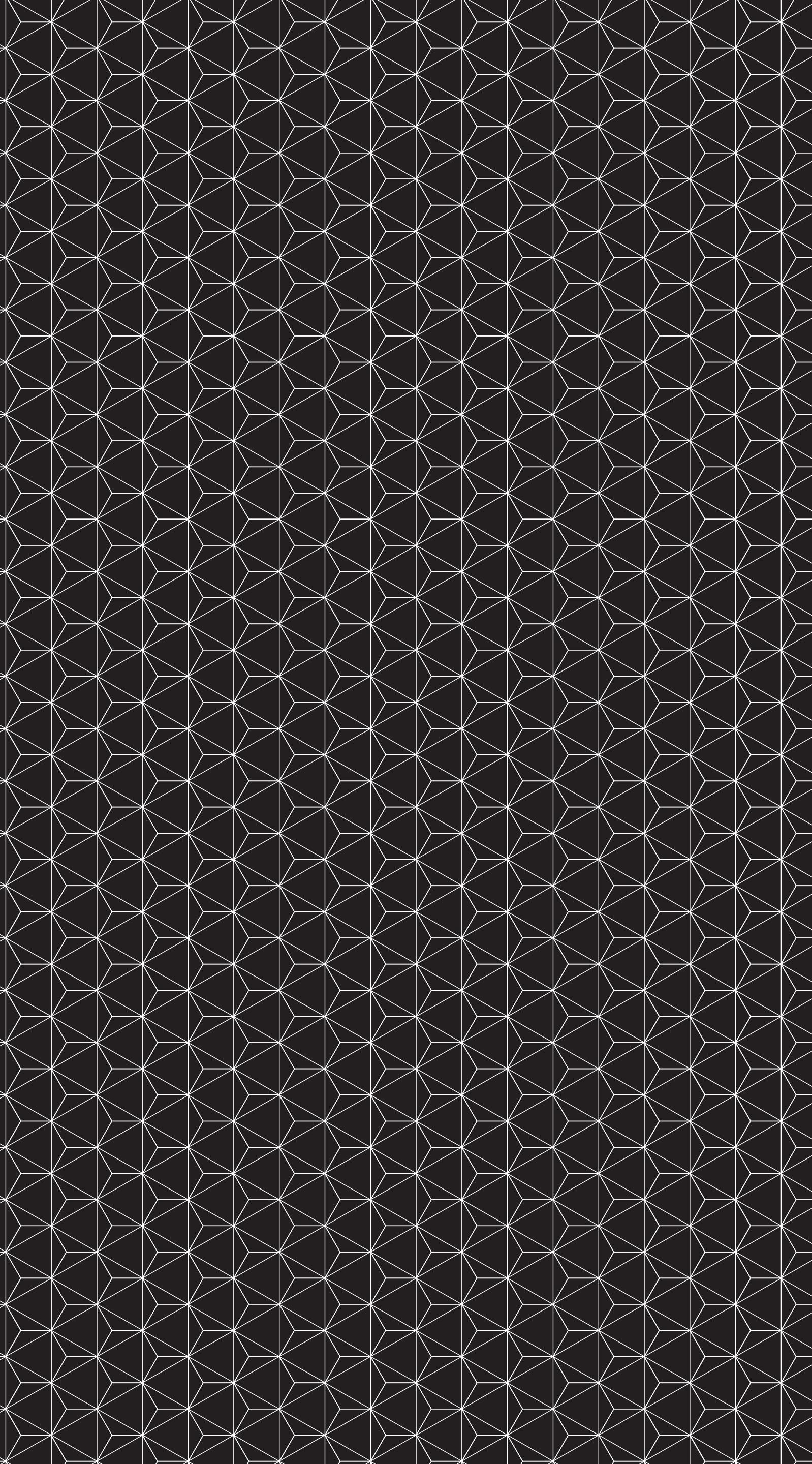
and lots of questions:

- How did the system work?
- What can we improve?
- How did people move around the club?
- Can we find other BLE devices?
- Can we find groups of friends?
- ...



A couple of takeaways

- Don't invent in isolation: go to test with people and collaborate with others (better if they are different than you are)
- Digital and physical worlds are merging:
 - IoT, AI, 3D printing...
 - More smart objects and environments
 - Enjoy it! but beware of your privacy



Thanks

David Ayman Shamma
Demosthenis Katsouris
Amritpal Singh Gill
DIS @ CWI
BYBORRE
REDBULL
IBM

