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Open Science in Horizon Europe

The European Commission perspective in Horizon Europe and the
new publishing platform Open Research Europe



Our journey together

(for the next 30 minutes)

Open Science: Why and What

Open Science in Horizon Europe

Tools are key: Open Research Europe

Do you see balance?

26

10

16

Société Belge des Balances & Bascules
RUE DE L'INTENDANT, 43 - BRUXELLES

Photo by Piret Ilver on [Unsplash](#)





Do you still see balance?

26
% margin for
commercial scientific
publisher

10 billion dollars: the
global cost for scientific
journals subscriptions

16 billion euros lost
every year in Europe for
not managing research
data properly

**Researchers are evaluated
by looking at the Impact
Factors of the Journals
where they publish papers
Commercial publishers are responsible
for assessing ranking (Impact Factor)
of the Scientific Journals**

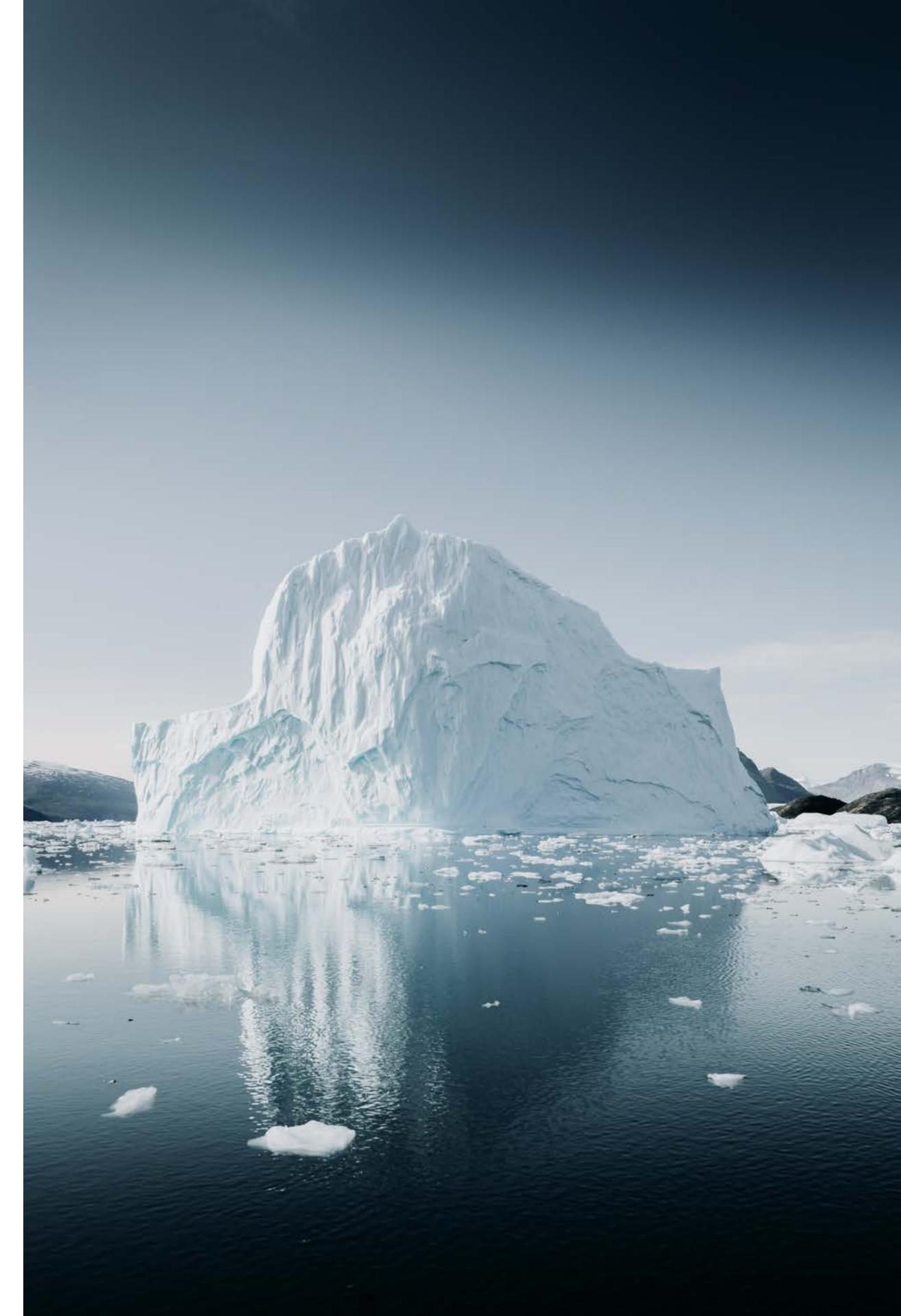
What is the problem?



What is not evaluated

is lost and
cannot enter the
scientific debate

Data, algorithms,
processess, software,
products,
methodologies



Why Open Science?

A dark, atmospheric photograph of a person standing on a rocky outcrop at night. The person is silhouetted against a bright, star-filled sky. The foreground is filled with dark, silhouetted rocks and bushes. The background is a deep blue/purple gradient, suggesting a twilight or night sky.

Because it...

- accelerates scientific progress
- enhances research quality and society trust in science (transparency)
- reduces time to market and technological transfer time
- increases impact

We are no more discussing about the opportunity: open science is the new norm

What is Open Science?



“Open science” means an approach to the scientific process based on open cooperative work, tools and diffusing knowledge

Horizon Europe Regulation and Model Grant Agreement

The concepts of Open Science, Open Innovation, Open to the World should ensure excellence and impact of the Union’s investment in research and innovation, while safeguarding the Union’s interests

Recital 7 Horizon Europe Regulation

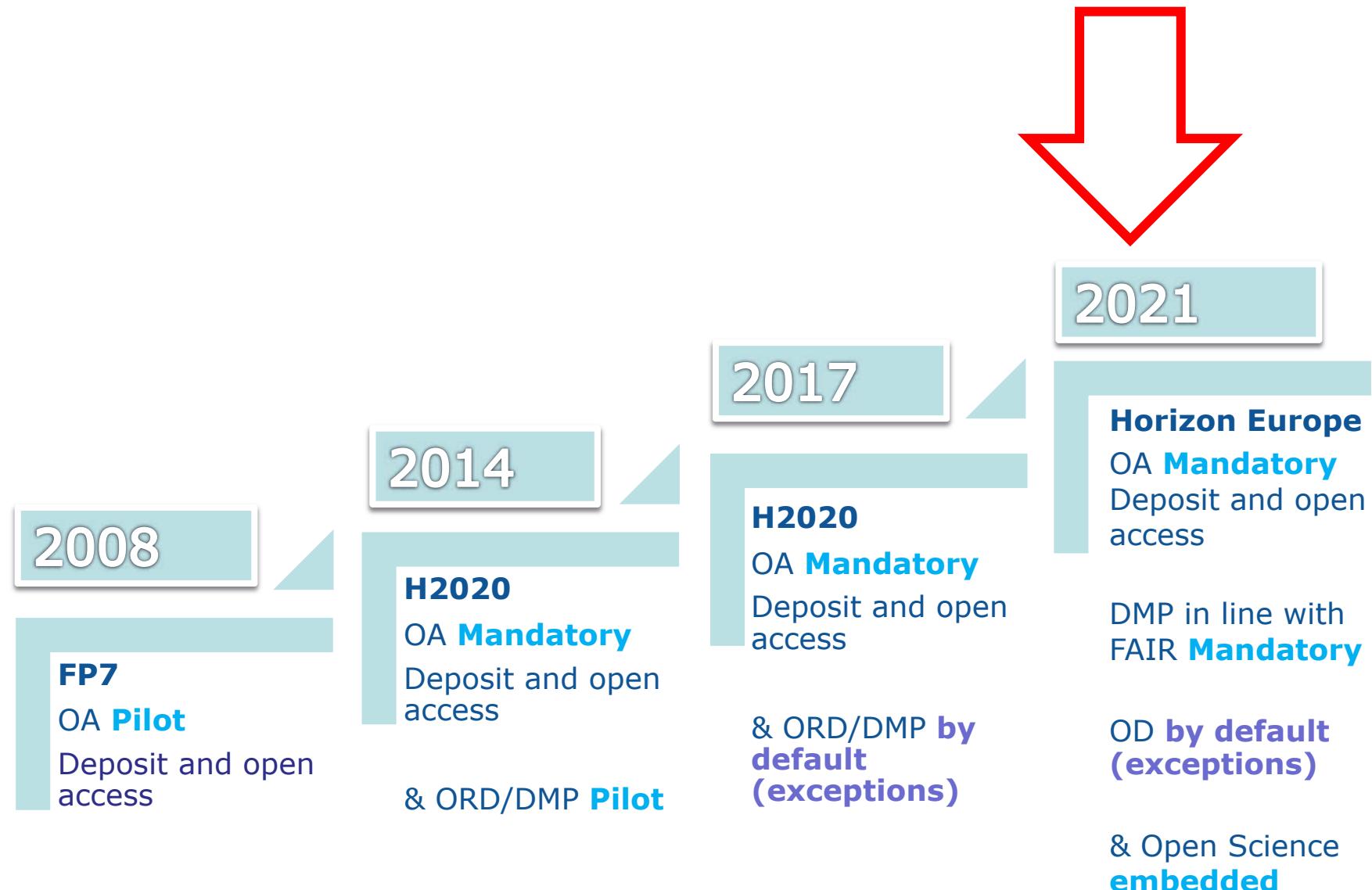


Open Science Components

Open Science: open as much as possible each step of the research activity



The European Commission and Open Science



Courtesy of Victoria Tsoukala, PhD - DG RTD Open Science (Unit G4) - PUBMET 2019, Zadar, September 19th, 2019

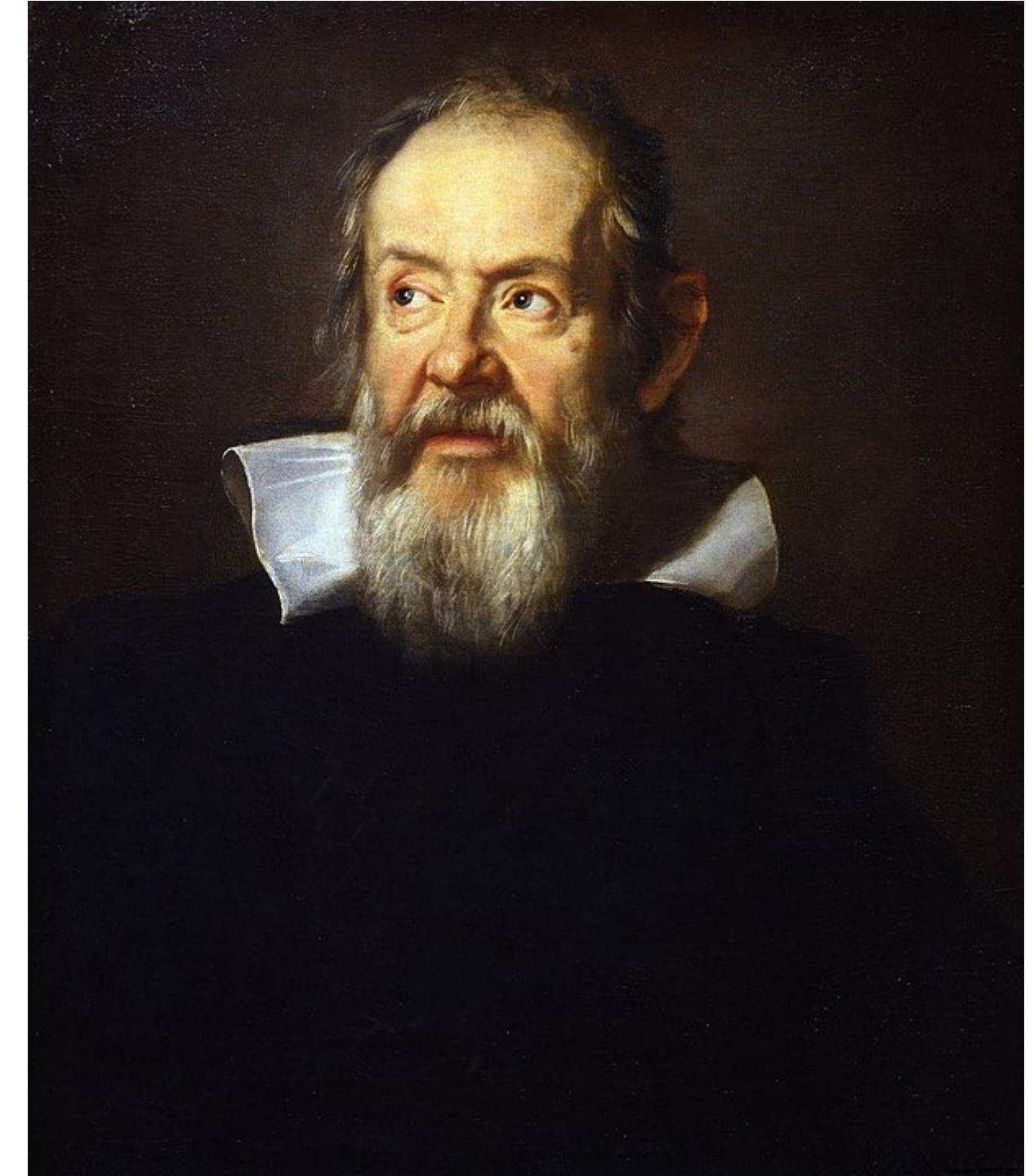
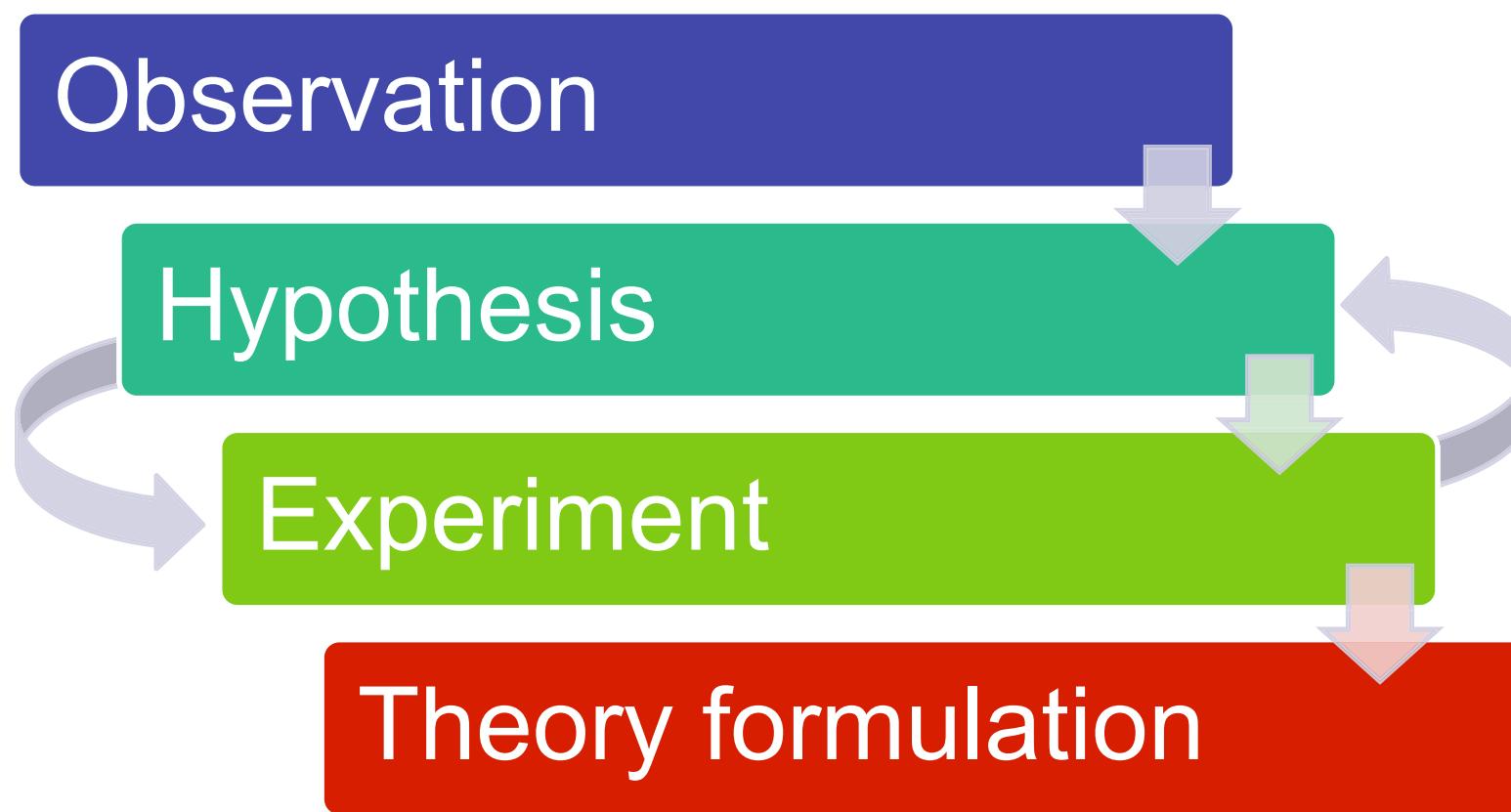
A change in the approach

The diagram consists of two large light blue circles on a dark blue background. The left circle contains the word 'Competition'. The right circle contains the text 'Collaboration and sharing'. A large, semi-transparent blue arrow points from the left circle towards the right circle, indicating a transition or shift in approach.

Competition

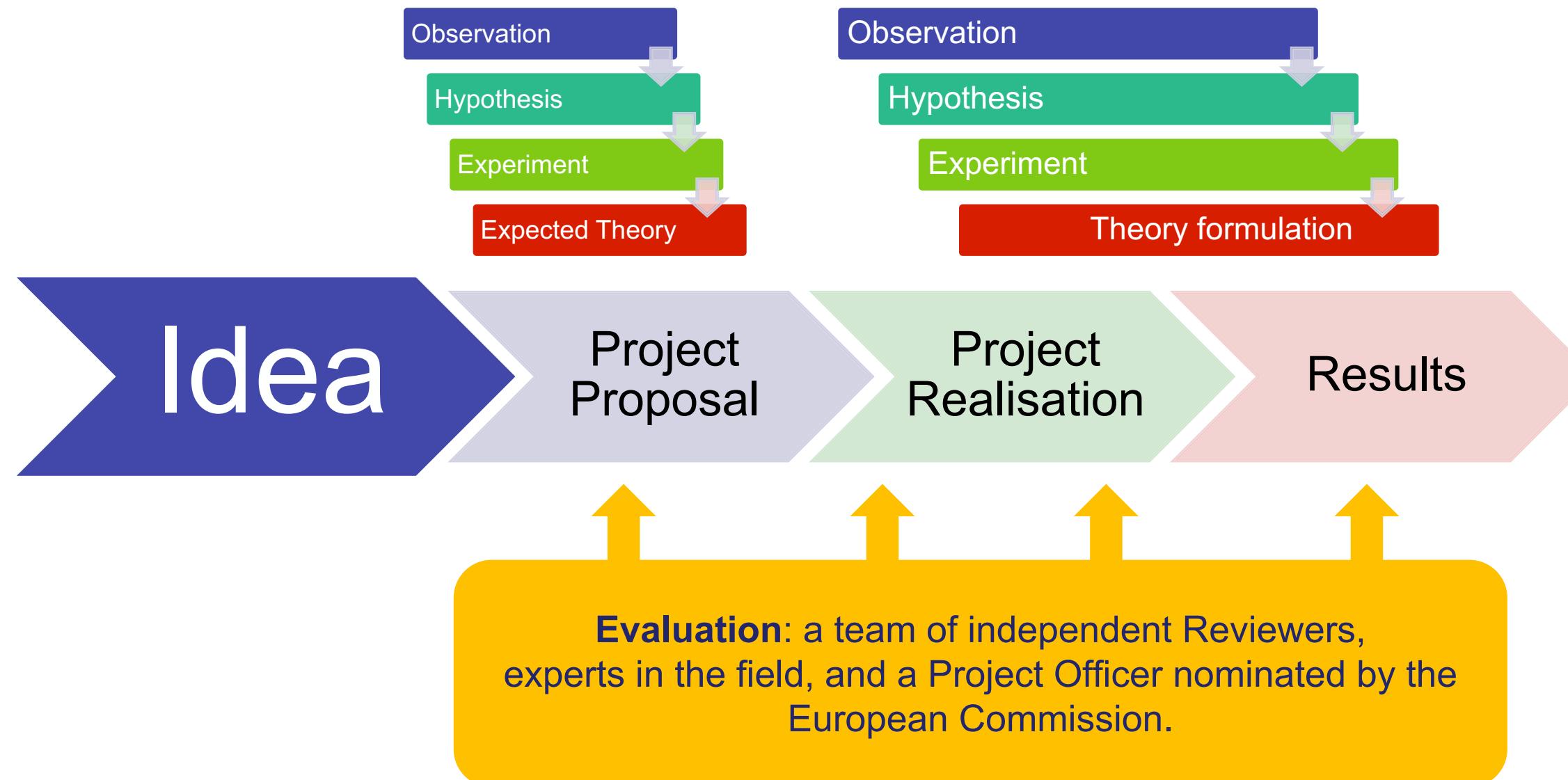
Collaboration
and sharing

The scientific Method

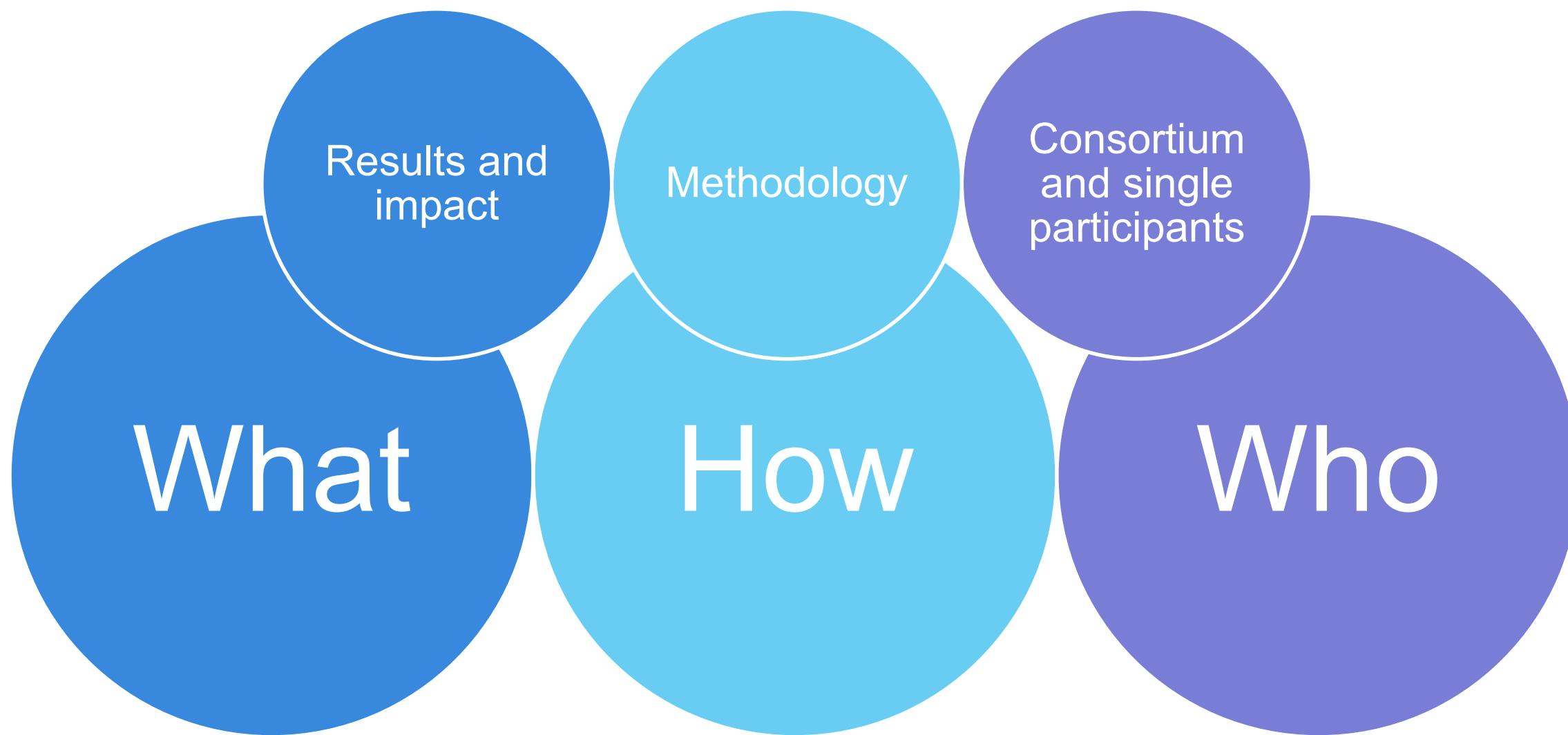


[Portrait of Galileo Galilei](#) by [Justus Sustermans](#) ([Galleria degli Uffizi, Firenze](#)), public domain

The path of a EC funded research project



Evaluation focus



In Horizon Europe the project is evaluated under the Open Science perspective also at the proposal stage.

HORIZON EUROPE LEGISLATION defines three types of impact, tracked with Key Impact Pathways



Article 50 & Annex V ‘Time-bound indicators to report on an annual basis on progress of the Programme towards the achievement of the objectives referred to in Article 3 and set in Annex V along impact pathways’

Open Science practices*

- **early and open sharing** of research (for example through preregistration, registered reports, pre-prints, or crowd-sourcing)
- **research output management** including research data management
- measures to ensure **reproducibility** of research outputs
- providing **open access** to research outputs (e.g. publications, data, software, models, algorithms, and workflows) through deposition in trusted repositories
- participation in **open peer-review**
- **involving all relevant knowledge actors** including citizens, civil society and end users in the co-creation of R&I agendas and contents (such as citizen science)

*Listed in the proposal template

** Mandatory and non-mandatory practices. Mandatory in MGA and WP



Excellence Criterion

Methodology

- Up to 1 page to describe how OS practices are embedded in the methodology
- Up to 1 page to describe research data/output management strategy
- Evaluation of the quality of open science practices



Adapted from Victoria Tsoukala, April 21, 2021,

Webinar: A successful proposal for Horizon Europe: Scientific-technical excellence is key, but don't forget the other aspects

Quality of Implementation Criterion

Capacity of participants and consortium as a whole and list of achievements

- Explain expertise on OS (if no OS practices are involved then no expertise required)
- List publications, software, data, etc, relevant to the project with qualitative assessment and, where available, persistent identifiers
- Publications expected to be open access;
- datasets expected to be FAIR and ‘as open as possible, as closed as necessary’.
- Significance of publications to be evaluated on the basis of proposers’ qualitative assessment and not per Journal Impact Factor



Once funded: Model Grant Agreement requirements

Open Access to Publications

Must be ensured: you must ensure open access to the papers published which derive from your project activities

Research Data Management

You must manage your data properly, according to the FAIR principles, and share them according to the principle «as open as possible as closed as necessary»

Open Access to publications

Beneficiaries must

- Ensure OA to peer-reviewed scientific publications relating to their results at the latest upon publication, via deposition of the author accepted manuscript or of the version of records in a trusted repository and **immediate open access via the repository under CC BY or equivalent**
- Ensure information via the repository about any research output/tools/instruments needed to validate the conclusions of the scientific publication
- retain sufficient intellectual property rights to comply with the OA requirements
- Publication in venue of choosing but publication fees are reimbursable only if publishing venue is full open access (publication fees in hybrids not reimbursed)



Research Data Management

Beneficiaries must

- Manage the digital research data generated in the action responsibly, in line with the FAIR principles
- Establish and regularly update a data management plan ('DMP') for generated (and/or collected) data by month 6 of project
- As soon as possible and within the deadlines set out in the DMP, deposit the data in a trusted repository and ensure OA under CC BY, CC 0 or equivalent, following the principle 'as open as possible as closed as necessary'
- Provide information via the repository about any research output/tools/instruments needed to re-use or validate the data





Tools
are
key

Photo by [Todd Quackenbush](#) on [Unsplash](#)



Open Research Europe

- ✓ It is not a Journal, it is a **publishing platform**
- ✓ The **aim** is to give researcher a venue where to publish the results of their research **funded by the EC**, irrespective of the perceived level of interest or novelty
- ✓ Confirmatory or negative results, as well as null studies are suitable
- ✓ The **scope of the Peer Review** is not to reject or accept a result but to improve its publication thanks to a collaboration effort among experts
- ✓ The **Reviewers role** is to assess whether the research is technically sound and of academic merit.



Open Research Europe



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Open Research Europe (ORE)

Public Procurement – 5.8 Million EUR contract signed in March 2020 with F1000 Research for 4 years

GYA, LIBER and Eurodoc as collaborators/subcontractors for communication and sustainability

OpenAIRE are a partner to help with syndication and communication of ORE

The screenshot shows the homepage of the Open Research Europe (ORE) website. At the top, there is a header with the European Commission logo and a search bar. Below the header, the main navigation menu includes "Open Research Europe", "How to Publish", "About", "My Account", and "Sign In". A prominent blue banner below the menu features the text "Rapid & Transparent Publishing" and a subtext about fast publication and open peer review for research from Horizon 2020 funding. A "SUBMIT YOUR RESEARCH" button is visible. At the bottom of the page, there is a note about submissions being published in March 2021, and a section listing subject areas: Natural Sciences, Medical and Health Sciences, Social Sciences, Engineering and Technology, Agricultural and Veterinary Sciences, and Humanities and the Arts.

<https://open-research-europe.ec.europa.eu/>

Why a publishing platform?

- ✓ High-quality, reliable and efficient publishing venue for Horizon research
- ✓ High scientific standards, and swift and transparent processes
- ✓ Expert Scientific Advisory Board
- ✓ No cost to authors/beneficiaries i.e. non-APC platform
- ✓ Optional, venue where grantees can publish post-grant the results of their work, while respecting their open access obligations

Price Transparency

Transparent about the costs and importantly the breakdown for the price that the Commission pays per article: **no cost for authors**



<https://open-research-europe.ec.europa.eu/for-authors/article-processing-charges>

The platform as a publishing service

- ✓ **Original peer-reviewed articles first posted as preprints**

Stemming from Horizon 2020-funded research (and later, Horizon Europe)

- ✓ **Immediate open access**

With content licensed for re-use

- ✓ **Open peer review**

Open reviewer identities, published reviews, post-publication comments

- ✓ **Connected to the scholarly ecosystem**

PIDs, connection to repositories, open data and software, interoperable technologies, preservation of content, TDM, etc.

The platform as a publishing service

✓ **New generation metrics**

Each article will have a dedicated metrics page

✓ **Explicit, accessible and transparent on business processes and publication policies**

All published on the site for everyone to see

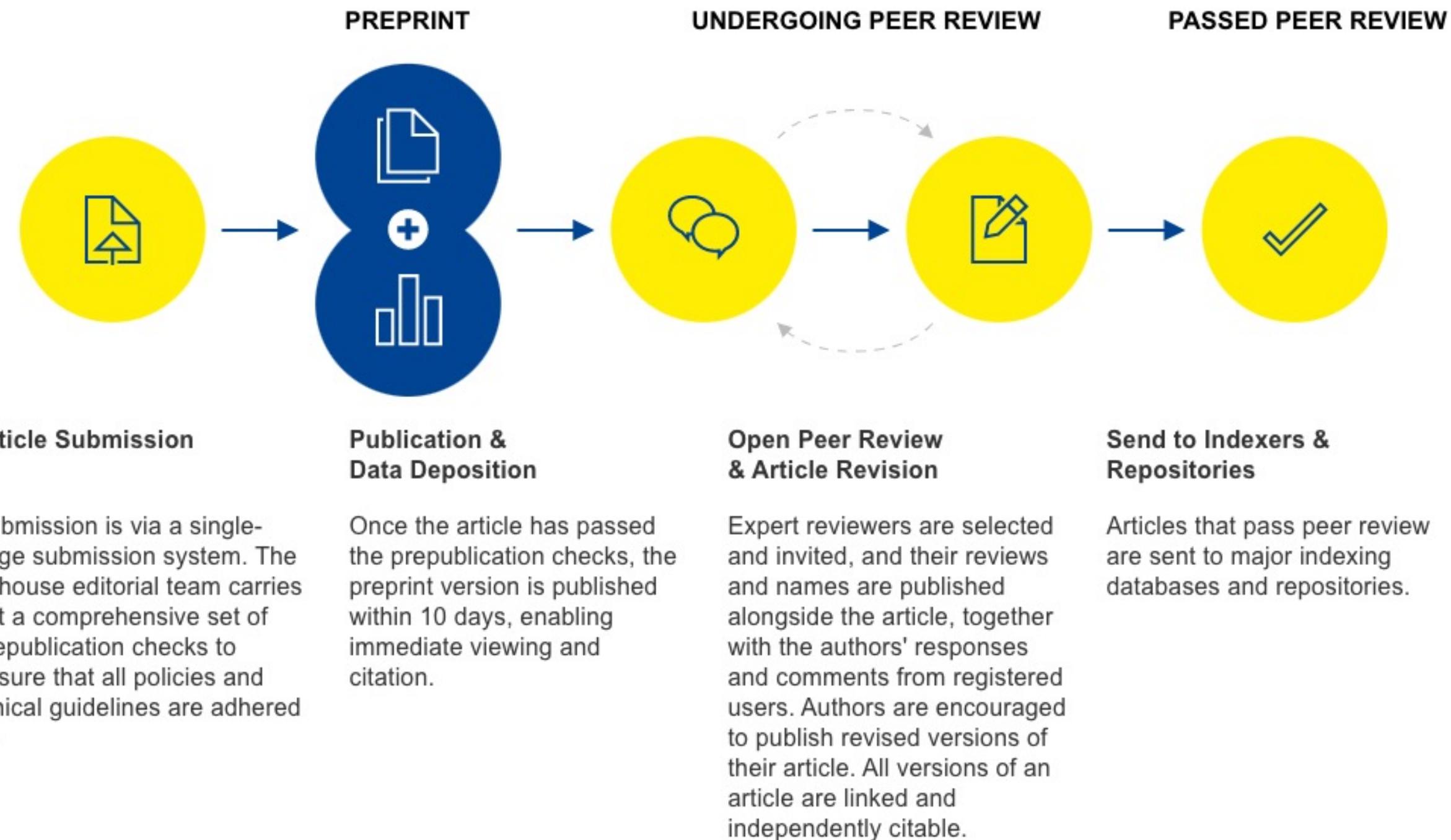
✓ **Aligned with the EC policy and principles**

Takes burden from researchers as it is fully compliant

✓ **Following example of other funders**

Such as the Wellcome Trust ([Wellcome Open Research](#)) and others

Open Research Publishing Model



Preprint example

Home » Browse » Improving the evidence base for delivery of public goods from public...

OPINION ARTICLE

Improving the evidence base for delivery of public goods from public money in agri-environment schemes [version 1; peer review: awaiting peer review]

✉ Mark S. Reed  ¹, Pippa J. Chapman², Guy Ziv², Gavin Stewart¹, Helen Kendall¹, Amy Taylor³, Dianna Kopansky⁴

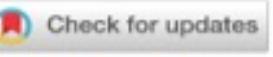
[Author details](#)

 This article is included in the Sustainable Food Systems gateway.

 This article is included in the N8 AgriFood collection.

Abstract

There is growing interest around the world in more effectively linking public payments to the provision of public goods from agriculture. However, published evidence syntheses suggest mixed, weak or uncertain evidence for many agri-environment scheme options. To inform any future "public money for public goods" based policy, further synthesis work is needed to assess the evidence-base for the full range of interventions currently funded under agri-environment schemes. Further empirical research and trials should then focus on interventions for which there is mixed or limited evidence. Furthermore, to ensure the data collected is comparable and can be synthesised effectively, it is necessary to reach agreement on essential variables and methods that can be prioritised by those conducting research and monitoring. Future policy could then prioritise public money for the public goods that can most reliably be delivered, offering better value for taxpayers and improving the provision of ecosystem services from agricultural landscapes.



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Open Peer Review

Reviewer Status
AWAITING PEER REVIEW

Comments on this article

All Comments (0)

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<https://emeraldopenresearch.com/articles/2-57>

Open peer review example 1

Home » Browse » Silent myelin-weighted magnetic resonance imaging

METHOD ARTICLE EDIT VERSION

REVISED Silent myelin-weighted magnetic resonance imaging [version 2; peer review: 2 approved, 2 approved with reservations]

Tobias C. Wood  ¹, Nikou L. Damestani¹, Andrew J. Lawrence², Emil Ljungberg  ¹, Gareth J. Barker  ¹, Ana Beatriz Solana³, Florian Wiesinger^{1,3}, Steven C.R. Williams  ¹

+ Author details

Abstract

Background: Inhomogeneous Magnetization Transfer (ihMT) is an emerging, uniquely myelin-specific magnetic resonance imaging (MRI) contrast. Current ihMT acquisitions utilise fast Gradient Echo sequences which are among the most acoustically noisy MRI sequences, reducing patient comfort during acquisition. We sought to address this by modifying a near silent MRI sequence to include ihMT contrast.

Methods: A Magnetization Transfer preparation module was incorporated into a radial Zero Echo-Time sequence. Repeatability of the ihMT ratio and inverse ihMT ratio were assessed in a cohort of healthy subjects. We also investigated how head orientation affects ihMT across subjects, as a previous study in a single subject suggests this as a potential confound.

Results: We demonstrated that ihMT ratios comparable to existing, acoustically loud, implementations could be obtained with the silent sequence. We observed a small but significant effect of head orientation on inverse ihMTR.

Conclusions: Silent ihMT imaging is a comparable alternative to conventional, noisy, alternatives. For all future ihMT studies we recommend careful positioning of the subject within the scanner.

Keywords

<https://wellcomeopenresearch.org/articles/5-74>

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Open Peer Review

Reviewer Status ✓ ? ✓ ? ⓘ

Reviewer Reports				
Invited Reviewers				
	1	2	3	4
Version 2 (revision) 13 Aug 20	✓ read		✓ read	
Version 1 21 Apr 20	? read	? read	? read	? read

- Richard Dortch  Barrow Neurological Institute, Phoenix, USA
- Olivier Girard  Aix-Marseille University, Marseille, France
Lucas Soustelle  Aix-Marseille Univ, CNRS, CRMBM UMR 7339, Marseille, France; SATT Sud-Est, Marseille, France
- Douglas Dean  University of Wisconsin-Madison, Madison, USA; University of Wisconsin-Madison, Madison, USA; University of Wisconsin-Madison, Madison, USA
- Gunther Helms  Lund University, Lund, Sweden

Alongside their report, reviewers assign a status to the article:

✓ APPROVED

The paper is scientifically sound in its current form and only minor, if any, improvements are suggested

? APPROVED WITH RESERVATIONS

Key revisions are required to address specific details and make the paper fully scientifically sound

✗ NOT APPROVED

Fundamental flaws in the paper seriously undermine the findings and conclusions

Visibility & credit for reviewers:

- Co-reviewing
- ORCID ids
- DOIs for reports

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Open peer review example 2

Reviewer Report

14 May 2020 | for Version 1

Richard Dortch , Division of Neuroimaging Research, Barrow Neurological Institute, Phoenix, AZ, USA

APPROVED WITH RESERVATIONS

This well-written manuscript seeks to develop and evaluate a silent myelin-specific MRI sequence for applications in infants and the elderly, where loud imaging sequences can be problematic. Recent work has demonstrated that so-called inhomogeneous MT (ihMT), which arises primarily from dipolar order effects in myelin lipids, may be a more specific assay of myelin content than other MRI measures (e.g., T₂ relaxation, diffusion, conventional magnetization transfer). As a result, there is significant interest in developing clinically feasible ihMT sequences for applications in neurodegenerative diseases, development, and aging. Overall, the study was well designed (e.g., strong repeatability and ROI analyses) and the results were compelling. However, there are several minor-to-moderate flaws, particularly in the motivation (e.g., the need for silent ihMT sequences) and methods (e.g., the influence of head orientation on ihMT), that slightly reduced my enthusiasm and lead me to recommend a minor revision.

1. The case made for silent MT sequences is not particularly compelling. The authors mention that these are "among the loudest" sequences because they use fast gradient-echo readouts to obtain whole-brain data in clinically feasible scan times. However, these sequences are usually SAR-limited with fairly reasonable TRs (typically between 25-50 ms) that are acquired at lower resolutions to ensure adequate SNR. Together, this results in a sequence with reduced acoustic noise compared to most rapid, high-resolution gradient echo sequences as well as other quantitative approaches that use EPI (e.g., diffusion). (moderate)
2. Furthermore, the benefits of using a silent myelin sequence may not outweigh the drawbacks. For example, the proposed method requires very low flip angles (2 degrees), which results in a significant SNR penalty relative to standard ihMT sequences. In addition, the RUFIS readout results in a small increase in scan time. Given that SNR is already relatively low for ihMT indices, the proposed method may be suboptimal in many clinical scenarios. (moderate)
3. The study was not designed to specifically measure the effect of head orientation on ihMT. Subjects were scanned four times (across two sessions), but head orientation was not directly controlled or measured across these scans. Instead a mixed effects model was used and head orientation was inferred from the images (rather than the orientation of individual tracts being measured using DTI for example). Furthermore, the confounding influences of T₁ and B₁ were not measured. The authors attempt to overcome this by using

26 Views  Cite this report  Responses (1)

Responses (1)

AUTHOR RESPONSE 19 Aug 2020
Tobias C. Wood, King's College London, London, UK

We thank the reviewer for their time and insight. There were in total five reviewers, with many helpful suggestions, and hence there have been many edits to the paper. Responses to this particular review follow below.

1. We concede that the acoustic noise from any scan will depend on the precise sequence settings. However, we note that recent ihMT work has used both an MP-RAGE style acquisition, with an imaging TR of 4.3ms and also SSFP with a TR of only 5ms. The introduction has been amended to explicitly reference these papers.
2. We agree that radial sequences are SNR constrained relative to cartesian sequences, this has now been explicitly stated in the discussion. Although the 3D radial readout does imply a time penalty relative to cartesian, we note that our overall scan time is competitive with recent cartesian ihMT papers. This has been added to the discussion.
3. We agree that it would have been preferable to acquire explicit T1 & B1 maps for comparison, but total protocol time prevented that in this study. In our opinion the ihMTRinv maps display more even contrast than the ihMTR maps, we hope that the revised figures with axial and coronal sections make this clearer.
4. We did not have a conventional cartesian ihMT implementation available when this study was conducted. However, as there are multiple such implementations in the literature, it is possible to broadly compare image quality and achieved ihMTR values. We have added a table of ihMTR values to make this comparison easier. We concede that it is not possible to compare acoustic noise levels, because it is not standard in the MR literature to record and report the acoustic noise of a sequence. In previous work (reference 22) we did directly compare noise levels between a radial ZTE and cartesian implementation of Variable Flip-Angle T1 mapping, which in our opinion would be similar to the noise levels in this work and found a 30 dB reduction in noise level.
5. Figure 1 has been updated with a reduced number of spokes to emphasise the stepped gradients. We hope this is clearer.
6. We thank you for pointing out that the frequency offset is not ideal for generating single-sided MT contrast. With hindsight, this is obvious. The discussion has been amended to reflect this.
7. Because the MT pulses are applied off resonance they should not significantly interact with the

REVISED Amendments from Version 1

The manuscript has been updated in response to the reviewer's helpful and insightful comments. The most important changes are that the figures have been redesigned and the emphasis on the head-orientation study reduced. The MR images have been updated to use a consistent set of slices, Figures 3 & 4 have been merged into a single figure, and the average within-subject CoV has been added. Figure 1 (the number of spokes) and Figure 6 (colour scheme) have been updated for clarity. We hope that these new figures are clearer and more intuitive than the previous figures. The language used to refer to the head orientation study has been clarified to refer to results as "highly statistically significant" rather than "strong". A reviewer provided a plausible explanation for the negative values of ihMTR in CSF, namely the use of Fermi pulses in the preparation module, and this limitation has been discussed. A table with the mean ihMTR and inverse ihMTR values has been added. The discussion has been expanded to better set the context of the paper within existing literature, with better comparisons between our results and previous papers. We think the resulting paper is much improved and thank the reviewers again for their valued input.

See the authors' detailed response to the review by Douglas Dean
See the authors' detailed response to the review by Gunther Helms
See the authors' detailed response to the review by Richard Dortch
See the authors' detailed response to the review by Olivier Girard and Lucas Sostelle

Open Research Europe

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Open data example

Data availability

Underlying data

Zenodo: IRM raw data (video format) and dataset (csv) supporting platelet attachment to collagen IV or fibrinogen in percentage over time (related to [Figure 1](#)), [https://doi.org/10.5281/zenodo.3774819⁴⁷](https://doi.org/10.5281/zenodo.3774819).

Zenodo: Raw data, temporal profiling for platelet spreading dynamics (related to [Figure 3](#)). [https://doi.org/10.5281/zenodo.3774823⁴⁸](https://doi.org/10.5281/zenodo.3774823).

Zenodo: Raw data for microtubule extension IRM images (videos) and raw data set (csv) (related to [Figure 4](#)), [https://doi.org/10.5281/zenodo.3774827⁴⁹](https://doi.org/10.5281/zenodo.3774827).

Zenodo: Raw data (IRM videos) of Nocodazole experiments (videos) and raw dataset for statistical purposes (csv) (related to [Figure 4](#)), [https://doi.org/10.5281/zenodo.3774835⁵⁰](https://doi.org/10.5281/zenodo.3774835).

Zenodo: Nocodazole experiment low mag images, IRM, raw data. Platelets fixed, imaged by IRM in low magnification for counting purposes. Platelets are either control or treated with nocodazole, [https://doi.org/10.5281/zenodo.3774843⁵¹](https://doi.org/10.5281/zenodo.3774843).

Zenodo: Raw data to support percentage of platelets in each morphological state, 1 hour post-platelet seeding (related to [Figure 8](#)), [https://doi.org/10.5281/zenodo.3774845⁵²](https://doi.org/10.5281/zenodo.3774845).

Zenodo: Dynamics of platelet spreading over time with/without treatments with manganese and thrombin (related to [Figure 8](#)). Raw images of platelets treated with and without Manganese and thrombin (tif, jpeg) and raw data set (csv), [https://doi.org/10.5281/zenodo.3774849⁵³](https://doi.org/10.5281/zenodo.3774849).

Zenodo: Un-cropped and unedited images/movies for all (DIC, movies, cryo-ET, SEM images). [https://doi.org/10.5281/zenodo.3773437⁵⁴](https://doi.org/10.5281/zenodo.3773437).

Extended data

Figshare: Differential dynamics of early stages of platelet adhesion and spreading on collagen IV- and fibrinogen-coated surfaces, [https://doi.org/10.6084/m9.figshare.c.4944738²⁴](https://doi.org/10.6084/m9.figshare.c.4944738).

This project contains the following extended data:

- **Figure S1. Platelet integrated activity.** Integrated activity of platelets: the mean absolute value $|\Delta\text{IRM}|$ at every time point. X-axis: Time in seconds. Y-axis: Platelet mean activity. Red dotted lines separate the phases: background, prior to platelet attachment, filopodial spreading phase, lamellipodial spreading phase, and the fully spread phase.
- **Figure S2. Interactions with the surface for collagen IV and fibrinogen.** The number of pixels interacting with the surface over time for the surfaces collagen IV and fibrinogen. Time in seconds.
- **Figure S3. Quantification and image analysis of platelet spreading, based on IRM live imaging for fibrinogen.** (A) Platelet spreading viewed by IRM, and the corresponding focal activity map, $\Delta\text{IRM}_t = \text{IRM}_t - \text{IRM}_{t+1}$. Positive values (yellow) imply local attachment; negative values (blue) imply local detachment (bottom right). One filopodia initially attaching and detaching (black arrow). Scale bar 2 μm (B) Integrated tapping activity of platelets: the mean absolute value $|\Delta\text{IRM}|$ at every time point. X-axis: Time in seconds. Y-axis: Platelet mean activity. Red dotted lines separate the phases: background, prior to platelet attachment, filopodial spreading phase, lamellipodial spreading phase, and the fully spread phase. (C) Total number of pixels interacting with the surface over time. Time in seconds. (D) Accumulated attachment and detachment over time shown by activity map, yellow means more attachment events, blue means fewer attachment event. Right images, correspond IRM images. Scale bar 2 μm .
- **Movie S1.** Shows the accumulated number of transitions from interaction to not interacting with the surface at every pixel over time.
- **Movie S2.** Shows an overlay of the highly active regions on top of the IRM images over time on collagen IV.
- **Movie S3.** Shows an overlay of the highly active regions on top of the IRM images over time on fibrinogen.

Data are available under the terms of the [Creative Commons Attribution 4.0 International license \(CC-BY 4.0\)](#).

Software availability

IRM spreading dynamics source code available from: <https://github.com/assafZaritskyLab/IRM-Spreading-Dynamics>

Archived source code as at time of publication: [https://doi.org/10.5281/zenodo.3770506²¹](https://doi.org/10.5281/zenodo.3770506)

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<https://f1000research.com/articles/9-449>

Supporting research across all disciplines

Editorial guidelines and policies specifically for:

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- Social Sciences
- Humanities

Data guidelines and policies in line with EC policies

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Content will be searchable by subject areas and by H2020 programme areas.

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Data Notes	Review	Review
Method Articles	Case Studies	
Software Tool Articles	Brief Reports	
Study Protocols	Data Notes	
Registered Reports	Method Articles	
Reviews	Software Tool Articles	
Systematic Reviews	Study Protocols	
Clinical Practice Articles	Registered Reports	
Case Reports	Systematic Reviews	
Case Studies		

Thank you!

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