Our Open Future

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Open Scholarship Initiative
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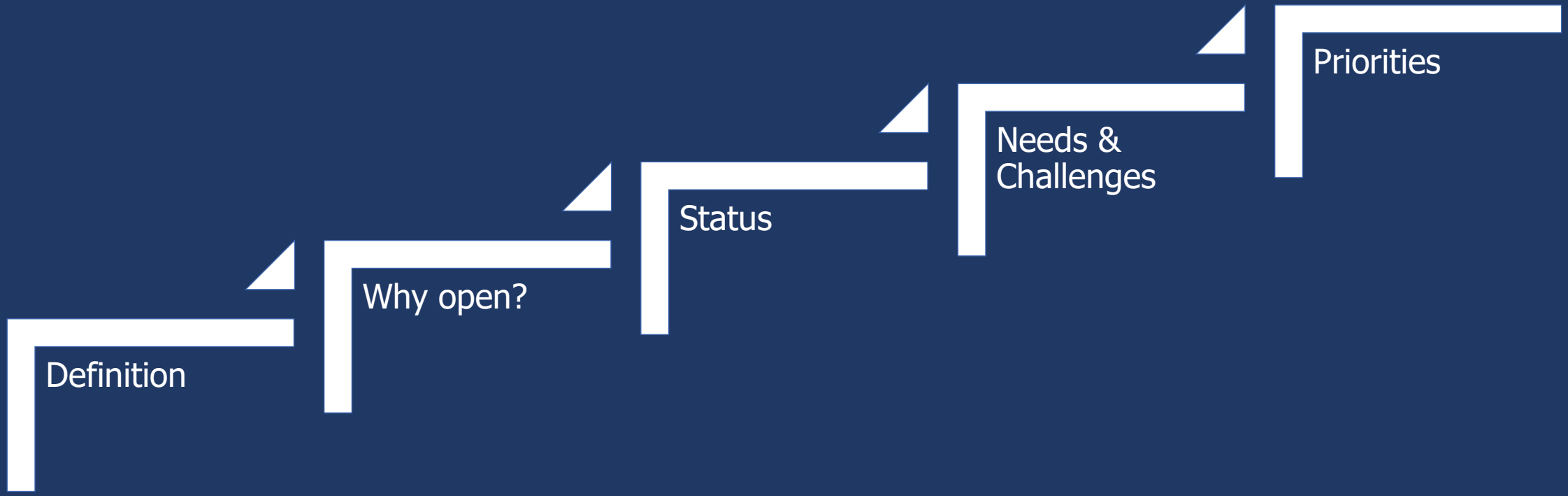
OSI


Definition
Why open?
Status
Needs &
Challenges
Priorities

1. Slides available for download
2. My email address is on last page

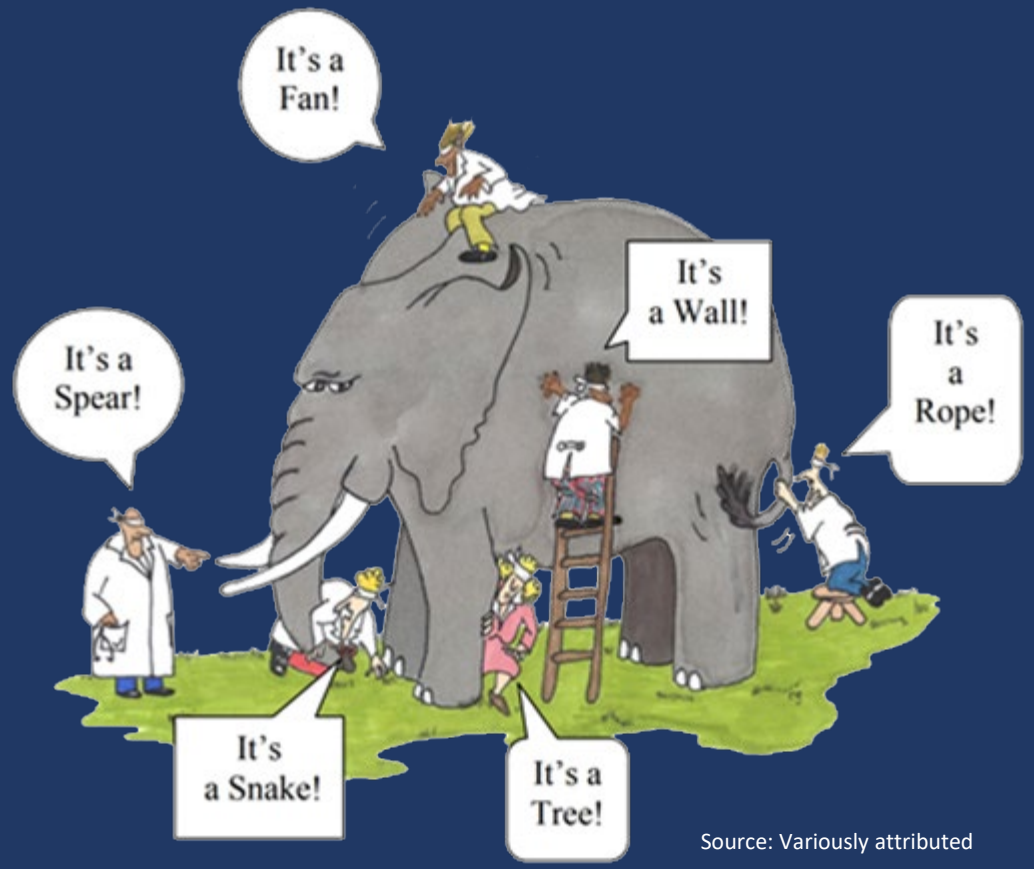
Definition

Miles' Law: "Where you stand depends on where you sit"

What is open?

HOW WE APPROACH THIS QUESTION IS RELATED TO HOW WE SEE SCIENCE COMMUNICATION

- **MANY PARTICIPANTS:** Individual researchers, research societies, research networks, journalists, IGOs, NGOs, governments, universities, libraries, informal educators, tech transfer offices, industry, science writers, policy activists, and more.
- **MANY SKILLSETS:** From subject-specific expert work like study design, research management and communication, grant writing, technical writing, and journal editing, to multidisciplinary work like media outreach, informatics, curation, epistemology, business development, and marketing.



Source: Variously attributed

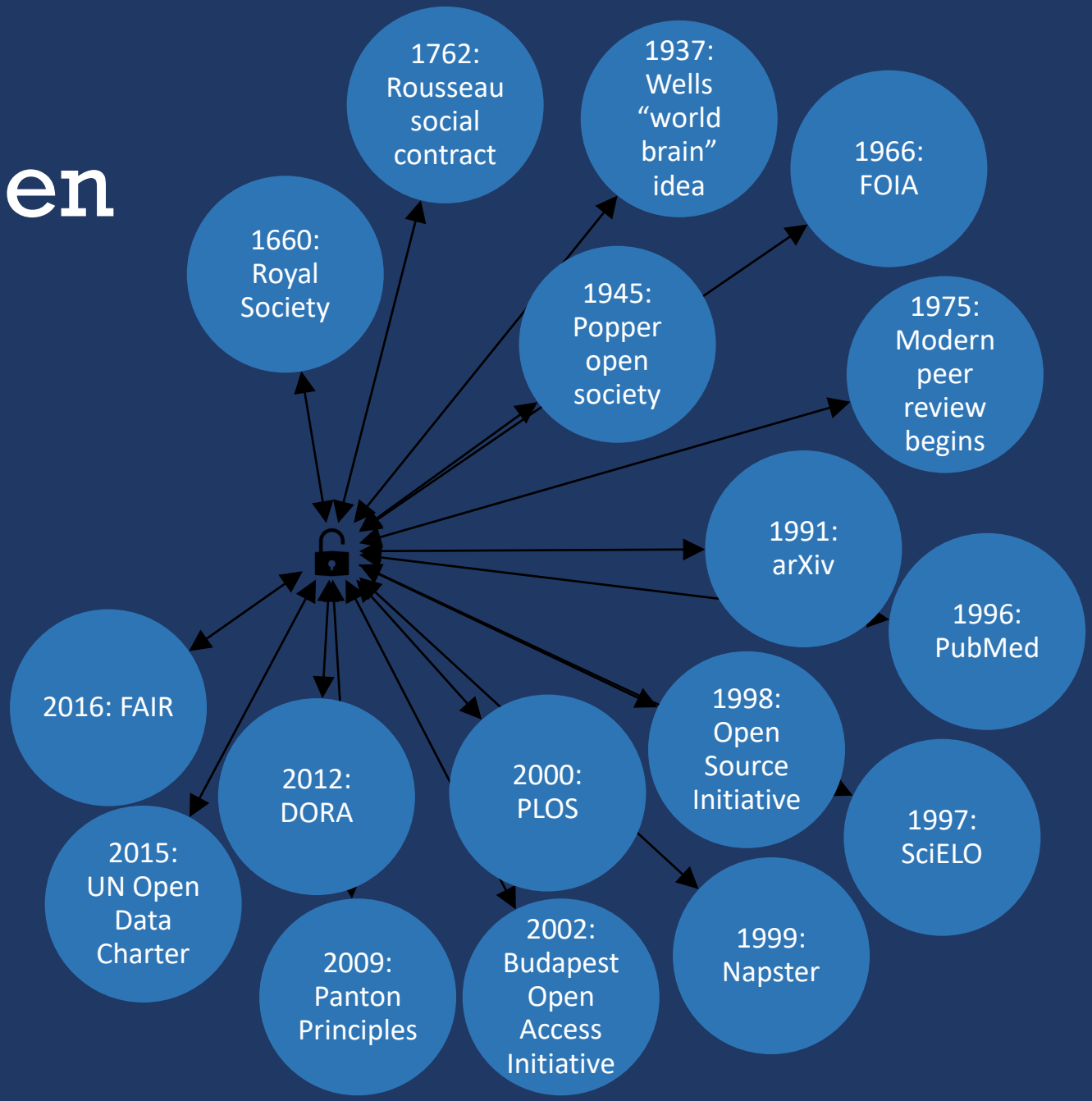
Our approach also depends on what kind of open we're talking about

There are several separate and distinct "open" movements, each with their own broad definitions.

OPEN	ACCESS
OPEN	DATA
OPEN	SOURCE/CODE
OPEN	SCIENCE
OPEN	GOVERNMENT
OPEN	EDUCATIONAL RESOURCES
OPEN	METHODS, PRACTICES

These different open movements have different origins

All evolved for decades (even centuries) from many corners of many societies. Some were originally fueled by idealism, others by need or opportunity. There is no starting point for any single movements—this growth has been iterative and cumulative.



And over time, they have followed different evolutionary paths…

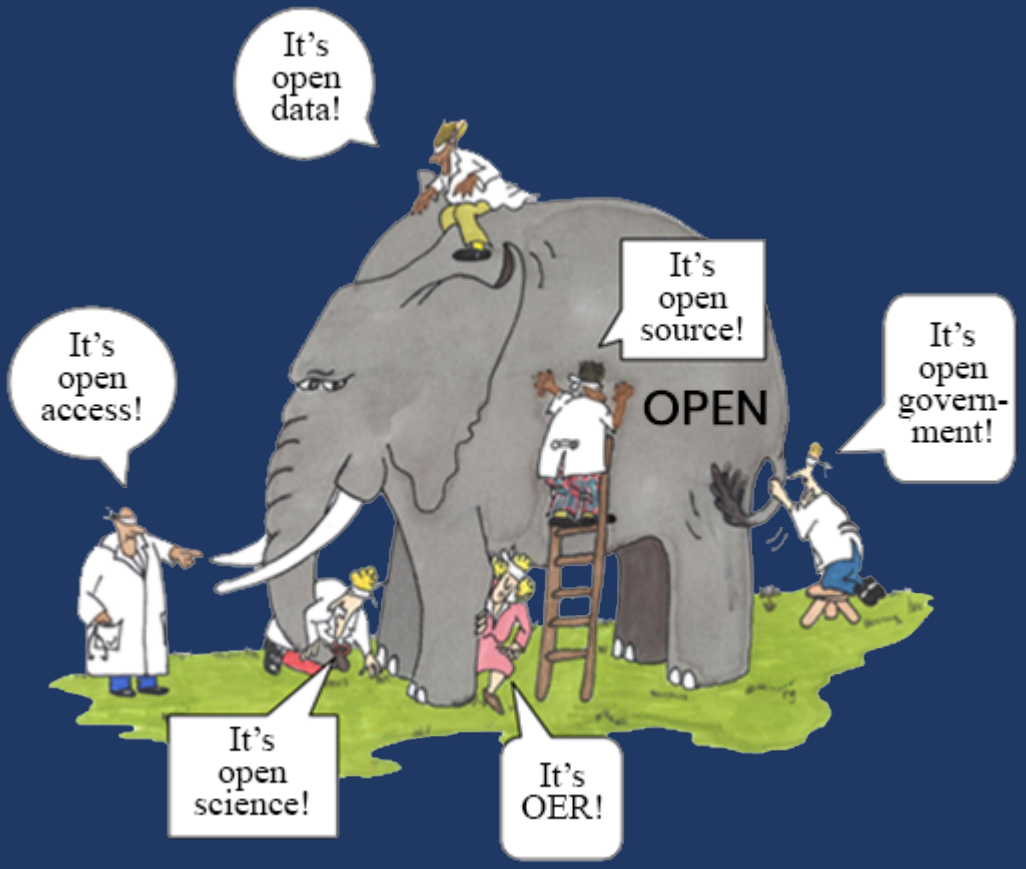
…been influenced by a wide variety of motives…

…and developed different focus points

These include (but are not limited to) improving the readability and clarity of science, maintaining the integrity of important communication tools like journals, evolving these communication tools and publishing methods, improving collaboration and interdisciplinary engagement, improving openness and transparency in science (with an eye toward improving information access and reuse, and also improving reliability and replicability), improving science outreach and literacy, making issue advocacy and awareness more effective, improving policy development and compliance (e.g., vaccines), and more.

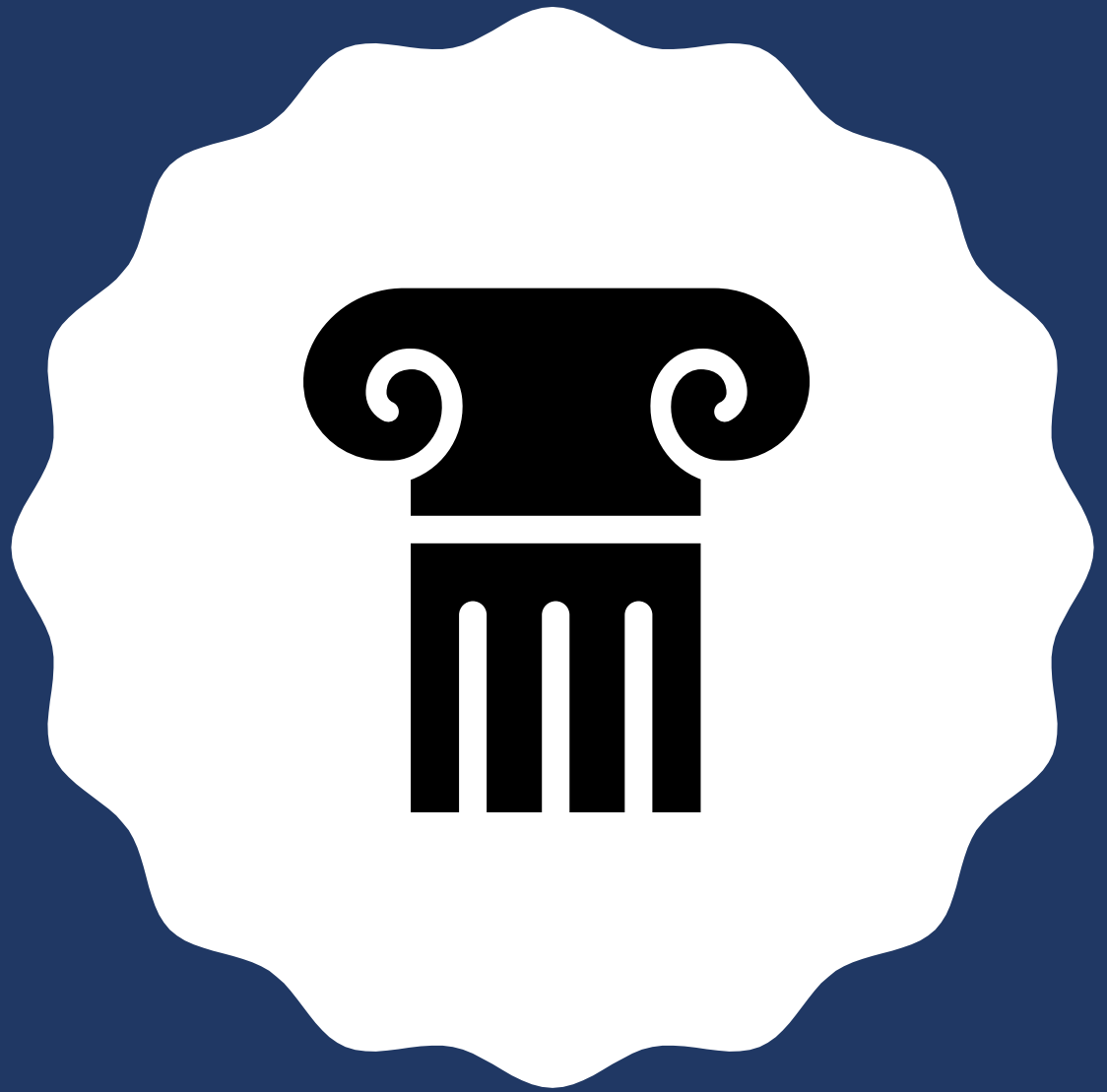
So, today, we see a wide variety of more or less hardened perspectives about what open is or at least should be and should focus on

- All of these perspectives are right, none are wrong
- This dynamic is true not just between open movements, but also within movements. There are as many "right" answers as there are participants in the open space



Philosophically…

- Sam Moore (2017) has called open a "boundary object." meaning that different communities have co-opted "open" for their own use without also trying to change the meaning of open for everyone, which has both preserved the diversity of open, and fostered different communities of use around this term and spurred local use and development.
- Fecher and Friesike (2013) see this as a good outcome, arguing that it is better not to rely on a single definition—that doing so "could prevent fertile discussions from the very beginning."
- Jon Tennant countered that a lack of common understanding in this space has had consequences. It has, in fact, "impeded the widespread adoption of the strategic direction and goals behind Open Scholarship, prevented it from becoming a true social 'movement', and separated researchers into disintegrated groups with differing, and often contested, definitions and levels of adoption of openness" (Tennant et al. 2019).



The text on this slide is copied from Hampson, G, M DeSart, J Steinhauer, EA Gadd, LJ Hinchliffe, M Vandegrift, C Erdmann, and R Johnson. 2020 (June). OSI Policy Perspective 3: Open science roadmap recommendations to UNESCO. Open Scholarship Initiative. doi 10.13021/ osi2020.2735

Practically, the result is that open definitions and outcomes exist along a broad spectrum

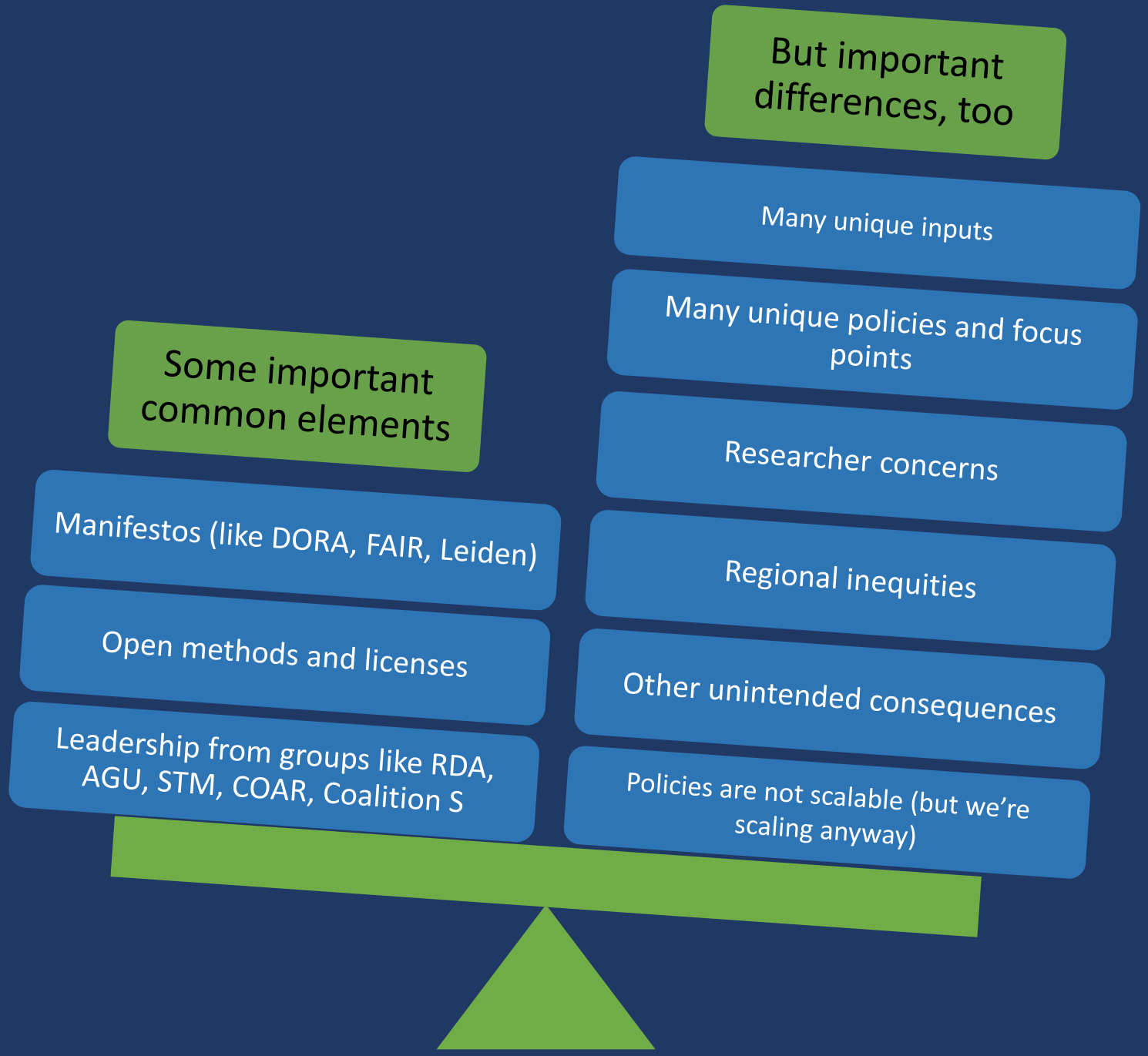
DARTS: discoverability (indexed, identifiers?); accessibility (downloadable, timely and machine-readable?); reusability (technical and licensing barriers?); transparency (confident in provenance and accuracy of this information?); and sustainability (stable long-term solution?).

…which often results in a tomato tomahto problem

RESEARCHERS, FUNDERS AND OPEN ADVOCATES CONDUCT OPEN RESEARCH OR TALK AMONGST THEMSELVES ABOUT THEIR SUPPORT FOR OPEN SOLUTIONS BUT IN FACT BE REFERRING TO ENTIRELY DIFFERENT THINGS

Curiously, the key differences between these approaches rivals the key similarities

BETWEEN OPEN MOVEMENTS, BUT EVEN INSIDE EACH MOVEMENT



Still, all these different ideas do have 3 things in common:

1. The goal to share information more broadly, especially with the right audiences
2. The use of certain standard, accepted approaches (like journals, licensing, etc.), and
3. The realization over time that there are no one-size-fits-all definitions, methods or solutions.

Even within an open solutions community of practice like Open Access or Open Data.

Why open?

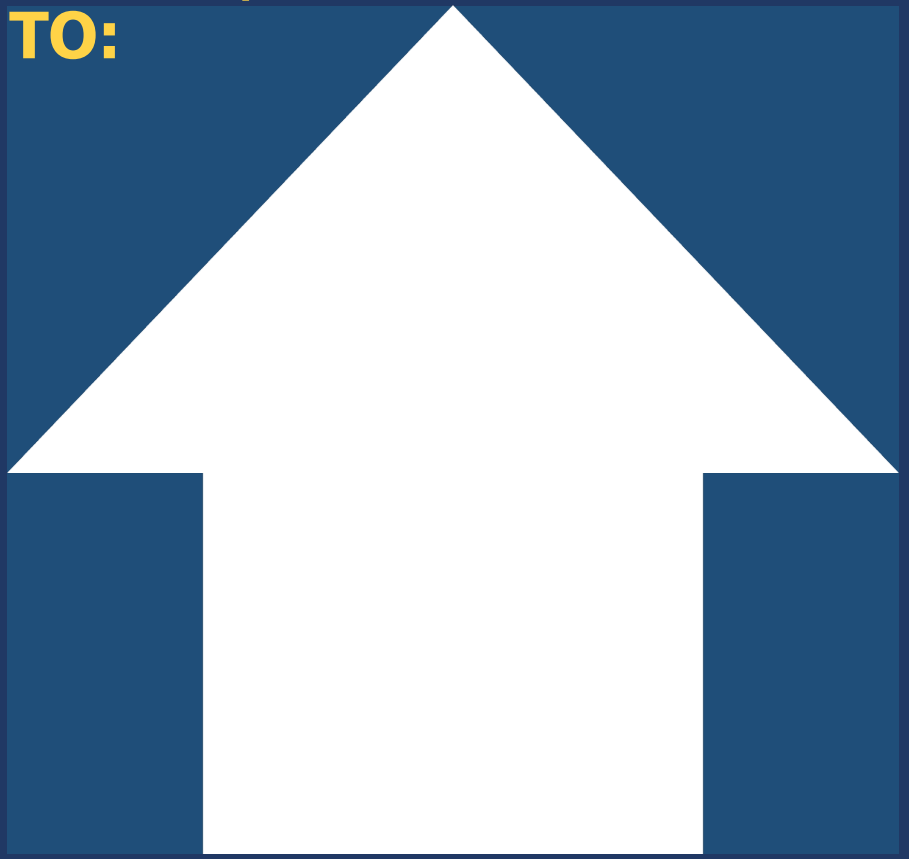
3 reasons

1

Open has potential

THE HOPE IS THAT OPEN SOLUTIONS, DONE RIGHT, WILL LEAD TO:

- Increased reach and engagement
- Increased impact (in science and policy)
- Increased benefit to science*
- Increased opportunity and equity



* For instance, through improved visibility, replicability, and interoperability

Fun fact: Lower cost used to be a driving force behind open but this is no longer the case. Our open solutions are costing (at least for now) at least as much as the systems they are replacing.

This potential is the "Open Renaissance" ideal

IF WE DO THIS....

- **Clearly define and support open**
- **Make open solutions robust**, inclusive, broad, scalable and sustainable
- **Resolve connected issues** (e.g., impact factors)
- **Align incentives** so scholars embrace open because they want to
- **Make open simple and clear** so scholars know what it means and why they should do it
- **Create clear standards and guidelines**
- **Keep the marketplace competitive** so open products remain cutting edge
- **Integrate open repositories,** not just connect them
- **Standardize data**

THEN WE GET THIS....

- **The research ecosystem grows more powerful** (with more data, more connections, and more apps),
- **Innovation is catalyzed**
- **Widespread improvements happen in science.**
- **New fields and discoveries emerge** based on "connecting the dots" (thanks to data and repositories)
- **Funding efficiency improves**
- **Discovery accelerates**
- **The social impacts of science surpass today** (including science literacy, public policy, education, more)

These expectations are lofty, but they are based in history and experience

The history of communication has demonstrated that as communication technology improves, so too does the breadth and depth of what we're able to achieve with communication. Combined with this, science itself would not have been able to take hold without the development of the printing press so research could be widely shared. So, the potential for science to succeed even more with more advanced communication techniques is real.

2 Open solutions are “vectors”

We face many challenges where more information transparency and sharing is needed:

- Critical research (like vaccines and climate change)
- Looming problems (like water and food scarcity)
- Access equity and budget constraints
- Research progress. The US National Academies states that “the openness of data is…critical to the progress of science, stimulating innovation, enhancing reproducibility, and enabling new research questions.”*

*NAS. 2018. Open Science by Design. doi: 10.17226/25116

3

More open is inevitable

Open solutions are everywhere and they are pervasive (as detailed in the next section)

- Which isn't to say these solutions are all benevolent (look no further than newspapers)
- But there is broad agreement among the leading thinkers in this space that we are at or near a unique period in history when we might be able to draw on our lessons of experience and work together to build a new and productive future for open where we can unite in common cause to realize the full potential of open.

Status

Here's what we've come up with so far

Widely used approaches

- Research sharing principles (like FAIR, DORA and Leiden), best practices, networks, collaborations
- Open licensing (CC-BY and its variations in publishing, CC0 in data, and various licensing schemes for code)
- The growing push for more preprints (still only a fraction of the total, however)
- APCs—"author publishing charges"—instead of subscriptions
- Transformative agreements between publishers and university systems for "read and publish" and/or "publish and read" journal publishing arrangements instead of subscriptions
- Mandates (from governments, universities and funders for open licensing, limited embargo periods, data inclusion, etc.)
- Growing use of tools and systems to catalogue science and impacts, like Altmetric, Crossref (DOIs), Unpaywall, ORCID, and more.

GO FAIR

Altmetric

CC BY NC ND

Crossref

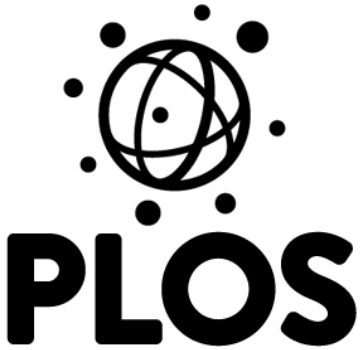
Plus global initiatives

- UNESCO's 2020-21 attempt to create a global framework for open science policy
- Plan S's attempt to create a one-size-fits all open solution for the world (Plan S is based in and applies almost exclusively to Europe at the moment)
- Broad advocacy and issue-specific work of many groups: SPARC, OA2020, OASPA, COAR, CODATA, RDA, WAME, more

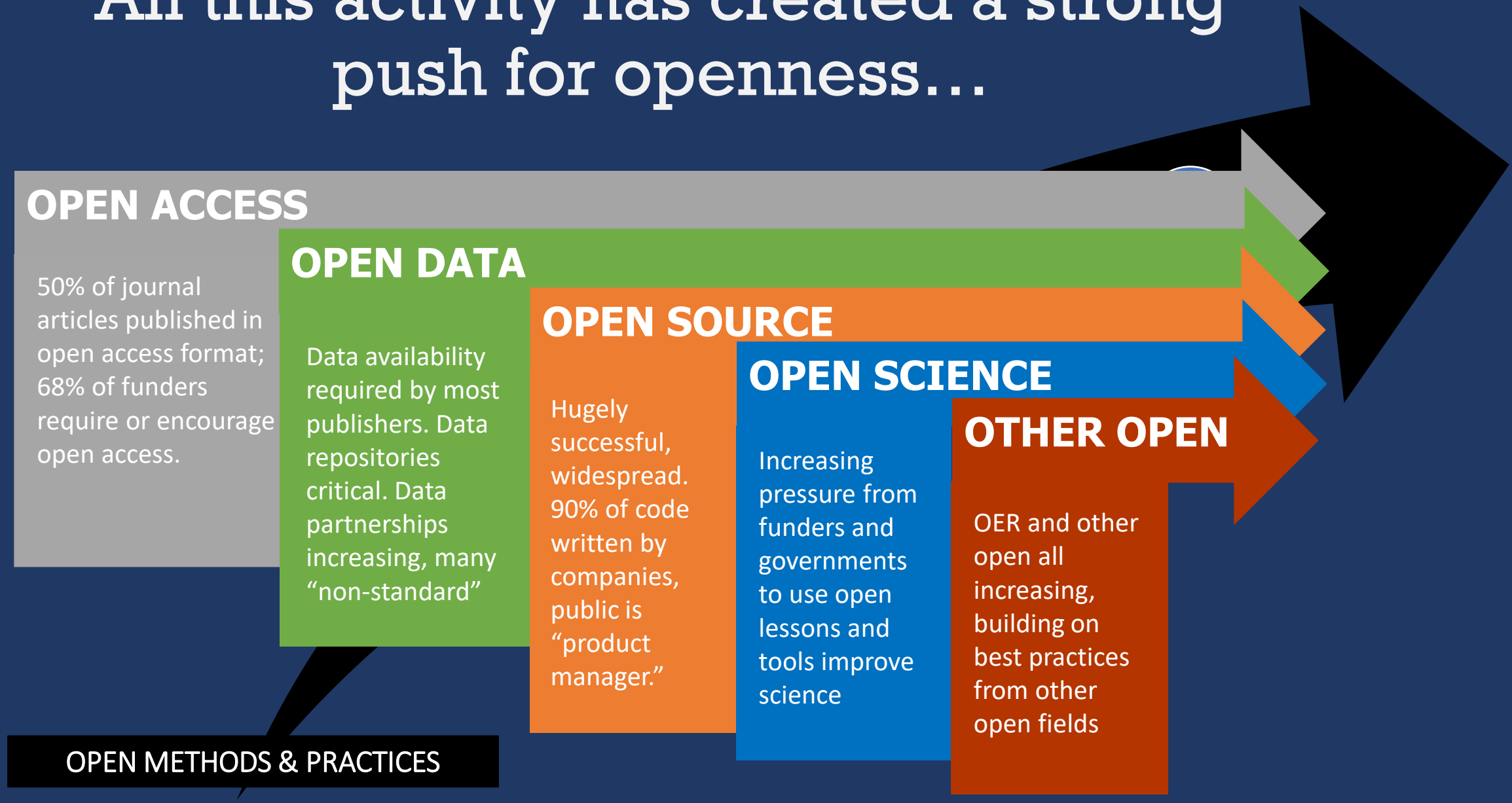
And more

There are many successful, vibrant, and growing open models and initiatives around the world, including:

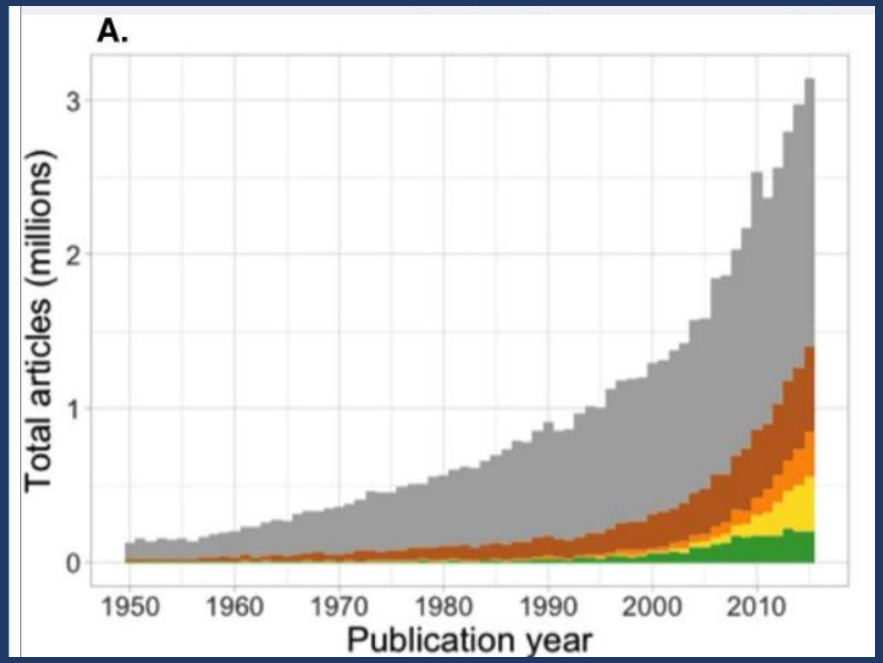
- Many organizations doing pioneering, groundbreaking, and highly successful work creating sustainable open solutions
- Work of libraries everywhere to highlight the need for open
- Growing research collaboration networks (DataSpace, Sage Bionetworks, more)
- EU Science Cloud (on the horizon)
- Growing focus on data repository standards and interoperability
- SciELO in South America, leading Brazil to the highest rate of open access in the world
- The US Public Access model (run through PubMedCentral), far and away the world's largest repository of "green" open
- Thousands of specialty journals, about half of which are open, and where the vast majority of journal publishing happens—about 75 percent of articles



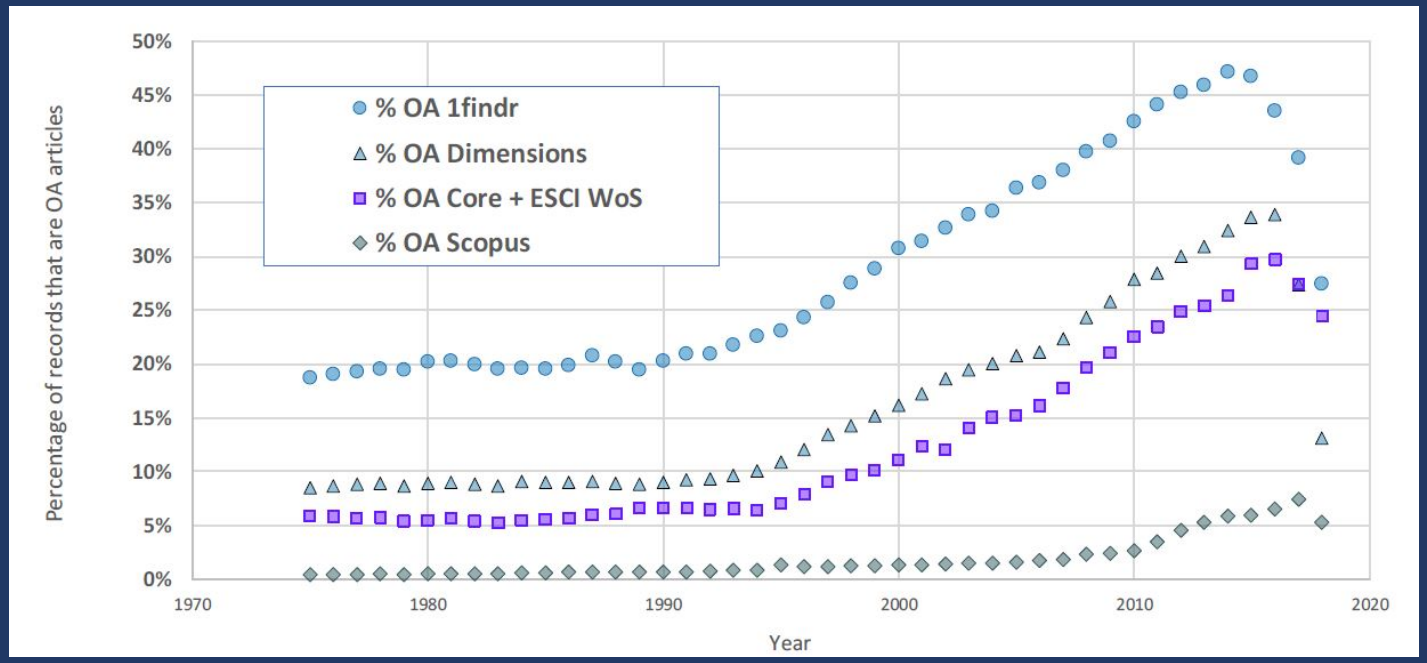
All this activity has created a strong push for openness…



Snapshot stats just for journals



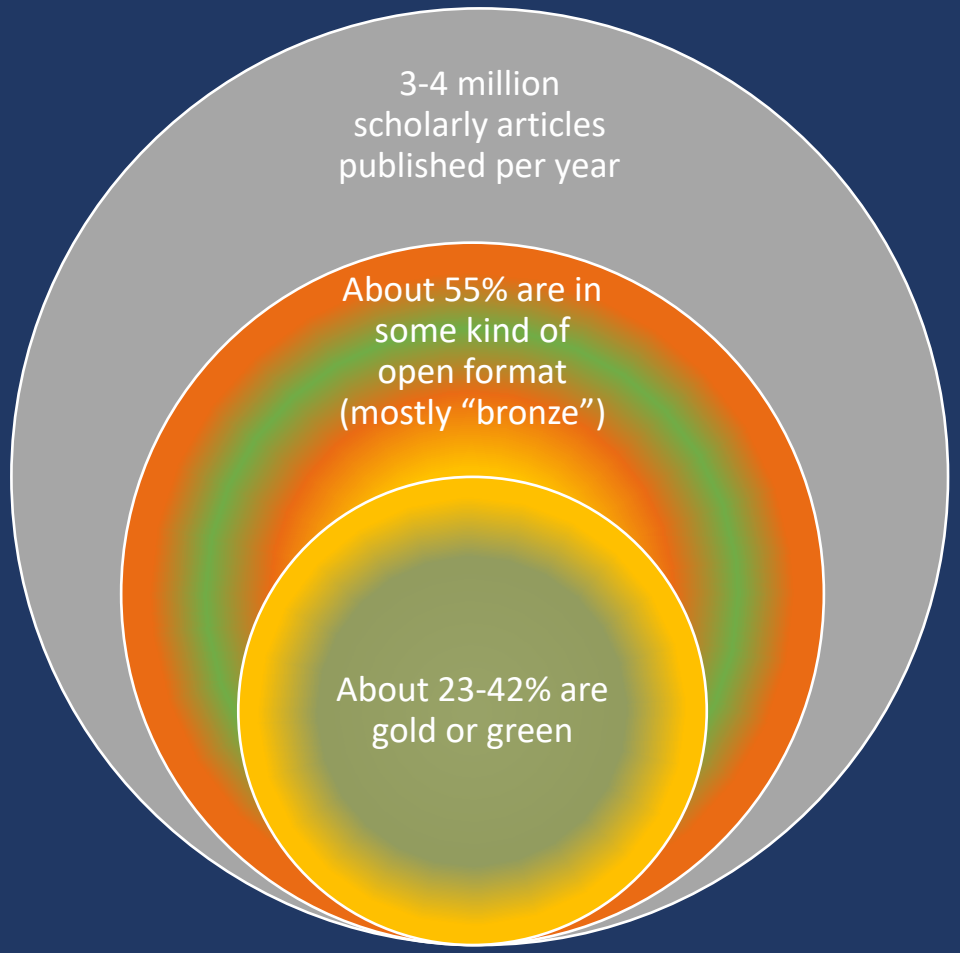
Piwowar, H, J Priem, V Larivière, JP Alperin, L Mat-thias, B Norlander, A Farley, J West, and S Haust-ein. 2018. The state of OA: a large-scale analysis of the prevalence and impact of Open Access articles. PeerJ 6:e4375



Archambault, E. 2018. Universalisation of OA scientific dissemination

Snapshot stats just for journals (cont.)

- Somewhere between 40,000 and 90,000 peer-reviewed scholarly journals in the world today
- 80-100 million scholarly articles
- About 28% of all articles are open in some fashion (about 70% dark)
- **TONS of variability depending on what's being counted as "open," "scholarly," and "journal," what time periods are being measured, what indexes are used to measure totals, what regions we're looking at, and more.**
- **LOTS of change and growth happening**



In general, though, every stakeholder group, government, funder, institution and researcher is still an island

We see lots of open solutions, just none (yet) that are truly scalable, global, and interoperable

And in general, ideology dominates the headlines (and funding)

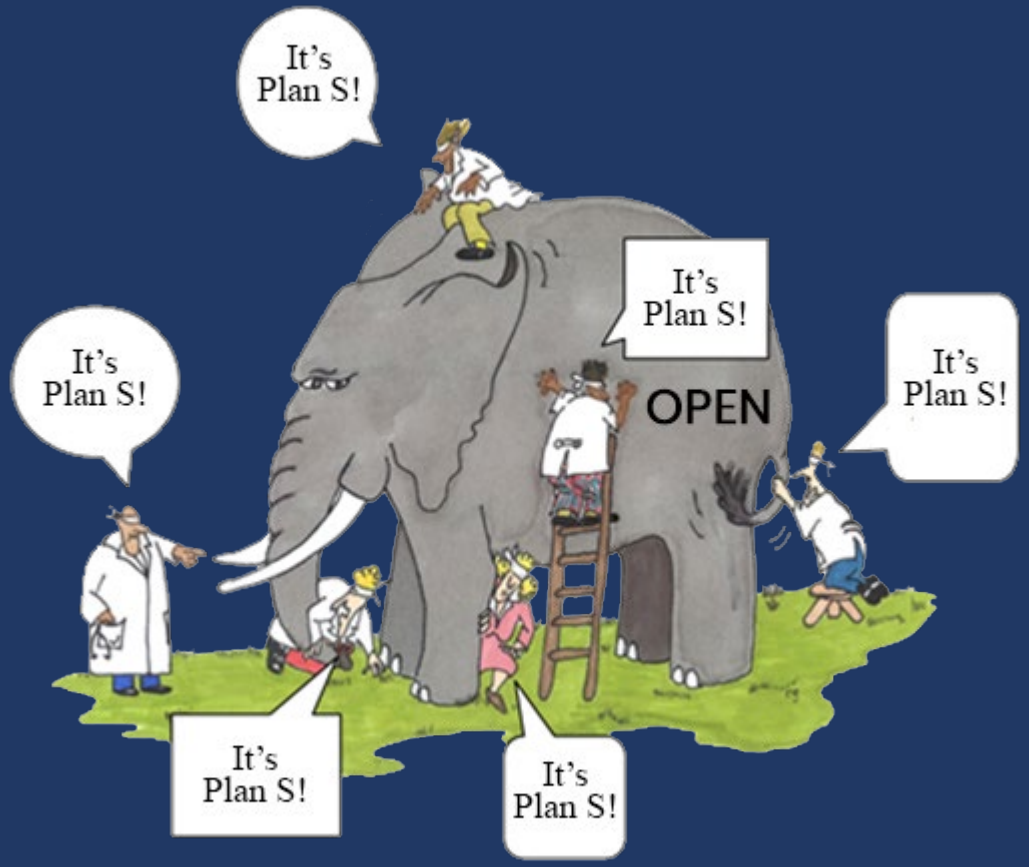
Much our open advocacy leadership is ideological. focused on "replacing" commercial publishers and/or implementing "ideal" solutions for open like Plan S instead of recognizing the wide variety of needs and outputs in the open solutions universe.

Ideology also dominates funding—the major nonprofit funders in this space (at present) are focused on ideological solutions and do not fund work that recognizes a universe of diverse open solutions and outcomes.

In particular, Plan S has become the new elephant in the room

Publishers and scholarly societies have aligned their businesses to the "inevitability" of this plan

Even though it only affects about 7% of published articles and involves two dozen governments and funders, primarily from northern Europe. This is most distinctly NOT a globally workable plan, but it has sucked a lot of oxygen out of the room for working on a truly global plan.



Has this tunnel vision been harmful?

- There are deep divisions in the open community—growing and deepening for decades now—centered around what solutions are "good" and "evil." *
- There is an extreme focus on details like licensing formats as opposed to broader themes like "good data." Most authors surveyed don't like the most liberal types of licenses required by "ideal" open solutions.
- The "author pays" APC approach to open is expanding through Plan S and transformative agreements, which is taking us from "paywall" barriers to "playwall" barriers
- Not improving regional subscription solutions like Research4Life has created a market need for predatory publishers in much of the world—low cost fake journals
- The international open solutions space is fracturing, with China, India the US and other regions all having distinct open solutions that don't align with the EU. What might this mean for the future of science access and collaboration?

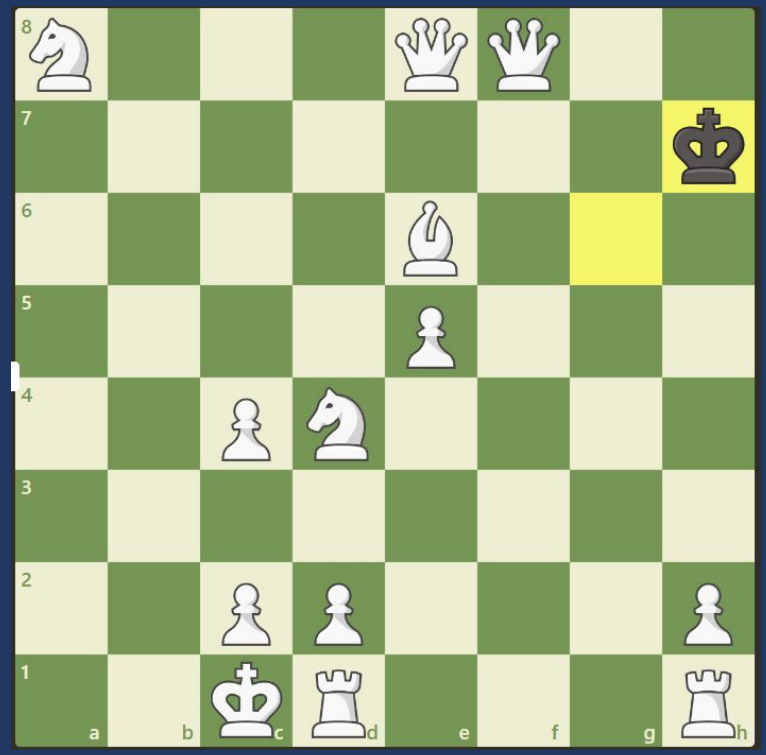
*Much of this stems from the outsize importance given by open advocates to the 2002 Budapest Open Access Initiative (BOAI) perspective on open access. OA wasn't invented at BOAI and the conference was tiny and unrepresentative of the global community—it also happened when the Internet was still very young (think pre-Amazon)—but the BOAI definitions are often cited with particular reverence as though they "must" accurately describe what open means and does.

SOME OTHER UNITENDED CONSEQUENCES OF OUR CURRENT POLICY TRAJECTORY (NOT THE FAULT OF "OPEN" BUT OF OUR EVERY STAKEHOLDER IS AN ISLAND APPROACH)

SUPPLY & DEMAND MISFIRES	• **Predatory publishing** is filling the demand for low-cost open publishing options • **Sci-Hub** is using university login credentials to steal copyrighted materials from publishers and offer this for free • **Most open policies do not require** that the official version of record be made open access—only the author's accepted manuscript. Official VORs are still mostly closed.
POLICY CONFLICTS	• **Numerous policy conflicts** are erupting, particularly between GDPR and open data • **Will tensions with China** over academic integrity, copyright protection, and IP theft affect global political support for current open solutions? • **STM-centric solutions** are driving the debate, with no real consideration for policies that work for the arts, humanities and social sciences. • **Preprints** (open access journal articles that generally aren't peer reviewed) are running into credibility problems. As a result, some critical science, as well as critical public policy, is experiencing an infodemic.
POLICY LOCK-IN	• **Will transformative agreements** lock-in our use of APC solutions, which in turn lock us into an open solution that makes it harder for many researchers from lower resource regions and institutions to participate in research? That is, are we replacing access barriers ("paywalls") with participation barriers ("playwalls")?

As open access journalist Richard Poynder has noted, we may be snatching defeat from the jaws of victory

- See Poynder's essay at https://richardpoynder.co.uk/Jaws.pdf for one of the best analyses of the open access movement ever written
- And again, referring back to what Jon Tennant wrote in 2019, **a lack of common understanding in this space has "impeded the widespread adoption of the strategic direction and goals behind Open Scholarship,** prevented it from becoming a true social 'movement', and separated researchers into disintegrated groups with differing, and often contested, definitions and levels of adoption of openness" (Tennant et al. 2019)



Can we do better?

Needs & challenges

Why isn’t everything open already?

1

Patience

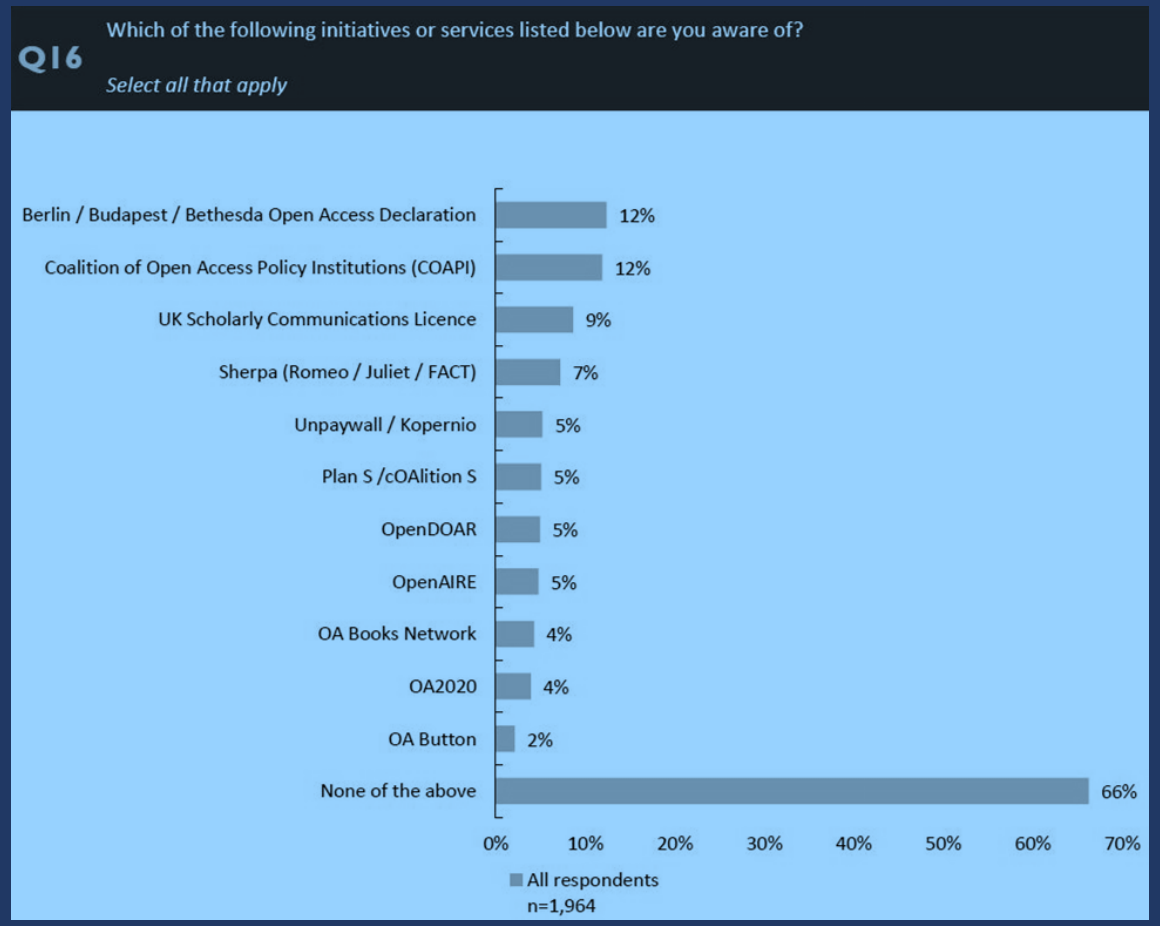
This is going to take time. Open solutions are attempting to meet a variety of existing needs and aspirations in research and beyond, including providing pathways for knowledge of all kinds to be shared more quickly, more freely (via liberal licensing), and literally more freely (at no cost to the reader). These solutions aren't perfect yet, though, and will take time to evolve and become more effective:

	OPEN ACCESS	OPEN DATA	OPEN SOURCE	OPEN SCIENCE	OPEN GOVT	OER	OPEN TOOLS
Discoverability							
Accessibility							
Reusability							
Transparency	AVERAGE						
Sustainability	**BAD**		**GOOD**				

2

Awareness

In survey after survey, most researchers and others in the knowledge ecosystem aren't particularly fluent in the details of open or their open publishing options, or they harbor misperceptions about what's involved with open (there is, however, huge variation in this awareness by field, institution, career stage and more)



Taylor & Francis 2019

3

Researcher concerns

IMPACT, CONFUSION, TRUST, ACCESS, AND EFFORT

1. **IMPACT**: Will my research benefit if I share my research? What benefit will I get from this personally? Will my open efforts be well received by colleagues and tenure committees? Is there a stigma associated with paying to get published?
2. **CONFUSION**: Where to begin? What kind of license should be used? What data should be shared, in what format, with whom, and in what repository?
3. **TRUST**: Will my open work be misinterpreted, misused, or misattributed? Will my potential discoveries be scooped?
4. **EFFORT**: Will complying with open requirements take up too much time? Different publishers and repositories all have different compliance formats and requirements. Will I be responsible for maintaining it long-term?
5. **ACCESS**: Who needs access to my work and for what reasons? Would abstracts or summaries suffice or is my raw data needed?

…plus concerns outside research

FREEDOM, TRANSPARENCY, EQUITY, CAPACITY

1. Does the local political environment allow for this kind of transparency?
2. Do government budgets prioritize this kind of work?
3. Is there the institutional capacity (in terms of knowledge, systems and direction) to do this kind of work?
4. Is there demand internally from citizens to access this information?
5. Is there a sense of unfairness here, that entities in the Global North will, with their larger budgets and resources, extract knowledge from the Global South and make discoveries with it?

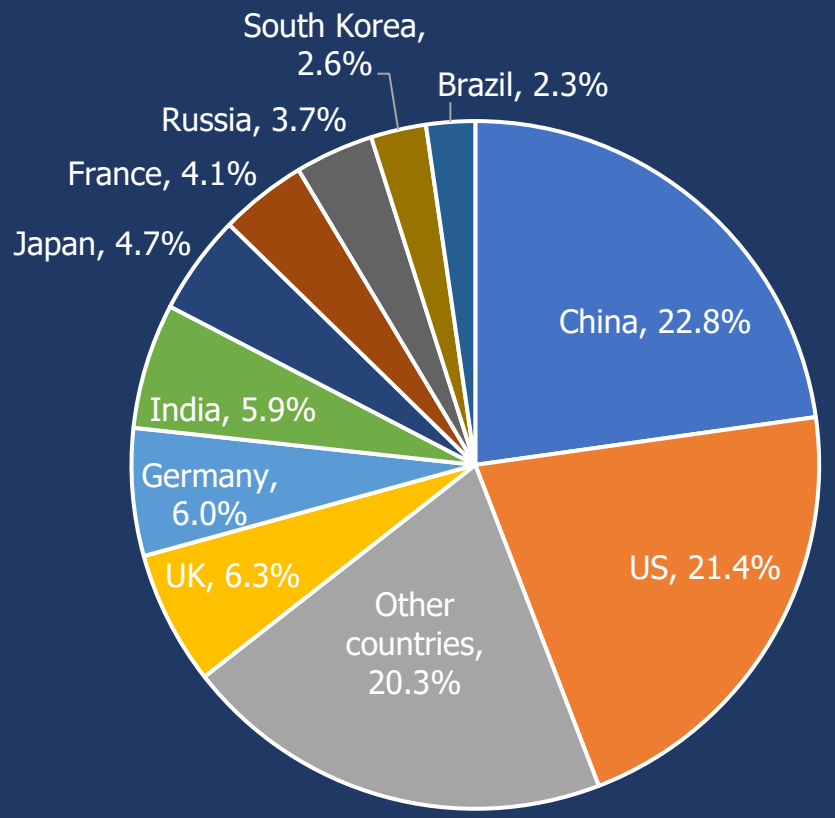
4 Differences

The open solutions universe has many common elements (like licenses and mandates), but it also has many differences, which makes it hard (and even undesirable) to create far reaching one-size-fits-all open policies.

For instance:

- Most research and research publishing happens in just a handful of countries, and most of these countries follow their own open access solutions, not a global solution.
- Perspectives and concerns about open vary widely by field (particularly STM compared with HSS), career stage, institution, region, and publishing frequency.
- The open solutions universe has a many different histories, motives, philosophies, structures, goals, stakeholders, rules, and policies, even within each open solutions community (like open access or open data). One voice doesn't speak for all.

Regional origin of 2018 journal articles



Source: UNESCO

5 Misaligned incentives

In academia (and especially STM), the culture of communication has developed incentives that distort the publishing environment and aren't aligned with open goals.

Condition	Incentivized publishing behavior(s)
Publish or perish	"Salami slice" findings into several papers; co-author anything; publish anything anywhere, even substandard work, or in predatory journals
Tenure and grant evaluations that weigh "impact"	Try to publish in the biggest name journals. This leads to misuse and abuse of the impact factor in ranking journals, research, and researchers, and also clinging to proven high-impact publishing choices
Use "citations" as a metric	Self-citations, citation rings, counting negative citations, etc.
Busy schedules	No time for reusability—data standards, connection between fields, etc.
Extreme focus on published work	Don't publish negative findings, don't do replicability studies
Secrecy and competition	Don't publish or share data until all the value has been extracted from it

6

Data challenges

- How can we fund and maintain the **INFRASTRUCTURE** necessary for data processing, curation, and preservation?
- How do we protect against link rot, and data decay and **DATA OBSOLESCENCE** over time?
- **BIG DATA** keeps getting bigger. Can we keep pace with sharing tools?
- How can we better share and **PRESERVE CODE**? In many kinds of research, sharing or reanalyzing data without the original code means just sharing and preserving a jumble of numbers.
- What happens to data once a research facility is **SHUT DOWN** and data needs to be preserved and curated for decades more?
- What happens to **LONG TAIL** data?—the data that sits on laptops or personal websites with minimal or no attached metadata or documentation? Not being able to capture this contributes to issues like irreproducibility, duplicate research, and innovation loss.
- **WHO PAYS** long term for data care and maintenance?
- How do we ensure the **TIMELY SHARING** of critical data (insofar as rapid sharing impinges on secrecy)
- How do we ensure better **DATA QUALITY**, consistency and completeness
- How do we standardize **DATA COLLECTION** as a necessary approach to ensuring data completeness and comparability?
- How do create internationally agreed-upon minimum standards for **METADATA** (further complicated when metadata are not in English)
- How do establish **INTEROPERABILITY** and **SEARCHABILITY** between data platforms (without which researchers need to search and make requests of multiple platforms)
- How do we create internationally agreed-upon **STANDARDS** for Data Availability Statements
- Can we streamline the **GOVERNANCE** structures used by different platforms
- Often (typically?), data platforms require **REGISTRATION** and are only open to “qualified” users. Is this adequate?

7

Evidence (or lack thereof)

In our push to adopt open policies, it's not altogether clear whether these policies are achieving the outcomes we want and need. For example:

- The evidence is unclear at the moment about whether open articles have a higher citation impact than subscription articles. They are definitely viewed more.
- CC-BY remains the LEAST popular form of licensing according to author surveys. For most research, what does CC-BY accomplish for text that CC-BY-NC-ND (or even copyright) does not?
- Open solutions are definitely not saving us money—which is ironic because cost concerns were an original driving force behind the push for open access publishing
- Open access publishing is growing but only considering **ALL** kinds of open solutions. The strictest form of open—the "gold" kind being pushed by Plan S—has remained stuck at about 10% (or less) of the world's total open for the past 20 years. Other forms of open (green, bronze, etc.) and other solutions (like SciELO, PLOS, arXiv, PubMedCentral, etc.) have proven sustainability, but are not being pushed.

8

Other needs & challenges

- **FUNDING:** Very little funding support is available to facilitate data sharing, and to improve data infrastructure systems (and the differences between global regions are stark). What will it take to increase this investment 100-fold?
- **POLICY:** How can we address conflict between data sharing policies in science (e.g., GDPR conflicts have stalled several global research projects)? How do we create mandates for sharing that align with the needs and incentives researchers have? What body can improve current global policy? How will geopolitical tensions (especially with China) affect the future of research collaboration? How will infrastructure deficits in much of the world affect the ability of scientists from these regions to participate in the future of science?
- **UNIVERITIES:** Academia still doesn't generally recognize, reward, or incentivize data sharing or team science in tenure evaluation processes (this is improving but still bad). How can these practices be improved?
- **MEASURING SUCCESS:** Our metrics for measuring the success of data sharing ventures are inadequate at the moment. For example, the number of peer reviewed publications flowing from shared data might be less important than whether this data gets used to inform study design, thereby reducing the need to put patients at risk.

What does all this mean?

1. Open movements are creating huge and diverse changes in the information landscape.
2. Many of these changes are good, but there are also significant needs and challenges
3. We aren't capitalizing on the full potential of open

- Open efforts end up speaking past each other—our definitions and goals aren't the same
- One-size-fits-all reform efforts don't resonate or work with most of the world
- We don't see our common ground needs and perspectives, just the details of our policies and ideologies

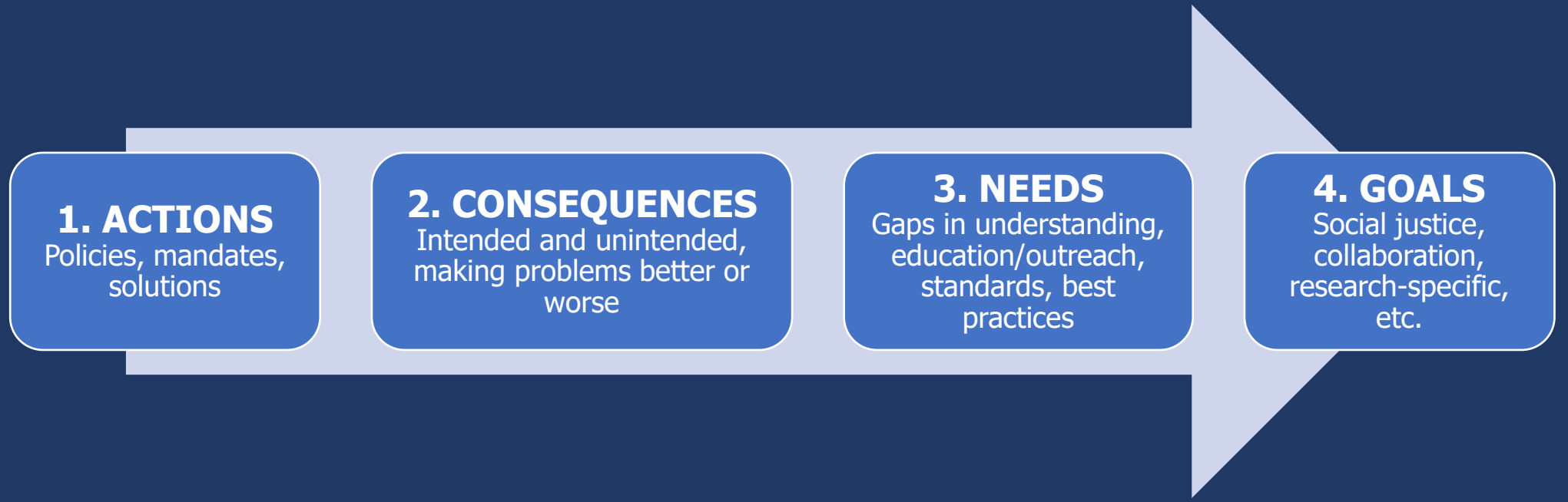
Priorities

6 ways we can begin our journey to a better open future

1

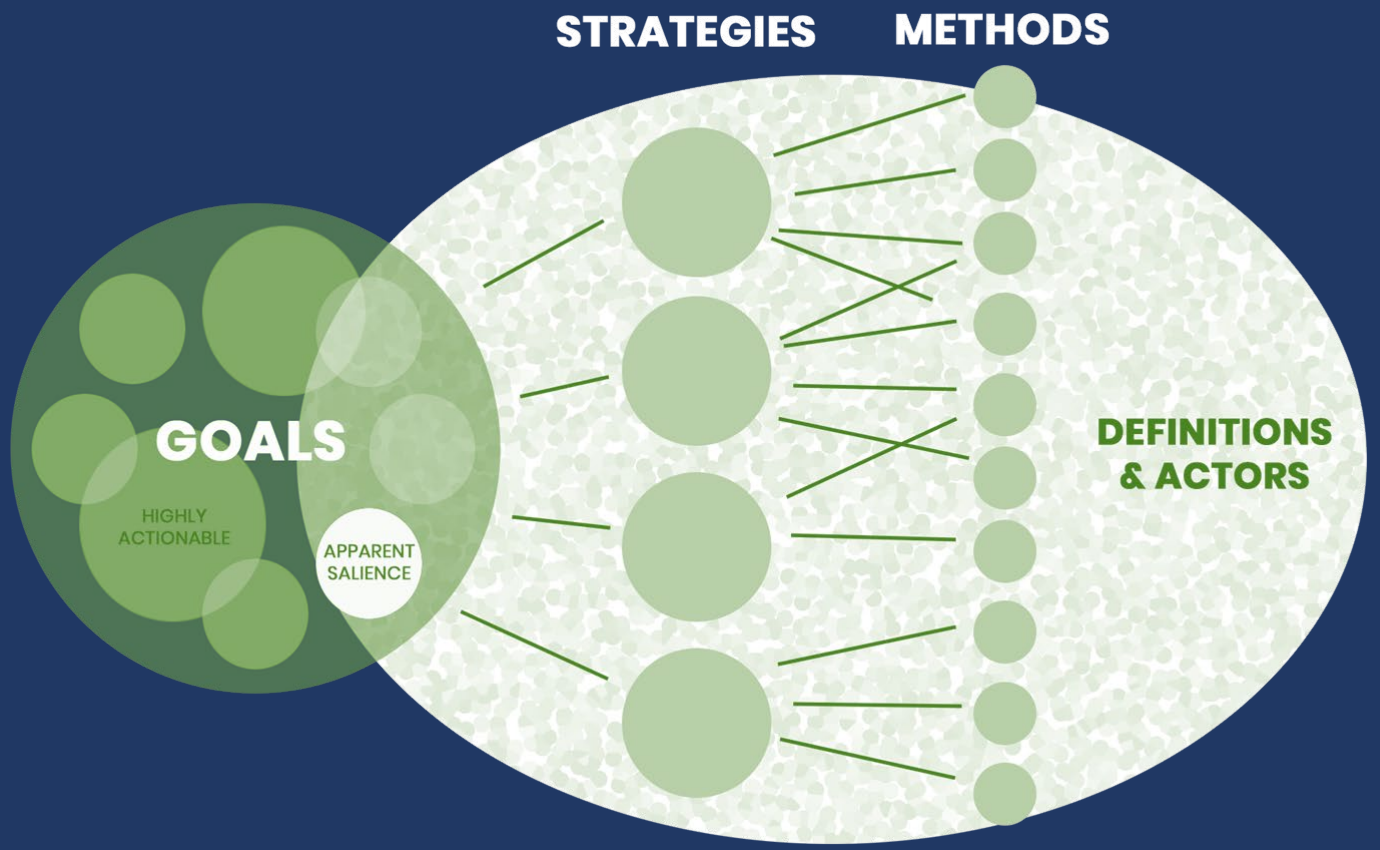
Plan first, then act

For the past 20 years, our approach to open has been driven by ideology. We have designed our open solutions first, and then tried to sell these solutions to researchers, downplaying unintended consequences, and ignoring the need for a more complete understanding of the open space. Reversing this process is important.



Work together toward common goals

A goals-based approach identifies the long-term changes our broad community desires, and then works backward, together, to map out the actions and policies we need to create this change. By focusing on common goals first, we work together in ways that maximize our mutual benefit across our many differences. The goals-based (Theory of Change) approach is widely used in business, governments, and the United Nations.



Hampson, G, M DeSart, L Kamerlin, R Johnson, H Hanahoe, A Nurnberger and C Graf. 2021. OSI Policy Perspective 4: Open Solutions: Unifying the meaning of open and designing a new global open solutions policy framework. Open Scholarship Initiative. January 2021 edition. doi: 10.13021/osi2020.2930

2

Ask (and answer) more fundamental questions

Instead of focusing on policy details like what kind of licensing is best, we need to ask more big picture questions, like:

- **Who and what?** Is our goal to make everything available to everyone, everything available to some, some things available to everyone, or some things available to some?
- **Why?** Is our goal to help communities of practice succeeded, make research more transparent, give patients better access to information, empower teachers with the newest and best information available to pass along to their students, improve access to knowledge around the globe, or all of the above?
- **How?** Do we build one silo or a network of silos? Do we simplify and incentivize systems for sharing? Do we mandate sharing. allow for a range of open outcomes and licenses, or require only the most liberal licenses? Do we mandate immediate haring or allow researchers time to analyze their data before first?

3

Truly work together

There are no "let's let someone else decide" options with open. Open access, open science, open data, and other movements all have different perspectives and priorities. An open science led effort makes no sense for humanities researchers; an open access led effort makes no sense for open data. And here again, there are no one-size-fits-all answers, and the impacts of our policies will vary by field, region, type of open, and more.

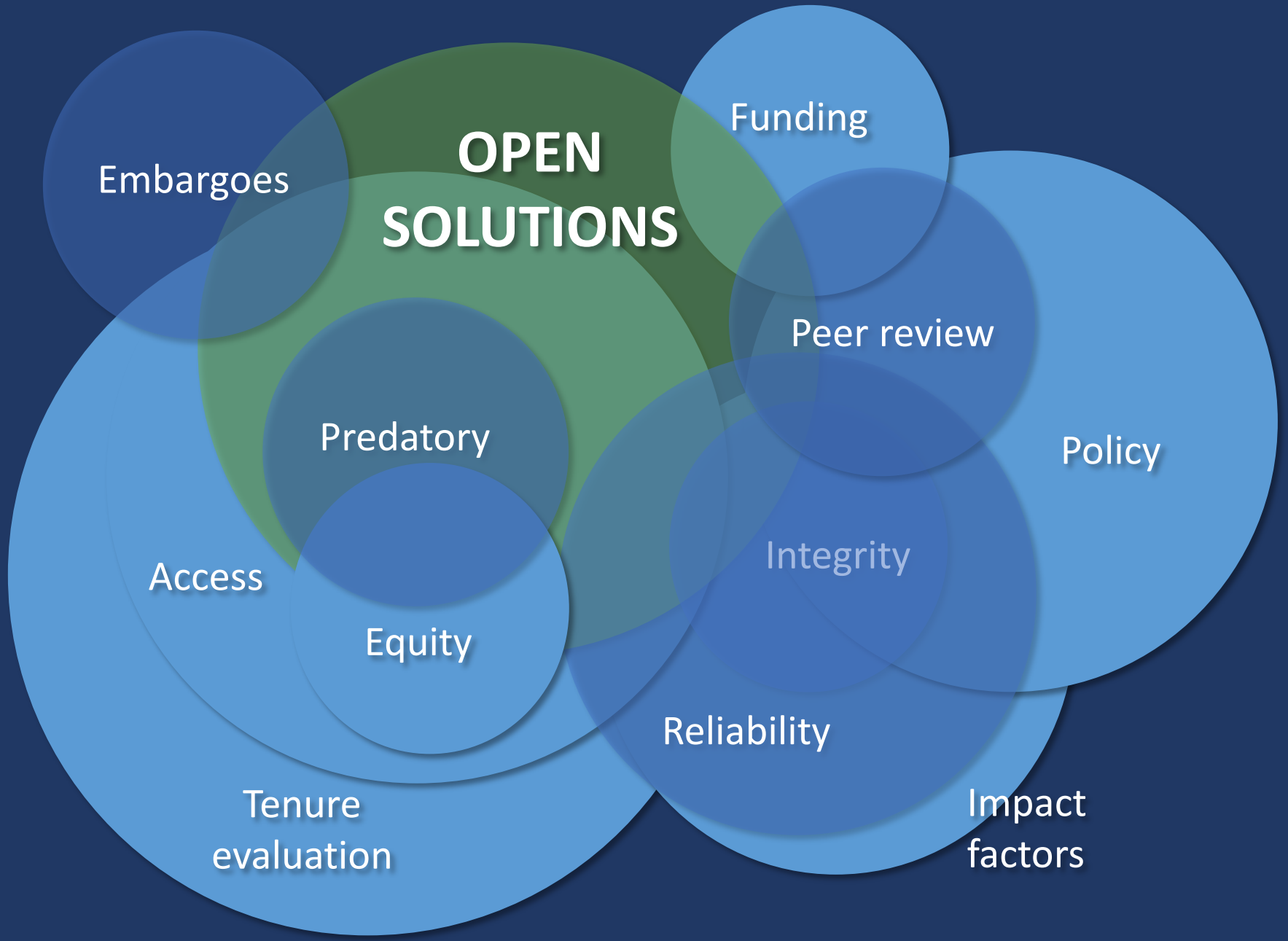
Do more to involve researchers

1. **Researchers care** about open insofar as it can help improve the quality, reach and impact of their work.
2. **Researchers are central**. They are the group that generates new knowledge, are arguably the primary consumers of this knowledge, and their ability to access and reuse this knowledge should be the key driver in this effort.
3. **Researcher voices have been underrepresented** in open efforts. Our open efforts to date have mostly involved handing the research community mandates they didn't design.
4. **Researchers have a wide variety of motives** for doing open. By portraying open as a movement where everyone has the same motives, we ignore those who are not motivated, or who are concerned about the real or potential negative consequences of current approaches to open.

4

Set more realistic expectations

We need to be wary of claims that open solutions are a panacea for all that ails research. They aren't. There are many connected issues that need to be worked on in parallel.



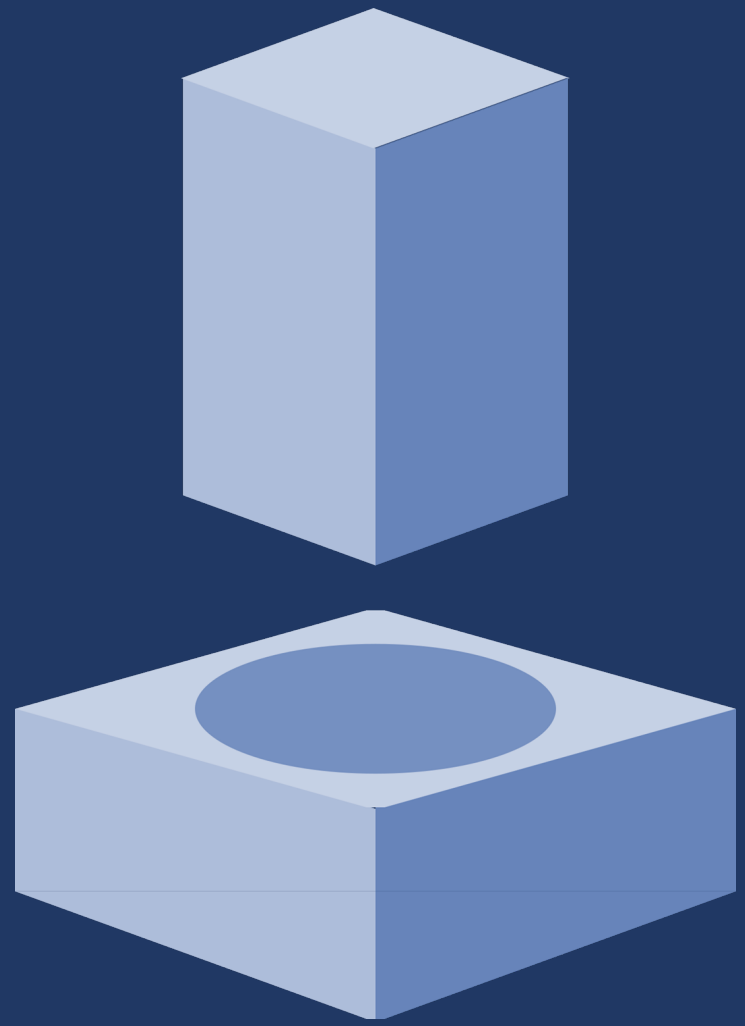
5

Value evidence…

- **Listen to and build on researcher needs.** Researchers have many concerns about open, and also many workable solutions.
- **Learn from what's actually happening in the open space.** Some of the most successful open models don't fit our narrative of what open is "supposed" to look like (some of these are described later in this presentation).
- **Focus on broad narratives** like good data, common open solutions, and common goals instead of on specific technical and licensing requirements.

…and gather more of it

We act as though we know all there is to know about open, and work backward, pounding square peg open solutions into the round holes of researcher needs and concerns. In the process, we aren't finding truths and unlocking the real potential of open.



ClinicalStudy DataRequest.com

the YODA PROJECT

CAVD DataSpace

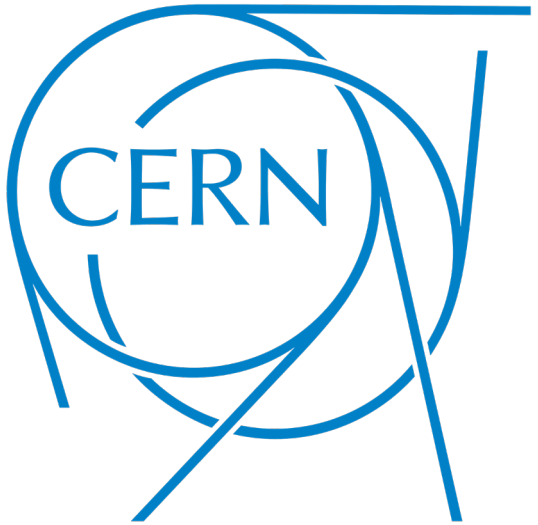
SageBionetworks

DataSphere

Vivli
CENTER FOR GLOBAL CLINICAL RESEARCH DATA

There are, for example, several outstanding examples of how real data sharing is working in today's science environment…

Large
Hadron
Collider



The Human Genome Project

...and a number of high-profile success stories in sharing science data...

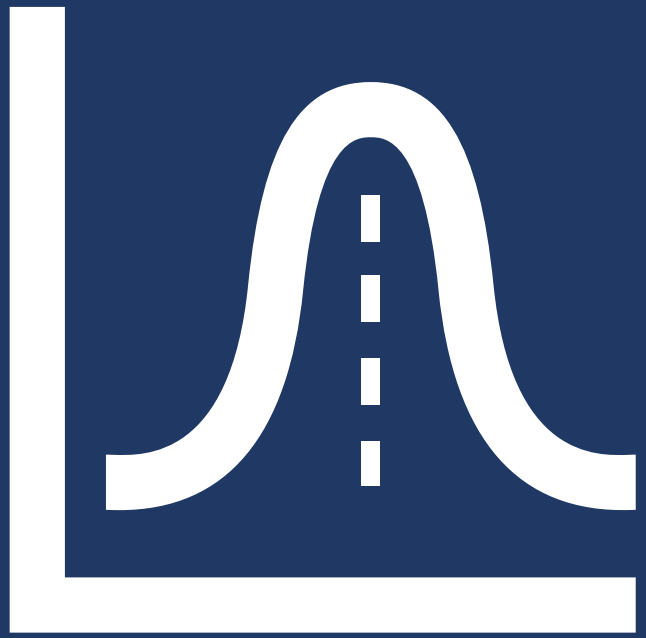
Governance structure	Number and linkage of parties	Degree of data Availability	Degree of freedom to use data	Challenges common to the governance success	Primary governance design pattern
Pairwise	One-to-one	Medium/ High	Medium/High	Uneven status of parties, value of data	Informal or closed contract
Open Source	One/some-to-many	High	High	Rights permanently granted to user	License
Federated Query	Many-to-many, via platform	High	Medium/Low	Defection of creators	Contract and club rules
Trusted Research Environment	One/some-to-many	Medium/Low	Medium/Low	Users agree to be known, surveilled	Data transfer and use agreements
Model-to-Data	One-to-many	High	Low	Not all who apply can use data	Restricted analyses, data curation
Open Citizen Science	Many-to-many	High	High	Capacity for analysis is uneven	Contract or license
Clubs, Trusts	Some-to-some	Medium/Low	High	Easy to create things governed more liberally. Trusteeship can be revoked.	Club / Trust rules
Closed	Many (to none)	Low	High	Fundamental limits to collaboration	Public laws, security protocols
Closed and Restricted	Some (to none)	Low	Low	Fundamental limits to collaboration	Public laws, security protocols

We have also learned a lot about the pros and cons of various data governance structures

Mangravite, L., A Sen, JT Wilbanks. 2020. Mechanisms to Govern Responsible Sharing of Open Data: A Progress Report https://sage-bionetworks.github.io/governanceGreenPaper/v/7ef288619fb46e6d9319433c64fbc5bef6250fe7/

And yet…

Despite all this evidence, **OUR HIGH GLOBAL OPEN EFFORTS OFTEN FOCUS ON IDEOLOGICALLY-DRIVEN ONE-SIZE-FITS-ALL SOLUTIONS** that aren't informed by real-world data sharing models and lessons of experience. We pursue these open policies as though they are goals unto themselves, but what are we actually accomplishing without also breaking down the barriers to effective data sharing and building up the necessary capacity for sharing (including big investment in infrastructure)?



6

Respect diversity…

We can’t pick the “right” answers from this diversity. Each answer important, and contributes to the greater whole.

Trying to impose a rigid ideological order on this diverse landscape will at best be ineffectual, and at worst fracture the global solution space and possibly even damage parts of the research ecosystem (think, for example, about HSS researchers being forced to use STM-centric solutions). Instead, we need a common-sense, collaborative, experience-driven open solutions policy to unite the disparate elements in this space—an approach that listens to all communities, embraces diversity, nurtures growth and innovation

…and stop thinking of "idealized open" as the goal

1. **Open is a means, not an end.** It is a way to solve problems and improve benefits.
2. **Open is not an ideal**. No open model is ever universally and completely open.
3. **Open has consequences**. If we truly want open to succeed, we cannot ignore the inequities or unintended consequences it causes.
4. **Open evolves.** , It is not a static state that can be defined once and for all time. As open evolves, it creates other realities we need to face.
5. **Openness requires collaboration**. We must work together to create real solutions—then and only then can we unlock the vast potential of open to improve science and society.

Embrace the diversity of open action

AND SUPPORT NEW WORK THAT MIGHT HELP

At universities:

- Establish science communication offices in universities and research institutes that help solve the communication needs of researchers, and also share best practices
- Introduce science communication training for graduate students and professors
- Allocate a small percentage of grants for science communication goals
- Work to gradually begin reinventing tenure evaluation policies with regard to publishing

As a global community:

- Learn more about open of all kinds so we can work together to build better solutions
- Work to develop better impact metrics
- Work across fields, institutions, disciplines, and open solutions categories on issues like climate change
- Think outside the box: Create a CC-EDU license, build an All-Scholarship Repository, etc.
- Think more in terms of the global universe of research outputs and not just academic research. What are we missing? (Hint: Most of the stuff)

Recognize we're all on the same team

ALLIES, NOT ENEMIES

This is all by way of saying that the open solutions universe is broad and diverse, with huge need and potential but also a wide range of issue and concerns that we should focus on so that we can begin working together on a better future for open. More often than not in this space, we tend to pursue solutions at scale that don't fit our unique needs and concerns and reflect our broad diversity. So, we can and should celebrate all the tremendous work being done in this space, but we should also be cognizant of the big picture—whether things are working out the way we intended, what solutions are working best in the real world, regional concerns that are getting swept under the rug, and so on. **If we can recognize that we're on the same team working together to create a better future for science and society, the global effort will be much better off and our open future will be much closer and brighter.**

Coming up…

The next speakers will go into more detail about this diversity of open and the future of open.

1. Toby will talk about work to capture this missing universe of research data (and remember, in terms of R&D, MOST of this is done by industry and not by academia, even though most publishing happens via academia).
2. Gabriella will talk about making open work in the global context
3. Jennifer will explain her experience of taking a scholarly society from zero to 60 on the open road and what that entails and has revealed
4. Heather and Jason—leading open researchers and innovators—are going to talk about what they're going to spring on the world in the coming months
5. Alison will close out with a vision interview, with a focus on improving equity, infrastructure, and culture change

In closing

Our future depends on protecting and enhancing the future of scientific research. Challenges like climate change, hunger, poverty and pandemics all require that our global research system operate as powerfully and equitably as possible, as soon as possible. These challenges also require that we work together on solutions that make sense for everyone everywhere. If we can do this, we'll win. At the same time, working together will help lead science to new heights, and will help our research ecosystem grow even more powerful and beneficial then ever before.

This global community—our global community—of governments, universities, publishers, funders, researchers, and other groups who are devoted to the future of openness are well positioned to help. All we need now is the strength to begin working together.

Thank you!

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Questions? Email Glenn Hampson ghampson@nationalscience.org. See also the OSI website at osiglobal.org.

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About OSI

OSI (the Open Scholarship Initiative) is a diverse, inclusive, global network of 450 high-level experts and stakeholder representatives, working together (as participants, alumni and observers) and in partnership with UNESCO to develop broadly accepted, comprehensive, sustainable solutions to the future of open scholarship that work for everyone everywhere.

- The opinions of OSI are not representative of all participants or their organizations.
- For more information, see osiglobal.org.

Source file

For more detail on the points summarized in this slide show, please see OSI Policy Paper 4, "Open Solutions." The full text of this report is available from the OSI website at osiglobal.org. The recommended citation for this work is:

Hampson, G, M DeSart, L Kamerlin, R Johnson, H Hanahoe, A Nurnberger and C Graf. 2021. OSI Policy Perspective 4: Open Solutions: Unifying the meaning of open and designing a new global open solutions policy framework. Open Scholarship Initiative. January 2021 edition. doi: 10.13021/osi2020.2930

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