European Commission

#HorizonEU

HORIZON EUROPE POLICY SUPPORT FACILITY

2021 – 2027

MLE CSI-PP Final Meeting
Brussels, 13 January 2023

Research and Innovation

FINAL MEETING AGENDA

Time	Description
09.30-09.40	Welcome from the hosts (10 minutes)
09.40-09.50	Welcome from the chair and presentation of the agenda (Alan Irwin, 10 minutes)
09.50-11.00	Presentation and feedback from participants on the Draft Final Report (Margaret Gold)
11.00-11.15	Coffee Break
11.15-12.30	”Putting the backcasting into practice” (workshop moderated by Margaret Gold and Alan Irwin)
12.30-13.30	Lunch
13.30-14.30	Presentations/Q&A of interesting citizen science projects in Belgium which have societal relevance/a societal dimension of citizen science
14.30-15.45	Tour behind the scenes of the museum
15.45-16.00	Wrap-up, closing of the MLE and next steps (Alan Irwin)

European Commission

ROYAL BELGIAN INSTITUTE OF NATURAL SCIENCES
Brussels, Belgium

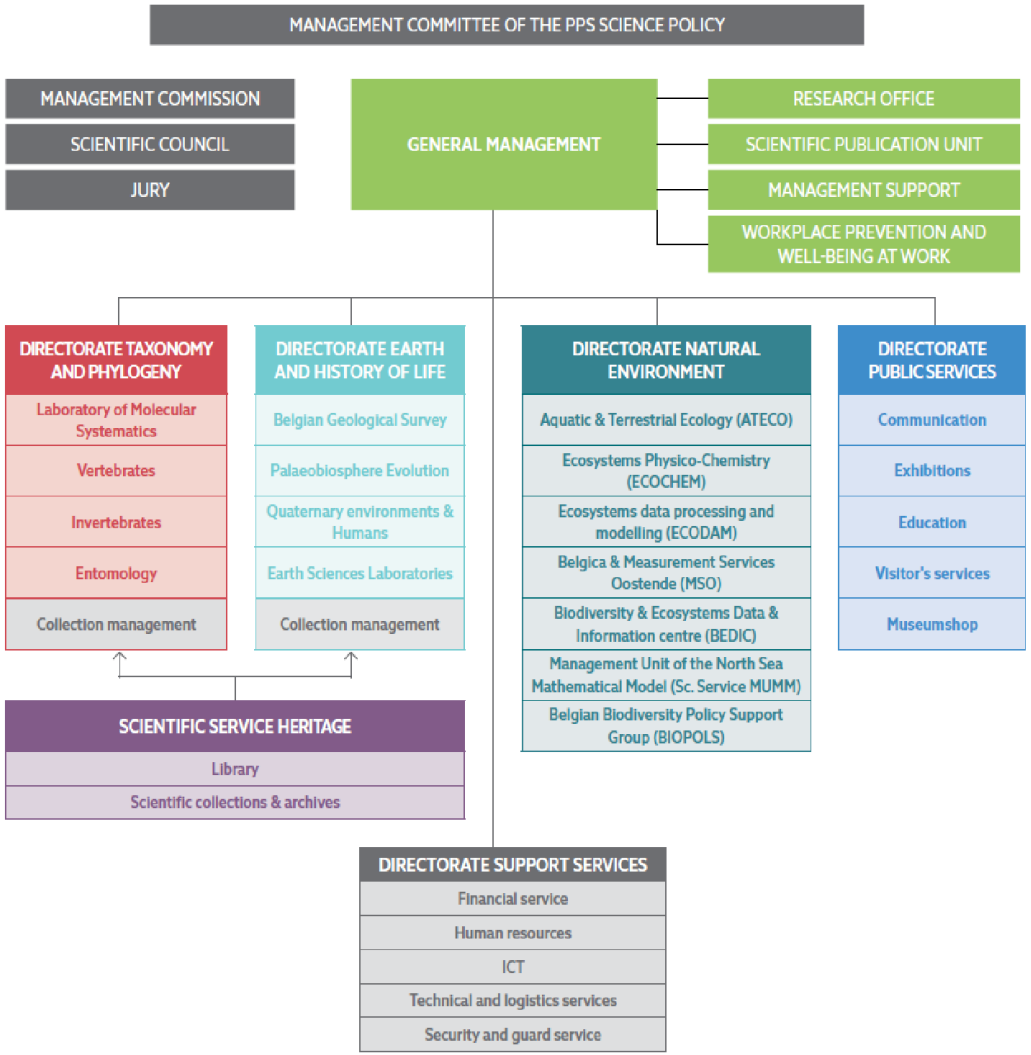
Carole Paleco
International relations

Mutual Learning Exercise
13.01.2023

- Presentation of RBINS
  - Our mandates
  - Organisational structure
  - Activities per OD
  - Citizen Science

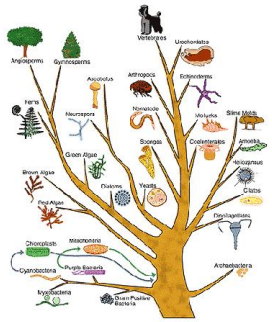
Our mandates/ missions

- Scientific research
- Scientific services and expertise (as support to policy)
- Collection management
- Education and public engagement


MANAGEMENT COMMITTEE OF THE PPS SCIENCE POLICY
MANAGEMENT COMMISSION
SCIENTIFIC COUNCIL
JURY
GENERAL MANAGEMENT
RESEARCH OFFICE
SCIENTIFIC PUBLICATION UNIT
MANAGEMENT SUPPORT
WORKPLACE PREVENTION AND WELL-BEING AT WORK
DIRECTORATE TAXONOMY AND PHYLOGENY
Laboratory of Molecular Systematics
Vertebrates
Invertebrates
Entomology
Collection management
DIRECTORATE EARTH AND HISTORY OF LIFE
Belgian Geological Survey
Palaeobiosphere Evolution
Quaternary environments & Humans
Earth Sciences Laboratories
Collection management
DIRECTORATE NATURAL ENVIRONMENT
Aquatic & Terrestrial Ecology (ATECO)
Ecosystems Physico-Chemistry (ECOCHEM)
Ecosystems data processing and modelling (ECODAM)
Belgica & Measurement Services Oostende (MSO)
Biodiversity & Ecosystems Data & Information centre (BEDIC)
Management Unit of the North Sea Mathematical Model (Sc. Service MUMM)
Belgian Biodiversity Policy Support Group (BIOPOLS)
DIRECTORATE PUBLIC SERVICES
Communication
Exhibitions
Education
Visitor's services
Museumshop
SCIENTIFIC SERVICE HERITAGE
Library
Scientific collections & archives
DIRECTORATE SUPPORT SERVICES
Financial service
Human resources
ICT
Technical and logistics services
Security and guard service

museum

Scientific research & services : topics & tools



- Descriptive Taxonomy
- Phylogeny
- Speciation processes
- Microevolution and adaptation
- Natural and sexual selection

- Interdisciplinary expeditions
- New molecular techniques: Next Generation Sequencing, Metagenomics, JEMU (with RMCA)

- Marine ecosystem modelling, aquatic chemistry and remote sensing of watercolour
- Freshwater biology, temporary ponds to ancient lakes
- Large biodiversity inventories in forest canopies
- Antarctic (Polar) Biodiversity
- Deep Sea (in development)

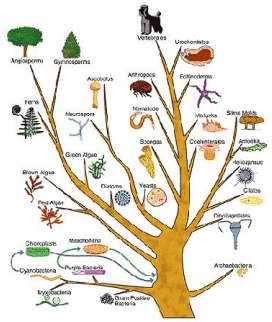
- Databases on Belgian sea, wild birds ringing, Antarctica

- Dino to bird evolution
- Early mammals
- Human evolution
- Archaeosciences
- Quaternary Geology
- Meteorites

- CT scanning and 3D imaging
- Geological model of Belgium

museum

Scientific expertise : Support to policy



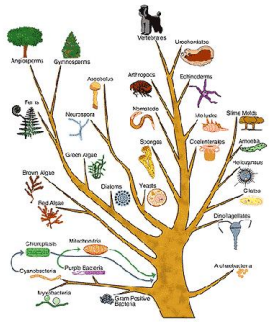
- Barcoding of Organisms of Political Concern (BopCo – with RMCA)

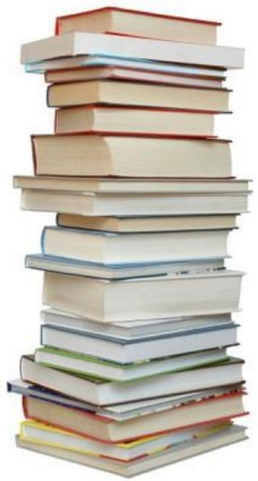
- Monitoring human activities at sea according to legal obligations: offshore windmills, oil spills (aerial monitoring), Sand extraction, marine mammals.
- Scientific support to Policy in regard to biodiversity (BioPols)
  - Belgian focal point CBD, Clearing House Mechanism
  - Cooperation for development (CeBios)
  - Belgian Biodiversity Platform
  - Invasive species secretariat
  - Marine Strategy Framework Directive
- Environmental impact assessments

- Geological mapping
- Belgian node to EU for geo data and geo resources
- Scientific support to preventive archaeology

museum

Collection management - Digitization & Open Access

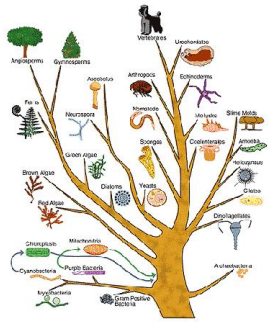




- 38 M preserved specimens
- Continued digitisation of collections: specimens, library, archives
- Explore new methods of digitisation
- Promote Open Access
  - Online publications, mostly Open Access: Belgian Journal of Zoology, Geologica Belgica, European Journal of Taxonomy (Diamond OA)
  - Open Data

museum

Education : Training and capacity building

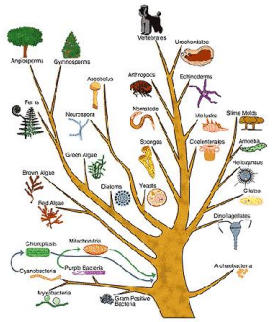


- Distributed European School of Taxonomy (DEST): 100 trainees/y
- Global Taxonomy Initiative (GTI/CBD)
- CBD training for developing countries
- CBD training for Belgian administrations
- Citizen Science projects

Postgraduate MSc and PhD students (85 in 2021)

museum

Geographical areas (to date)



- Antarctica
- Azores
- Belgium
- Central Africa
- Galapagos
- Peru
- South East Asia
- Vietnam

- Antarctica
- Ancient Lakes
- Australia
- Belgium
- Brazil
- North Sea
- Pacific Deep Sea
- Papua-New Guinea
- Sahel & Central Africa

- Belgium
- Central Asia
- Central Africa
- China
- Easter Island
- India
- Japan
- Pacific Deep Sea
- Peru
- Vietnam

museum

The Museum

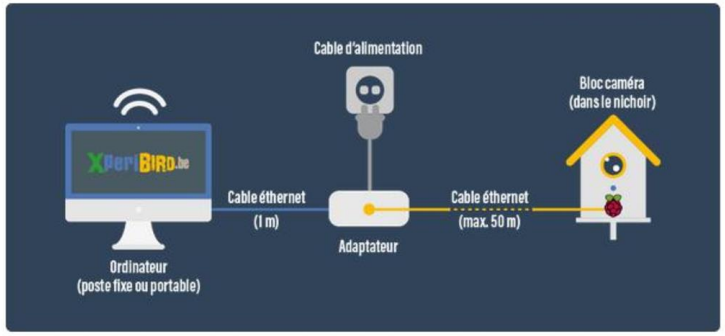
- 16.000 m² permanent exhibitions
- 750 m² temporary exhibitions
- 100 people (out of 420)
- 310 000 visitors (mean attendance over last 10 years)

- Permanent exhibitions are about
- Dinosaurs
- Evolution
- Mankind
- History of the natural sciences
- Biodiversity

- 1 temporary exhibition / year
- Many activities for the visitors such as guided tours, workshops, teacher's doc…

14-10-2022> 13-08-2023

Outside of the Museum…
Travelling workshops-exhibitions, our science truck "XperiLAB"
and programme XperiBird



Google.org

museum

WHAT KIND OF PROJECTS ?

CIVIC ACTIONS	CONSERVATION	INVESTIGATION	VIRTUAL	EDUCATION
				

This classification pays attention to the organizational and macrostructural characteristics of the projects, to their goals and the importance of physical environment to participation. (Wiggins and Crowston 2011)

Belgian Federal Mutual Learning Event

Citizen Science in the Belgian Federal Scientific Institutes. A state of affairs: current practices and funding opportunities.

12 January 2023

AfricaMuseum, Leuvensesteenweg 13, 3080 Tervuren

Meeting room 1

Organised by Tine Huyse, Luiza Mitrache, Carole Paleco, Aziz Naji, Marzia Mazzonetto

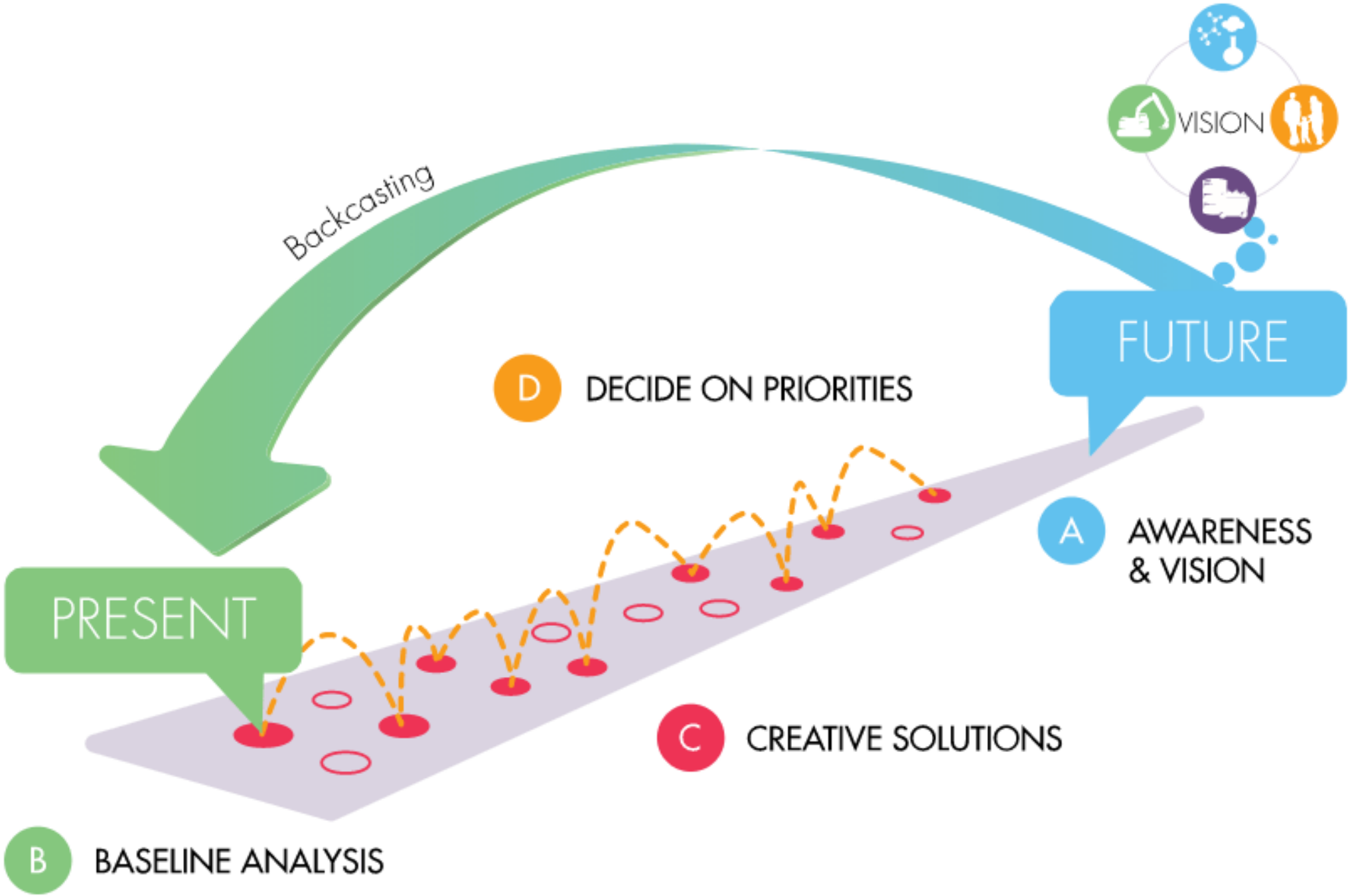
SESSION 1 An introduction to Citizen Science in the Belgian Federal Scientific Institutes
SESSION 2 Participatory workshop on current needs and funding opportunities at the federal level
Session moderated by Marzia Mazzonetto (Stickydot)

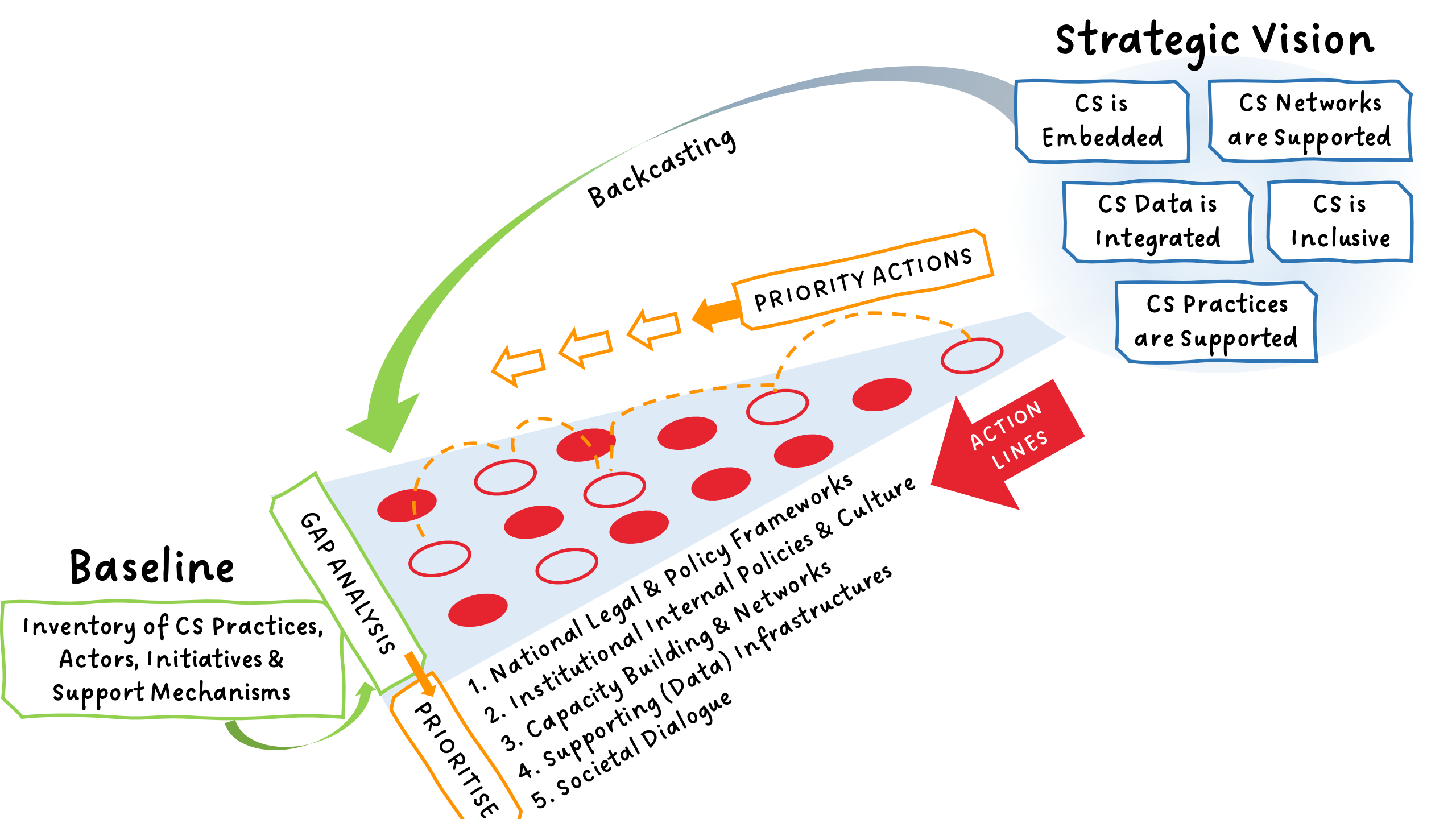
Presentations from 8 Federal Scientific Institutions and Scivil

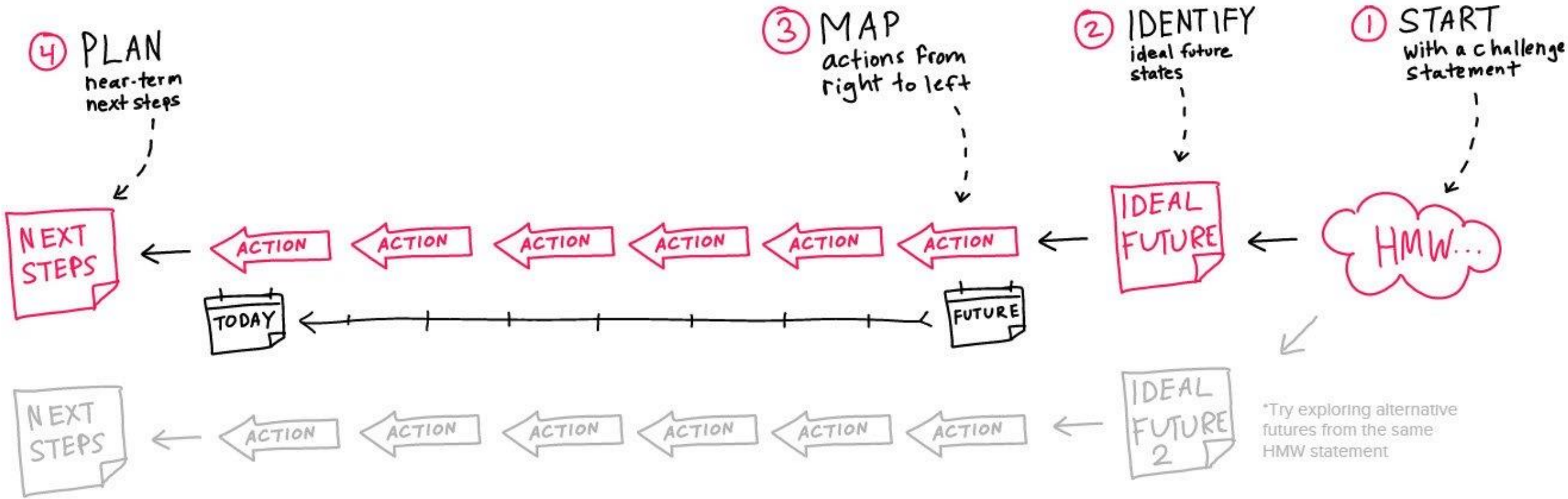
- Well attended, very welcome event
- Needs expressed
- Open discussion with BELSPO on the support and funding opportunities

	Maarten Reyniers and Steven Caluwaerts (Royal Meteorological Institute of Belgium)	1. Citizen science and crowdsourcing at the Royal Meteorological Institute of Belgium
	Stijn Calders (Royal Belgian Institute for Space Aeronomy)	2. Radio Meteor Zoo, a citizen science project hosted on the Zooniverse platform
	Koen Van Noten and Thomas Lecocq (Royal Observatory of Belgium)	3. Involving Belgian citizens in earthquake monitoring and science
sciensano	Tinne Lernout and Suzannah D'Hooghe (Sciensano)	4. TekenNet, Muggensurveillance and CIVISANO
	Q & A 1	
AFRICA	Larissa Smirnova and Caroline Michellier (Royal Museum for Central Africa)	5. Citizen Science projects at the RMCA : digitizing collections using the platform DOEDAT and projects HARISSA and ATRAP
museum	Kelle Moreau and Wouter Dekoninck (Royal Belgian Institute of Natural Sciences)	6. Citizen Science projects at the RBINS: Monitoring of living and dead marine mammals in Belgian waters and citizens working on the entomological collections
	Johan Van Der Eycken (State Archives of Belgium)	7. Citizen Science projects at the State Archives
SCivil	Annelies Duerinckx (Scivil)	8. An overview of Citizen Science in Flanders

Thank You !


VISION
FUTURE
Backcasting
D DECIDE ON PRIORITIES
A AWARENESS & VISION
PRESENT
C CREATIVE SOLUTIONS
B BASELINE ANALYSIS


Strategic Vision
CS is Embedded
CS Networks are Supported
CS Data is Integrated
CS is Inclusive
CS Practices are Supported
Backcasting
PRIORITY ACTIONS
ACTION LINES
GAP ANALYSIS
PRIORITISE
Baseline
Inventory of CS Practices, Actors, Initiatives & Support Mechanisms
1. National Legal & Policy Frameworks
2. Institutional Internal Policies & Culture
3. Capacity Building & Networks
4. Supporting (Data) Infrastructures
5. Societal Dialogue


1 START
With a challenge statement
HMW...
2 IDENTIFY
ideal future states
IDEAL FUTURE
3 MAP
actions from right to left
ACTION
ACTION
ACTION
ACTION
ACTION
ACTION
FUTURE
TODAY
4 PLAN
near-term next steps
NEXT STEPS
IDEAL FUTURE 2
ACTION
ACTION
ACTION
ACTION
ACTION
ACTION
NEXT STEPS
*Try exploring alternative futures from the same HMW statement

CURIEUZENEUZEN
CLIMATE & CITIZEN SCIENCE






Camille Allonsius
13/01/2023
Photos by Sigrid Spinnox

CURIEUZENEUZEN
CLIMATE & CITIZEN SCIENCE

Identify which gardens stay cool during a hot summer day based on microclimate sensor network

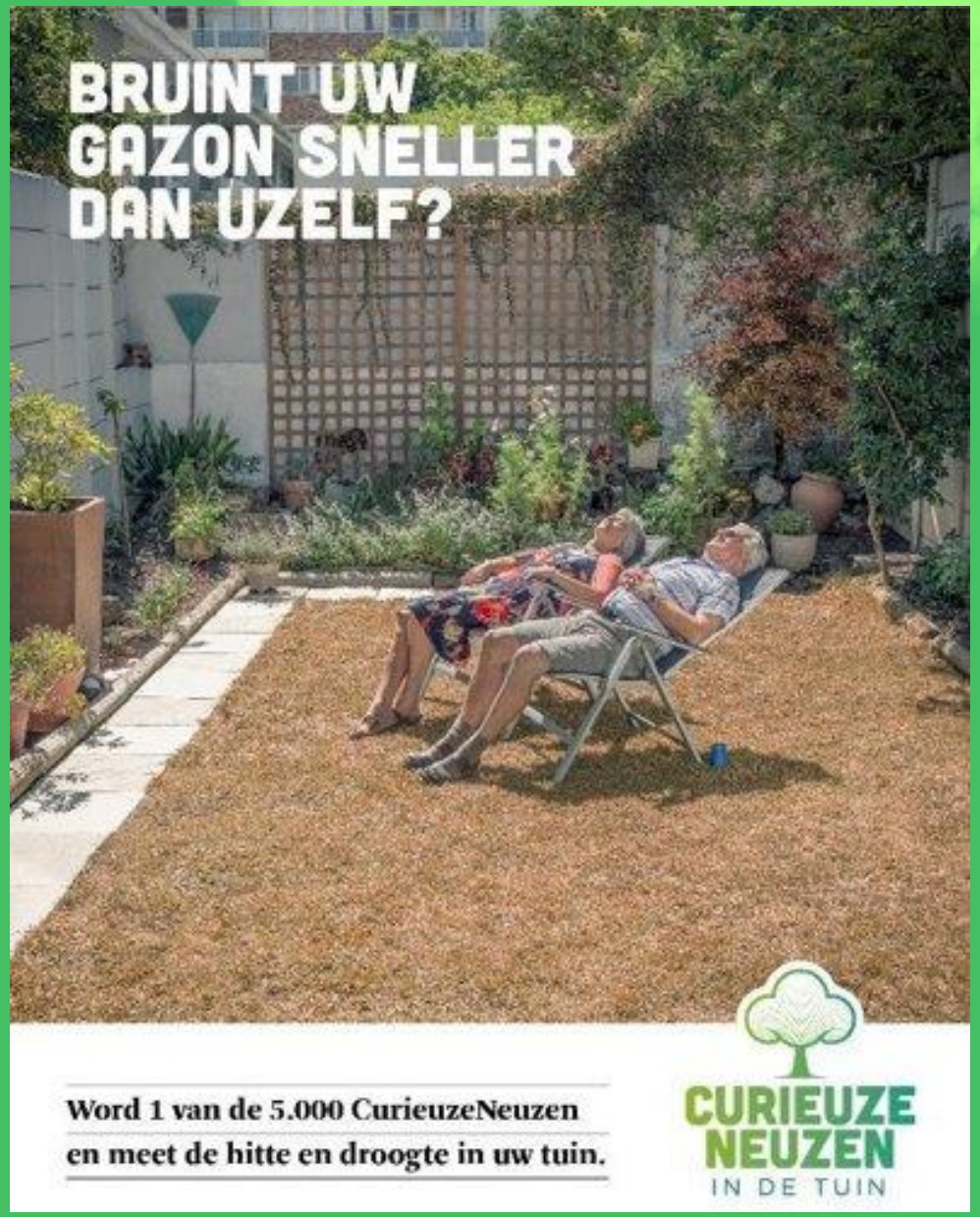
Inform the broad public about climate change happening in their direct environment and “warming” them for necessary future climate mitigation and adaptation measures

CURIEUZENEUZEN
CLIMATE & CITIZEN SCIENCE

With the support of
1 media partner,
1 telecom company,
3 governement
institutions,
1 retail sponsor,
1 logistics partner

51.001
subscribers

5.000 participants:
3.539 families
76 companies
432 schools
362 municipalities
500 farmers
100 nature reserves

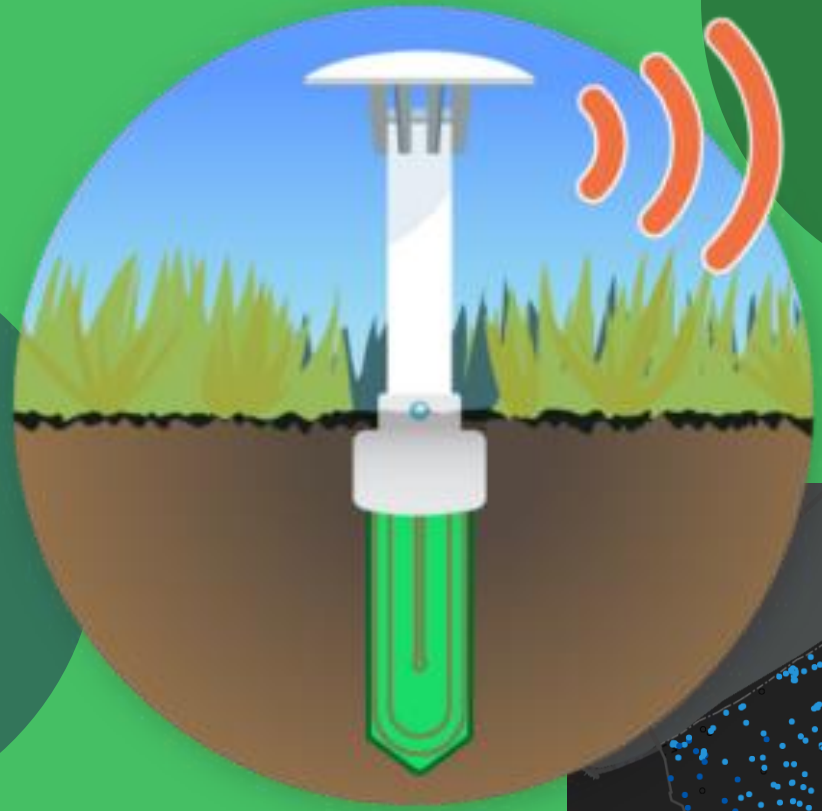


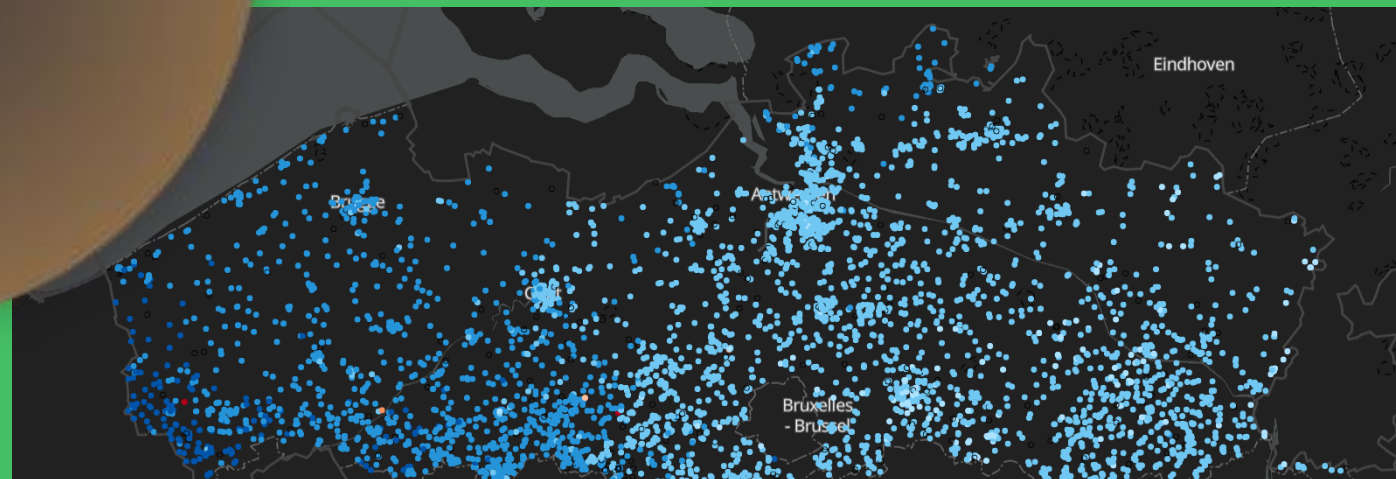
CURIEUZENEUZEN
CLIMATE & CITIZEN SCIENCE

Measurements from April to October in 2021 and 2022

Measurements continously published on interactive dotted maps and personal dashboards

5.000 participants:
3.539 families
76 companies
432 schools
362 municipalities
500 farmers
100 nature reserves





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CLIMATE & CITIZEN SCIENCE

2021
Wettest summer ever with average temperatures

2022
Driest summer months with above average temperatures

The result?

High-resolution climate data show what measures you can take to improve conditions in your city and individual gardens

101 articles in print
175 articles online
8 items on TV news
9 radio interviews
>50.000 social media interactions
50.000+ newsletter audience

CURIEUZENEUZEN
CLIMATE & CITIZEN SCIENCE

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Several local municipalities in Flanders are working out their own sensor networks and/or applying our recommendations

CURIEUZENEUZEN
CLIMATE & CITIZEN SCIENCE

Our advice for future projects?

Be ambitious
for citizen science!

Look for “win-win” projects

Citizen scientists deliver quality input & amplify your message

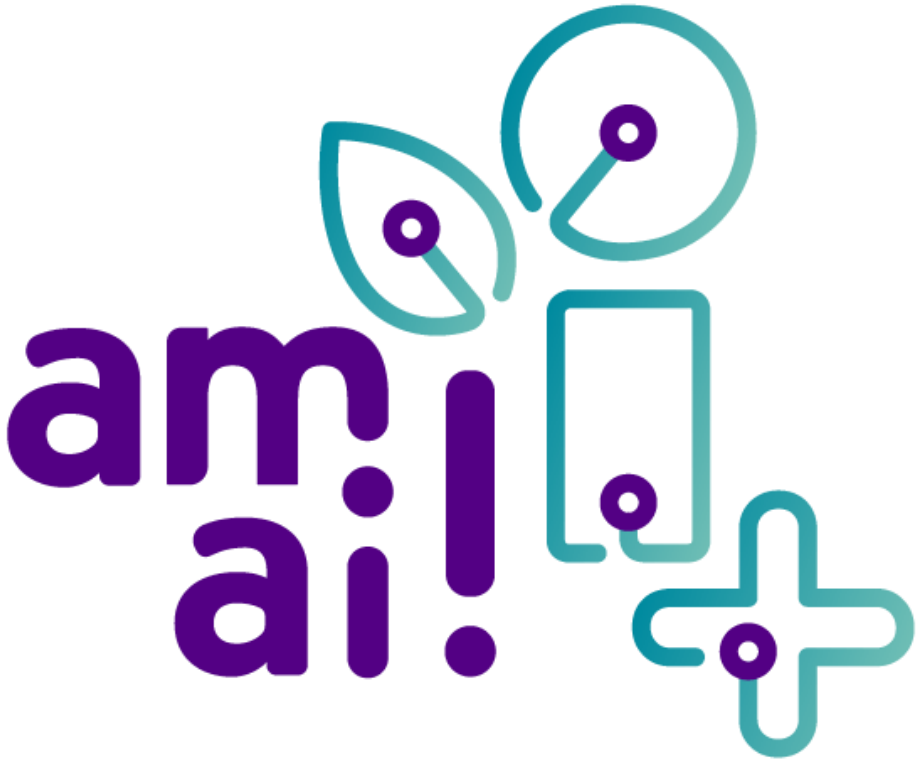
CURIEUZENEUZEN
CLIMATE & CITIZEN SCIENCE

What's next for us?

A lot more data analysis, and scientific publications

Our team is starting up a CurieuzeNeuzen spin-off, with support and strategy advice for future large-scale citizen science projects

camille.allonsius@uantwerpen.be



Co-creating artificial intelligence: designing and enhancing AI solutions through citizen science

AI VLAANDEREN
BOUWEN AAN JE DIGITALE TOEKOMST

SCivil

The amai!-team

- **Scivil**: The Flemisch center for citizen science
  - Associated with RVO-society
- **Knowledge centre Data & Society**
  - Associated with research group imec-SMIT-VUB

Funded by the **Flemish Governement** (Economy, Science and Innovation), as part of AI Flanders programme

Main goals

Insight: How is AI part of our lives?

- Science communication

Ideas: What do you want AI to be used for (and in what ways)?

- Citizen science

Impact! We give consortia a chance to make citizens' ideas come true

- Funding call
- Projects with a citizen science approach

5 themes

Mobility

Climate

Health

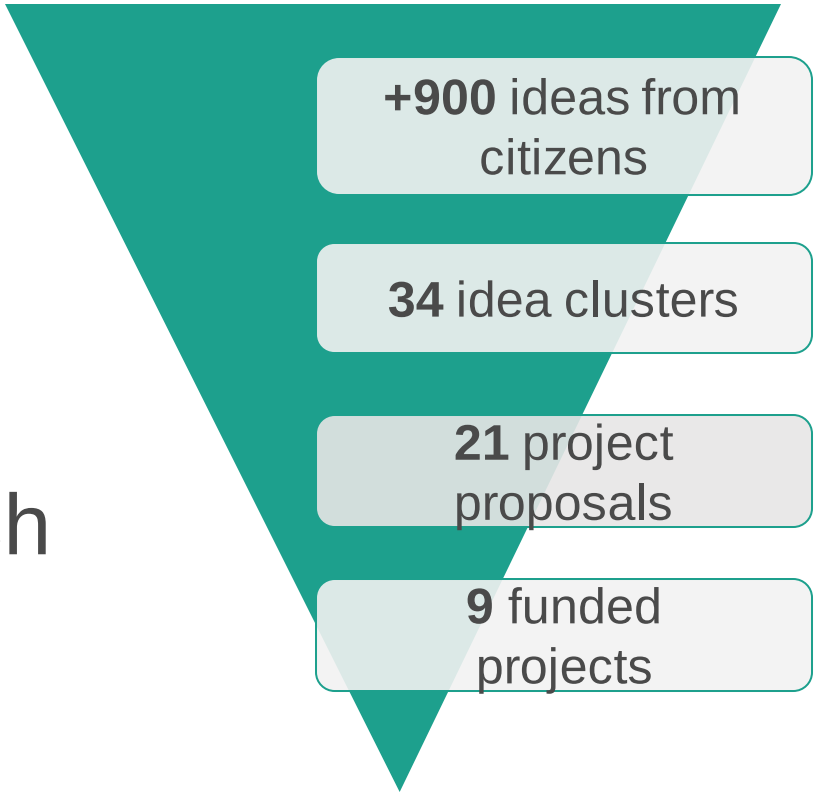
Work

Digital inclusion

amai!

4 phases

- 1. collecting research questions
- 2. co-creating solutions
- 3. open call for projects
- 4. developing solutions with CS approach



amai!

Target audiences

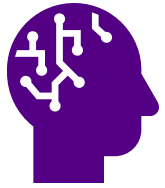
People who are not primarily interested in AI, but who are deeply concerned with current societal challenges

Civil society organizations

Societal implementers

Researchers

Policy makers



AI-professionals

amai!

Wide communication reach

Levels of participation

21 consortia submitting proposal
450 participants in workshops
900 citizens sending in ideas
5000 citizens voting for best proposal
10.000 visitors of event booth
40.000 visitors of online website
500.000 listeners on national radio

Communication actions

- Collaboration with national public broadcaster
- Social media campaigns
- Online platform
  - Gathering ideas
  - Providing accessible information
  - Fun tests on AI

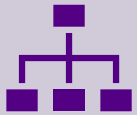
Activities

- 2021: brainstorm sessions an co-creating sessions
  - Mainly online (covid)
- From 2022: more focus on offline events
  - Information sessions
  - Workshops
  - Idea booth at events
  - Train-the-trainer
  - ...
- The amai! card game
  - From 8+
  - At home or in classroom

Impact on policy making

Citizen participation in funding process	Focus on solving societal issues Projects based on ideas from citizens Public voting to define winners
Involving citizens in complex policy themes	amai! as example put forward by Flemish government Inspiration for other funding calls (e.g. Flemish Food Strategy)
Charter on (ethical) conditions for AI	What do citizens expect from AI systems? Input from citizens during workshops Intended for anyone who creates new AI systems

Lessons learned for policy makers?



Long term vision

Yearly renewal, no longterm guarantees
It takes time to build community
Implementing all phases in one year is tough

Project call connecting science & society

Matchmaking needed between stakeholders
Give consortia enough time to develop proposal
Funding budget high enough
Product duration long enough

Importance of communication

Wide communication comes with high costs!
Policy makers can help by promoting the project

Elements of success

Amai! involves a wide range of stakeholders

Amai! has a wide reach through different participation levels

- Working with national public broadcaster
- Large events work better than online
- Working together with existing communities and networks

Citizens are involved in every step of the process

Cascade funding to make ideas from citizens come true

BeBirds

Wild birds ringing for science and conservation

Didier Vangeluwe

Royal Belgian Institute of Natural Sciences

museum
Operational Directorate Natural Environment
OD Nature I OD Natuur I DO Nature

.be

Objectives

i) to collect quality data on wild bird's movements and demographic parameters throughout a network of certified volunteers

ii) to make these data available to scientists / policy makers stakeholders / general public

iii) to promote the development of knowledge by participating in the training of postgraduate students;

iv) to develop own research programs focused on nature conservation.

How it works ?

ECON
ZERO
AURORA

SCHEME RING NR.	BRUSSELS **M21012**
SPECIES	**BUBO BUBO** OEHOE GRAND-DUC D'EUROPE EAGLE OWL
AGE / SEX	Pullus C/3
RINGING DATE	07.05.2017
RINGING PLACE	FALISOLLE NAMUR BL26 BELGIUM
RINGING COORDIN.	50.25 N - 004.37 E
FINDING DATE	02.06.2019
FINDING PLACE	LE CHATELET-SUR-SORMONNE ARDENNES FR11 FRANCE
FINDING COORDIN.	49.51 N - 004.31 E
FINDING DETAILS	Traffic accident (dead <1 week) / Verkeersslachtoffer (<1 week dood) / Tué par véhicule (<1 semaine) 63 km. 2 y 0 m 26 d
RINGER FINDER	Gdt.51 Bubo Jan Loos Reported as BUBO BUBO
REFERENCE	06.09.2019

Mapping ringing recoveries

This app allows you to map the ringing recoveries recorded in Belgium since 1927. This is the result of millions of hours of work performed by thousands of volunteer ringers. We hope you will be interested by this information. The maps can be freely copied provided that you mention the address of the site (http://odnature.naturalsciences.be/bebirds/) and the date of access . If you wish to undertake a study based on these data, you can submit an application to access a particular data set.

Data are available for 295 species and subspecies

Eagle owl

Sex

Any/unknown | Male | Female

Age

Any/unknown | Chick | Juvenile | Fully grown

Update

Last database update: 18 Nov 2021

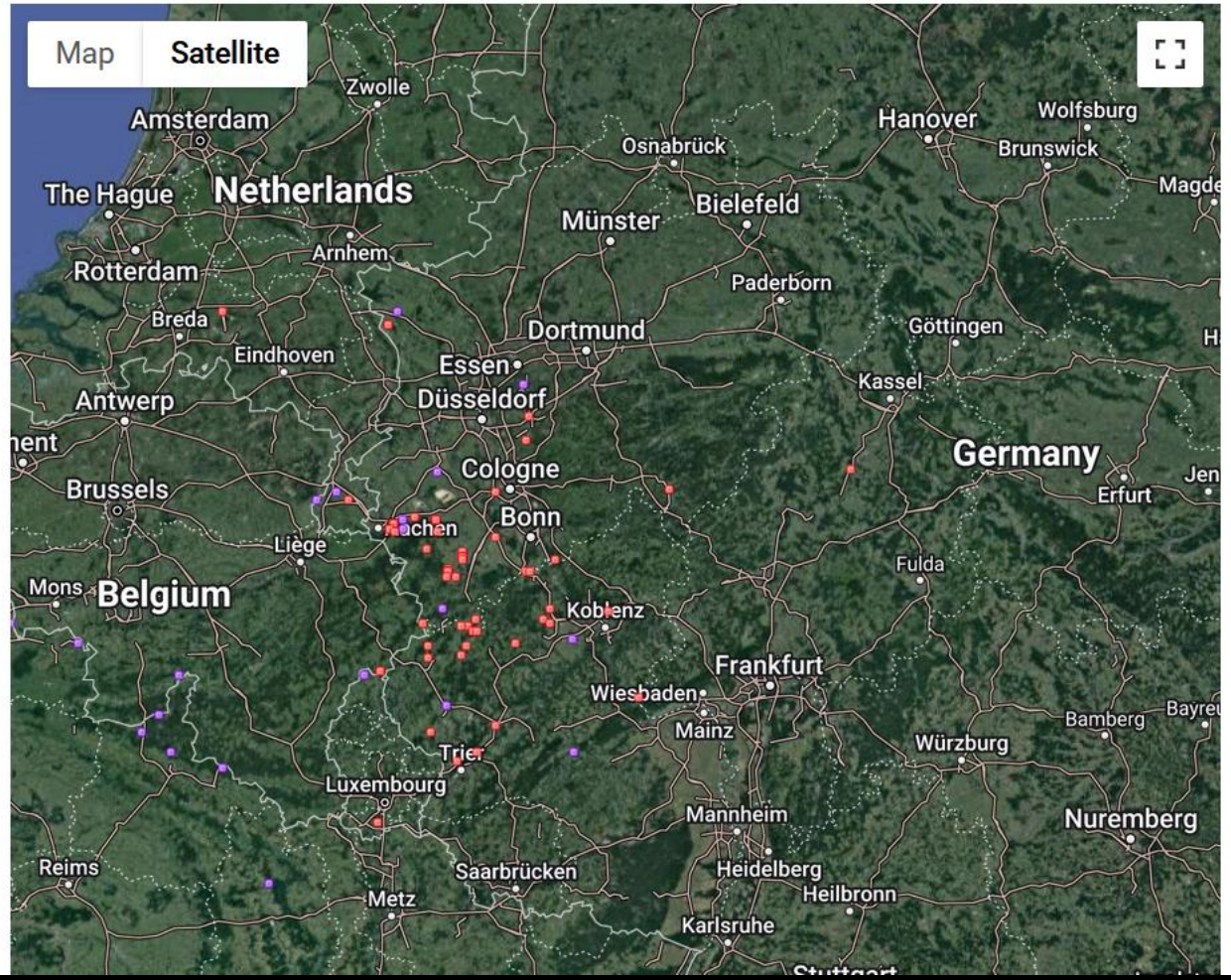
Eagle owl *Bubo bubo*

- Ringed in Belgium, found here [21]
- Ringed here, found in Belgium [61]

Ring# HELG/13665
- 1982-08-14 (Nideggen, Germany)
- 1983-08-12 (Welkenraedt, Belgium)

Ring# HELG/15459
- 1984-07-07 (Stollberg, Germany)
- 1984-11-09 (Tihange, Belgium)

Ring# HELG/15489
- 1984-09-15 (Solingen, Germany)
- 1984-11-09 (Tihange, Belgium)



circa 700,000 wild birs ringed/year by certified volunteers

Key points

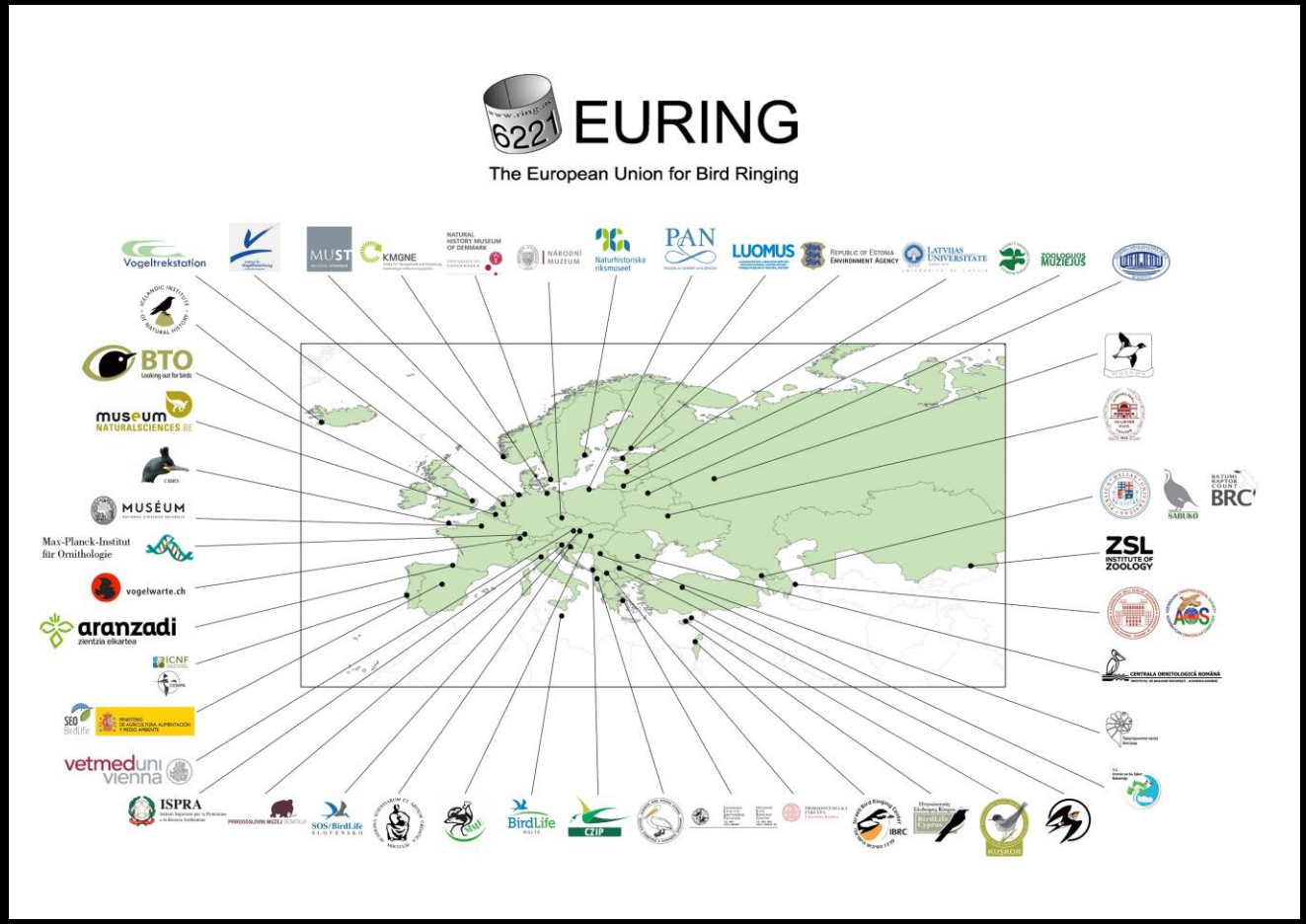
i) launched in 1927 => long-term following up

ii) based at governmental institution => perennity

iii) coherent network of certified volunteers => data quality
=> data availability
=> geographical coverage

Key points …

iv) strong international cooperation (network of 46 institutions)



Coherent network of certified volunteers

i) structure in regional groups

ii) certification process

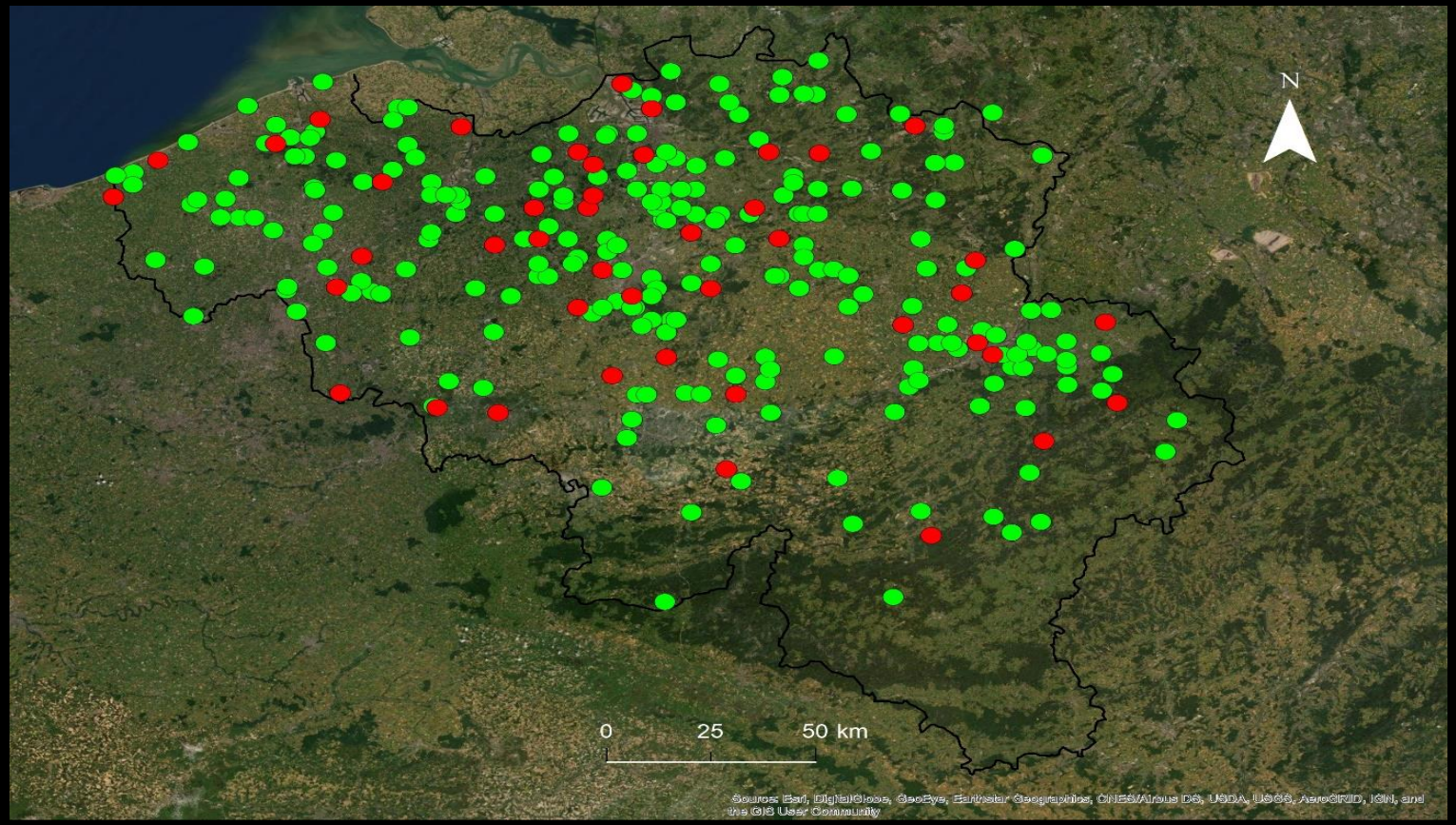
iii) software for data encoding and transmission

iv) coordination meeting

v) general meeting

vi) website

Structure in regional ringing groups



50 regional groups + 1 transversal (thematic) group
50 group's leaders (« old sages »)
345 certified collaborators (18-85 years old)

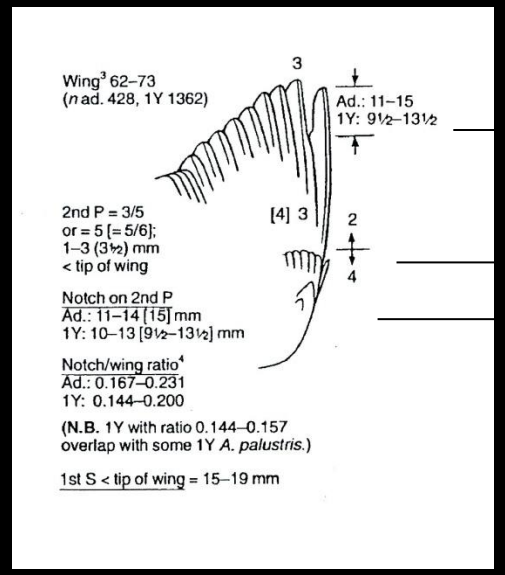
Certification process

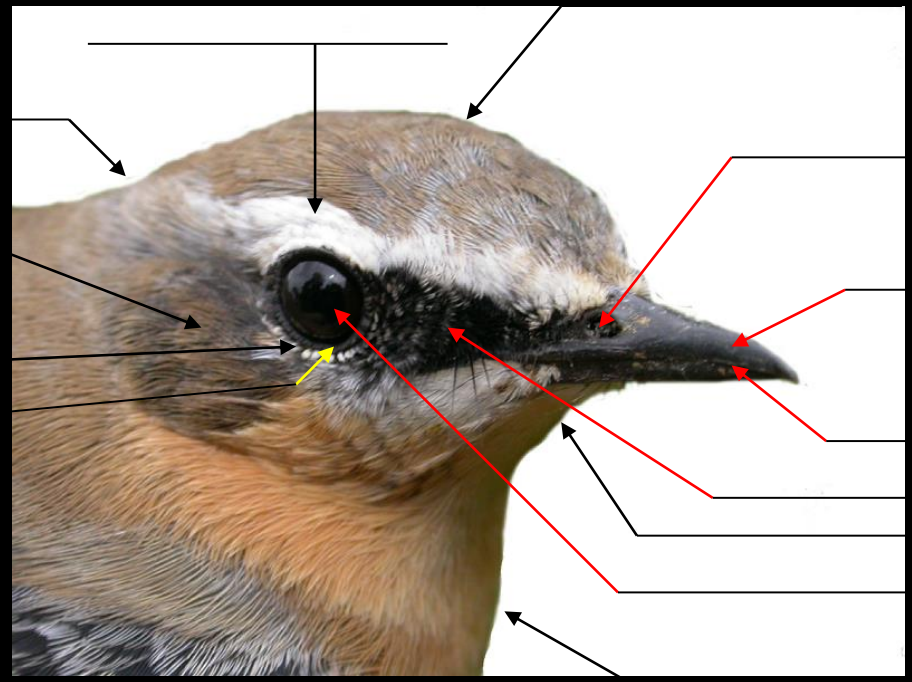
2 years internship in ringing group mandatory prior to exam

inscription by ringing group leader based on evaluation of practical capability

⇒ first level exam => certification to ring nestlings

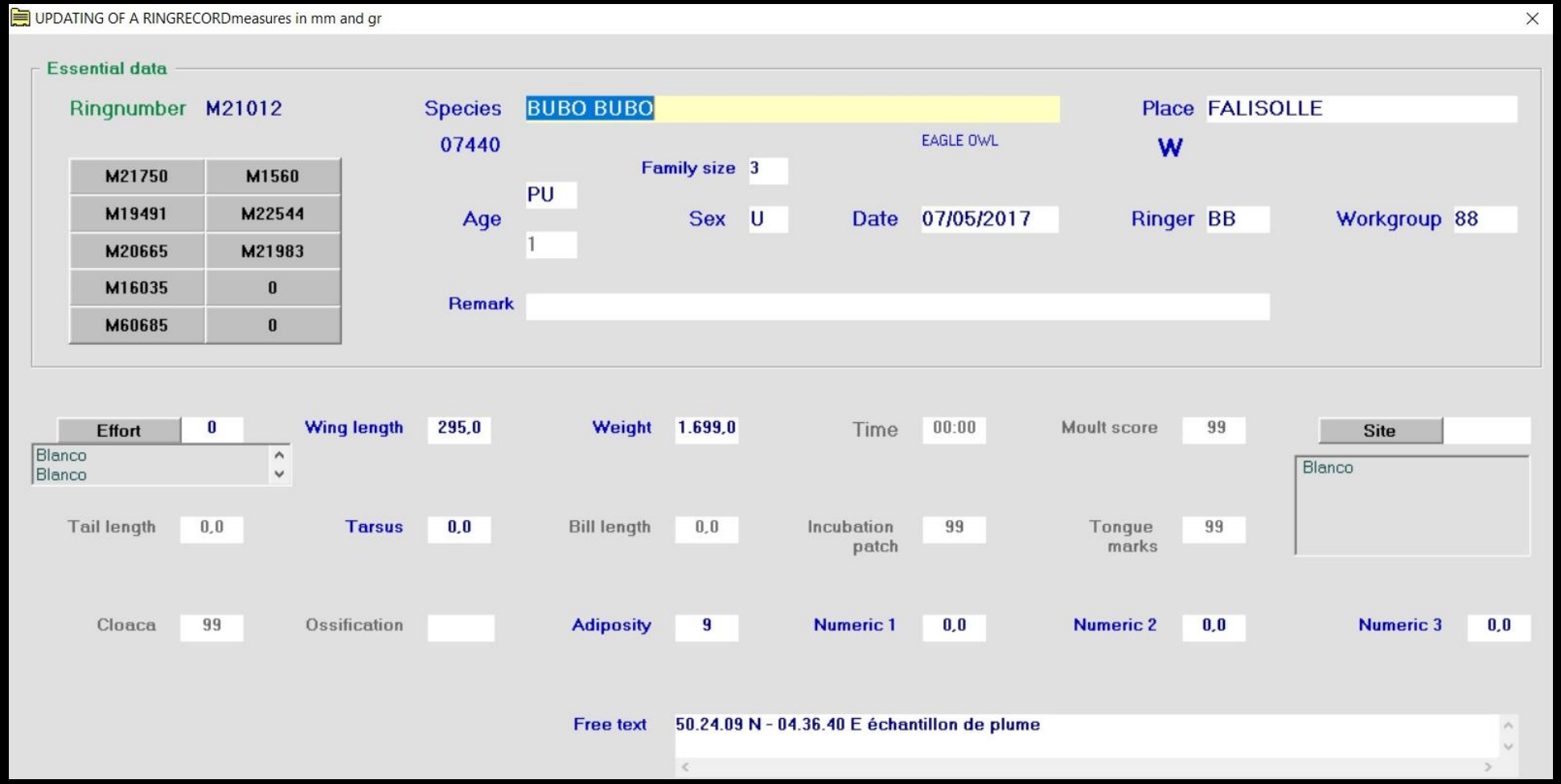
⇒ second level exam => certification to ring full grown





Software for data encoding and transmission

encoding + validation group leader + transmission RBINS

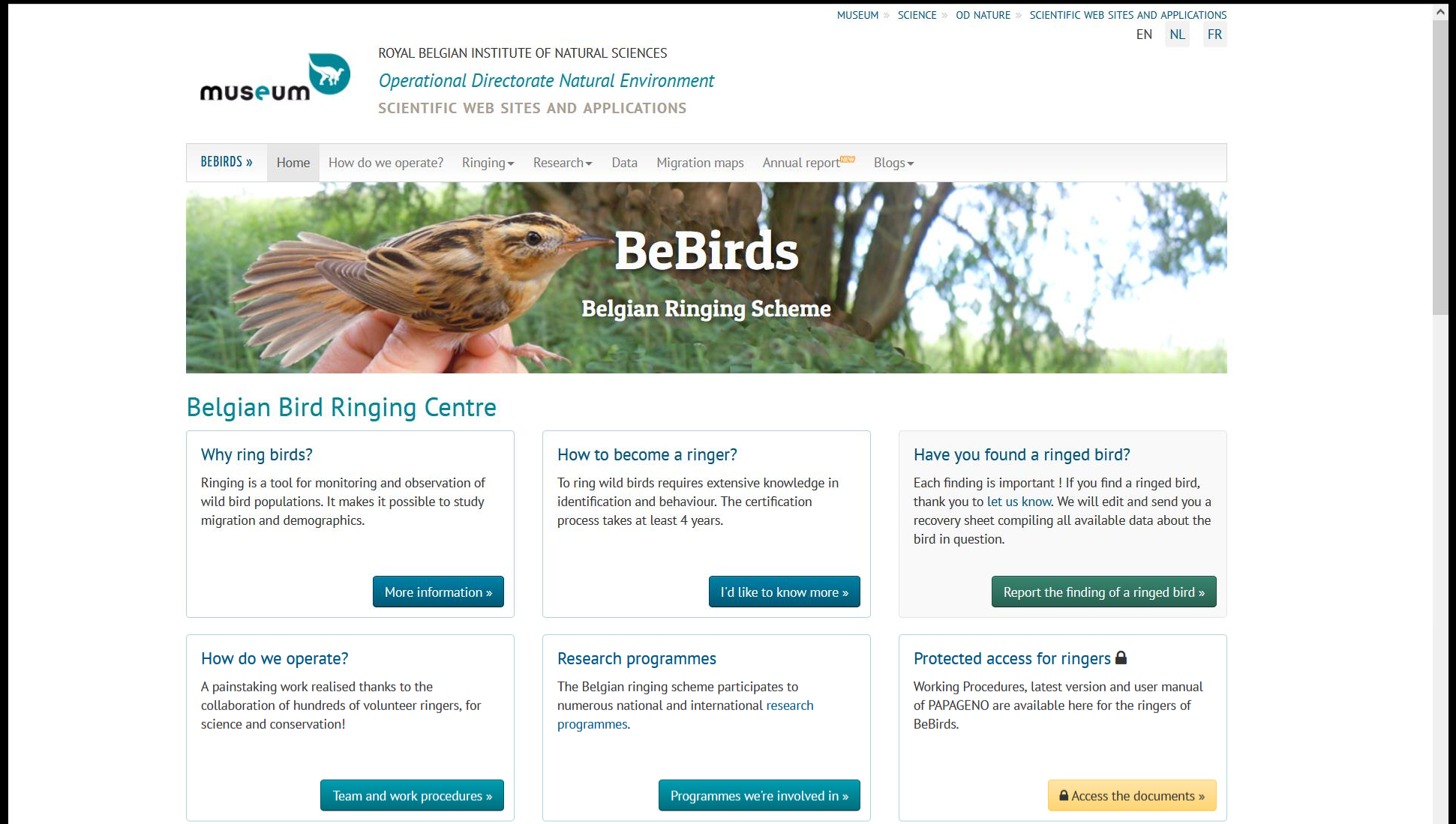


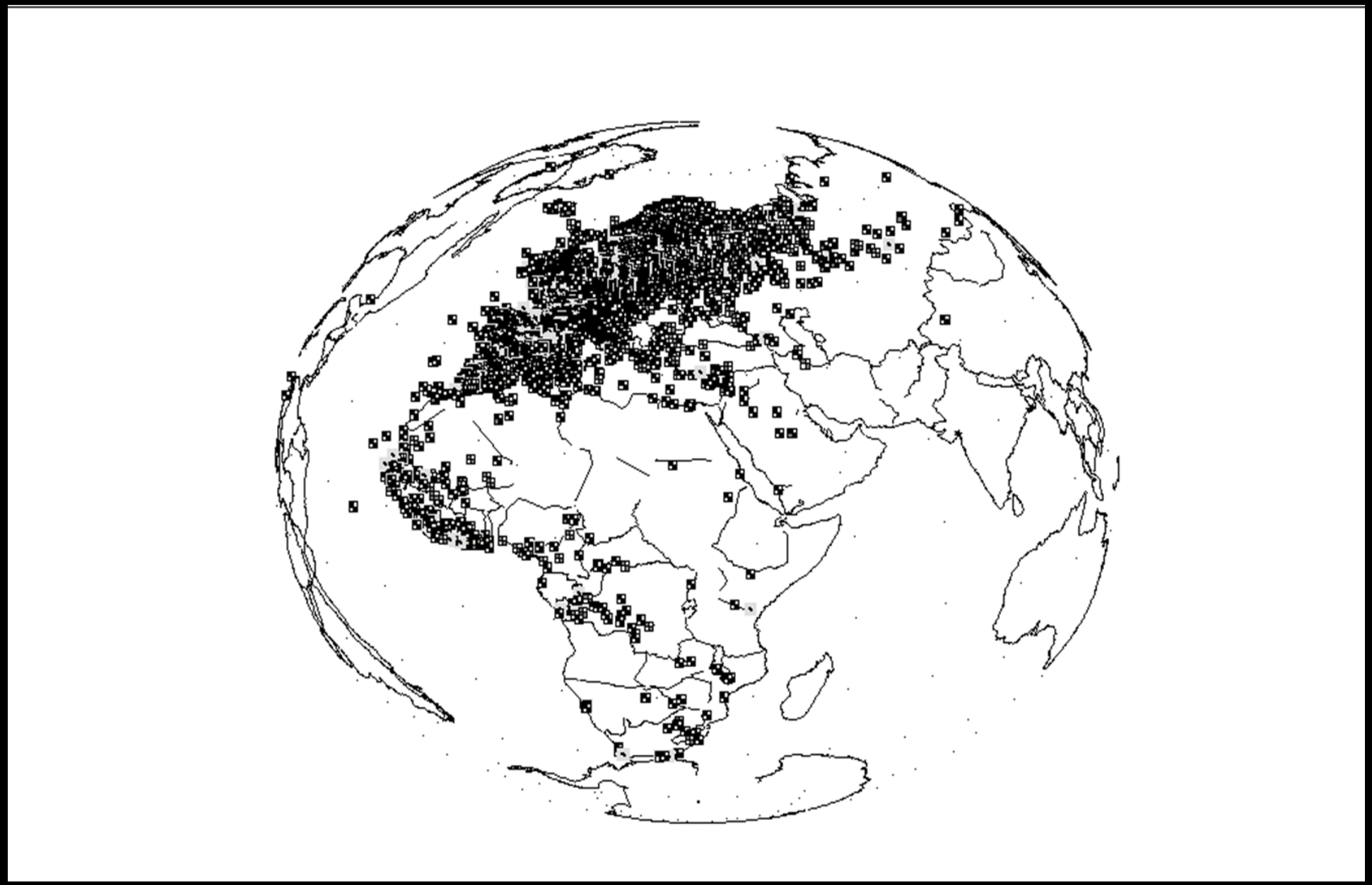
Coordination meeting and general meeting

annual => listening – communication – training – team building

Website

Sharing results with the network + general public, documents for the ringers





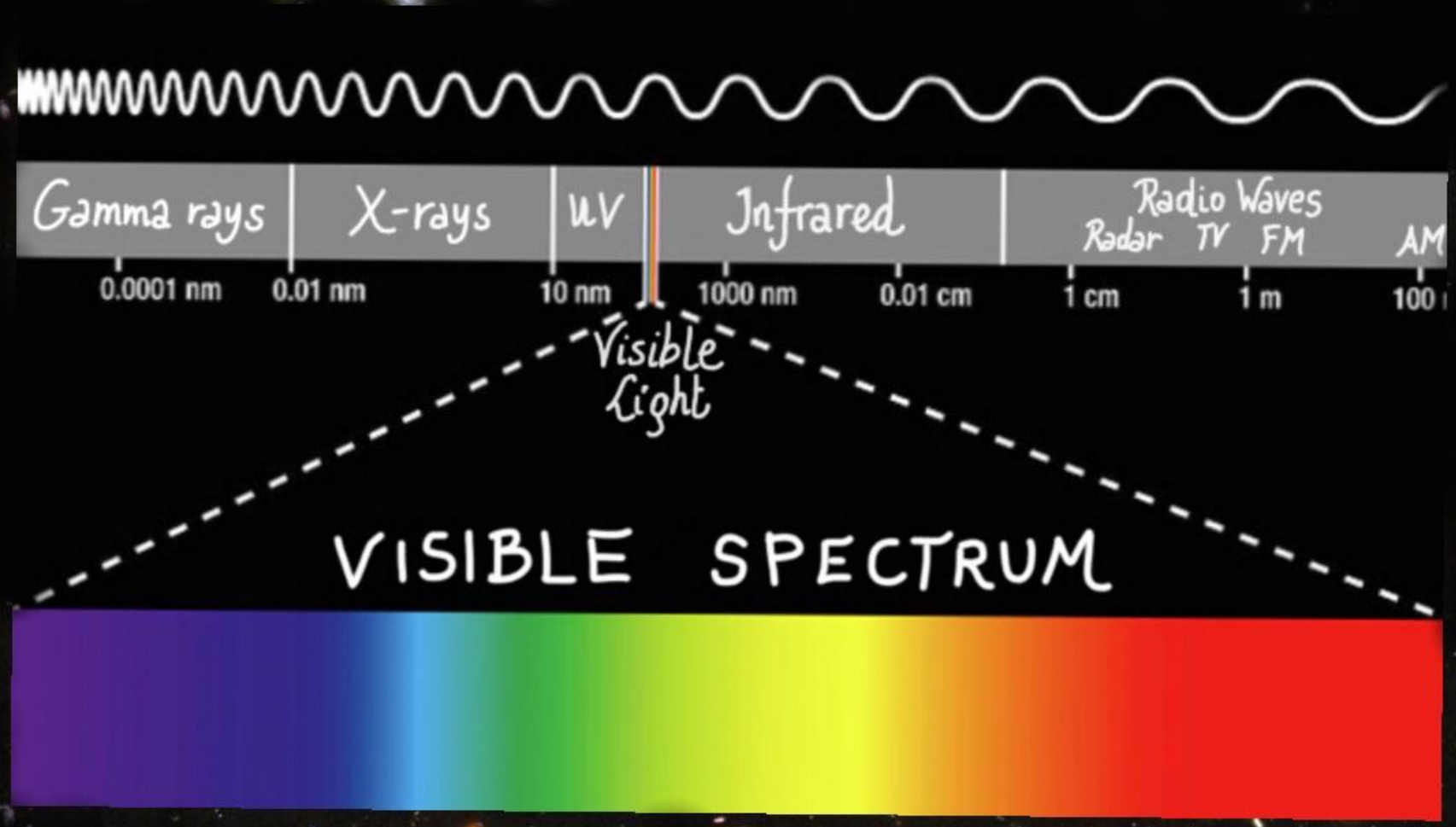
Thanks for your attention


Astro
Sounds

https://www.iau.org/public/themes/citizen-science-projects/

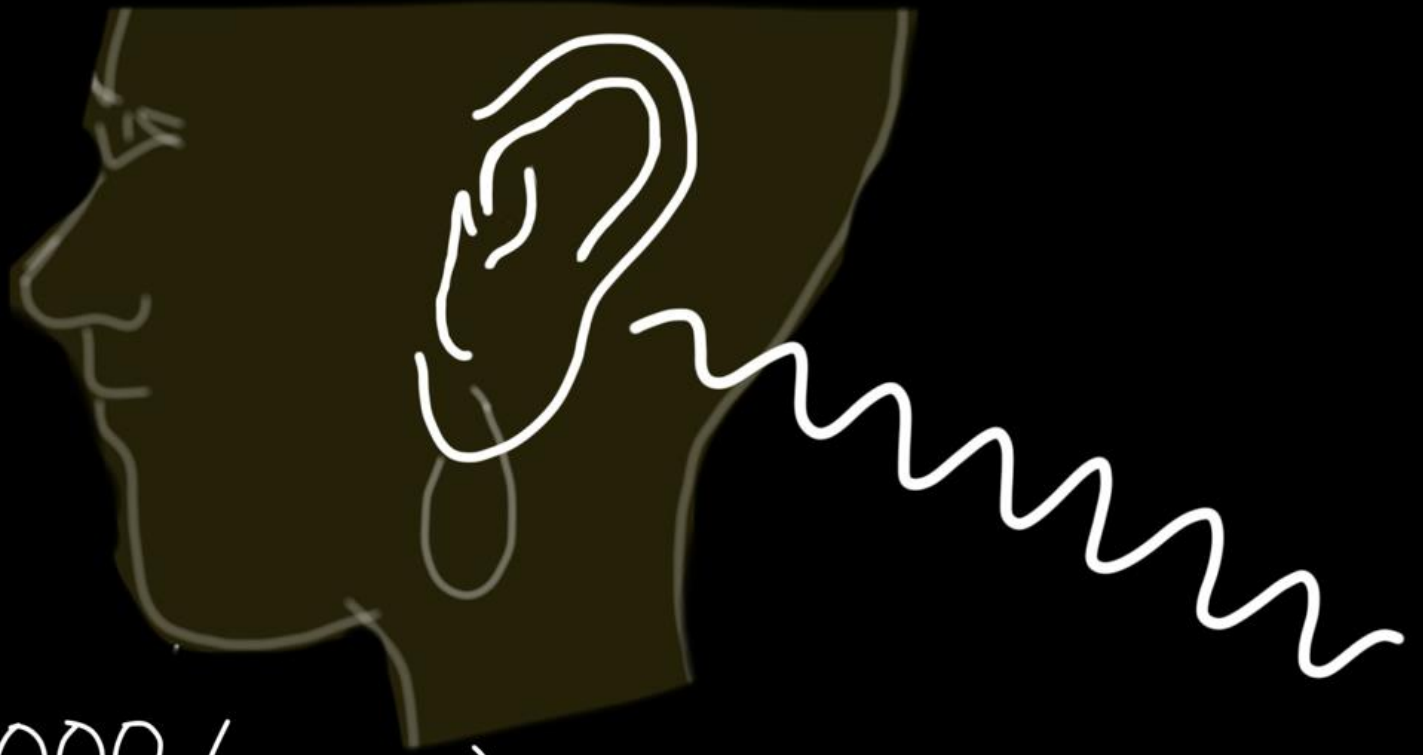
https://www.iau.org/public/themes/citizen-science-projects/

Light

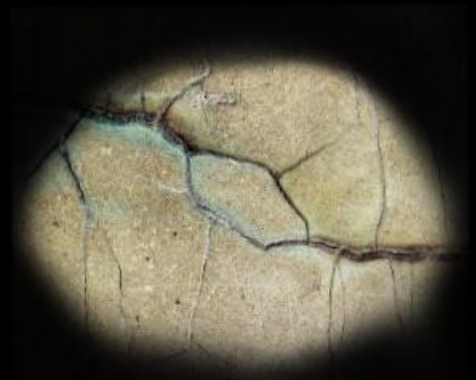

Gamma rays
X-rays
UV
Infrared
Radio Waves
Radar TV FM AM
0.0001 nm
0.01 nm
10 nm
1000 nm
0.01 cm
1 cm
1 m
100
Visible Light
VISIBLE SPECTRUM

Sound

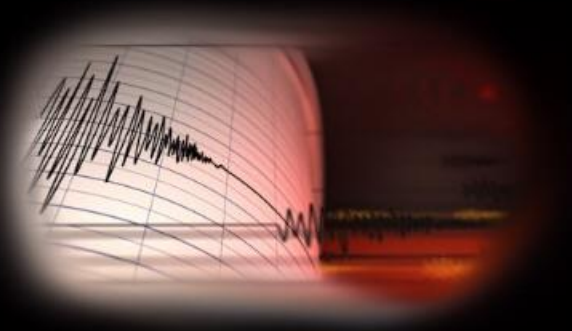
Humans




Planets

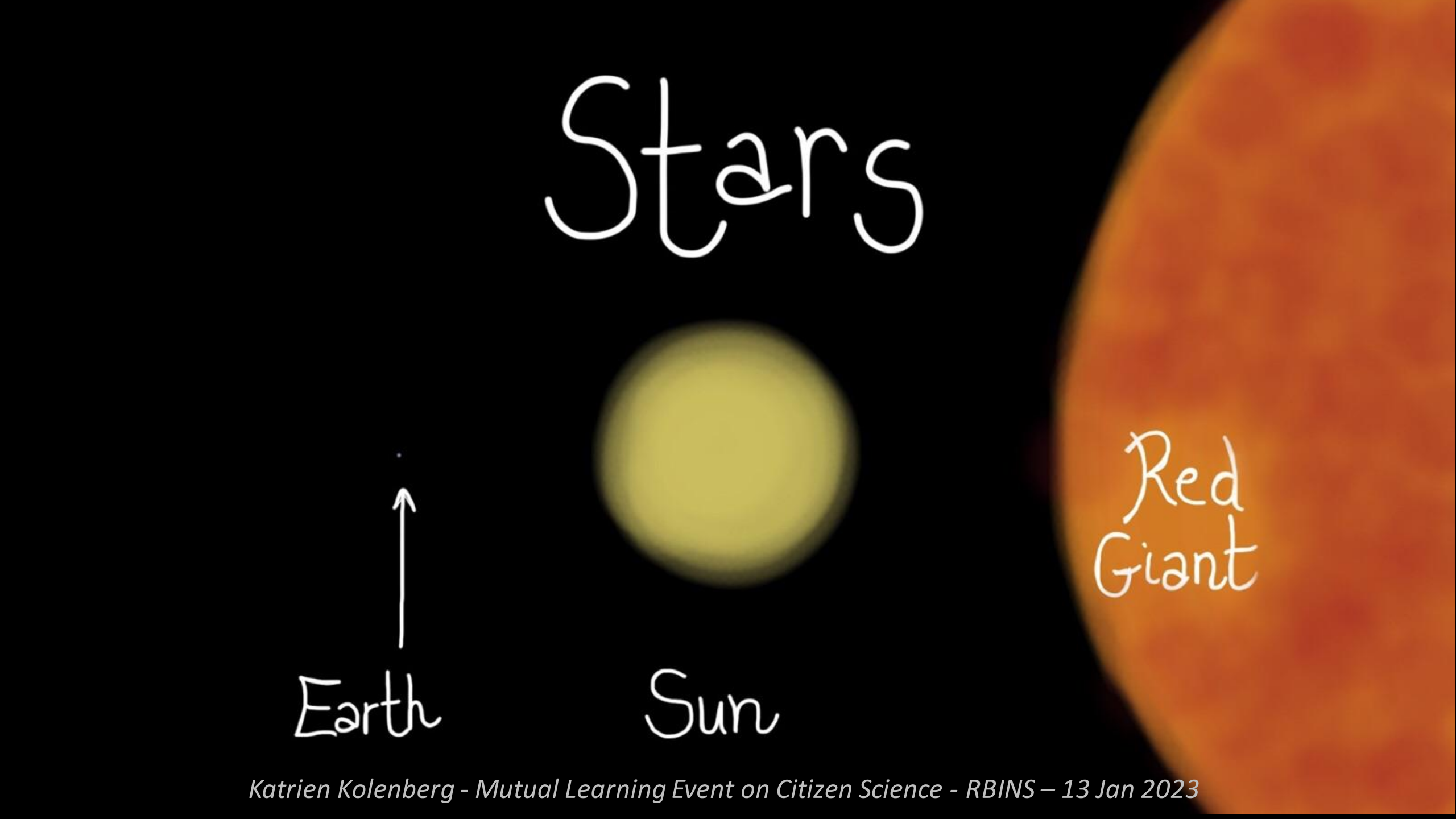


Earthquake

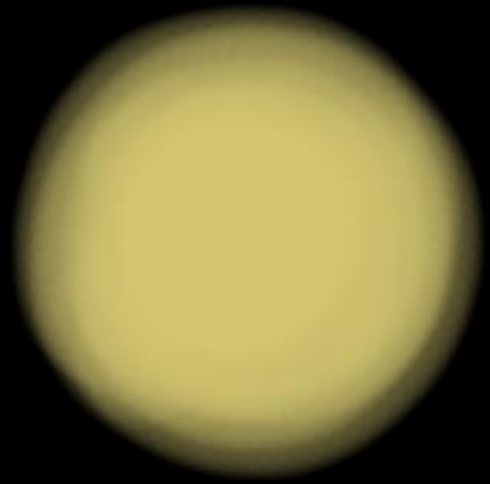



Insight
Marsquakes

Stars



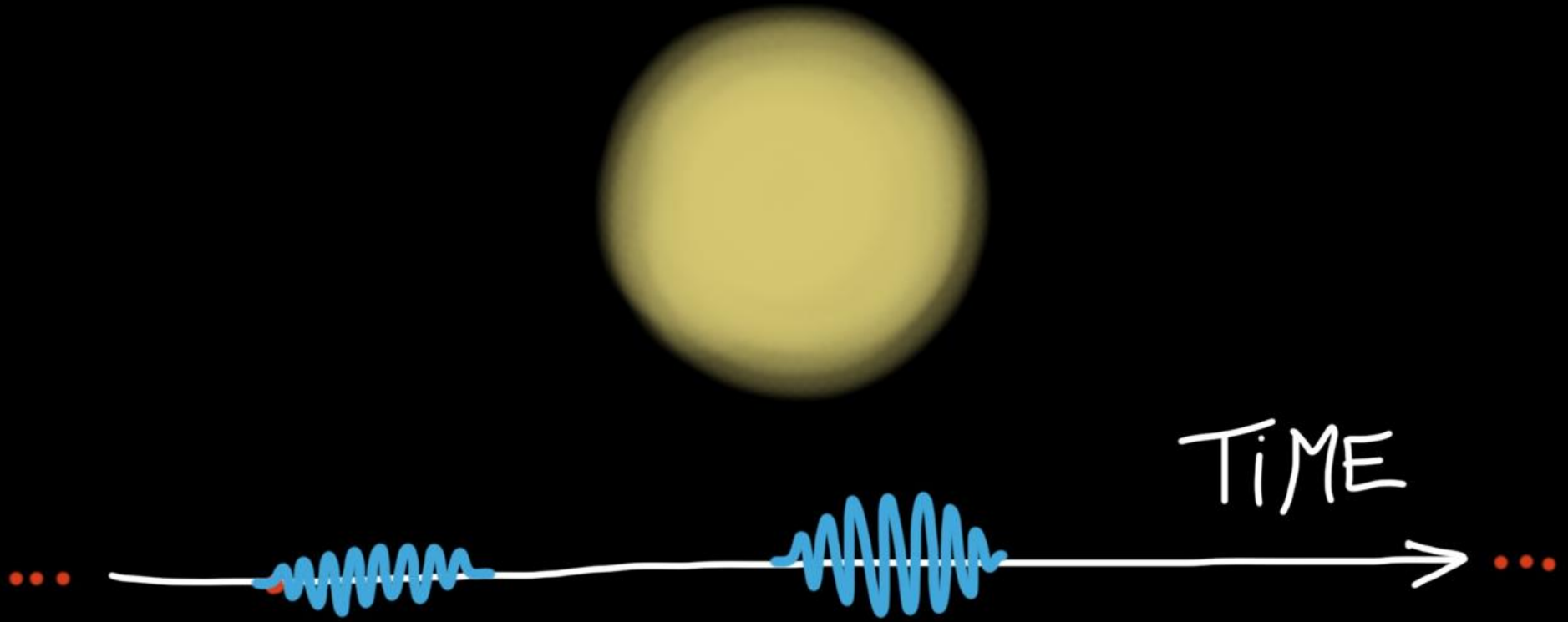
Stars

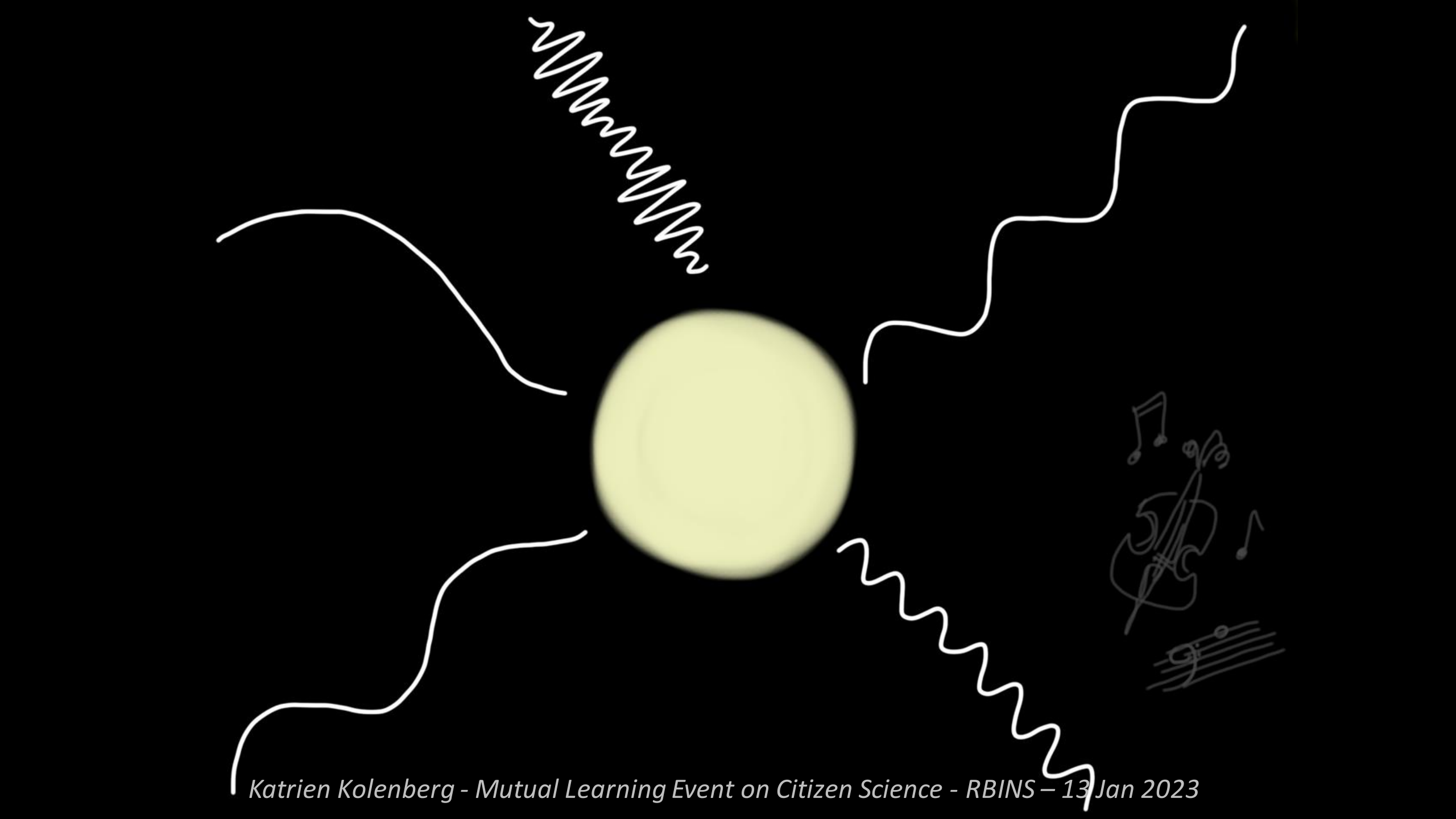


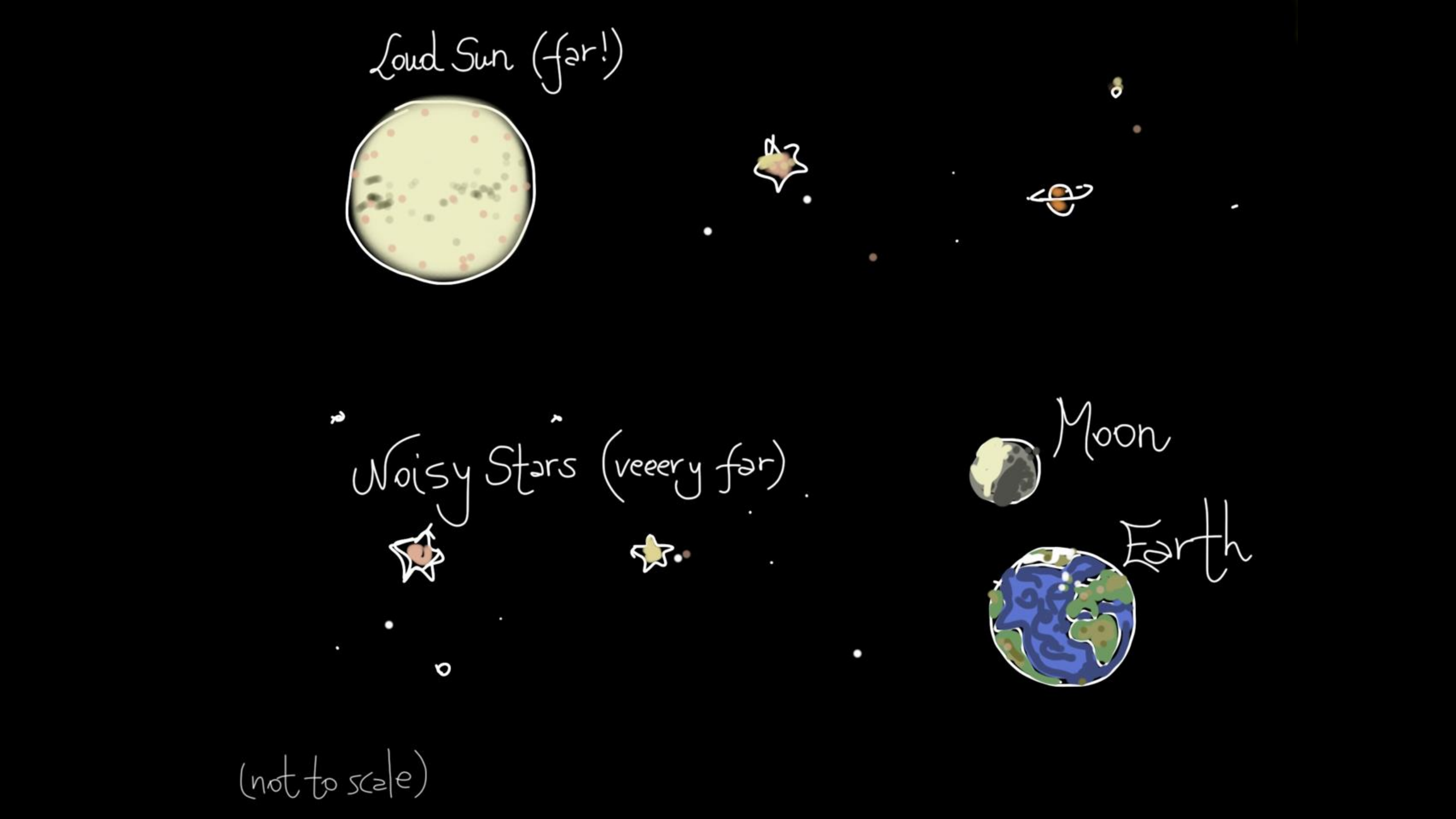
TIME

$10^6 - 10^{10}$ years

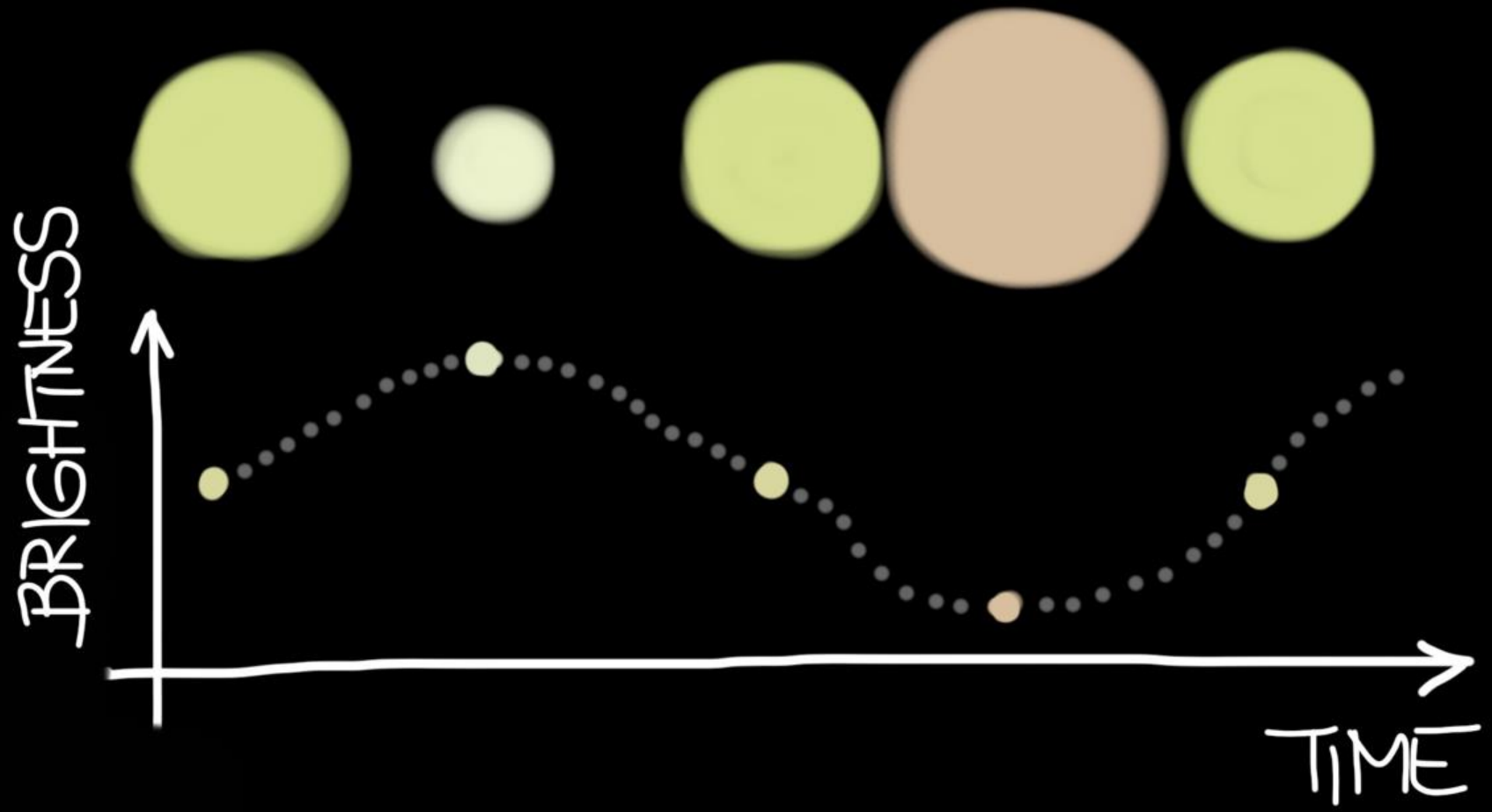
Stars

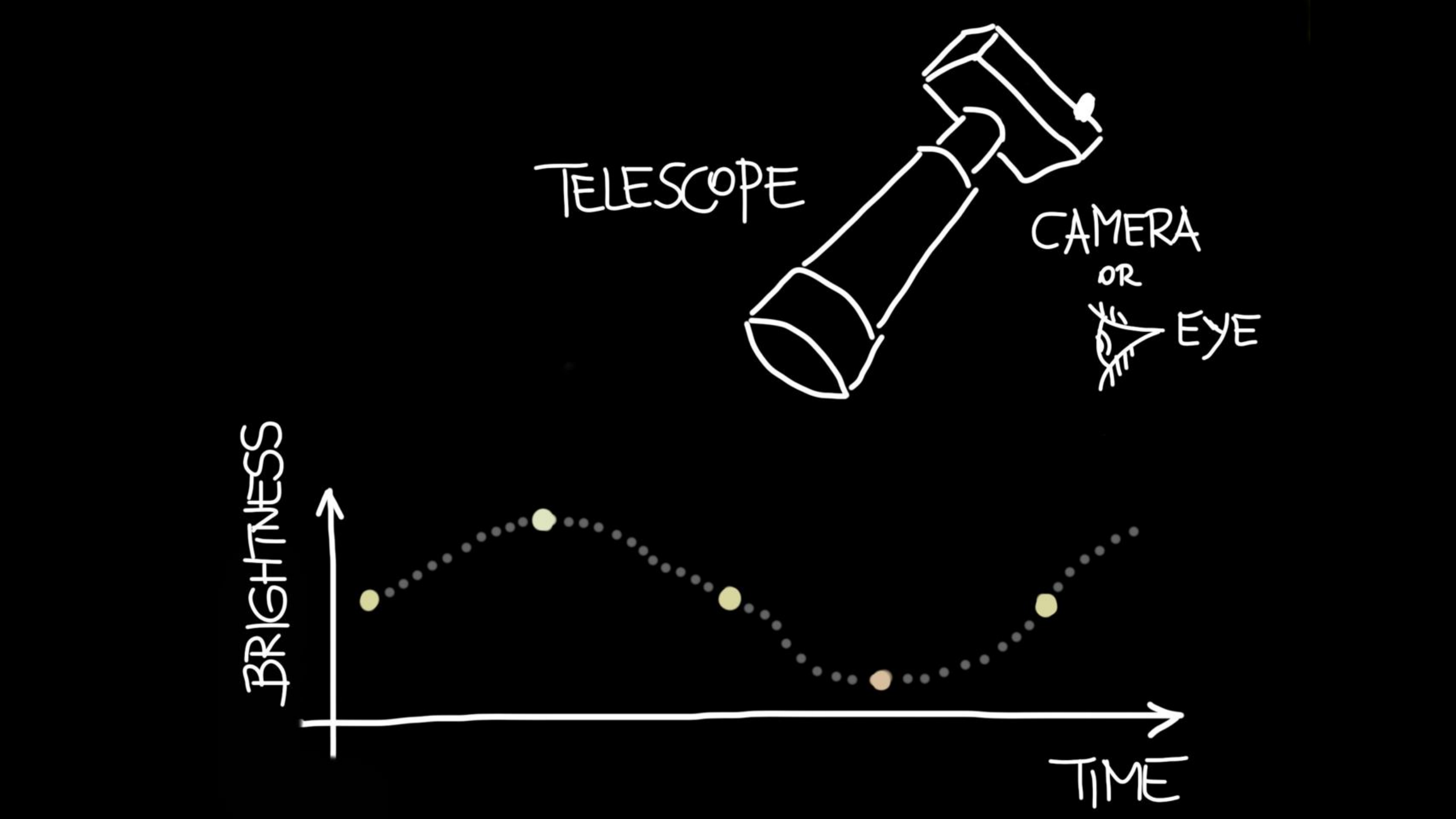





Loud Sun (far!)
Noisy Stars (veeery far)
Moon
Earth
(not to scale)

Seeing Stars Sing

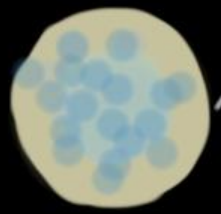



TELESCOPE
CAMERA
OR
EYE
BRIGHTNESS
TIME

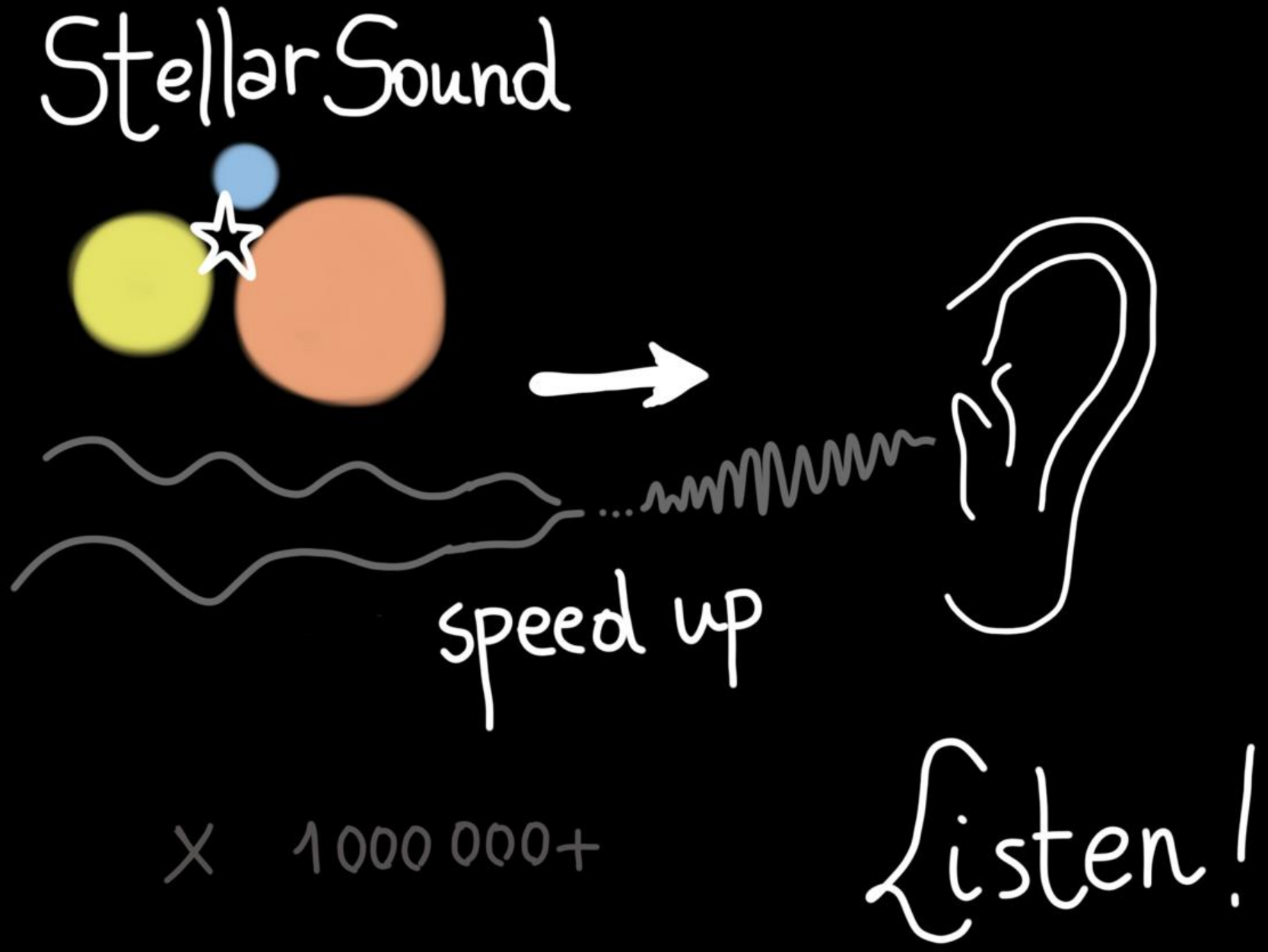
Big, fluffy Star

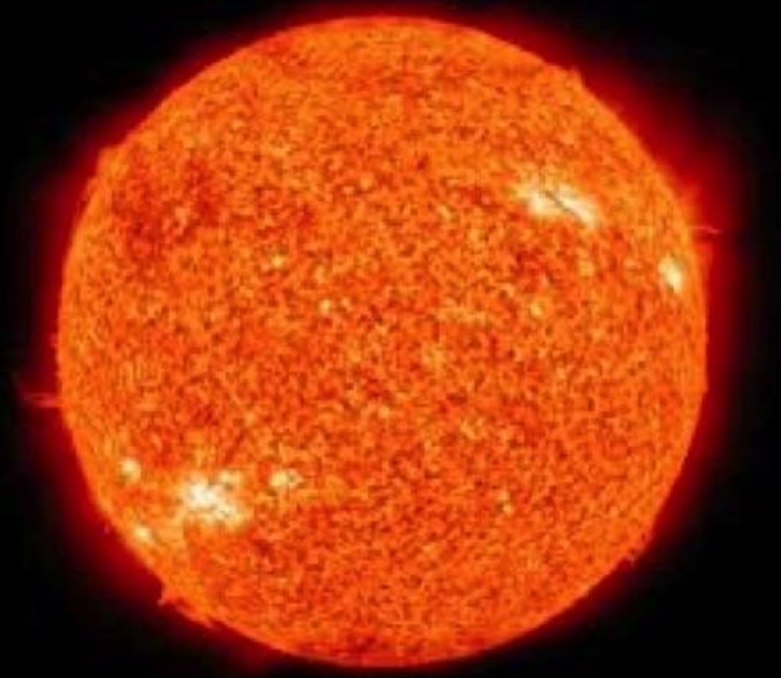
LOW PITCH

Small, dense Star

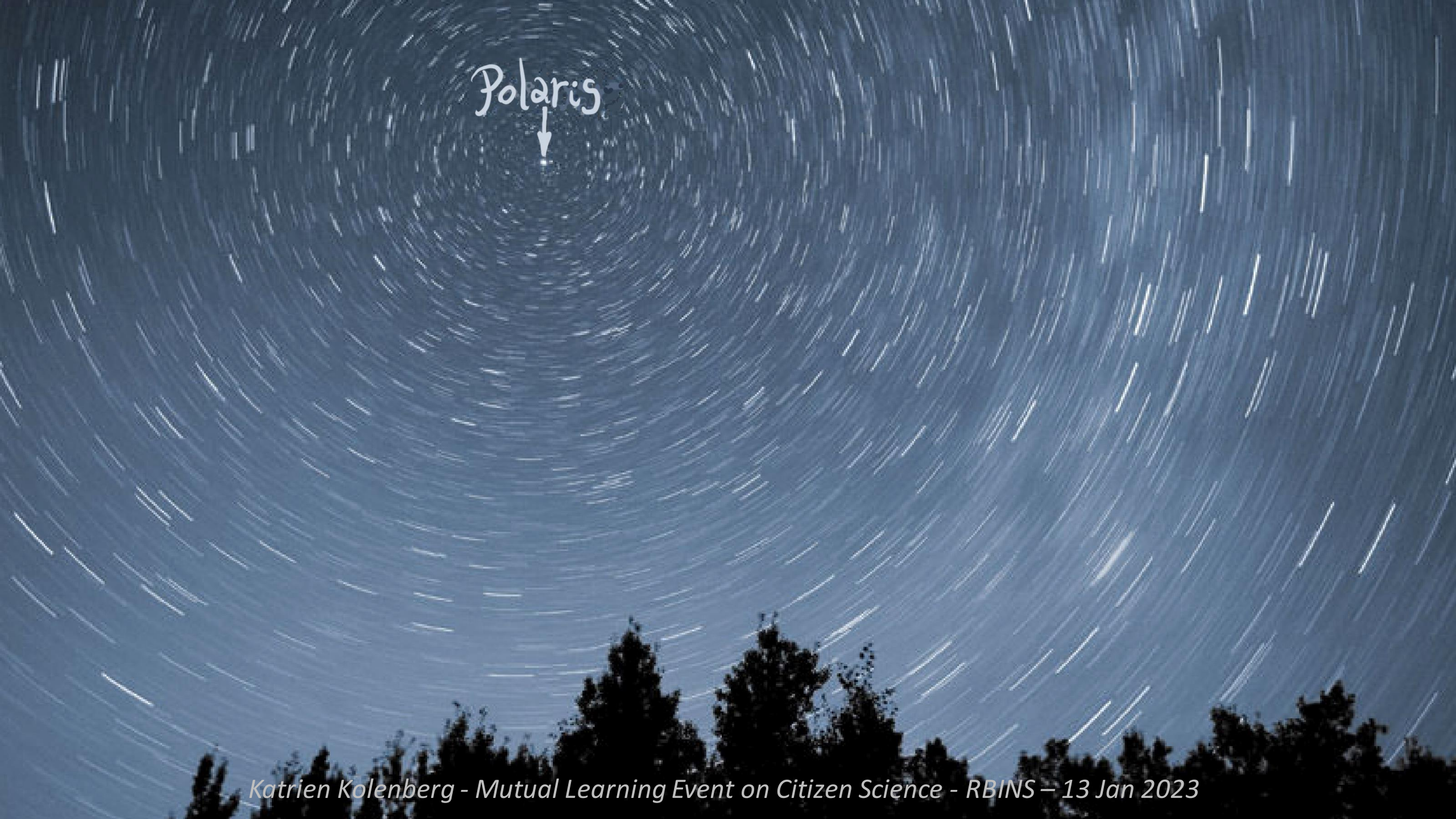


HIGHER PITCH


Stellar Sound
speed up
x 1 000 000+
Listen!

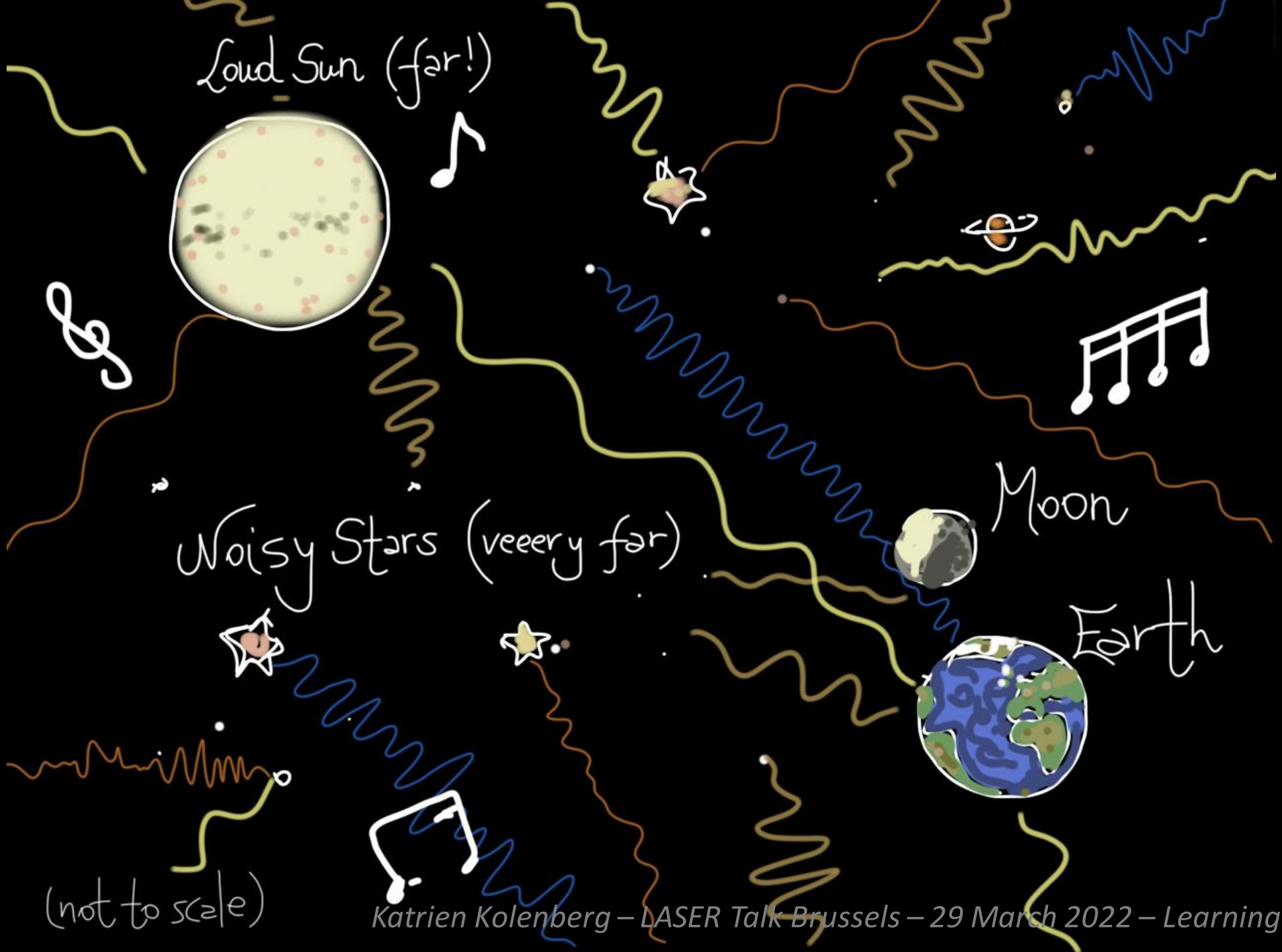

Sun


Aquila
Corona Borealis
Boötes
Hercules
Sagitta
Coma Berenices
Lyra
Vulpecula
Delphinus
Equuleus
Canes Venatici
Cygnus
Draco
Ursa Minor
Leo
Ursa Major
Leo Minor
Cepheus
Lacerta
Pegasus
Polaris
Lynx
Camelopardalis
Andromeda

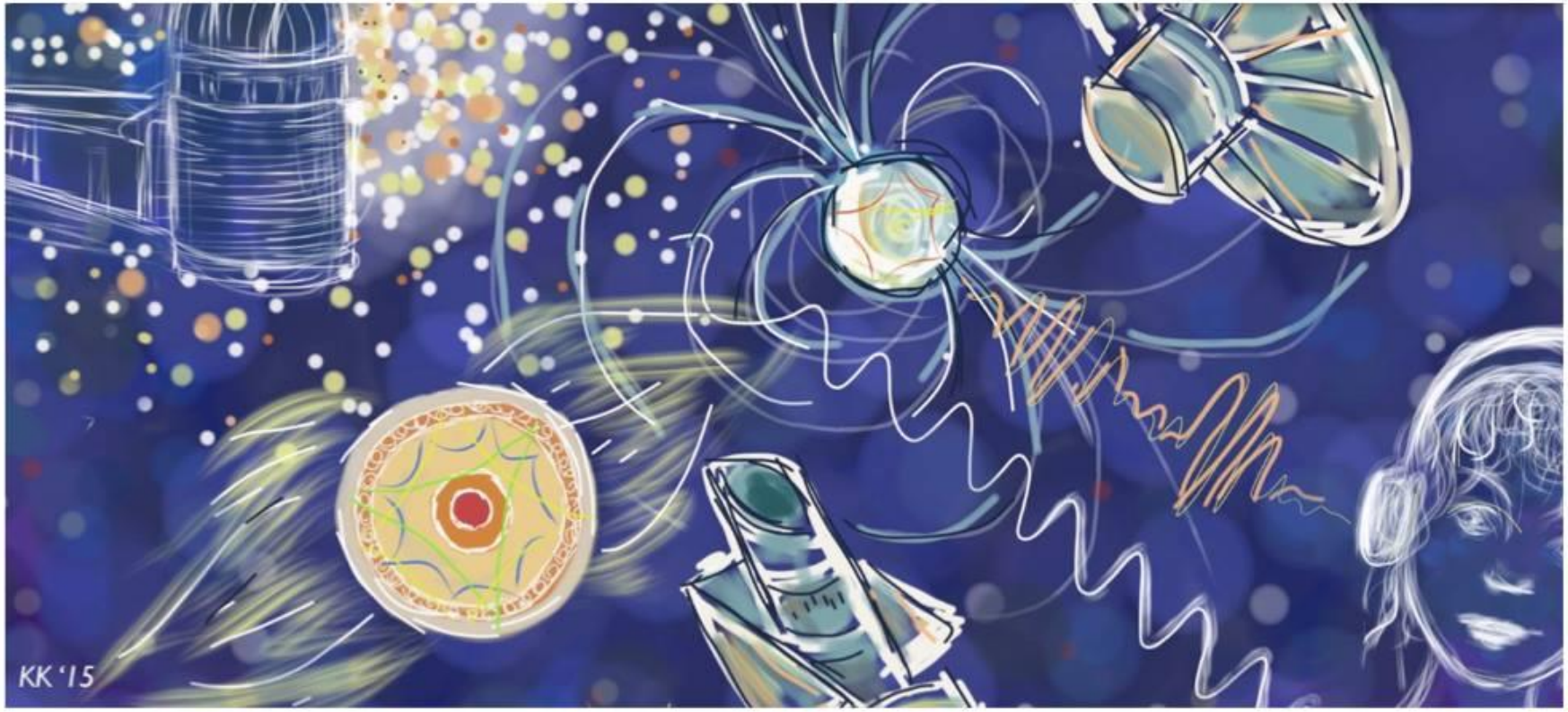

Polaris


Aquila
Coma Berenices
Hercules
Sagitta
Lyra
Delphinus
Canes Venatici
Cygnus
Draco
Beta Cephei
Alfirk
Ursa Minor
Ursa Major
Cepheus
Pegasus
Leo Minor
Lynx
Camelopardalis


RR Lyrae
Aquila
Coma Berenices
Canes Venatici
Draco
Ursa Minor
Ursa Major
Leo Minor
Leo
Lynx
Camelopardalis
Cepheus
Lacerta
Pegasus
Cygnus
Hercules
Delphinus


Loud Sun (far!)
Noisy Stars (veeery far)
Moon
Earth
(not to scale)

Sound to See Better



Participate in ground-breaking experiments at the IAU GA!

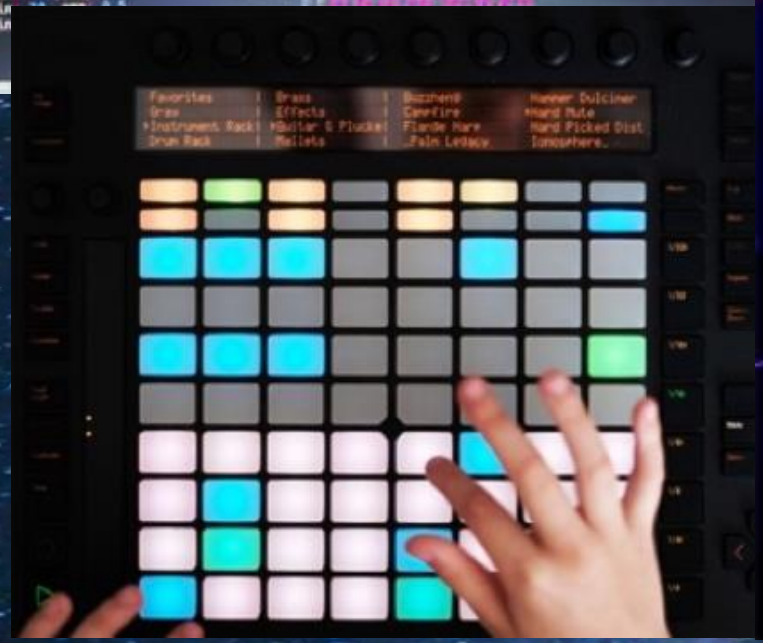
AstroSounds

Listen to the stars!

Start: 20/01/2020 - End 31/08/2023


AstroSounds
www.astrosounds.be
DAG VAN DE WETEN-SCHAP
22 | 11
DIGITAAL
Astro Sounds
ASTROSOUNDS
- LUISTER NAAR DE STERREN!
05:21
Katrien Kolenberg – LASER Talk Brussels – 29 March 2022 – Learning through Sound
vimeo

SDG 4, SDG 5, SDG 9, SDG 17 (met icons)



STEM - STEAM

Timbreherkenning - AstroSounds

* Required

1. luisterfragment *
(1 Point)

Select your answer

2. luisterfragment *
(1 Point)

Select your answer

3. luisterfragment *
(1 Point)

Select your answer

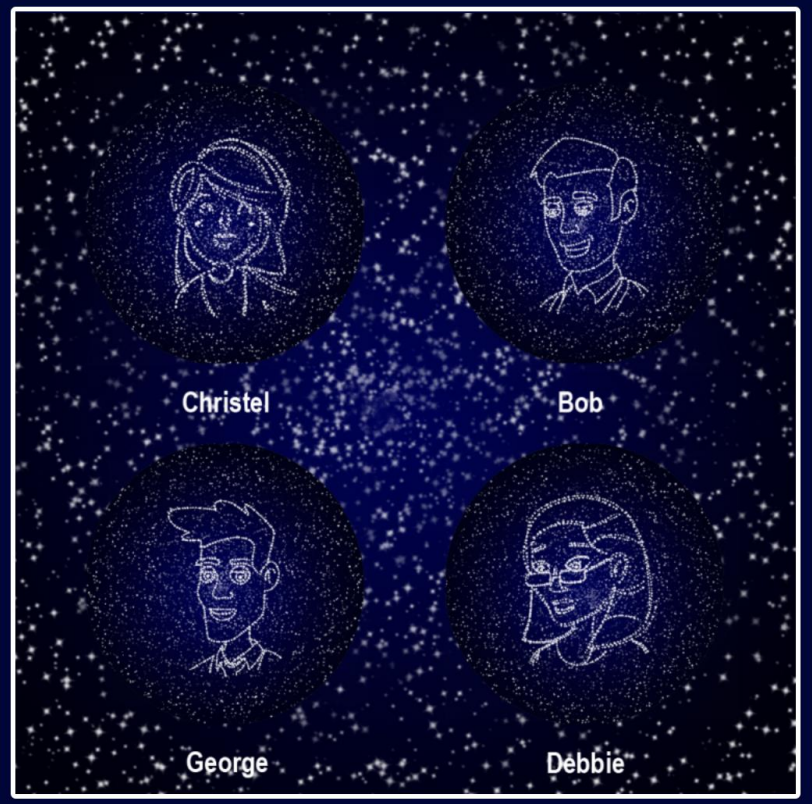
Experimenten

App / online

Luister eens 1

Hier zie je 4 verschillende personen die dezelfde zin zeggen. Kan je ze van elkaar onderscheiden?

Klik op iedere foto en luister goed, je mag iedere persoon zoveel beluisteren als je wilt. Het is de bedoeling dat je hierna de juiste stem met de juiste persoon kan verbinden.



Denk je bovenstaande stemmen van elkaar te kunnen onderscheiden?

Bewijs het in ~ Test Jezelf 1!

Sterteaser

Klik op onderstaande afbeelding

Ditmaal hoor je een RR Lyrae, heel anders dan de vorige toch? Je zal snel nog meer over RR Lyrae te weten komen, nog even geduld!

Na deze instrumentale inleiding, richten we onze blik op de mens. Mensen van elkaar onderscheiden lijkt je makkelijker dan instrumenten? Wie weet... De gemiddelde mens herkent 5000 gezichten! Maar kunnen jouw oren ook de juiste stem linken aan het juiste gezicht?

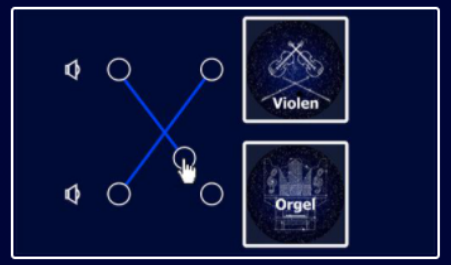
Ga verder met de "Vocale Training".

Oorwarmers

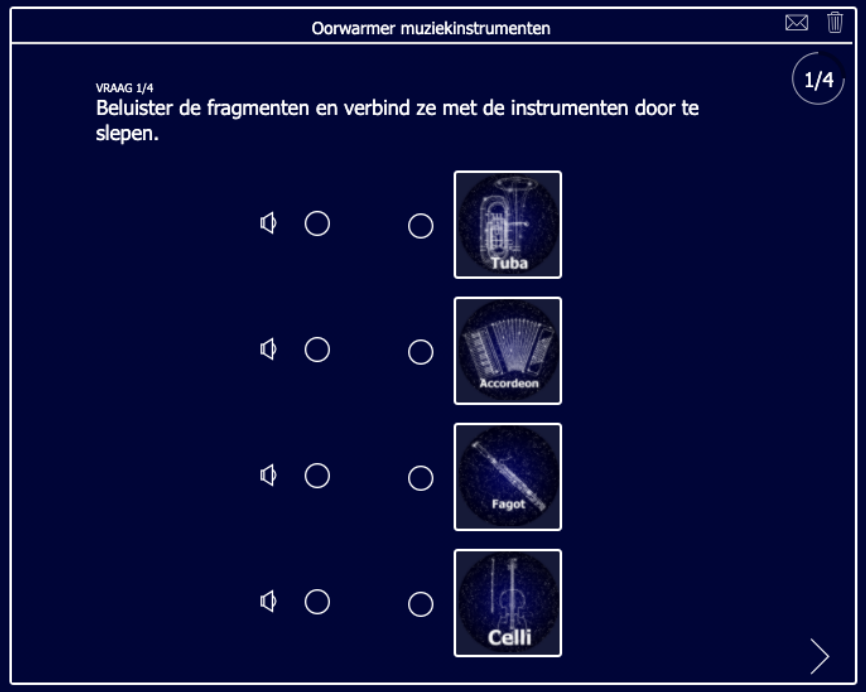
Aan het begin van deze luisterervaring willen we weten hoe goed je verschillende instrumenten kan herkennen. Sommige instrumenten zullen moeilijk zijn, geen probleem! Daar werken we later aan. Nu bepalen we jouw startpunt.

Vervolledig de quiz hieronder.

Klik op het "audio-icoontje" en luister naar de fragmenten. Sleep de cirkels van links naar de cirkels voor de juiste instrumenten, zoals op onderstaande foto. Aanpassen kan door de lijn opnieuw te trekken van links naar rechts.



Gebruik het pijltje onderaan rechts om verder te gaan.



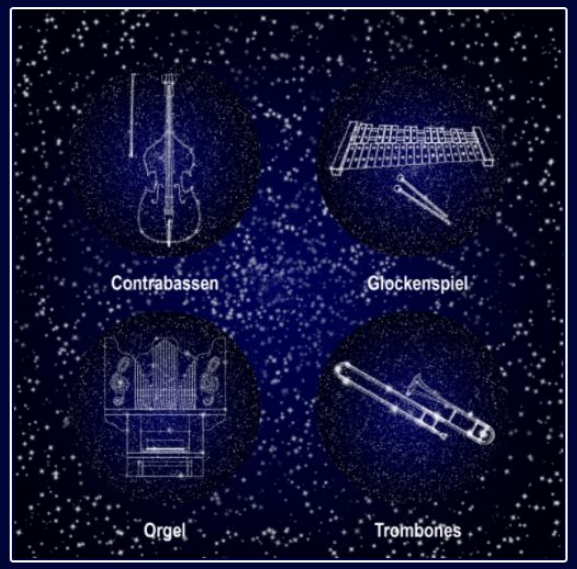
Ga verder naar "Luister eens 1"

Luister eens naar instrumenten 4

Welkom op training 4. Na dit level veranderen we van decor. Maak je klaar en veel succes!

Klik op een instrument om dit te beluisteren. Luister naar alle 4 de instrumenten. Je mag ieder instrument zo vaak als je wilt beluisteren totdat je denkt ze goed van elkaar te kunnen onderscheiden.

Zodra je zover bent, mag je verder naar onder om je kennis te testen.



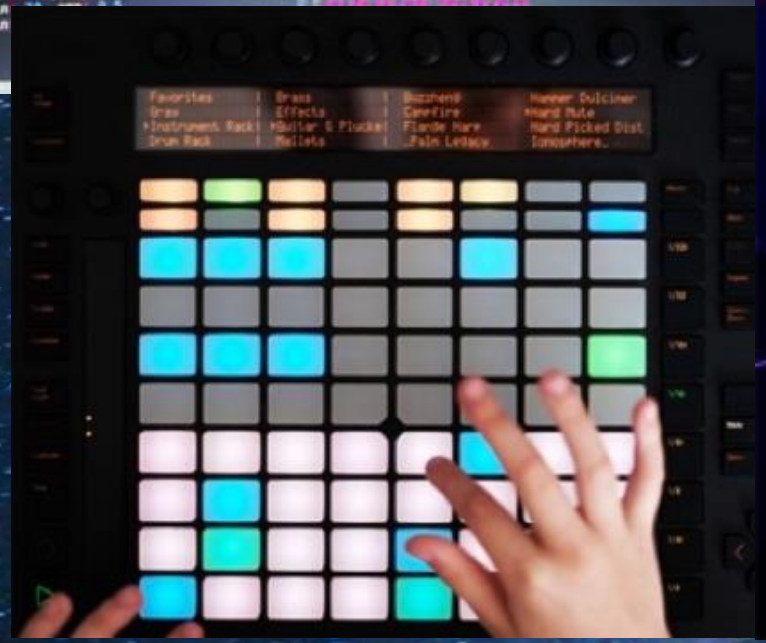
Ben je klaar voor meer? Test jezelf 4 is de laatste oefening van de gemixte instrumenten, ga ervoor! Klik op het tabblad linksboven, of op de link.

Ga verder in Test jezelf 4

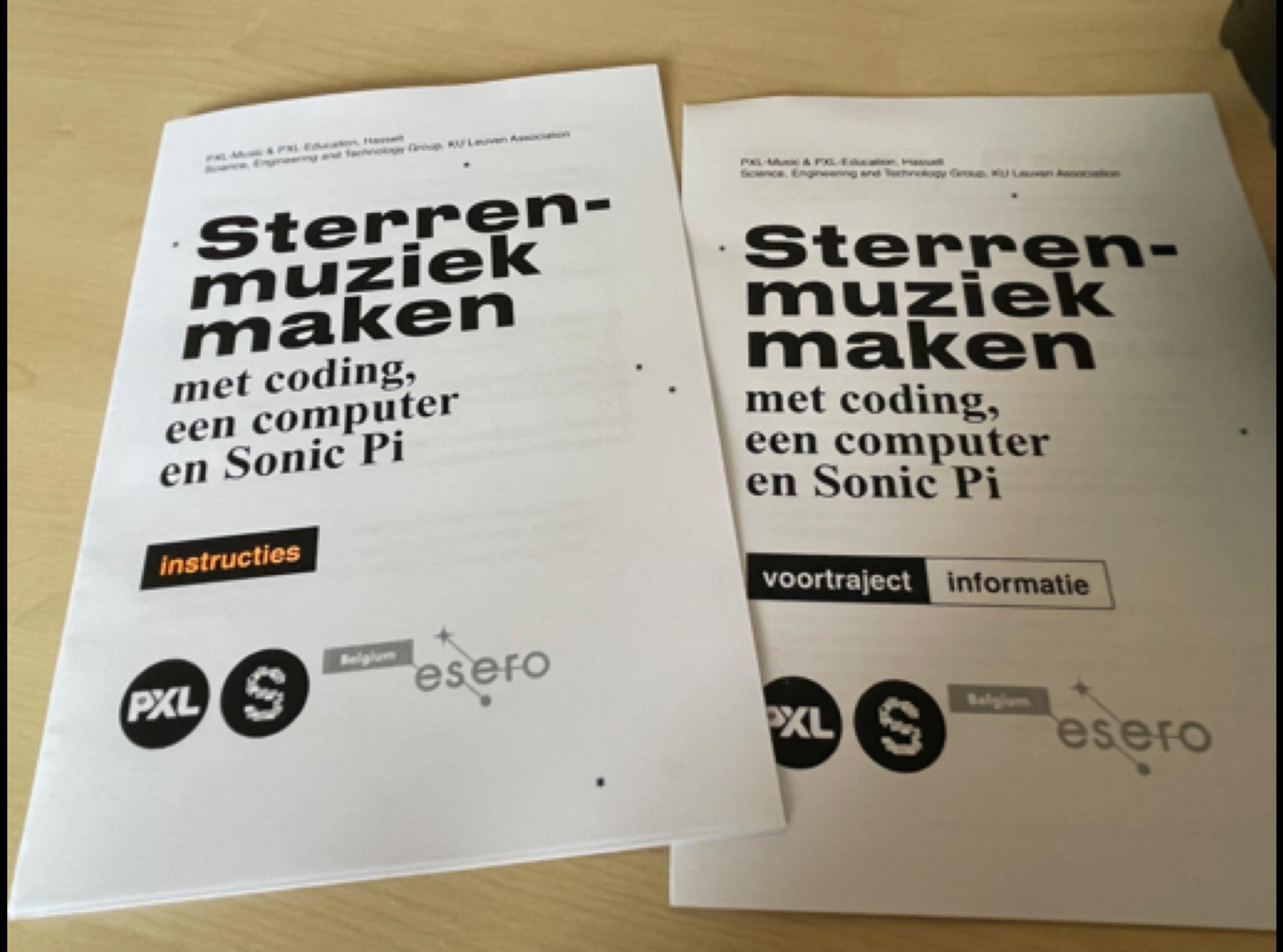
STEM voor Leerkrachten

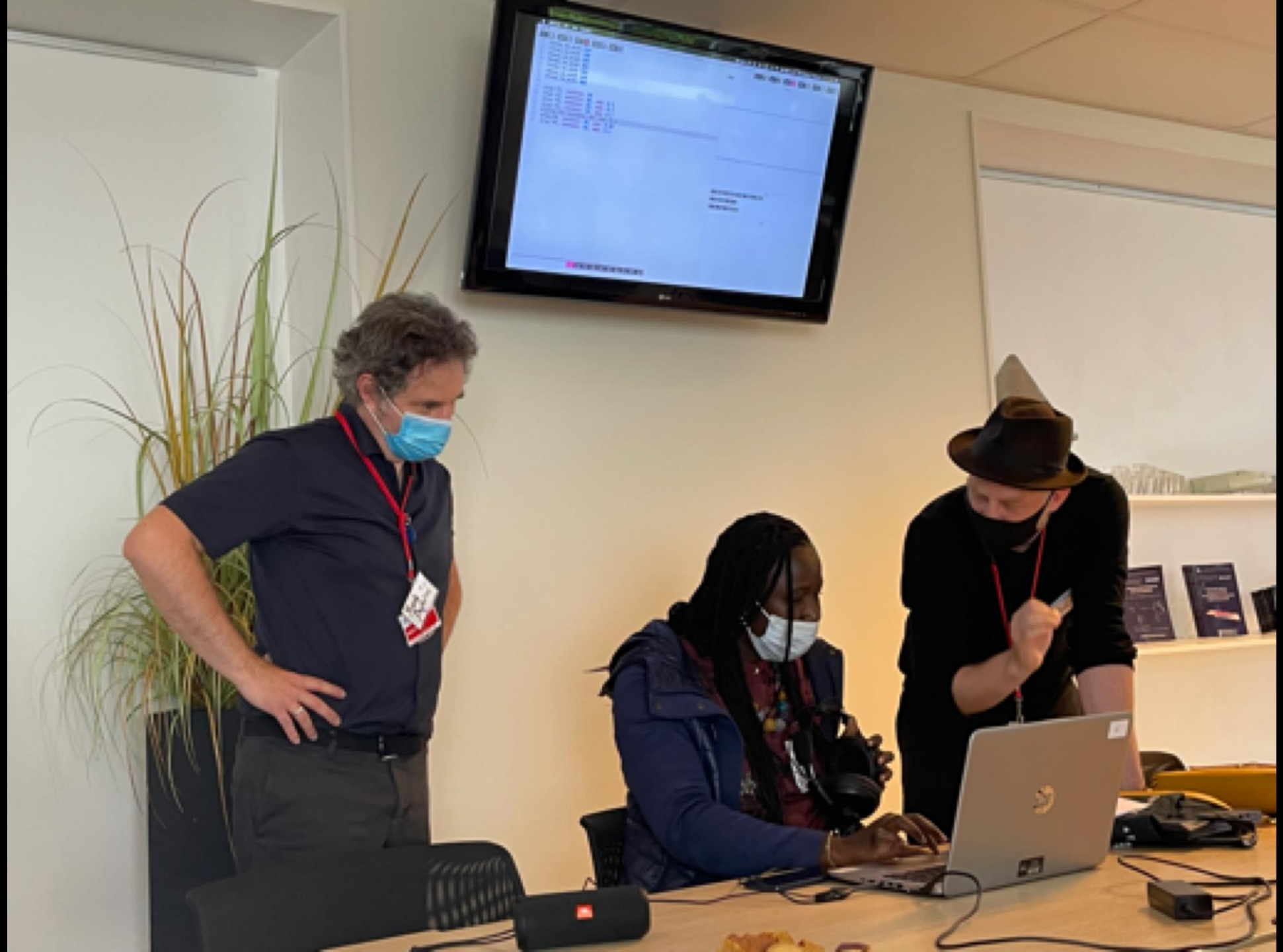
SDG 4, SDG 5, SDG 9, SDG 17

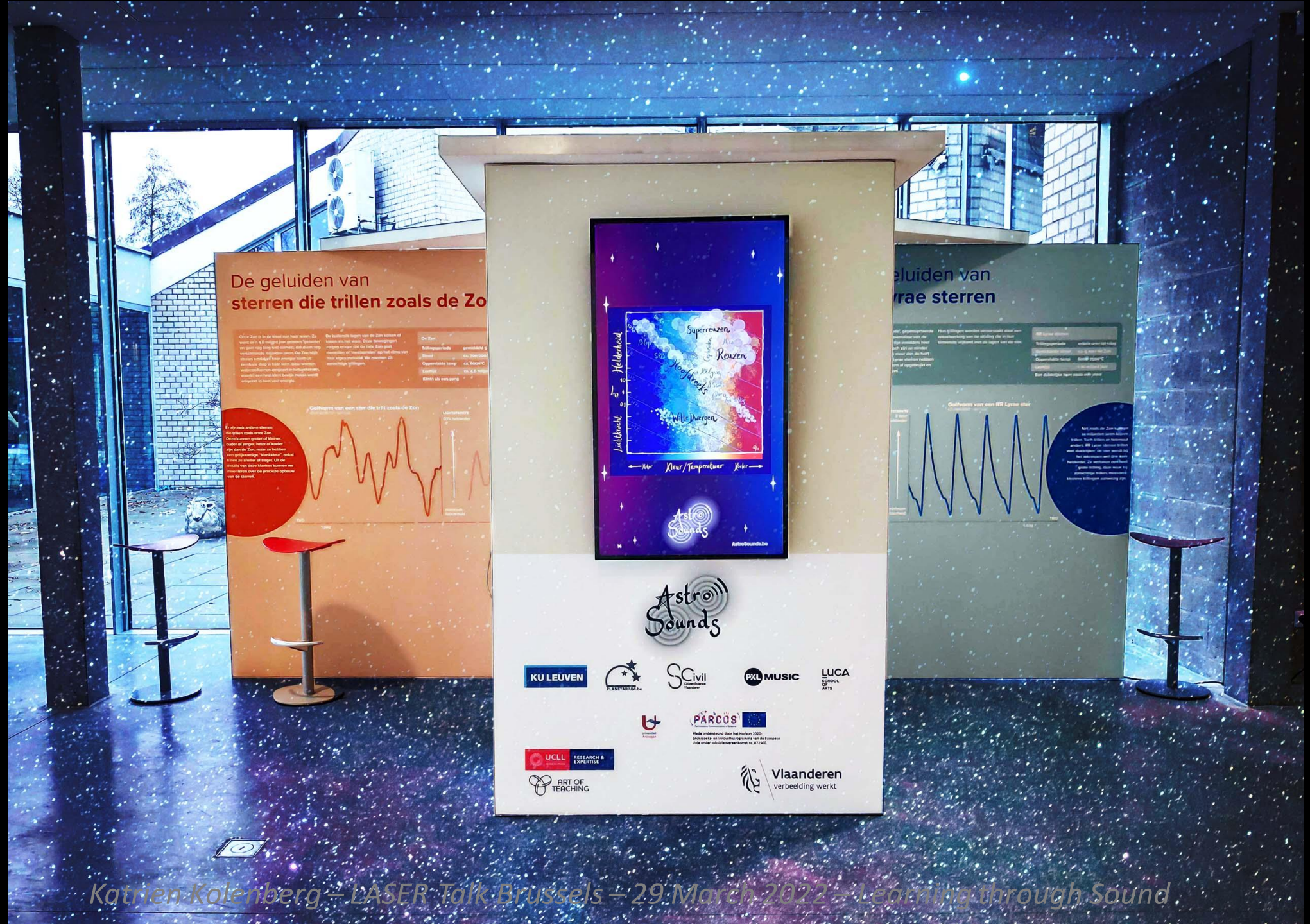
Belgium esero

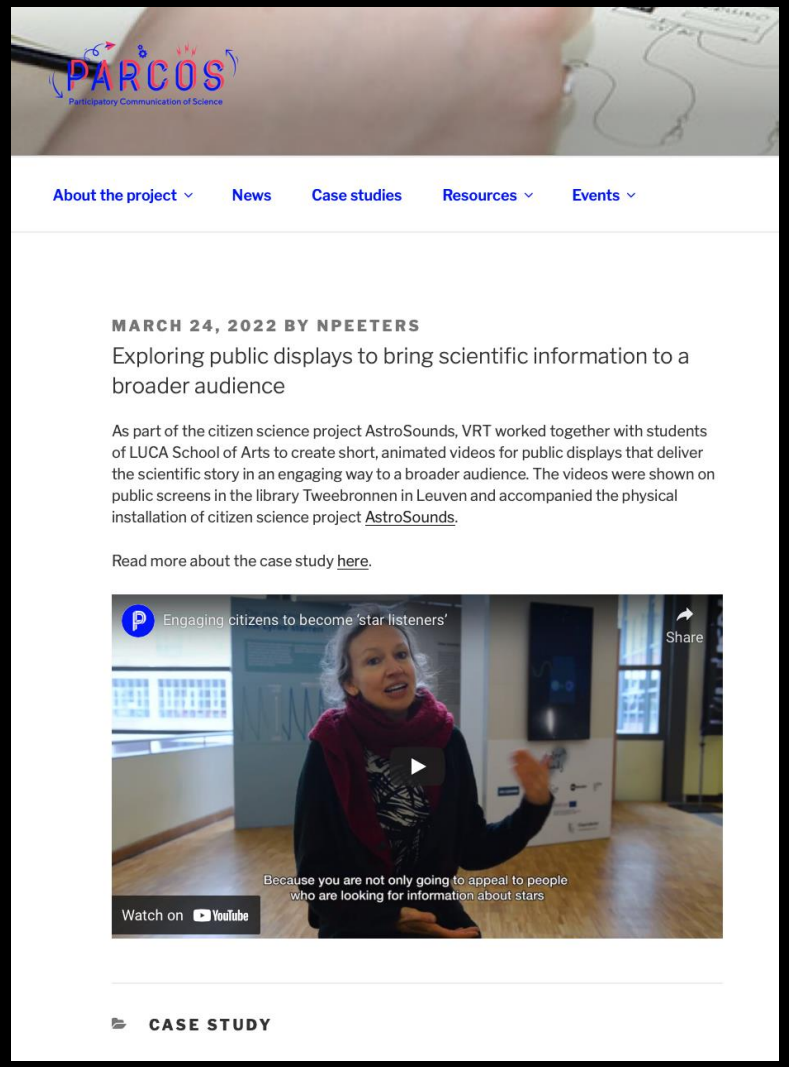


STEM - STEAM


PXL-Music & PXL-Education, Hasselt
Science, Engineering and Technology Group, KU Leuven Association
Sterren-muziek maken
met coding, een computer en Sonic Pi
instructies
PXL
Belgium
esero
PXL-Music & PXL-Education, Hasselt
Science, Engineering and Technology Group, KU Leuven Association
Sterren-muziek maken
met coding, een computer en Sonic Pi
voortraject
informatie
PXL
Belgium
esero

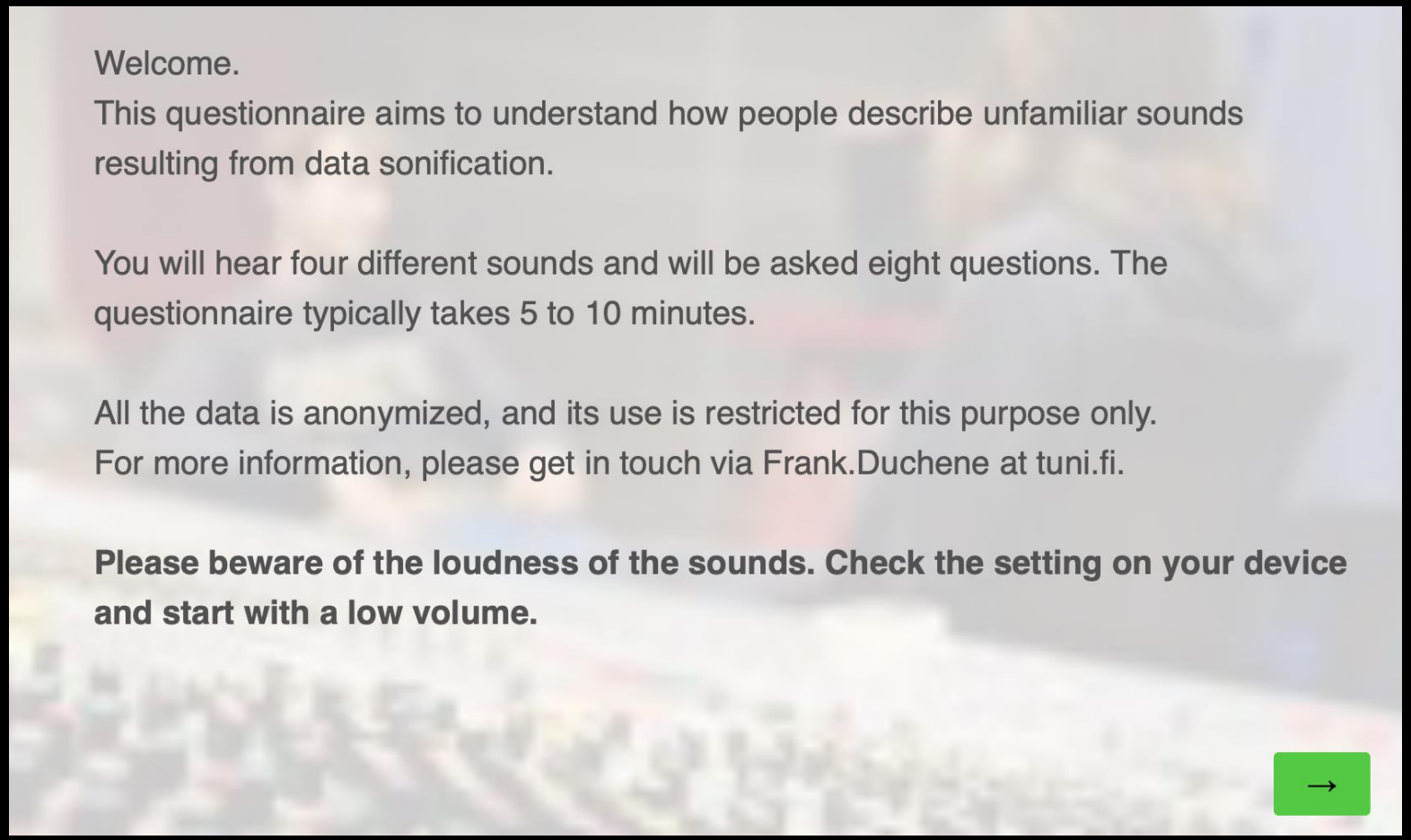



De geluiden van
sterren die trillen zoals de Zo
Superreuzen
Reuzen
Hoofdreeks
Witte Dwergen
Helderheid
Lichtkracht
Heter
Kleur/Temperatuur
Koeler
Astro Sounds
AstroSounds.be
Astro Sounds
KU LEUVEN
PLANETARIUM.be
SCivil
PXL MUSIC
LUCA SCHOOL OF ARTS
PARCOS
UCLL RESEARCH & EXPERTISE
ART OF TEACHING
Vlaanderen
verbeelding werkt



https://parcos-project.eu/2022/03/exploring-public-displays-to-bring-scientific-information-to-a-broader-audience/

https://hogeschoolpxl.eu.qualtrics.com/jfe/form/SV_bDZ1WbmDbUvcVqC

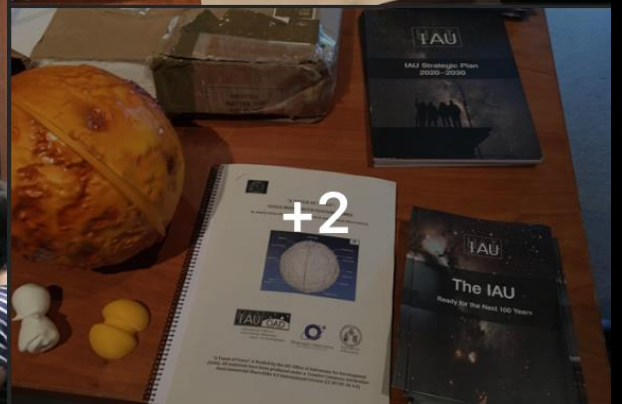


SDG 10, SDG 17

Inclusieve wetenschap

STEM voor Leerkrachten is at **Planétarium de Bruxelles**.
February 18, 2019 · Brussels ·

Wanda Diaz Merced explains how astronomy can be made accessible for ALL. Inclusive auditory and tactile stations and teaching material make up the project Inspiring Stars. https://sites.google.com/oao.iau.org/inspiringstars Space4STEM & STEM4ALL!



www.astrosounds.be
katrien.kolenberg@kuleuven.be

- Gender en STEAM – SDG5
- http://www.scientix.eu/documents/10137/752677/Scientix-SPNE12-Gender-Innovation-STEAM_Final.pdf/e907b19e-0863-4502-a396-9ad6a5184be0

  Gender and Innovation in STEAM Innovation

- STEM and its effectveness for education: – SDG4

  Students' engagement in different STEM learning environments: integrated STEM education as promising practice?

  May 2019

  International Journal of Science Education 41(2):1-21

  DOI:10.1080/09500693.2019.1607983

  Projects: STEM@school

- Inclusive astronomy: event in Planetarium (April 2019) – voorloper AstroSounds – SDG10

  Inspiring Stars Initiative

  https://sites.google.com/oao.iau.org/inspiringstars

  https://www.iau.org/public/images/detail/KH9A2391-180822-CC/

  https://www.iau-100.org/inspiring-stars

- SDG9: Power of sonification http://theses.gla.ac.uk/5804/1/2014DiazMercedPHD.pdf

  Sound for the exploration of space physics data, PhD thesis Wanda Diaz Merced

Stay Tuned!

Katrien.kolenberg@kuleuven.be

Thank you!

#HorizonEU

http://ec.europa.eu/horizon-europe