

Open Science

Science Ouverte

From CNRS: Centre National Recherche Scientifique

National Plan For Open Science

Open science promotes taking a transversal approach to the question of access to scientific work and to the aims and sharing of scientific results.

It also inherently involves a new way of practicing science by opening up processes, codes, methods and protocols.

Open access makes the movement towards disseminating scientific production on the internet possible. It removes barriers to access *while maintaining the levels of protection offered by copyright.*

As open as possible and as closed as necessary

- European Commission report 2016

2023 Is Year Of Open Science - Open.Science.gov

The U.S. White House declared 2023

The Year of Open Science

In May & June of 2023 they held a series of Listening Sessions, open to the public and accessible online, where diverse stakeholders offered their insights into the implementation process and goals of Open Science.

- **Early Career Researchers**
- **Academics**
- **Entrepreneurs**
- **Publishers**
- **R&D**
- **Government Agencies**



Unesco Tool Kit for Open Science

The UNESCO [Open Science Toolkit](#): designed to support implementation of the UNESCO [Recommendation on Open Science](#), the first international standard-setting instrument on open science. This Recommendation was adopted by 193 countries in November 2021 at the 41st session of the UNESCO General Conference.



Article >

UNESCO's toolkit can help accelerate the transition to global open science



NASA TOPS - Transform to Open Science

NASA'S 5-Year Plan to accelerate Open Science practices.

Roadmap:

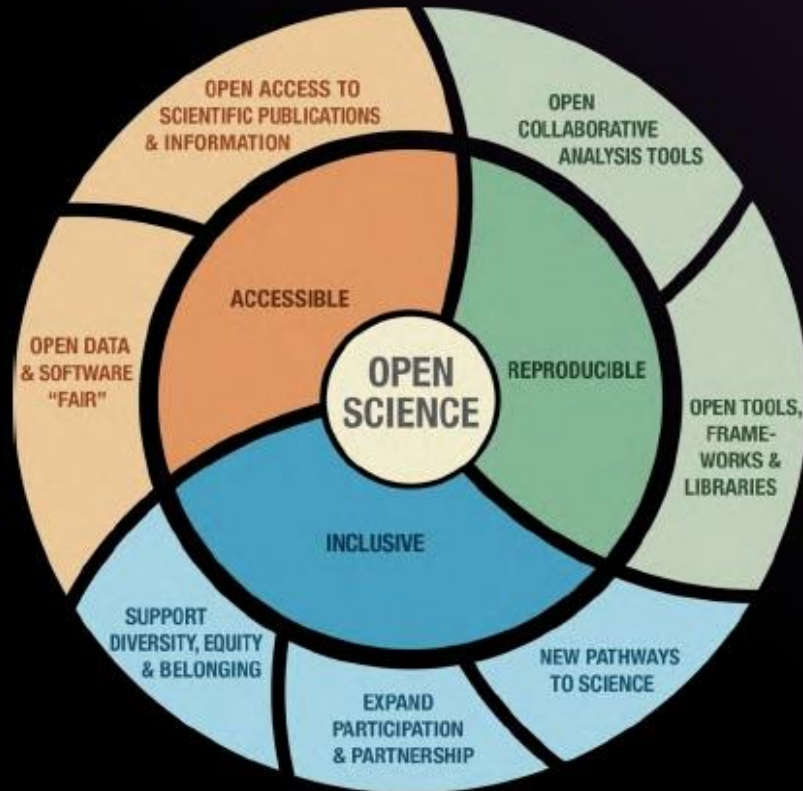
- ❑ Accelerate major scientific discoveries
- ❑ Broaden participation by historically excluded communities
- ❑ Increase understanding and adoption of open science principles and techniques



We need more WE science, rather than ME science. Openly sharing data, software and results.- Yale



Open Science is Accessible, Reproducible & Inclusive



Creates research that is:

- Cited more
- Has a bigger impact
- Increases transparency
- More inclusive

Inclusive science means more:

- Collaborative projects
- Access to 'hidden knowledge'
- Equitable Systems
- Increased Participation

*slide credit: Chelle Gentemann, TOPS



We need more people - more hands, more eyes, more brains.

'More people with diverse experiences to participate so that we ask the best questions and find the best solutions.'

Infrastructure



POLICY

Outreach



NASA & CERN Joint Open Science Summit July 2023

On April 30, 1993 CERN released the World Wide Web to the public. Tim Berners-Lee proposed this to allow scientists and researchers working all over the globe to share information quickly and accurately.



Accelerating the Adoption of Open Science

CERN-NASA Open Science Summit 2023

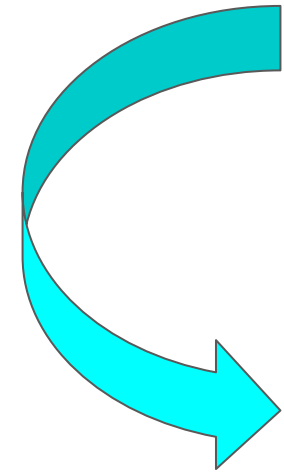
July 10th - 14th, 2023

CERN, Geneva, Switzerland

More information: <https://indico.cern.ch/e/os-summit2023>



Today 5 Billion+ people, more than $\frac{2}{3}$ of the world's population rely on the internet for research, commerce, entertainment and communications.



blockchain

= tools for Open Science

Open Science Is A Nice Idea – But How Do We Implement It?

Tools facilitated by the blockchain offer some key solutions.

- **IP NFTs**
- **Transaction Hashes that can be used as Persistent Identifiers (PiDs)**
- **Decentralized Data Storage (such as on IPFS, Arweave or Storj)**
- **On-chain Publishing**
- **Traceability of researchers' contributions**

FRONTIER REGISTRY
ALPHA RELEASE
ANNOUNCED

Frontier Registry
IP Rights On-Chain

Scientific Research. Minted. On The Blockchain.

#DeSci

Scientific Research

Frontier Registry - Explainer Video



Open Science + Blockchain

DeSci

Or 'Decentralized Science'

This often implies use of DeFi tools such as tokenized data. The term DeSci is still being defined by the ecosystem. It is a very young movement, gaining traction only since Spring 2022.

Blockchain for Science

Blockchain tooling for Open Science Implementation

More broadly interprets uses of the blockchain for scientific research and sharing.

Such as for FAIR (Data)

Findable

Interoperable

Accessible

Reusable

More resources: cos.io/