

# Kyiv, Covid, Climate Change and Crowdsourcing

DPNC Seminar, UNIGE  
2 March 2022

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Citizen Cyberlab, CUI  
Crowd4SDG

# Prologue





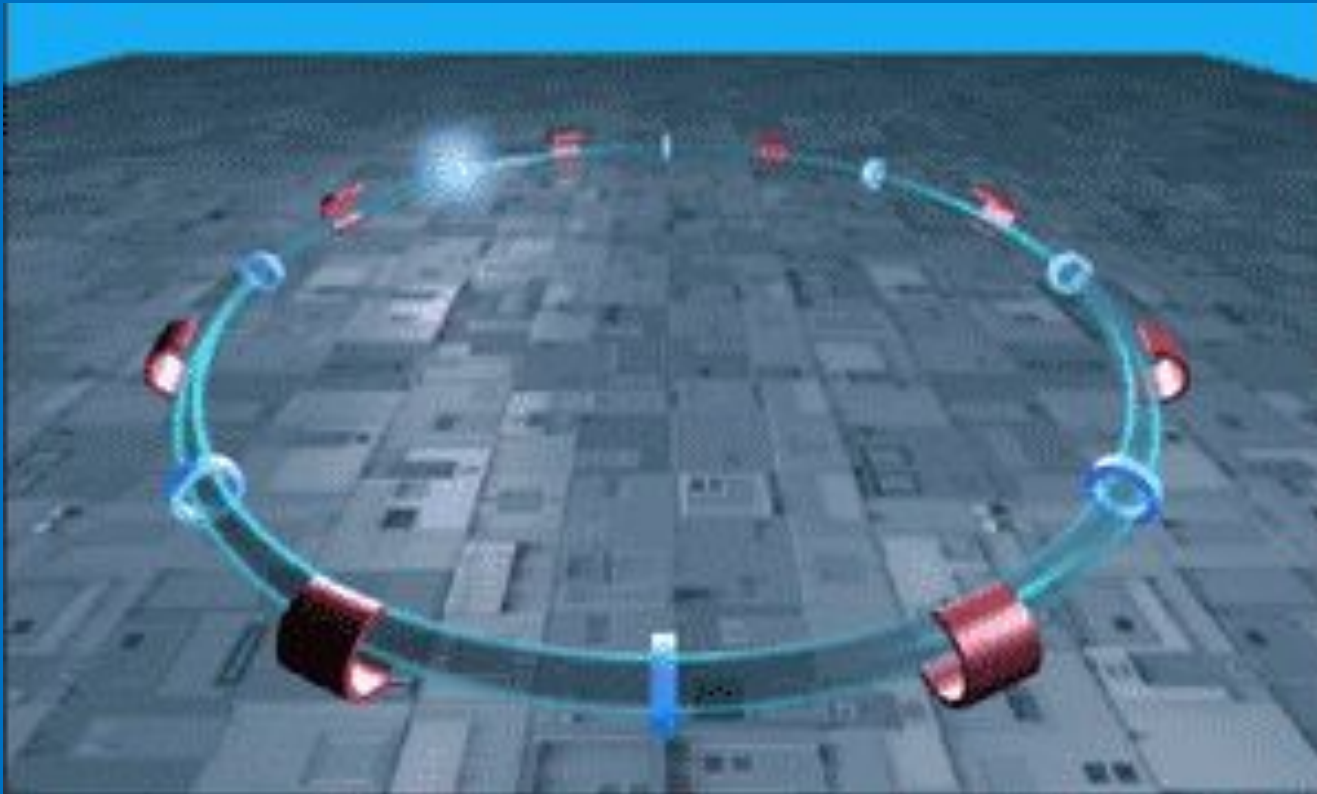
# 1999: SETI@home





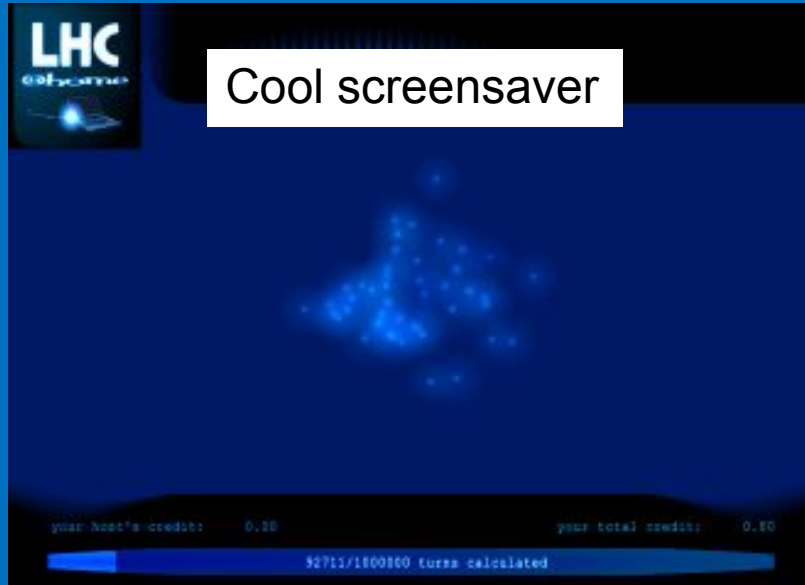


# 2004: LHC@home “Sixtrack” built on BOINC



# Why did volunteers participate?

Cool screensaver

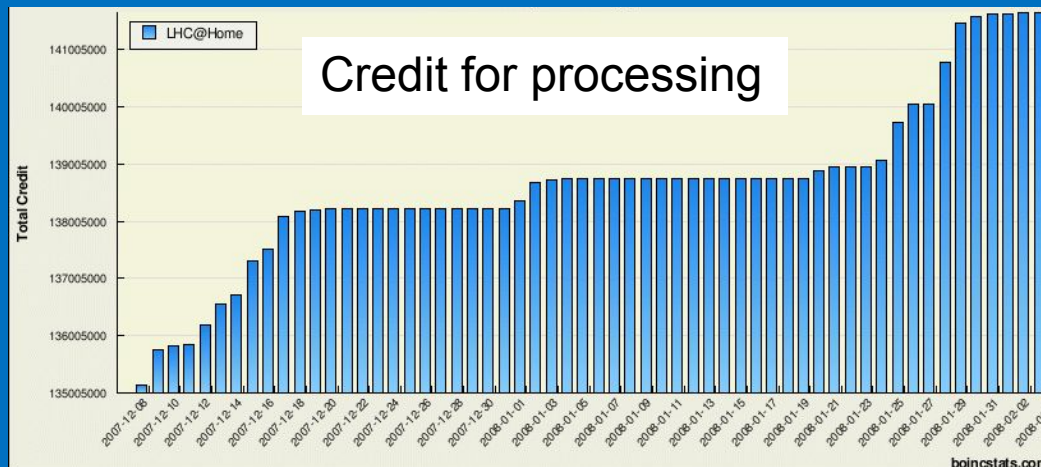


Message boards

The screenshot shows a web browser window titled "Message boards : LHC@home Science - Mozilla Firefox". It displays a list of message board topics with their respective counts and authors.

Topic	Count	Author
*UK baffins sniff for Higgs	226	
CAST - Cern Axion Space Telescope made from LHC spare parts.	143	Alex
This website details the ATLAS detector.	178	Alex
LHC and Muon??	503	ric
:	481	PoorBoy
Does 'protwelve' WU refer to tuning of magnet twelve?	349	Alex
[R] Physics special magazine issue	112	leaden
About the status report	246	Arnaud
What exactly do we Calculate?	335	gyxvi
great link about the LHC	168	Guido.Waldermeier.Remember

Credit for processing



# Comment by a volunteer

[Return to thread](#)  
**Send message**  
Joined: 2 Jan 12  
Posts: 1  
Likes: 0  
Re: 0

Message #107 - Posted: 22 Jan 2012 - 10:26:23 UTC - Reply - View - Search author

Thanks for this extremely interesting thread!

I am new to T4T and BOINC and I really appreciate the learning potential of such projects. However, from my perspective what is the most motivating aspect of T4T is that it allows non-experts to contribute to high-level science project like testing the Standard Model. It is amazing how it allows the public to become actively involved in the research and become a part of scientific community.

It is a good idea to let everyone to contribute to the code, but one has to keep in mind that there are already hundreds of scientific and non-scientific open source projects, where virtually everyone can join in. For T4T it might be even better to let the users play with the data generated in the VM. Since we all already have the CERNVM, it should be possible to include some tools to visualize the data generated on our computers and compare results of different simulations. This way, the project could become more interactive and more fun. Who knows, it might also prompt someone to pursue scientific career...

A good example might be Foldit - an online game that allows players to search manually for the the lowest energy protein configuration. It is a great tool to learn the protein structure and at the same time it provides some meaningful scientific results. Although search for the bigger factor is probably more sophisticated than protein folding and can not be easily represented in a game, I believe that any degree of interactivity would be a big plus.

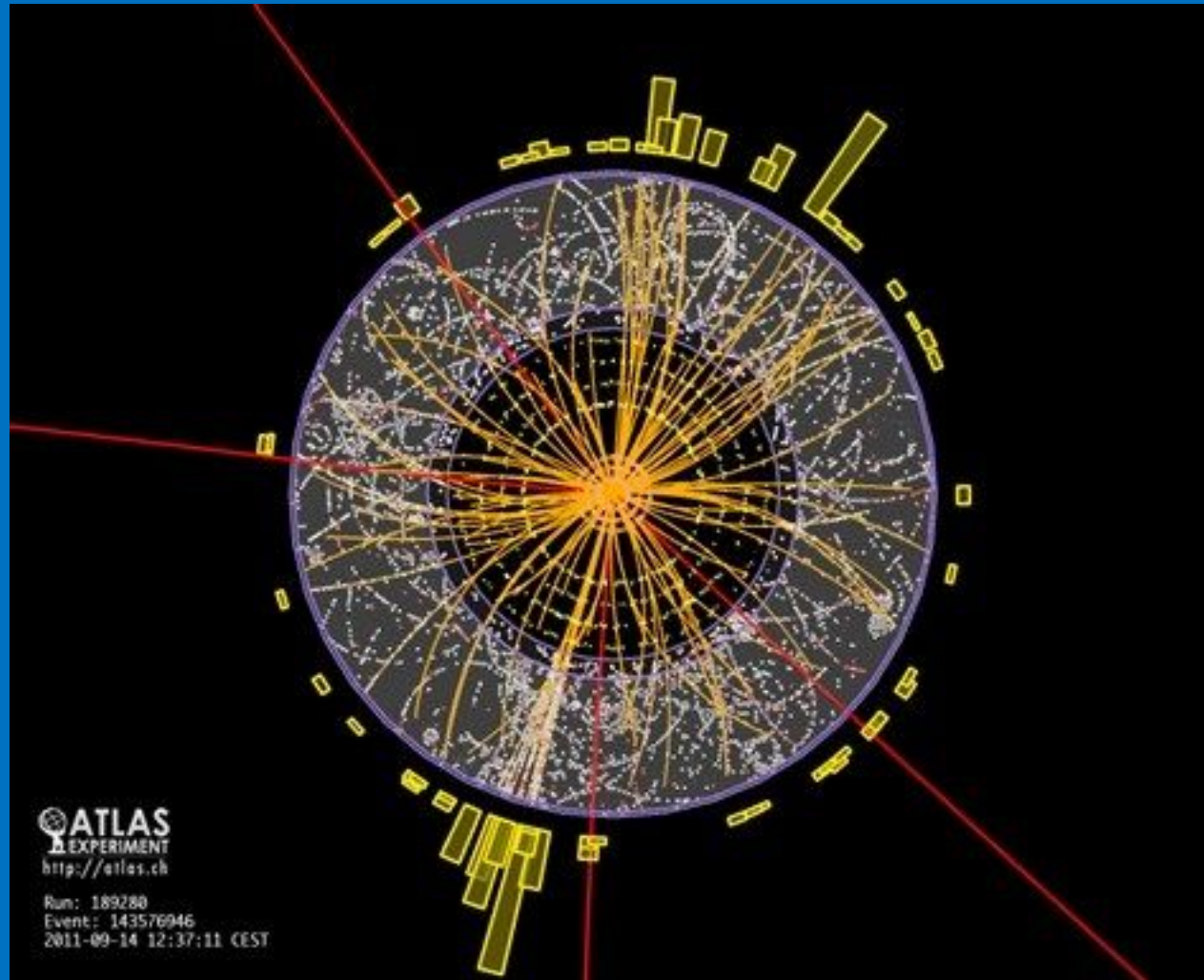
Regarding the rewards, I think that the recognition of volunteer contribution in the media and scientific *print* is the biggest reward. For example, a Nature paper on Foldit includes all the players as the co-authors:  
<http://www.nature.com/news/2010/01/27/foldit-nature010701a.html>  
(a player may also get a free copy of the paper).

There might be also other ways to motivate users like competitions for the best screenshot showing some data from the simulations or best parameters to match some data from experimental or simulated collisions. These are only some rough ideas.



# Recent Technological Evolution

# 2011: LHC@home “Test4Theory”



# 2021: 50-200k BOINC jobs (increasingly backfilled jobs)



Courtesy Laurence Field, CERN IT Dept.

# GalaxyZoo (2007)

## Volunteer galaxy classification

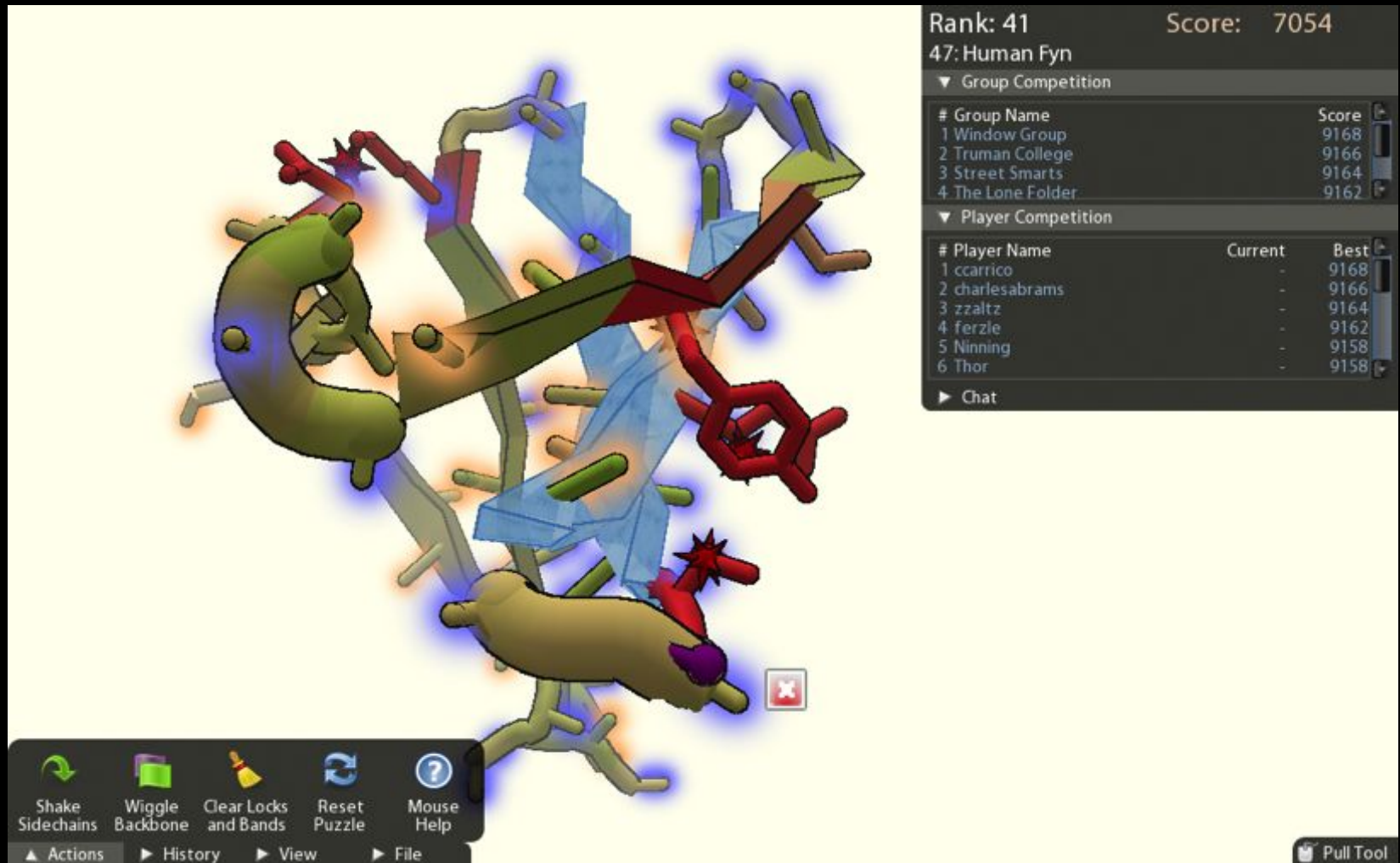
now part of Zooniverse





# Foldit (2008)

## volunteer protein folding



The screenshot displays the Foldit game interface. The central 3D view shows a protein structure with a green backbone, blue and red side chains, and a yellow ribbon. The structure is surrounded by a blue and orange glow. A red 'X' icon is visible in the bottom right corner of the 3D view.

Rank: 41      Score: 7054  
47: Human Fyn

▼ Group Competition

#	Group Name	Score
1	Window Group	9168
2	Truman College	9166
3	Street Smarts	9164
4	The Lone Folder	9162

▼ Player Competition

#	Player Name	Current	Best
1	ccarrico	-	9168
2	charlesabrams	-	9166
3	zzaltz	-	9164
4	ferzle	-	9162
5	Ninning	-	9158
6	Thor	-	9158

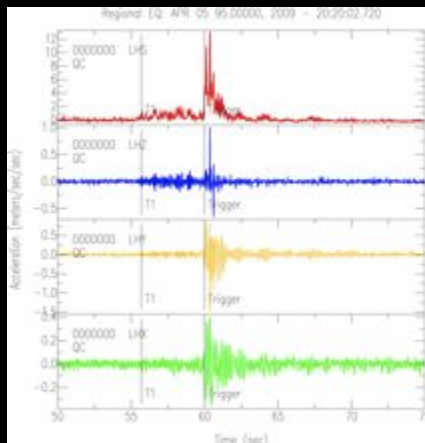
► Chat

Shake Sidechains    Wiggle Backbone    Clear Locks and Bands    Reset Puzzle    Mouse Help

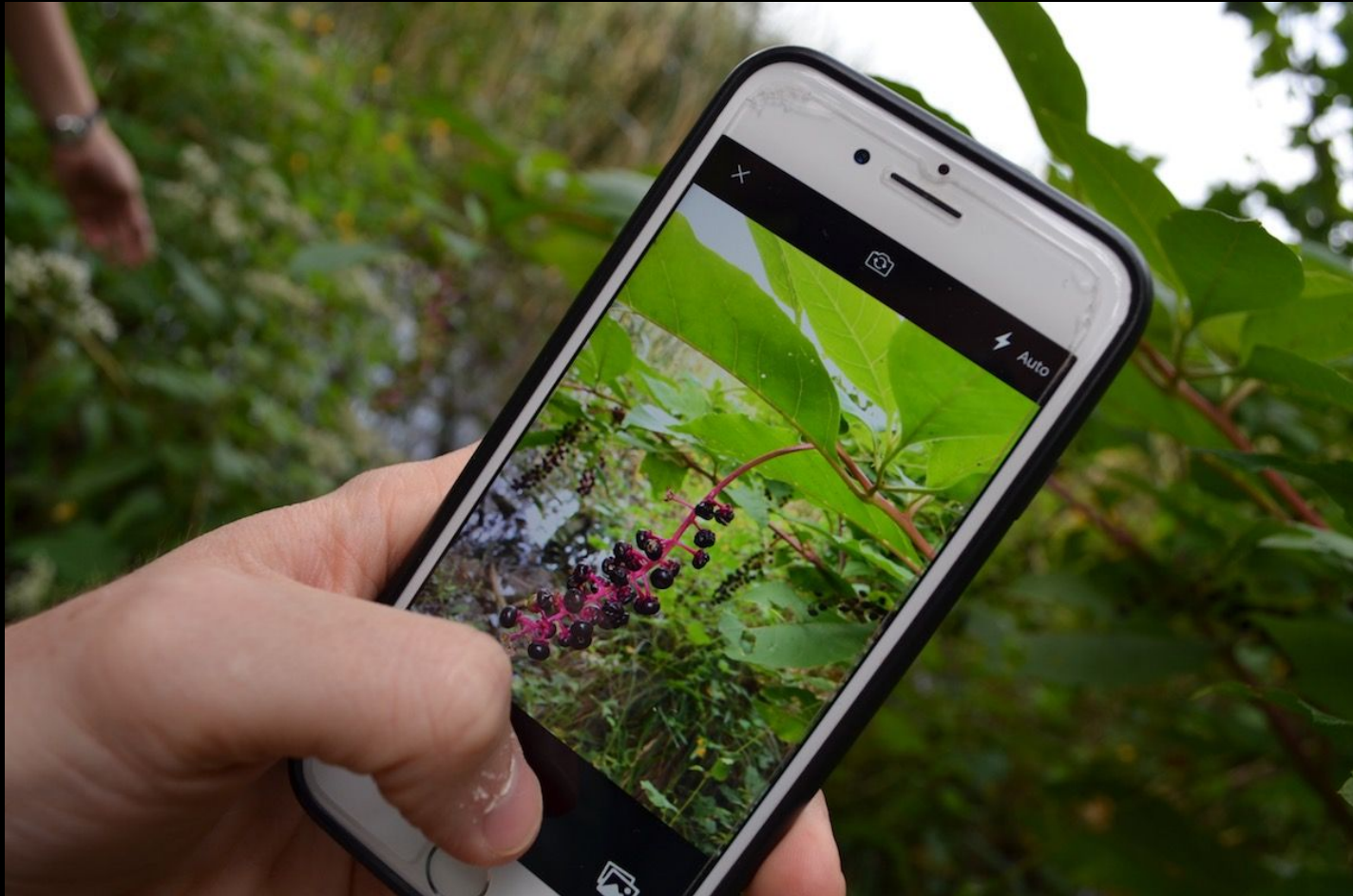
▲ Actions    ► History    ► View    ► File

Pull Tool

# Quake Catcher Network (2008) volunteer seismic detection



# iNaturalist on smartphone (2013) volunteer biodiversity monitoring





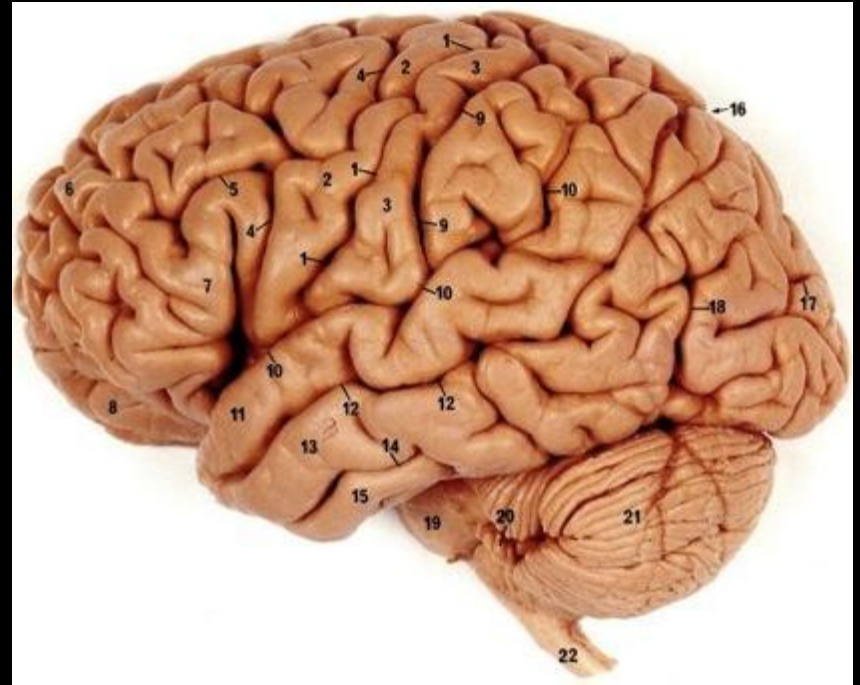
# Crowdsourcing for Science



Volunteer  
Computing



Volunteer  
Sensing



Volunteer  
Thinking



# Crowdsourcing for Science

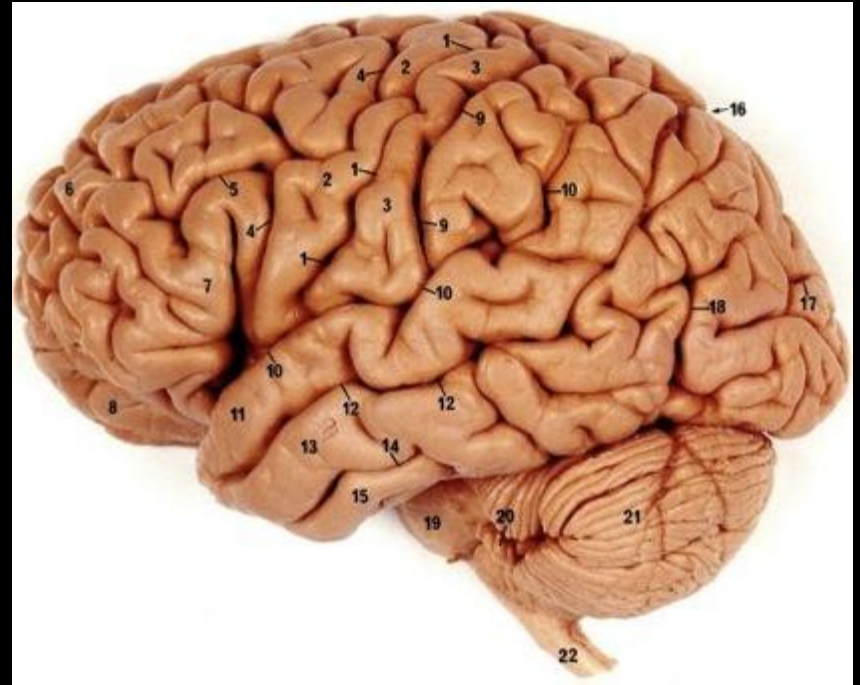
The largest scientific resource on the planet?



2bn

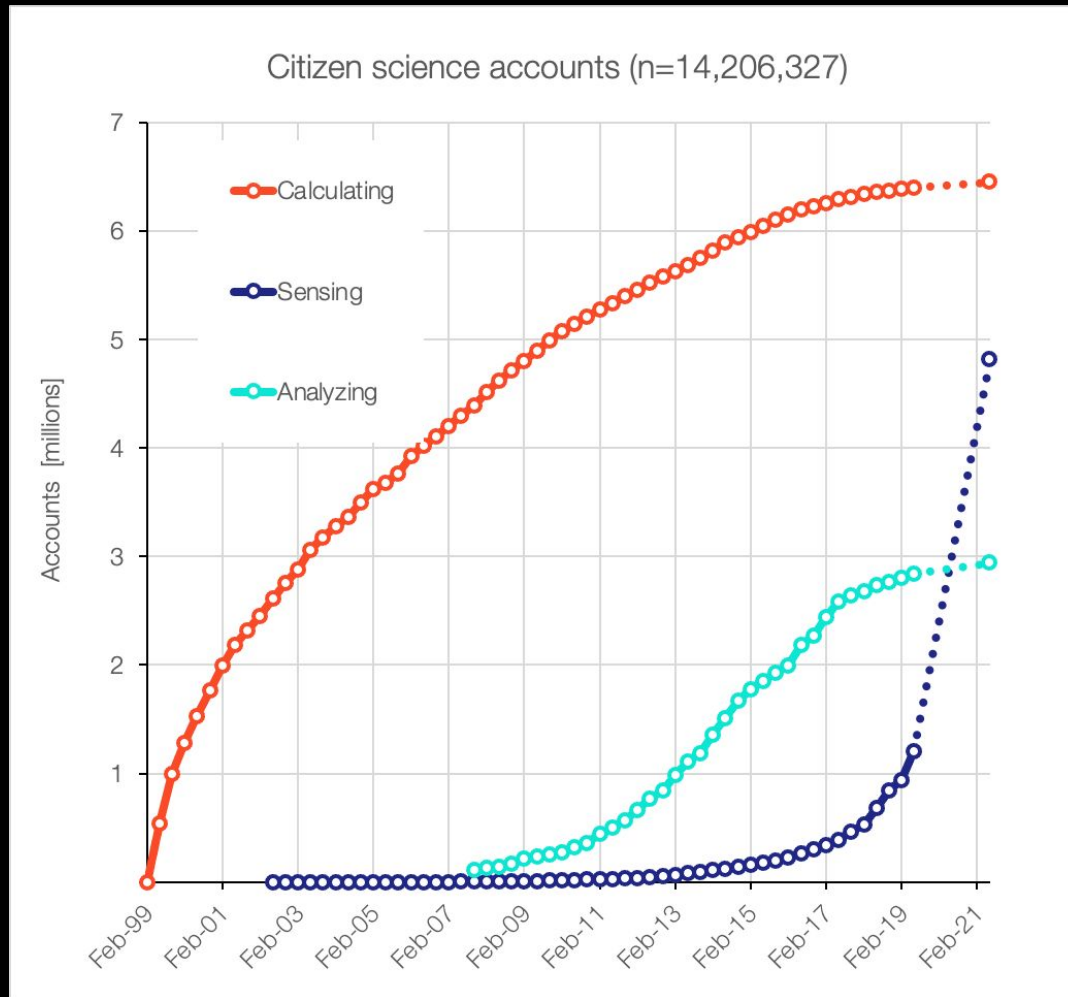


6bn



8bn

# Evolution of number of users



Courtesy Bruno Strasser et al. UNIGE



since 2009:  
University of Geneva  
UN Institute for Training and Research  
European Organization for Nuclear Research

“Rethinking Public Participation”



# Crowd4SDG

The aim of the Crowd4SDG project is to explore and assess whether, to what degree and according to which scientific standards **citizen science** can contribute to the twin tasks of:

- **tracking progress** towards the SDGs
- generating **grassroots innovation** that enable such progress



*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 872944*



# Project Research: AI + crowdsourcing

Are there people in this image?

☐ YES ☐ NO ☐ NOT SURE

Are the people wearing masks?

☐ YES ☐ SOME OF THEM ☐ NO ☐ CANNOT TELL


If so, which type?

☐ Scarf ☐ Cloth ☒ Surgical ☐ FP2 ☐ FP3  
☐ Gasmask ☐ Other ☒ Cannot tell

Are the people wearing the mask correctly?

☐ YES ☐ NO ☒ ONLY SOME OF THEM ☐ CANNOT TELL

☐ NOT SURE



Negri, V., Scuratti, D., Agresti, S., Rooein, D., Scalia, G., Shankar, A.R., Marquez, J.L.F., Carman, M.J. and Pernici, B., 2021, May. **Image-based social sensing: combining AI and the crowd to mine policy-adherence indicators from Twitter.** In *2021 IEEE/ACM 43rd International Conference on Software Engineering: Software Engineering in Society (ICSE-SEIS)* (pp. 92-101). IEEE.

# Project Participants (The Crowd)





# Project Innovation: Youth Challenges

## #OPEN17WATER

**Pitch your idea on how we can tackle urban water resilience**

Application deadline is 4 October 2020  
Midnight CEST

**BROUGHT TO YOU BY:**

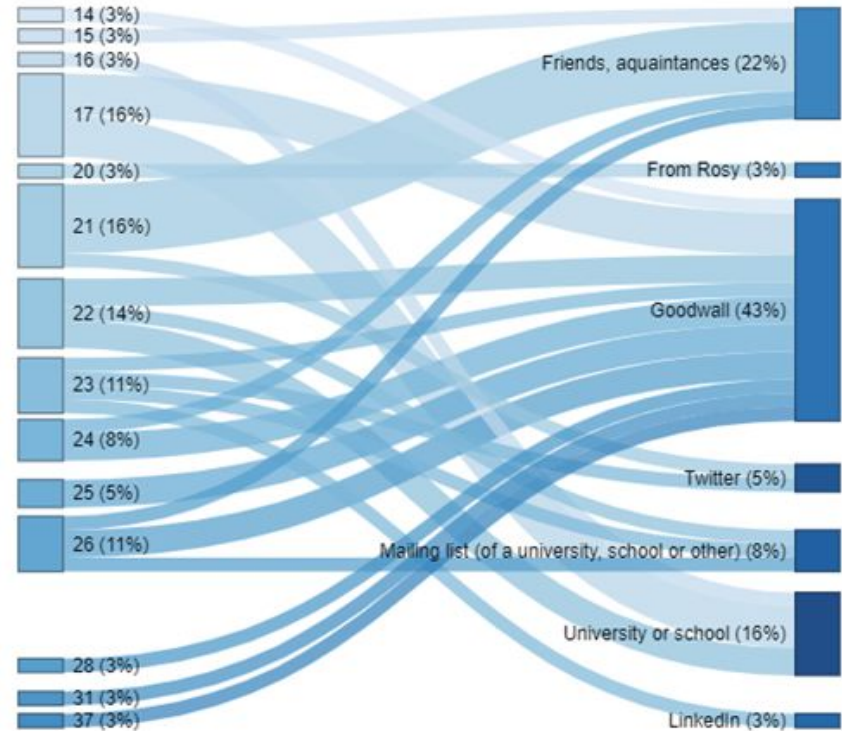
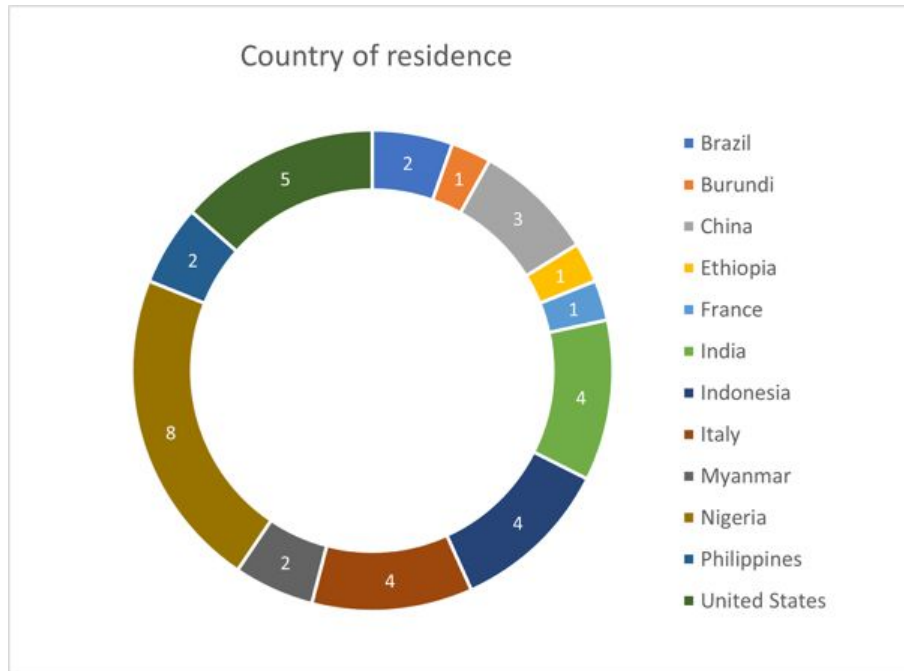


in collaboration with Omar & Taha Bawa

Co-founders **Goodwall**

<https://www.goodwall.io/>

# Results: Engaging with Global Youth

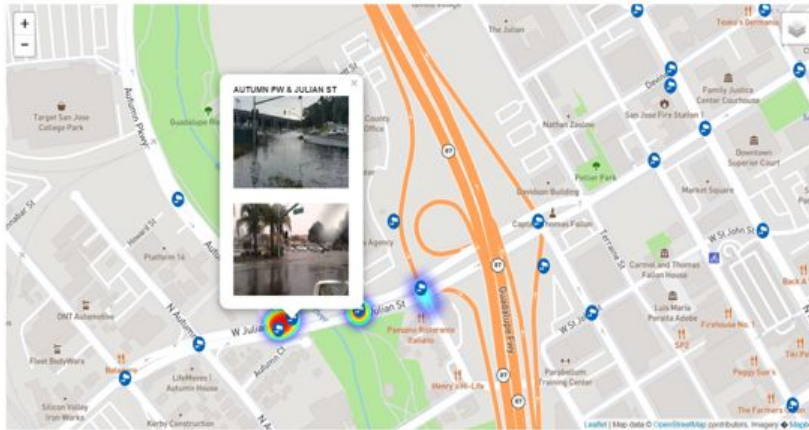




# Results: Creating SDG Entrepreneurs

Project Flood Finder  
Student project from Crowd4SDG  
Based on crowdsourcing and AI

Deeya Vadia  
16 year-old highschool student  
Led the Flood Finder team



Deeya is first author on a poster about her project accepted at ISCRAM 2021  
Flood Finder won competition to join social incubator run by Code for America

# E2mC: Crowdsourced Emergency Services for the Copernicus Programme

## Social Media



Witness  
Component



## Relevance



## Geolocation



in collaboration with Einar Bjorgo  
UNOSAT programme, UNITAR

# Crowdsourcing and Crises

ALINA CHAN  
& MATT RIDLEY

VIRAL

The Search for the  
Origin of Covid-19

# Crowdsourcing and Crises



# Crowdsourcing and Crises

TIME

WORLD • UKRAINE

## How Open Source Intelligence Became the World's Window Into the Ukraine Invasion

BY **BILLY PERRIGO**  FEBRUARY 24, 2022 11:59 AM EST

**I**n a grainy cell-phone **video** shared widely on Twitter early on Thursday morning, plumes of black smoke billow out of a burning vehicle on the tarmac of what appears to be a military airstrip. The heavy breathing of the man holding the camera is audible over the sounds of broken glass and rubble crunching underfoot.

The video, which was originally shared on a Ukrainian Telegram channel, was verified and uploaded to Twitter by Thomas van Linge, a 25 year-old based in Amsterdam. The video, van Linge wrote online, depicted “utter destruction” after an explosion at the military airfield in Lutsk, western Ukraine, just 90 kilometers away from the border with Poland. It appeared to be some of the





# Q&A

[www.crowd4sdg.eu](http://www.crowd4sdg.eu)

