



→ EO OPEN SCIENCE 2.0

Objectives and Organisation

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12–14 October 2015 | ESA–ESRIN | Frascati (Rome) Italy

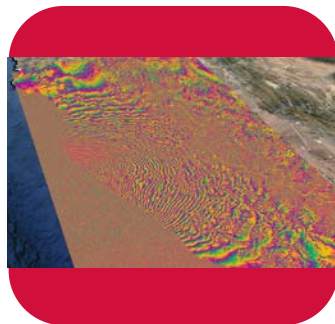
European Space Agency

European Space Agency



Rapid transition of Research towards Science 2.0

Science 2.0 describes the on-going systematic changes in doing Research and organising Science driven by rapid advances in ICT and Digital Technologies, combined with a growing demand to do Science for Society (actionable research) and in Society (co-design of knowledge).*



climate change

Geohazards

Quality of Life

Air Quality

Land use

Open Science 2.0 Drivers



- **'Digital natives'** becoming part of the researcher population.
- The **availability** of (low-cost) **digital technology**,
- The growing and increasingly pressing **demand for solutions to Grand Challenges** (e.g. climate change, food shortage) and the societal expectation that **science should deliver**.
- The growing scrutiny with regard to research integrity and to the **accountability of science and research within societies**.
- The **need for platforms that are used in scientific career to collaborate**, to publish etc.
- The tremendous **increase in the number of researchers , scientific institutions and students**

The top banner features a blue background with a satellite in the center. To the right, the ESA logo is visible. The background is overlaid with various terms in a light blue, semi-transparent font, including 'VISUALISATION', 'BLOGS', 'TUTORIALS', 'TOOLBOXES', 'COLLABORATION', and 'E-LEARNING'.

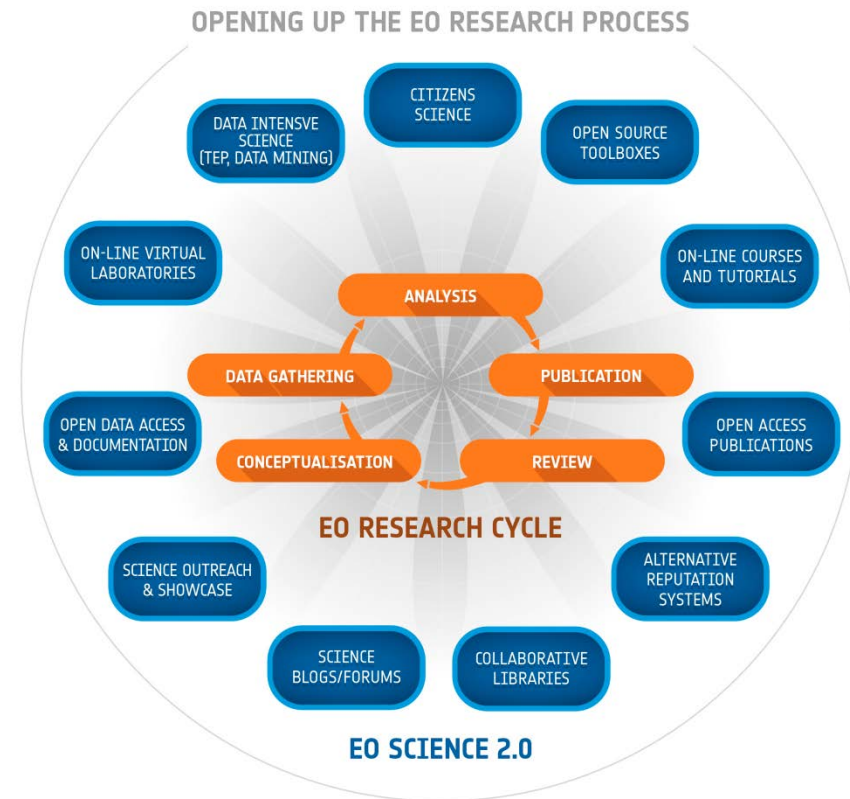
Open Science 2.0 Trends

- ***More Global Collaboration*** (e.g. Open Science & Innovation)
- ***More Data-intensive Science*** (e.g. Big Data analytics, Cloud)
- ***More Actors & Communities involved*** (e.g. Citizen Science)
- ***More Openness, Transparency, Scrutiny of results*** (e.g. Open Access Journals, Reproducibility of Results)
- ***New ways to publish*** (e.g. Social Media, Open Source libraries, Executable Papers)
- ***New ways to educate digital natives*** (e.g. Massive Open Online Courses - MOOCs)



EO Open Science consultation OBJECTIVES

- **Gather and foster** the EO Open Science **scientific community** and **key stakeholders**
- Provide a forum to **present EO Open Science activities** and for international exchange
- **Formulate community recommendations** on EO open science ,
- **Present large-scale EO international initiatives**
- **Consult to prepare future ESA scientific Exploitation Program Elements**



OVERVIEW



DAY 01 12 October

9:00 Welcome from ESA

9:30 **Keynote Speech**
A.1 - A new era for
Open Science and
Earth Observation

11:00 **Coffee Break**

11:30 A.1 - A new era for
Open Science and
Earth Observation

12:45 **ROUND TABLE**

13:15 **Lunch Break**

14:15 **Keynote Speech**
A.2 - Open Innovation
and Tools

15:45 **Coffee Break**

16:15 A.2 - Open Innovation
and Tools

17:00 **ROUND TABLE**

17:15 **Jam Session**

DAY 02 13 October

9:30 **Keynote Speech**
B.1 - Citizen Science

11:00 **Coffee Break**

11:30 B.1 - Citizen Science

12:45 **ROUND TABLE**

13:15 **Lunch Break**

14:15 **Keynote Speech**
B.2 - Earth Science
Virtual Research
Environment

15:45 **Coffee Break**

16:15 B.2 - Earth Science
Virtual Research
Environment

17:30 **ROUND TABLE**

18:00 **Jam Session**

DAY 03 14 October

9:00 **Keynote Speech** | **Keynote Speech**
C.1A - Scientific
Communication
and Visualisation | C.1B - Exploitation
Platforms

10:45 **ROUND TABLE** | 11:00

11:15 **Coffee Break** | 11:30

11:45 **Keynote Speech**
C.1A - Scientific
Communication
and Visualisation

13:15 **ROUND TABLE**

13:45 **Lunch Break**

14:45 **A, B, C Poster Session and Exhibition**

17:45 **Session Reports and Closing**

FEEDBACK





EO Science 2.0 website

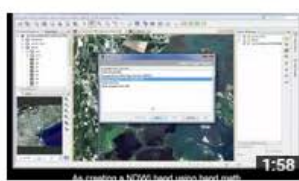
EOScience2.0 <https://www.youtube.com/channel/UCPnL3aynCQxTOJPttxMiS3Q/feed> Subscribe 11

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Research and Service Support: new opportunities for EO
85 views • 1 week ago



STEP and the Sentinel-2 Toolbox
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Making a sensible use of technology: the new frontier of
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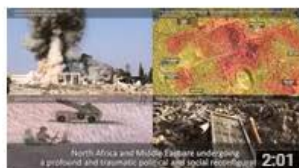
A crowdsourcing based game for land cover validation.
147 views • 2 weeks ago



Sustainable urban transport and ridership estimation of BRTS
49 views • 2 weeks ago



Validation Of Future Internet Technologies For Added Value
64 views • 1 we



Preserving cultural landscapes through citizen engagement



Integration of Earth Observation and In situ Data for Map Updating



Mission Exploitation Platform proba-v



E-Infrastructures empowered by Interoperable Volunteered



Cost-efficient and reliable crowd sourcing platforms built on open...

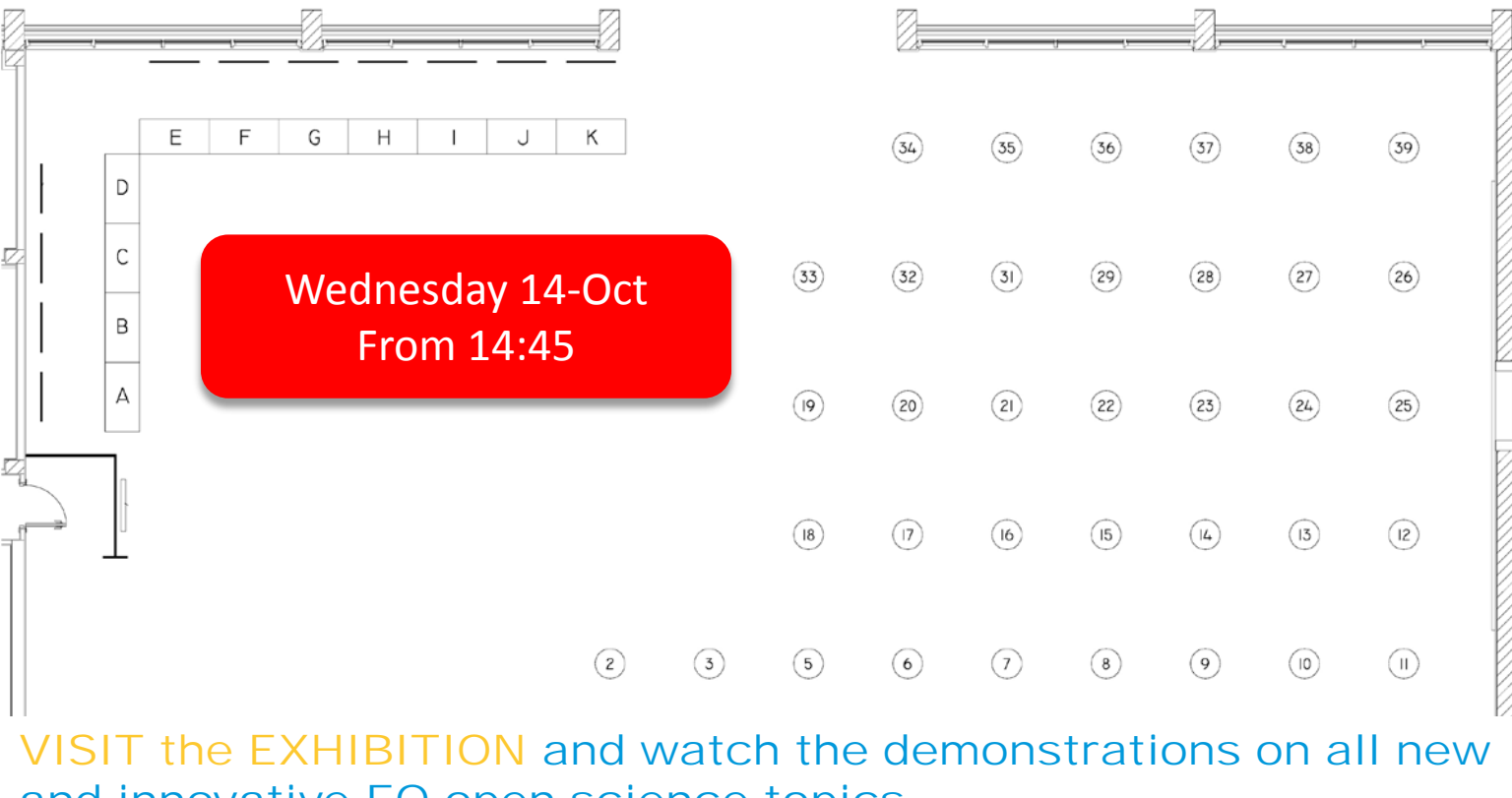


Phases Ambig Combining Pr
29 views • 2 we

All received videos are available to the general public before the event on the dedicated EO Science 2.0 channel ! Participants can get the "flavour" of the presentation and plan their visit to the poster space. Videos will be also shown on dedicated screens during the event.



Posters and Exhibition



Exhibitors

- A SOLENIX
- B ARRAY SYSTEMS COMPUTING INC.
- C CARTODB
Geospatial on the cloud
- D DRIHM
DISTRIBUTED RESEARCH MANUFACTURE FOR INNOVATION TECHNOLOGY
- E aizoOn
TECHNOLOGY CONSULTING
- F ReMedia.IT
- G amazon web services™
- H terra due 2.0
- I SenSyF
- J EOX
- K ACS
ADVANCED COMPUTER SYSTEMS

VISIT the EXHIBITION and watch the demonstrations on all new and innovative EO open science topics

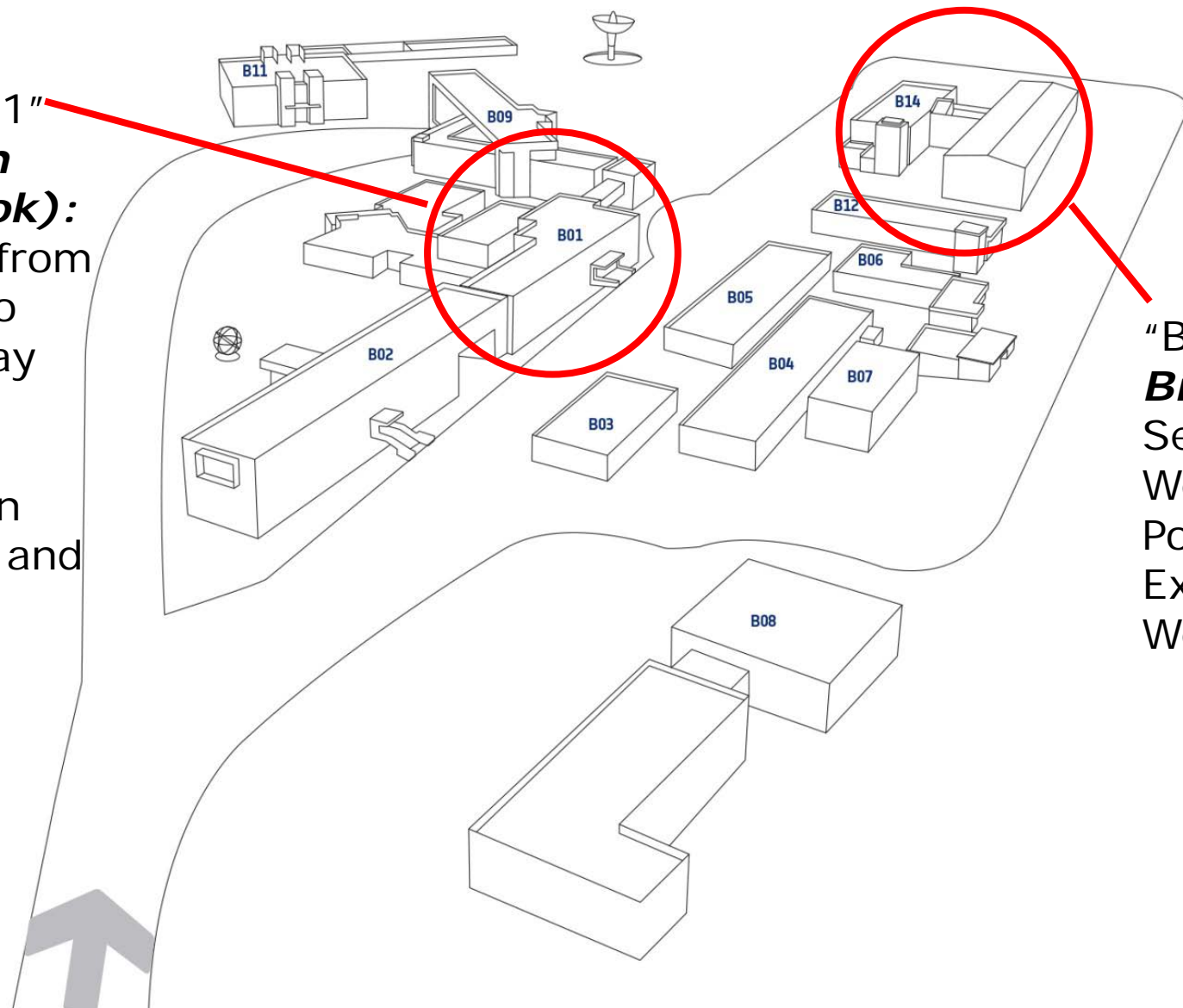
VISIT the POSTER section ... scientists will be able to present their results interactively ...using connected laptops.

Conference Rooms



"Building 1"
**Magellan
(and Cook):**
Sessions from
Monday to
Wednesday

Cook
Hackathon
Thursday and
Friday



"Building 14"
Big Hall:
Session on
Wednesday
Posters and
Exhibition on
Wednesday



1st EO Open Science JAM

WHO

Participants are Scientists and contributors from the various thematic sessions with coordination of Frank Snik, Univ of Leiden

WHAT

JAM sessions on challenging topics and / or societal issues of of Air quality, Quality of life, Everyday effects of climate change, Geohazards, Land use.

HOW

After having identified a concrete issue to solve (related to the general topic), each group will design the outline of a potential EO Open Science project to specifically address that issue.

Out-of-the-box thinking is very much encouraged, but the project needs to remain realistic for implementation in the near future .

WHEN

Starts today at 17:15
Reporting on Tuesday in Plenary



Interconnecting science, industry, politics and society

An idea that is developed and put into action is more important than an idea that exists only as an idea. *Buddha*



FIRST ESA HACKATHON event

WHEN

15-16 October at ESA-ESRIN
bringing together volunteered programmers
with the **developers of the Sentinel
Application Platform (SNAP)**.

WHO

enthusiastic developers who love solving
challenging problems and have a good
knowledge of the Java programming language

WHAT

During the event, programmers will agree
about new tools to be integrated within SNAP,
develop, test and run them



step
science toolbox exploitation platform

esa

ESA STEP TOOLBOXES DOWNLOAD GALLERY DOCUMENTATION COMMUNITY

SNAP
Sentinel 1 Toolbox
Sentinel 2 Toolbox
Sentinel 3 Toolbox
Download
Community

Home > Toolboxes > SNAP

SNAP

A common architecture for all Sentinel Toolboxes is being jointly developed by Brockmann Consult, Array Systems Computing and C-S called the **Sentinel Application Platform (SNAP)**.

The SNAP architecture is ideal for Earth Observation processing and analysis due the following technological innovations: Extensibility, Portability, Modular Rich Client Platform, Generic EO Data Abstraction, Tiled Memory Management, and a Graph Processing Framework.

Feature Highlights

- Common architecture for all Toolboxes
- Very fast image display and navigation even of giga-pixel images
- Graph Processing Framework (GPF): for creating user-defined processing chains
- Advanced layer management allows adding and manipulation of new overlays such as images of other bands, images from WMS servers or ESRI shapefiles
- Rich region-of-interest definitions for statistics and various plots
- Easy bitmask definition and overlay
- Flexible band arithmetic using arbitrary mathematical expressions
- Accurate reprojection and ortho-rectification to common map projections,
- Geo-coding and rectification using ground control points
- Automatic SRTM DEM download and tile selection
- Product library for scanning and cataloging large archives efficiently
- Multithreading and Multi-core processor support
- Integrated WorldWind visualisation

SNAP Frequently Asked Questions

SNAP is using the following technologies

- [NetBeans platform](#) desktop application framework
- [Gradle](#) multi-platform installation builder
- [GeoTools](#) geospatial tools library
- [Jira](#) issue tracker
- [Git](#) version control system, hosted by [GitHub](#)

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<http://step.esa.int/main/toolboxes/snap/>



Augmented Reality App

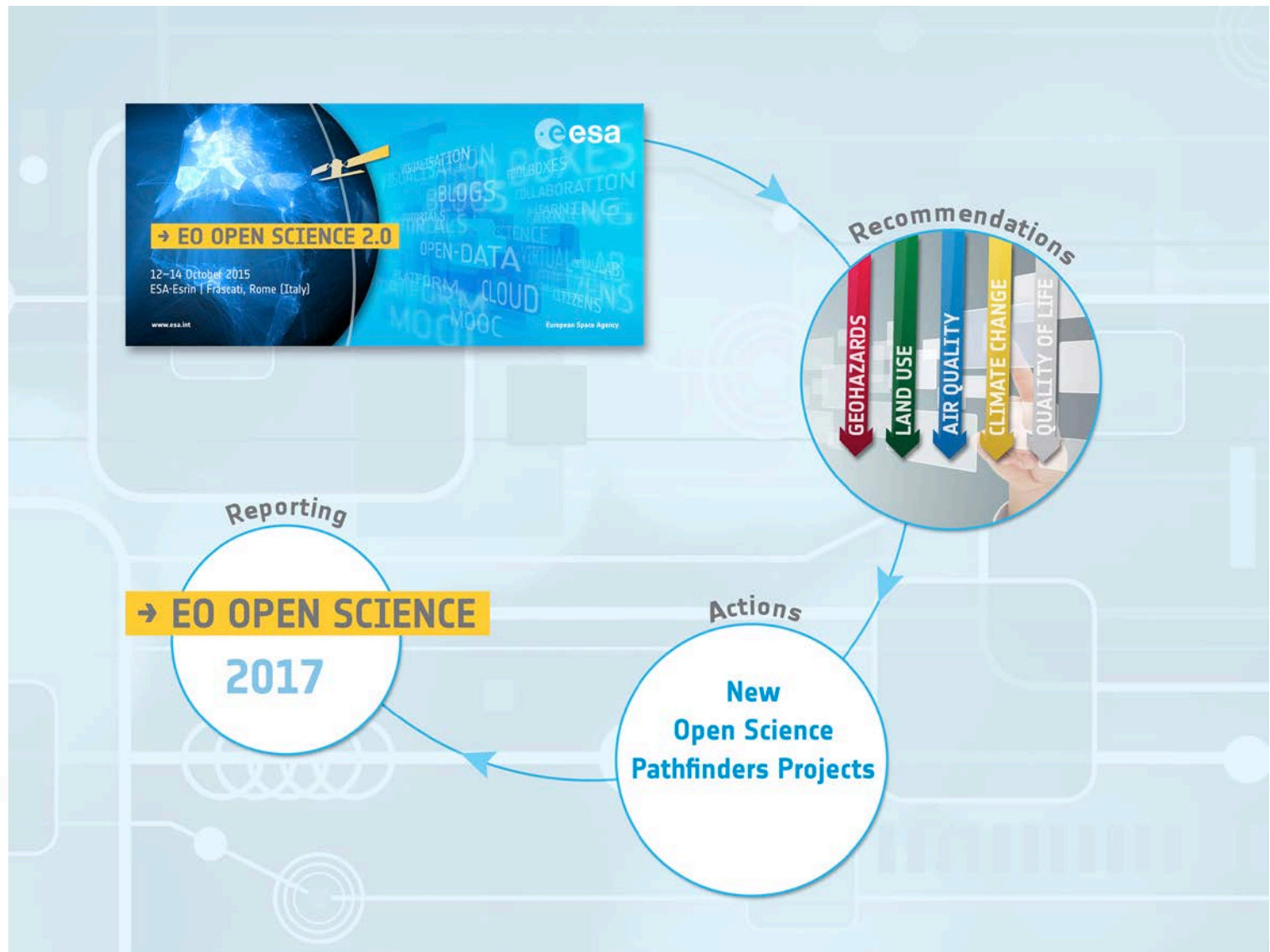




EO Open Science Questions

1. How to make science more responsive to societal challenges?
2. What are the current barriers for EO open science?
3. About infrastructure:
 - What have you got now?
 - What would you like to have?
 - How can ESA help?
4. How to make sure that scientists lead the development?
5. How to develop new practices in open EO data exploitation?
6. What are the major gaps (technological, infrastructure, at community level...) between EO Open Science and current ESA practices?
 - What are the recommendations to fill such gaps?
7. What are the recommendations for EO Open Science Pathfinders projects?

EXPLOITATION CYCLE





observing the earth



ESA

OBSERVING THE EARTH

UNDERSTANDING OUR PLANET

SECURING OUR ENVIRONMENT

BENEFITING OUR ECONOMY

+ About Observing the Earth

[ESA > Our Activities > Observing the Earth](#)



Search here

EO programmes

- The Living Planet
- Copernicus

EARTH OBSERVATION SCIENCE 2.0

Follow discussions at the three-day Earth Observation Science 2.0 conference live from ESA's centre for Earth Observation in Frascati, Italy, on 12–14 October.



Earth Observation Science 2.0

· [Full programme](#)

ESA's Earth Observing missions

- Envisat
- ERS overview
- Earth Explorers overview
- Sentinels overview
- Proba-V
- Proba-1 overview
- Third Party Missions overview
- Meteosat Second Generation
- MetOp overview

– Opportunities with us

Earth Observation Open Science 2.0

Event starts Mon, Oct 12 2015 9:00 AM CEST

GET NOTIFIED

More on [livestream.com](#) →



Enjoy the event!



Twitter: #eoscience20