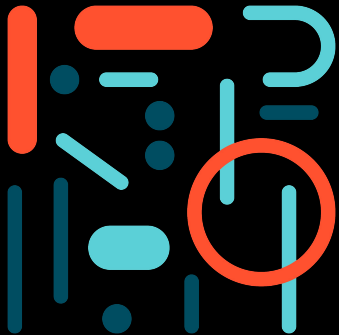




# Some Challenges of Citizen Science for Universities

Alexander Refsum Jensenius  
9 December 2020



Music  
Researcher



Lab and  
Centre  
Director

Research  
Musician

Open  
Research  
Advocate

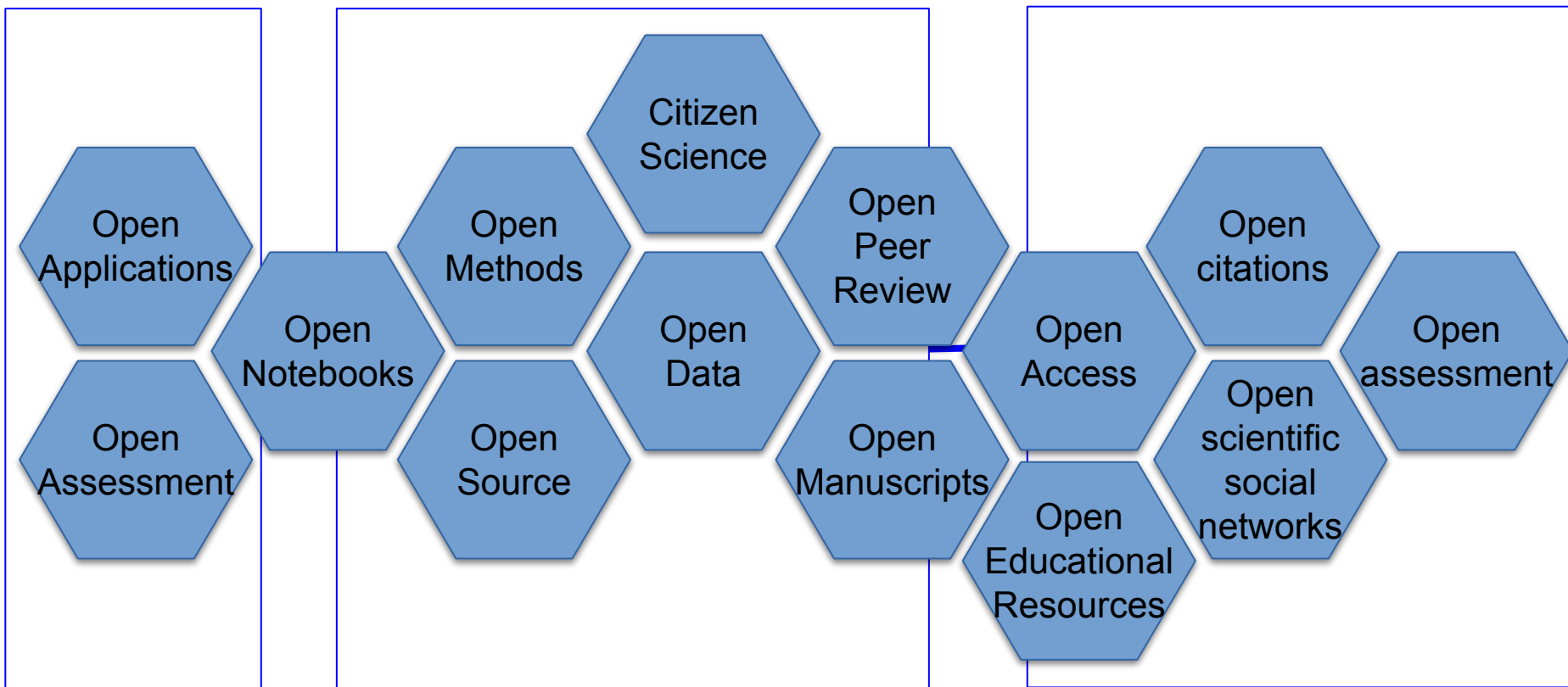
Open Research ~ Open Science

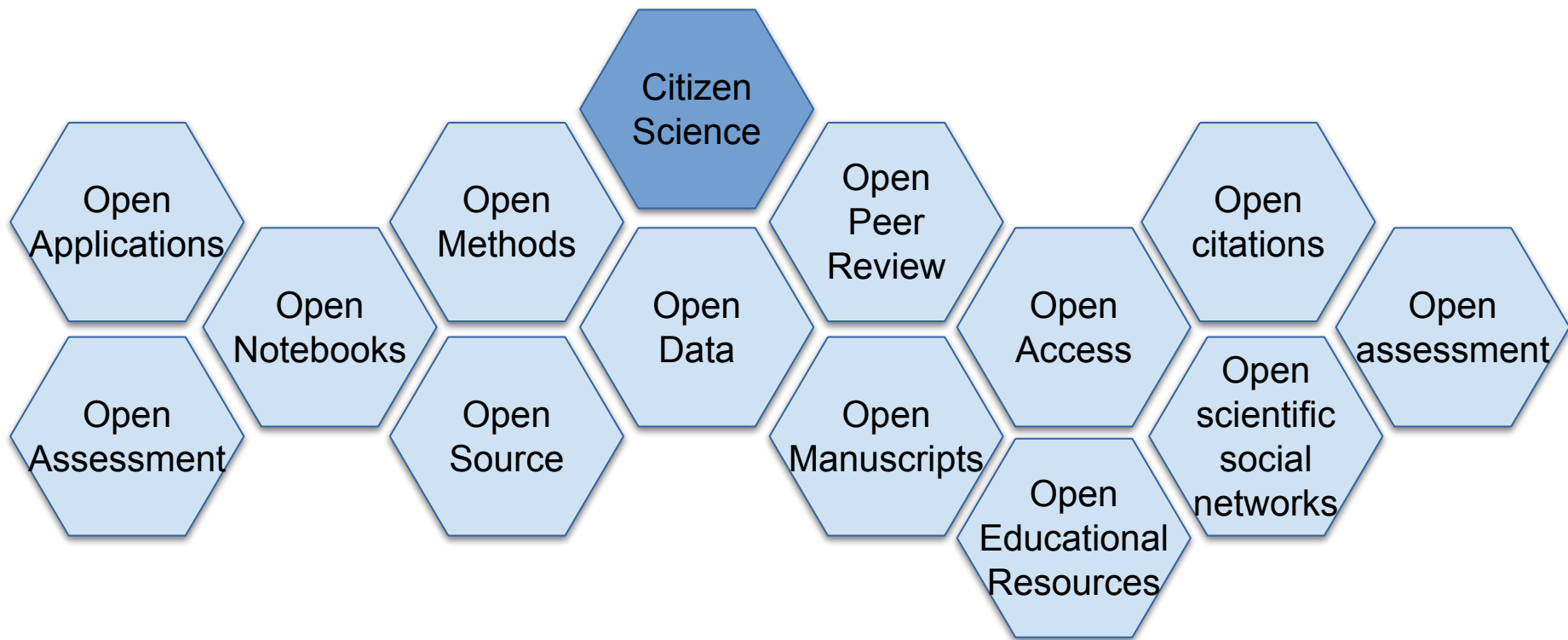
```
graph LR; A[Application] --> B[Research]; B --> C[Output];
```

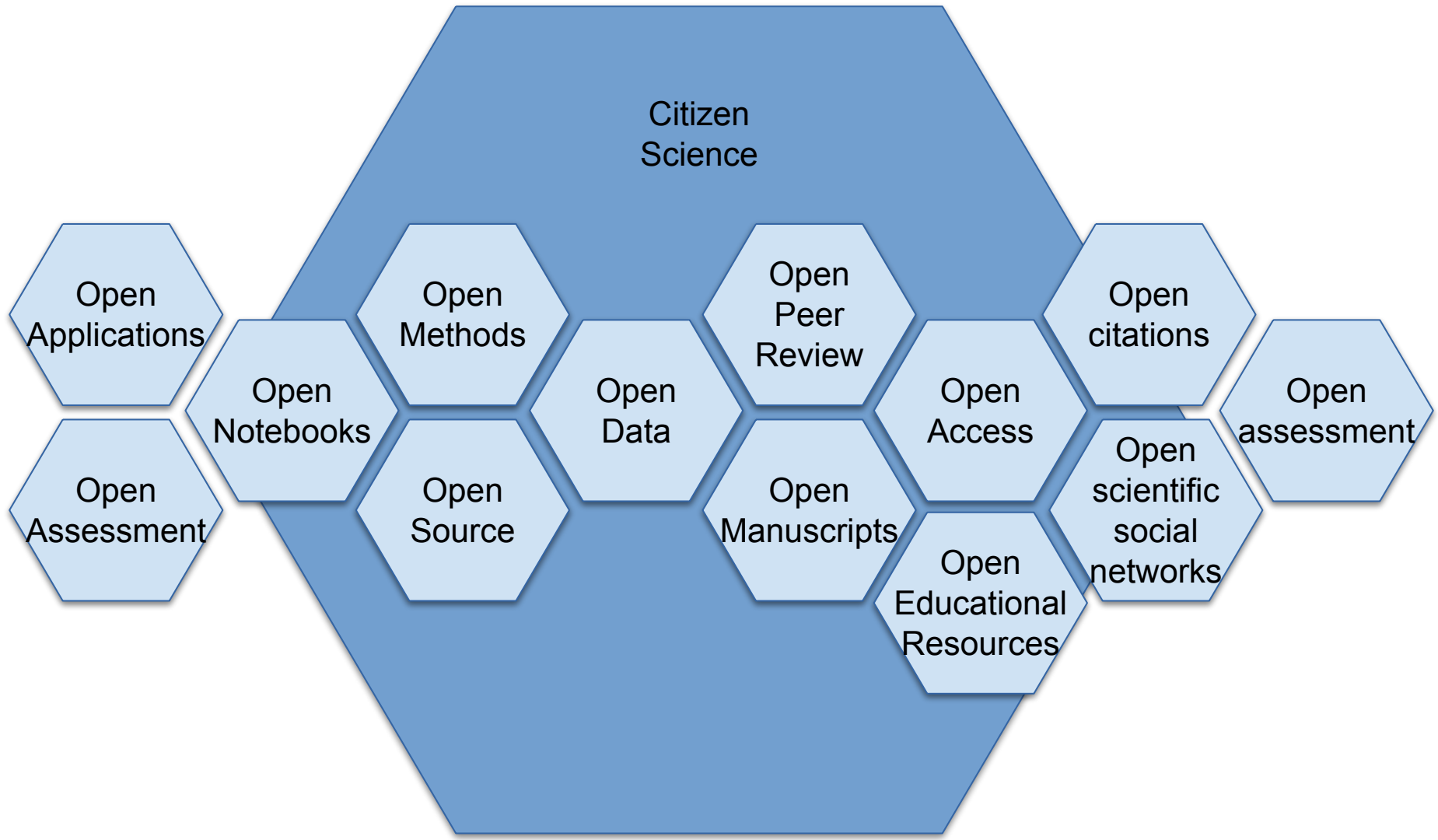
Application

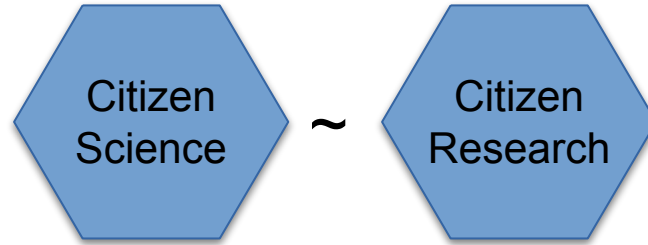
Research

Output

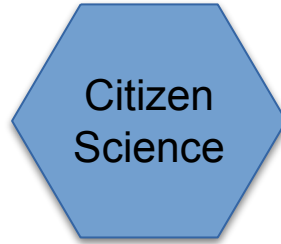












**HJERNE**LÆRING

**Music**  
Lab

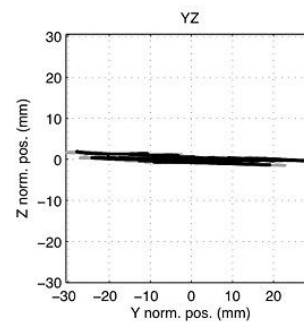
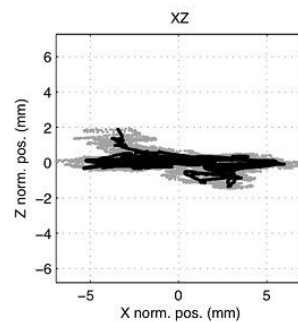
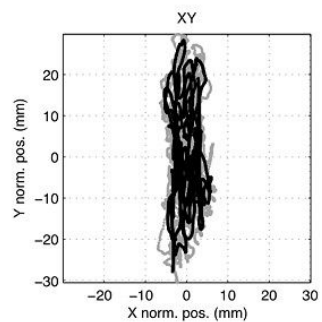
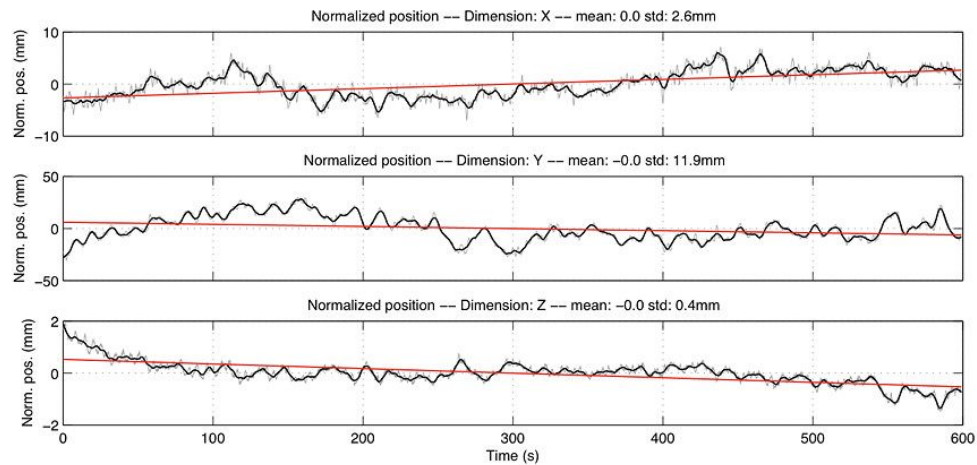


**HJERNELÆRING**



Does music (actually) make people move?





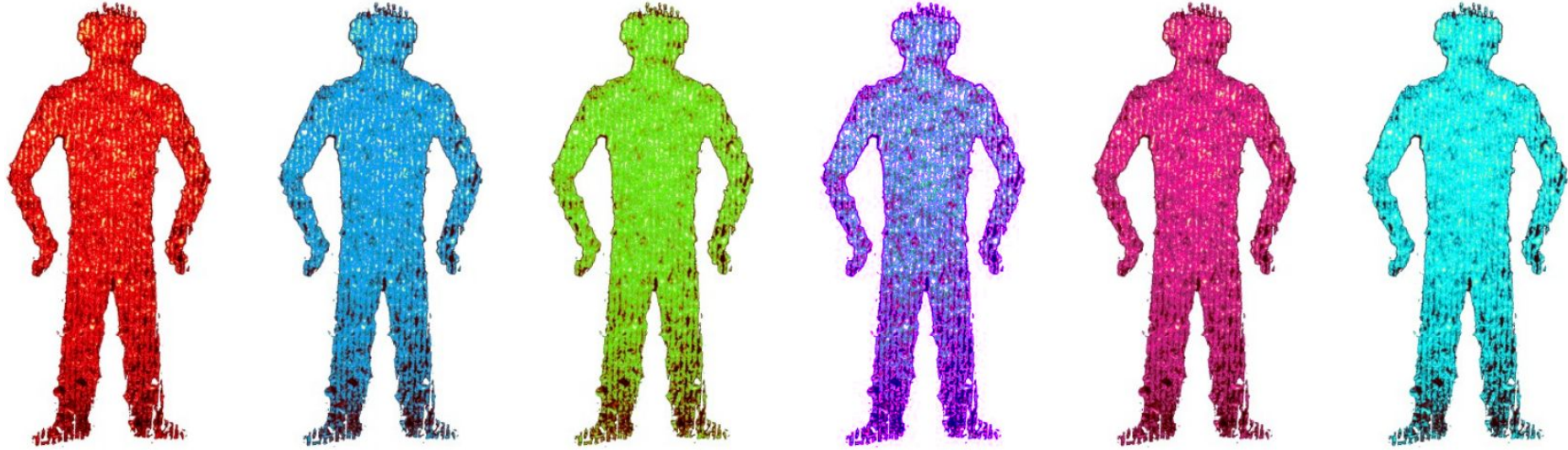


How to get more  
participants?



A group of about ten people are standing in a line on a stage, facing away from the camera towards a man on the right. They are all standing still. The stage has a black carpet with white papers on the floor. There are speakers on stands on either side of the stage. The background is dark.

# Norwegian Championship of Standstill



# Oslo Standstill Database

> 600 recordings





fourMs / MICRO

Unwatch 2Unstar 2Fork 1

<> CodeIssuesPull requestsActionsProjectsWikiSecurityInsightsSettings

masterMICRO / NM19 / NM19.ipynb

Go to file

vicogsAdd files via upload

Latest commit e08a99 on Aug 3History

1 contributor

1.84 MB

Download

Motion Capture Data Analysis - NM19

Libraries

Installing and importing libraries for data processing, sound analysis and visualization.

```
In [1]: # Install a pip package in the current Jupyter kernel
import sys
!sys.executable -m pip install librosa #Sound analysis

Requirement already satisfied: librosa in ./.anaconda/lib/python3.6/site-packages (0.7.2)
Requirement already satisfied: numpy=>1.15.0 in ./.anaconda/lib/python3.6/site-packages (from librosa) (1.16.4)
Requirement already satisfied: soundfile=>0.9.0 in ./.anaconda/lib/python3.6/site-packages (from librosa) (0.10.3.post1)
Requirement already satisfied: joblib=>0.12 in ./.anaconda/lib/python3.6/site-packages (from librosa) (0.15.1)
Requirement already satisfied: resampy=>0.2.2 in ./.anaconda/lib/python3.6/site-packages (from librosa) (0.2.2)
Requirement already satisfied: audioread=>2.0.0 in ./.anaconda/lib/python3.6/site-packages (from librosa) (2.1.8)
Requirement already satisfied: decorator=>3.0.0 in ./.anaconda/lib/python3.6/site-packages (from librosa) (4.0.11)
Requirement already satisfied: numba=>0.43.0 in ./.anaconda/lib/python3.6/site-packages (from librosa) (0.48.0)
Requirement already satisfied: scipy=>1.0.0 in ./.anaconda/lib/python3.6/site-packages (from librosa) (1.5.0)
Requirement already satisfied: six=>1.3 in ./.anaconda/lib/python3.6/site-packages (from librosa) (1.10.0)
Requirement already satisfied: scikit-learn=>0.19.0,>=0.14.0 in ./.anaconda/lib/python3.6/site-packages (from librosa) (0.18.1)
Requirement already satisfied: cffi=>1.0 in ./.anaconda/lib/python3.6/site-packages (from soundfile=>0.9.0->librosa) (1.9.1)
Requirement already satisfied: llvmlite=>0.32.0,>=0.31.0dev0 in ./.anaconda/lib/python3.6/site-packages (from numba=>0.43.0->librosa) (0.31.0)
Requirement already satisfied: setuptools in ./.anaconda/lib/python3.6/site-packages (from numba=>0.43.0->librosa) (34.2.0)
Requirement already satisfied: pyparser in ./.anaconda/lib/python3.6/site-packages (from cffi=>1.0->soundfile=>0.9.0->librosa) (2.17)
Requirement already satisfied: appdirs=>1.4.0 in ./.anaconda/lib/python3.6/site-packages (from setuptools->numba=>0.43.0->librosa) (1.4.0)
Requirement already satisfied: packaging=>16.8 in ./.anaconda/lib/python3.6/site-packages (from setuptools->numba=>0.43.0->librosa) (16.8)
Requirement already satisfied: pyparsing in ./.anaconda/lib/python3.6/site-packages (from packaging=>16.8->setuptools->numba=>0.43.0->librosa) (2.1.10)
You are using pip version 19.0.1, however version 20.2b1 is available.
You should consider upgrading via the 'pip install --upgrade pip' command.

In [6]: !sys.executable -m pip install chart_studio #Librosa plots

Requirement already satisfied: chart_studio in ./.anaconda/lib/python3.6/site-packages (1.1.0)
Requirement already satisfied: retrying=>1.3.3 in ./.anaconda/lib/python3.6/site-packages (from chart_studio) (1.3.3)
Requirement already satisfied: plotly in ./.anaconda/lib/python3.6/site-packages (from chart_studio) (4.2.1)
Requirement already satisfied: six in ./.anaconda/lib/python3.6/site-packages (from chart_studio) (1.10.0)
Requirement already satisfied: requests in ./.anaconda/lib/python3.6/site-packages (from chart_studio) (2.12.4)
You are using pip version 19.0.1, however version 20.2b1 is available.
You should consider upgrading via the 'pip install --upgrade pip' command.

In [6]: !sys.executable -m pip install numba

Collecting numba=>0.47
```

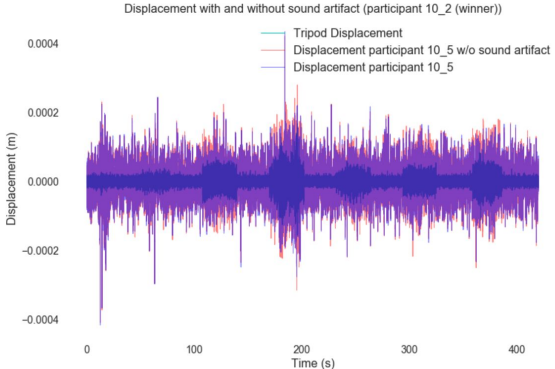
419.875000	-2.400000e-05	2.220446e-16	-0.000018	0.008333
419.883333	-5.000000e-06	-4.000000e-06	-0.000012	0.008333
419.891667	6.000000e-06	-9.000000e-06	-0.000009	0.008334
419.900000	-5.551115e-17	4.000000e-06	0.000010	0.008333
419.908333	-1.600000e-05	3.000000e-06	-0.000015	0.008333
419.916667	-5.551115e-17	0.000000e+00	-0.000005	0.008334
419.925000	-1.300000e-05	5.000000e-06	0.000004	0.008333
419.933333	-1.200000e-05	-1.100000e-05	-0.000008	0.008333
419.941667	-9.000000e-06	-1.700000e-05	-0.000013	0.008334
419.950000	2.200000e-05	3.000000e-06	0.000007	0.008333
419.958333	1.700000e-05	9.000000e-06	-0.000004	0.008333
419.966667	2.000000e-05	6.000000e-06	-0.000008	0.008334
419.975000	3.800000e-05	1.300000e-05	-0.000007	0.008333
419.983333	-2.000000e-06	-1.000000e-05	-0.000007	0.008333
419.991667	4.000000e-06	4.700000e-05	0.000012	0.008334
420.000000	0.000000e+00	-2.200000e-05	-0.000003	0.008333

50400 rows x 4 columns

```
In [71]: fig5, ax5 = plt.subplots(1)
fig5.set_figheight(8)
fig5.set_figwidth(12)
ax5.set_facecolor('white')
ax5.plot(displacements[10][9][['X']], lw=1, label='Tripod Displacement', color='c')
ax5.plot(displacements_clean[10][5][['X']], lw=1, label='Displacement participant 10_5 w/o sound artifact', color='red', alp
ha=0.5)
ax5.plot(displacements[10][5][['X']], lw=1, label='Displacement participant 10_5', color='blue', alpha=0.5)

plt.tick_params(axis='both', which='major', labelsize=14)
ax5.legend(loc='upper right', fontsize=10)
plt.xlabel('Time (s)', fontsize=10);
plt.ylabel('Displacement (m)', fontsize=16);
plt.title('Displacement with and without sound artifact (participant 10_2 (winner))', fontsize=16)

Out[71]: Text(0.5, 1.0, 'Displacement with and without sound artifact (participant 10_2 (winner))')
```





How to get a lot more  
participants?



# HJERNE LÆRING



## Å stå helt stille

HJERNELÆRING | FØLELSENE | OPPGAVE | 20-25 MINUTTER

**Alexander Jensenius er forsker. Han prøver å forstå hvordan hjernen og kroppen fungerer sammen. Hva skjer når vi prøver å stå stille? Er det mulig å stå stille til musikk?**

I dag skal i hjelpe Alexander med å gjøre et eksperiment. Det betyr at vi har fått en oppgave av ham. Først skal vi stå mussetilte uten musikk. Så skal vi stå stille mens vi spiller musikk. For å hjelpe Alexander å finne ut mer om hvordan kroppen og hodet fungerer sammen skal vi tegne og fortelle hvordan vi har det i kroppen og hodet underveis.

Så spennende å være med på et ekte eksperiment!

### Del 1

1. Tegn en strek fra toppen til nederst på et blankt ark.
2. Nå skal alle stå stille som mus i ett minutt, uten musikk. La alle komme til ro, tell ned 3-2-1 og ta tiden i ett minutt.
3. Tegn og skriv det som skjedde i hodet og kroppen på venstre side av arket.
4. Hva skjedde? Diskusjon.

utarbeidet med RITMO

Perd. 16



### Utstyr:

- blanke ark
- fargeblyanter
- et utvalg sanger barna kan velge mellom, om de ikke kommer på noe selv direkte





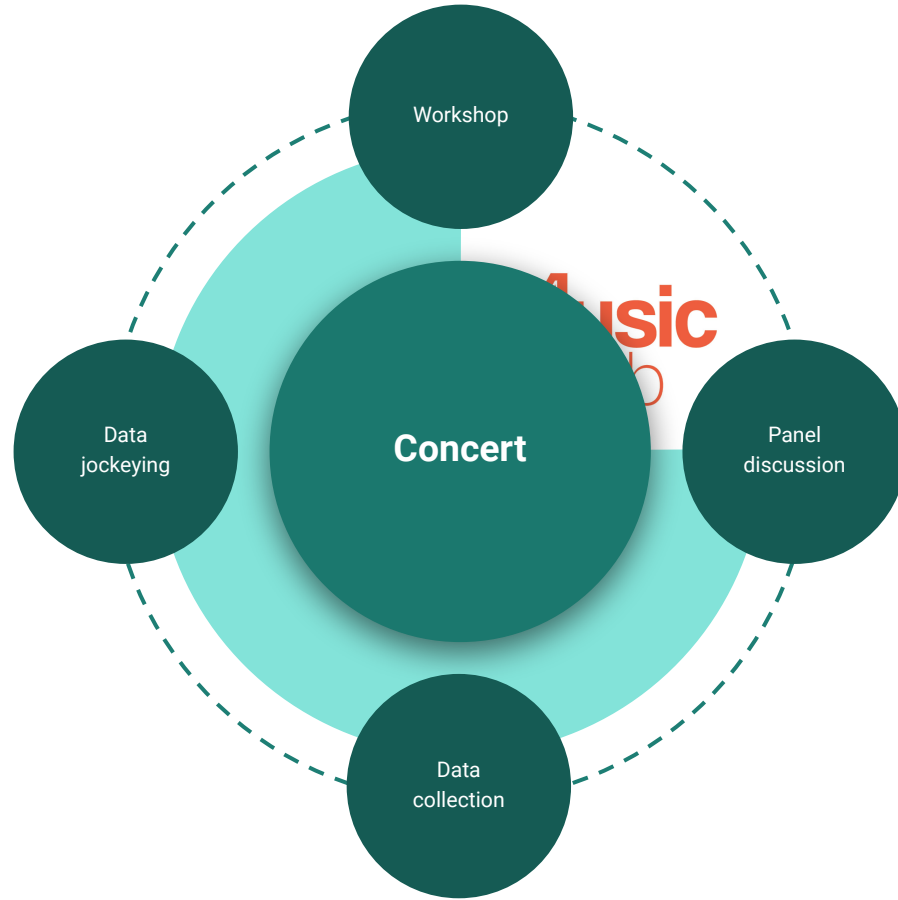


- Lots of data!
- Quantitative data very simple
- Qualitative data very messy!

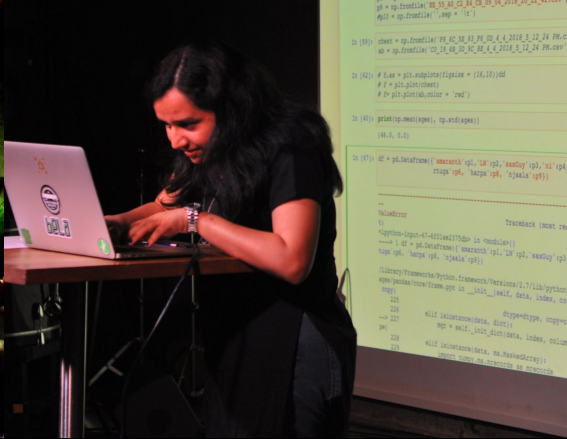


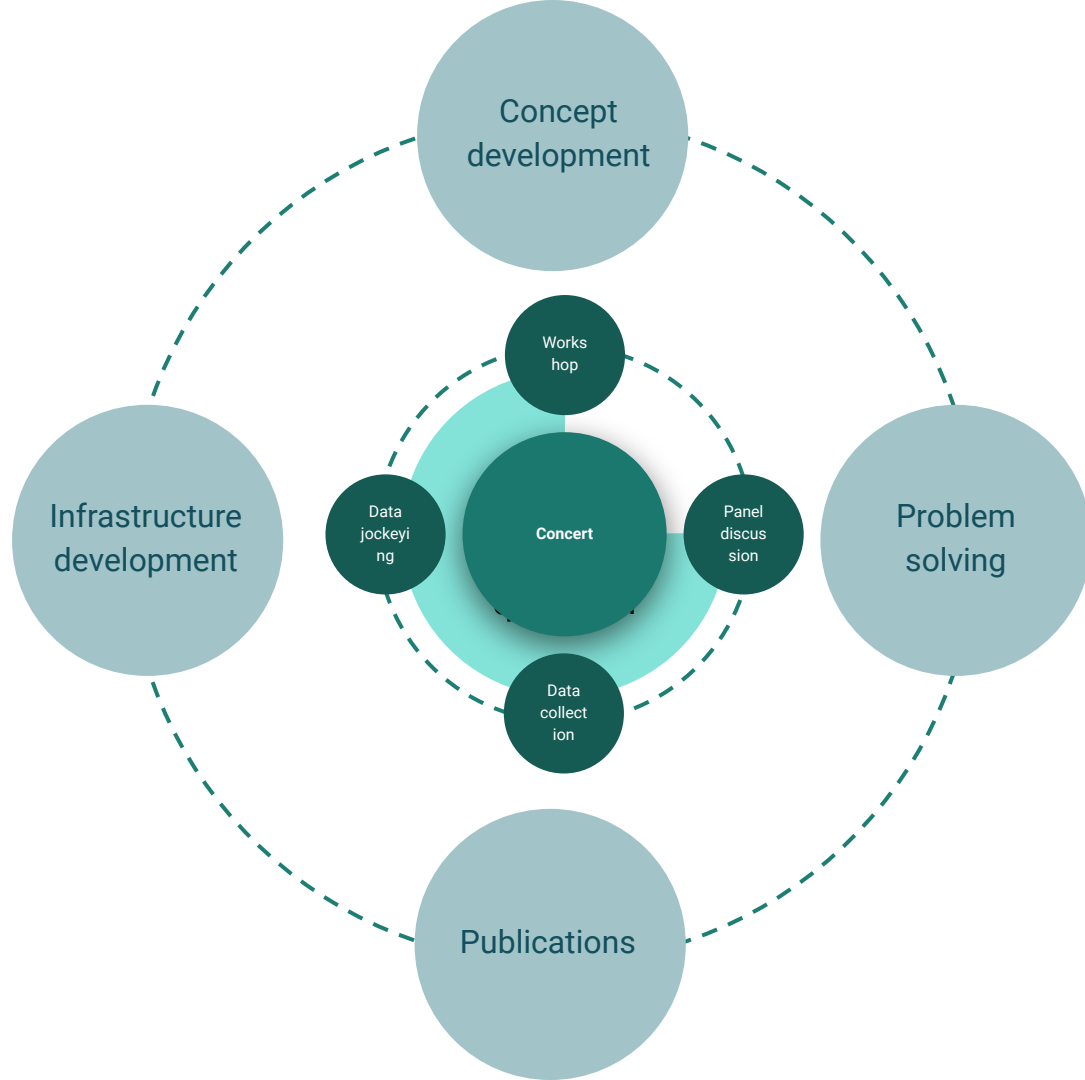
- Relies on external partner
- Limited control on data collection
- No control on selection of participants

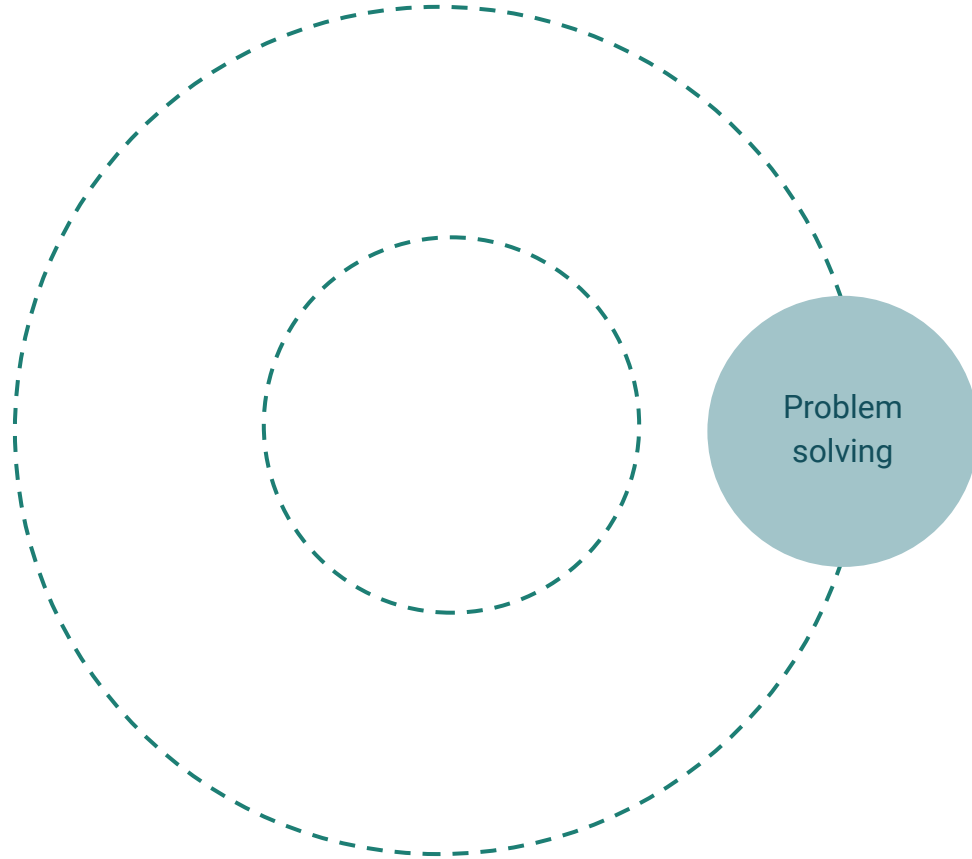
**Music**  
Lab











Privacy  
Copyright

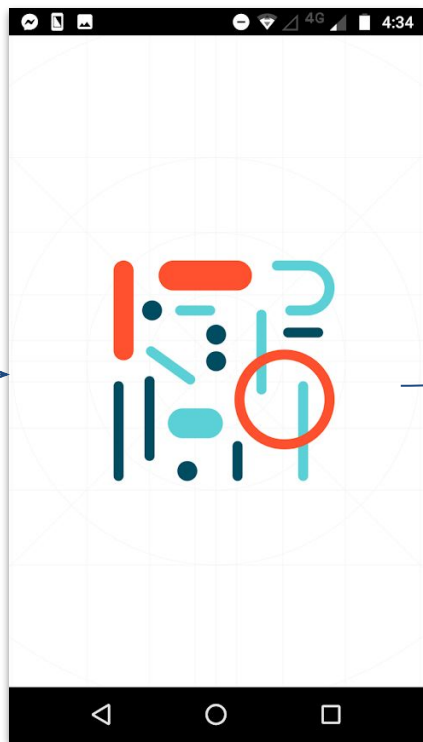
Storage

Archive

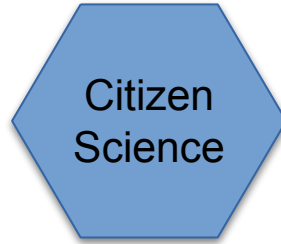
Infrastructure  
development



The diagram features a central teal circle containing the text 'Infrastructure development'. To the left of this circle are the words 'Storage' and 'Archive' stacked vertically. To the right of the central circle are two concentric dashed teal circles. A dashed teal line connects the right edge of the central teal circle to the inner dashed circle, and another dashed teal line connects the same point on the central circle to the outer dashed circle, suggesting a relationship or flow between the central concept and the outer layers.

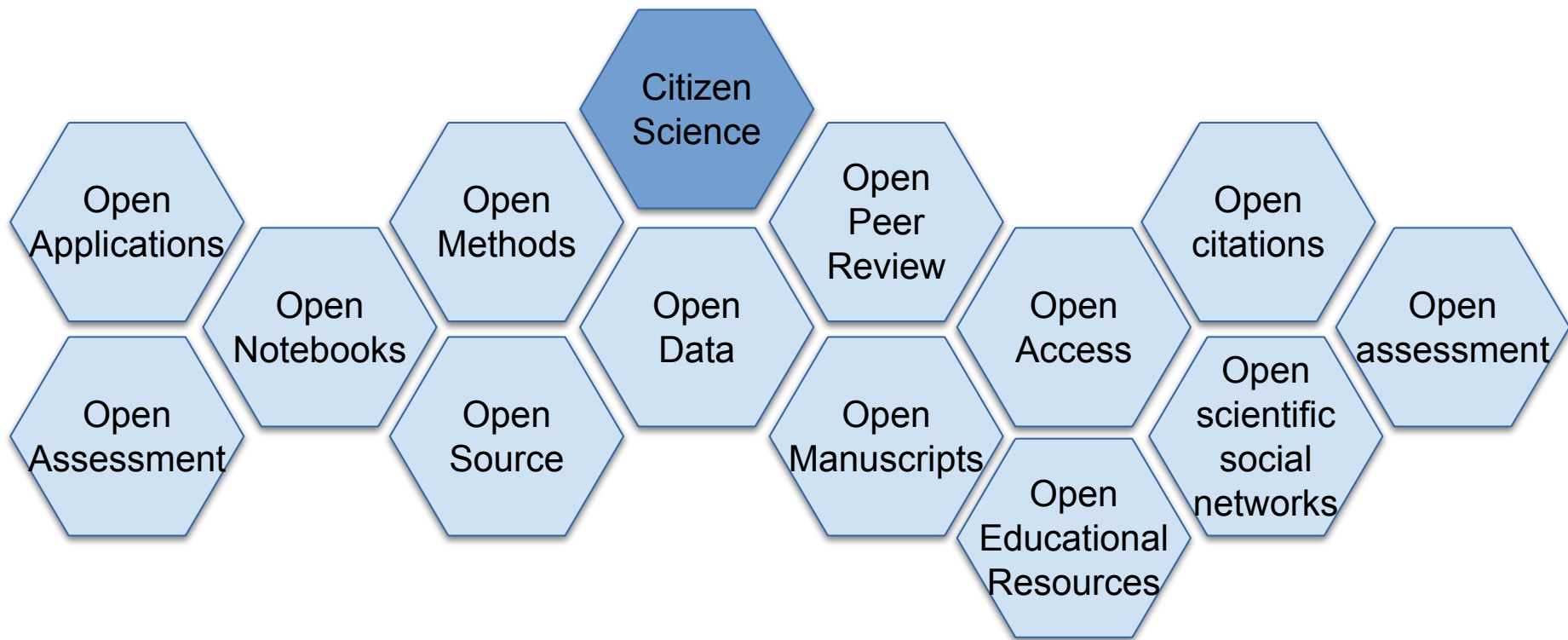




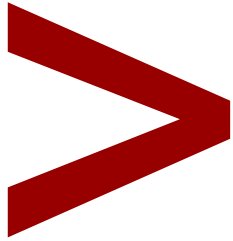


**HJERNE**LÆRING

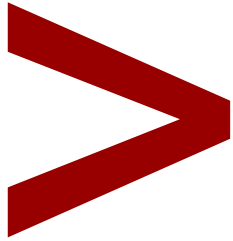
**Music**  
Lab







- Need technical infrastructure for data collection, handling, storage, and archiving
- Need channels for connecting to citizens
- Need legal support (privacy+copyright)
- Need data management support
- Need strategies for avoiding bias and pressure
- Need incentives and rewards



Need policies



Need pilot projects to try things out

