

Skiis
4 eosc

Supporting

eosc



Guidelines and best practices for Honest Brokers

Harnessing Open Science to support
Evidence-Based Decision Making

Guidelines and best practices for Honest Brokers Harnessing Open Science to support Evidence-Based Decision Making

Version 1.1 (July 2024)

Authors

Mario Locati (INGV)
Federica Tanlongo (EPOS ERIC)
Betty Evangelinou (GRNET)
Giulia Dotta (INGV)
Massimo Cocco (EPOS ERIC)
Stefano Cacciaguerra (INGV)

Template design

Carlo Volpe (GARR)

Icon design

Barbara Angioni (INGV)

Layout

Betty Evangelinou (GRNET),
Barbara Angioni (INGV)

Disclaimer

This is a digest of Deliverable 3.3 "D3.3 Guidelines and best practices for honest brokers" (<https://doi.org/10.5281/zenodo.104476634>) and was produced by the Skills4EOSC project. The project has received funding from the European Union's Horizon Europe research and innovation Programme under Grant Agreement No. 101058527 and from UK Research and Innovation (UKRI) under the UK government's Horizon Europe funding guarantee [grant number 10040140].

The information and views set out in this document are those of the author(s) and do not necessarily reflect the official opinion of the European Commission. Neither the European Commission guarantees the accuracy of the information included in this document. Neither the European Commission nor any person acting on the European Commission's behalf may be held responsible for the use which may be made of the information contained therein.



Copyright notice

This work by Parties of the Skills4EOSC Project is licensed under a Creative Commons Attribution 4.0 International License creativecommons.org/licenses/by/4.0

¹ <https://doi.org/10.5281/zenodo.11475253>

Contents

1	Introduction	5
2	Challenges	6
3	The impact of Open Science	7
4	Additional Professional profiles involved	8
5	Guidelines and Best Practices	10
	a. Ethical Conduct	10
	b. Communication Skills	11
	c. Legal Context	12
	d. Open Publications	13
	e. Open Data	13
	f. Open Source Software	14
	g. Open Peer Review and Quality Assurance	15
	h. Open Collaboration	16
	i. Access Restricted Research Outputs	17
	j. Scientific Uncertainties	17
	k. Open Research Infrastructures	18
	l. Information Overload	19
	m. Tools Based on AI	19
6	Conclusions	21
	Author details	22

List of acronyms and abbreviations

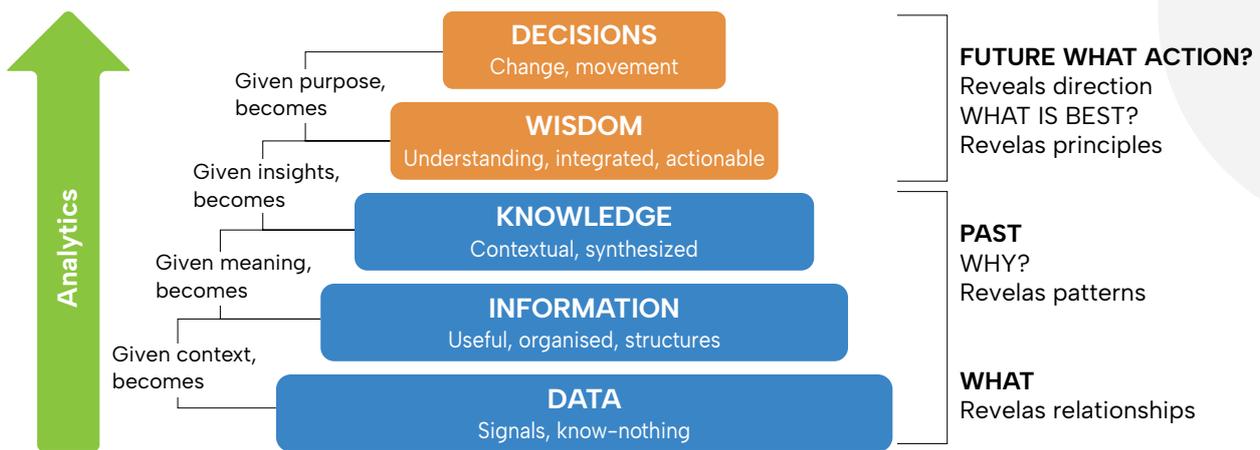
CARE	Collective Benefit, Authority to Control, Responsibility, and Ethics
CSCCE	Centre for Scientific Collaboration and Community Engagement
DMP	Data Management Plan
ELSI	Ethical, Legal and Social Issues
EOSC	European Open Science Cloud
ETHRD IG	Education and Training on Handling of Research Data Interest Group (RDA)
ICT	Information and Communication Technology
IT	Information Technology
JRC	Joint Research Centre
FAIR	Findable, Accessible, Interoperable, and Reusable
MVS	Minimum Viable Skillset
ORCC	Open Research Competencies Coalition
OS	Open Science
R&I	Research and Innovation
RDA	Research Data Alliance
RDM	Research Data Management
RI	Research Infrastructure
RPO	Research Performing Organisation
RSE	Research Software Engineer
T4fs	Terms for FAIR skills
WG	Working Group

See also EOSC Glossary: <https://eosc-portal.eu/glossary>

1 Introduction

Open Science advocates for the democratisation of scientific research and its outputs, emphasising accessibility, transparency, and collaboration. This movement aims to enhance the quality, efficiency, and impact of scientific work, thereby fostering increased public trust and broader engagement.

Central to this ecosystem is the Honest Broker, an entity (i.e. a person or a group of people) that plays a crucial role in bridging the gap between scientific research and policy-making. Honest Brokers act as neutral intermediaries, facilitating *the use of scientific evidence in decision-making without pushing a particular agenda*. They ensure that policy and decision-makers have access to reliable, authoritative, relevant scientific evidence, helping them to navigate the complexities of the Open Science resources. Open Science poses unique challenges and opportunities at the interface of science and policy. Access to vast amounts of scientific information can be overwhelming; hence, the Honest Broker's role is crucial in making this information understandable and actionable.



Honest Brokers do not limit the options available to decision-makers but instead clarify and expand the scope of choice for decision making, allowing for decision makers to reduce choices based on their individual values and preferences. This role requires a deep understanding of both scientific content and the policy-making process, ensuring that the advice provided is both relevant and timely.

This document tries to provide a comprehensive set of guidelines and best practices for Honest Brokers operating within the Open Science ecosystem. By detailing these roles and practices, the document not only aids Honest Brokers but also encourages researchers to embrace Open Science, enhancing the overall integrity and impact of scientific endeavours in public decision-making.

2 Challenges

In their role as intermediaries, Honest Brokers encounter several challenges that test their abilities to maintain integrity and effectiveness. These challenges primarily revolve around managing conflicts of interest, balancing advocacy with neutrality, and navigating complex policy landscapes.

Conflicts of Interest play a significant role in the daily operations of Honest Brokers, who must actively manage and disclose any potential biases or financial interests that could influence their advice. This aspect of their work becomes crucial in environments where political tensions or commercial sensitivities are high. To uphold their reputation for objectivity and impartiality, Honest Brokers are required to maintain transparency about potential conflicts of interest and implement strategies to mitigate their influence on the decision-making process.

Another critical challenge is **balancing advocacy and neutrality**. Honest Brokers are tasked with the delicate responsibility of presenting scientific evidence in a way that is clear and impactful without advocating for specific policy outcomes. They must navigate the fine line between explaining the implications of scientific findings and stepping into policy advocacy. To maintain their credibility, it is essential for Honest Brokers to avoid biases and to clearly distinguish between presenting factual evidence and supporting particular policies.

Lastly, **navigating complex policy landscapes** requires Honest Brokers to have a thorough understanding of the political and social dynamics that influence policy decisions. They must be attuned to the varying interests and values of different stakeholders and tailor their communication strategies accordingly. This challenge demands a deep grasp of the policymaking process and the skill to translate complex scientific concepts into language that is accessible and relevant to policymakers and the public.

3 The impact of Open Science

The adoption of Open Science practices, focusing on transparency, accessibility, and collaboration using modern and efficient communication technologies, significantly enhances the role of Honest Brokers as the interface between scientific research and policymaking.

Open Science greatly **improves accessibility** to scientific outputs. With research findings made readily available, policymakers and the public can easily access and use this information. This accessibility enables Honest Brokers to draw upon a comprehensive pool of data to make informed recommendations. Such broad dissemination of knowledge ensures that decision-making is influenced by a diverse array of perspectives, enhancing the democratic nature of policy development and ensuring that decisions are well-rounded and inclusive.

Thus, Open Science **confers increased credibility to Honest Brokers**. By openly sharing research data, publications, and methodologies, Honest Brokers establish a foundation of transparency and trustworthiness. This transparency is crucial in both enhancing their credibility and fostering higher levels of trust among policymakers and the public. The accountability that Open Science promotes is vital in **minimising biases and misinterpretations**, allowing for a clearer and more reliable presentation of scientific evidence. When others can verify the underlying evidence, it strengthens the integrity of the information provided and reduces the risk of misinformation influencing policy decisions.

Lastly, the practice of Open Science fosters **enhanced collaboration** among the scientific community, Honest Brokers, and policymakers. This collaboration, in the form of sharing resources, expertise, and different perspectives, contributes to a more robust and inclusive policy making process.

Open Science platforms facilitate the collaboration by enabling Honest Brokers to connect with experts and stakeholders efficiently. Such connections are crucial to more easily **identify research gaps and develop tailored solutions** that effectively address societal challenges. Moreover, this collaborative environment promotes a **more informed decision-making process**, where policies are crafted not only based on scientific data but also on a comprehensive understanding of societal needs.

4 Additional Professional profiles involved

Multiple professional figures operate at the interface between science and policy and decision-making, playing a different role in bridging the gap between scientific knowledge and its application in policy and decision-making processes. These professionals possess specialised expertise and skills that enable them to effectively translate scientific findings into actionable insights for policymakers and decision-makers. The differentiation of these figures can be considered in some ways artificial, fictional and far from the reality for those who practise this kind of activity. In fact, most of the time the mediation activities require a mixture of multiple profiles all at once, boundaries between roles are continuously crossed and maintained in complex and multidirectional interactions, and scientists can arrange knowledge co-production processes in a way that helps to blur the science-policy-society boundaries.

Technology Advisor

Offers expert advice on the use and implementation of technology within various domains. Technology Advisors assess technological needs and challenges, recommending advanced solutions that enhance decision-making processes and policy development. They play a crucial role in ensuring that technical information is comprehensible for non-technical decision-makers.

Legal Advisor

Bridges the gap between scientists and decision-makers and provides legal guidance and advice by interpreting and applying legal principles to scientific research, ensuring compliance with laws and regulations. Legal Advisors facilitate communication by translating complex legal concepts into accessible language, advising on the potential legal implications of various decisions.

Pure Scientist

Focuses solely on advancing knowledge through curiosity-driven research. This role prioritises the truth and validity of scientific findings without concern for their policy implications, societal impacts, or practical applications. Pure Scientists typically do not engage with policymakers directly and are selective about participating in Open Science initiatives based on personal or organisational values.

Science Arbiter

Provides factual answers to specific questions from policymakers or stakeholders without advocating for any policy decisions or value judgments. Science Arbiters rely on the robustness of scientific methods, maintaining a clear distinction between facts and values, thus ensuring that scientific knowledge is seen as authoritative and sufficient for informing policy.

Knowledge Broker

Facilitates the transfer and exchange of knowledge among various actors, bridging differences and enhancing mutual understanding. Unlike Honest Brokers, who provide neutral advice for decision-making, Knowledge Brokers may operate across multiple markets or domains and could have vested interests in the outcomes of their exchanges.

Issue Advocate

Actively supports specific policy positions or value judgments, attempting to influence decision-making processes to favour their preferences. Issue Advocates use scientific evidence to bolster their arguments, but do not adhere to the standards of objectivity and neutrality expected of Honest Brokers. While in a democratic dialogue their role may be instrumental in pushing critical topics in the policy agenda based on scientific evidence, it is imperative that they are not confused with impartial brokers (*Stealth Issue Advocate*).

Boundary Spanner

Operates at the crossroads of different sectors, such as science and policy or academia and industry. Depending on the context and needs, a Boundary Spanner might assume the roles of Science Arbiter, Knowledge Broker, Honest Broker, or Issue Advocate, adapting to facilitate effective communication and collaboration among different groups.

5 Guidelines and Best Practices

As intermediaries, Honest Brokers directly and significantly benefit from the principles of Open Science, which ensure free, easy, and efficient access to scientific results. This access facilitates the mediation process, making it more straightforward when based on open, reproducible scientific results that adhere to transparent procedures.

Therefore, Honest Brokers should promote Open Science among researchers, advocating for the pursuit of its principles and goals. Additionally, Honest Brokers should assist scientists in fulfilling their social responsibility by making their knowledge accessible and understandable to a broader audience. This support not only aids in the effective conduct of their mediation tasks but also maximises the advantages derived from the Open Science ecosystem.



a. Ethical Conduct

Maintaining ethical conduct is paramount for Honest Brokers to ensure the integrity and trustworthiness of their role. This involves upholding impartiality, avoiding conflicts of interest, protecting confidentiality, ensuring transparency, and adhering to ethical guidelines for scientific research and communication.

Honest Brokers must strive for **impartiality** and **avoid conflicts of interest**. They should provide accurate, unbiased information, cite sources appropriately, and **avoid data manipulation or cherry-picking**. **Transparency** is crucial, with disclosure of any potential conflicts of interest or funding sources.

Confidentiality is essential to ensure the trust in the Honest Broker of all parties involved. Honest Brokers should make sure to follow all the steps to ensure the research participants' privacy and informed consent. Data should be anonymized whenever possible. However, in exceptional circumstances, such as for public health or safety concerns, confidential information may need to be disclosed.

Transparency in research methods and reporting requirements is also vital to uphold the Honest Broker's role and authority.

Honest Brokers should **adhere to ethical guidelines for scientific research and**

communication suggested by the relevant Committee(s) operating in the field of action. Responsible data management involves adhering to FAIR principles. Intellectual property rights must be respected, and plagiarism avoided. Steps should be taken to **prevent misinterpretation or misuse** of research findings.



b. Communication Skills

Effective communication is a cornerstone of the Honest Broker's role, necessitating both clarity and engagement in their methods.

Honest Brokers must **simplify and engage** when presenting technical information. This involves translating complex scientific data and concepts into more understandable terms, often using analogies and visual aids to clarify their points. By simplifying the information, they make it **accessible to non-specialist audiences**, including policymakers who may not have a deep background in the specific scientific disciplines.

Engaging with these audiences is crucial and the Honest Brokers should seek to enhance understanding and retention by **encouraging interaction through questions and soliciting feedback**, ensuring that the information is not only presented but also resonates with the audience.

Honest Brokers need to **tailor the message to the audience and engage in a two-ways communication** with them. Understanding the perspectives of policymakers and stakeholders is key to adapting their messages effectively. Each stakeholder group may have different concerns, priorities, and levels of understanding about the scientific issues at hand. By tailoring their messages to align with these perspectives, Honest Brokers can make their communications more effective and impactful. Building strong relationships through **active listening and ongoing dialogue** allows Honest Brokers to more effectively gauge the concerns and needs of these groups, *facilitating a more collaborative and responsive approach to information dissemination.*

Honest Brokers must focus on **clarity and conciseness** in their communication. Using plain language, avoiding jargon, and concentrating on key points are essential practices that enhance understanding. Clear and effective communication is

instrumental to making the Honest Broker's interactions with diverse audiences productive, and ensuring that the information they convey is both **accessible and actionable**.



c. Legal Context

Honest Brokers are tasked with navigating complex legal and ethical frameworks to ensure the integrity of the scientific advice they provide and to effectively protect intellectual property rights. This responsibility involves a thorough understanding and adherence to legal standards and ethical guidelines that govern their activities.

In terms of **copyright and licensing**, Honest Brokers need to be well versed in the relevant laws and licensing agreements that apply to scientific outputs. This knowledge helps ensure that they provide proper attribution for the research and findings they disseminate and comply with open access policies where applicable. Ensuring compliance not only respects the legal rights of the original creators of the scientific work but also promotes the ethical sharing and utilisation of knowledge.

Data protection and privacy are also critical areas for Honest Brokers. They must respect and adhere to data protection regulations to safeguard the privacy and security of sensitive data. This often includes obtaining informed consent from data subjects when necessary and following ethical guidelines for the collection, handling, and sharing of data. Such practices are essential to maintain the confidentiality and integrity of the information that Honest Brokers manage.

The **legal implications of providing advice** is crucial for Honest Brokers, especially when their guidance could influence policy decisions. They need to be aware of the potential liabilities associated with errors or misinterpretations of their advice. In some cases, seeking legal guidance is necessary to navigate these complex issues effectively and to ensure that the advice given does not inadvertently lead to legal entanglements. By adhering to these legal and ethical obligations, Honest Brokers uphold the trustworthiness of the scientific advice they advocate.



d. Open Publications

Honest Brokers promote practices that enhance the accessibility and impact of scientific knowledge. One key point involves advocating for the publication of research findings in open access journals. By encouraging open access, Honest Brokers help increase the dissemination of scientific knowledge, making it freely available to a wider audience, which in turn facilitates greater scientific collaboration and innovation.

Honest Brokers should advocate for the use of **open licences**, such as those provided by *Creative Commons*. These licences allow the reuse, adaptation, and redistribution of research outputs. By promoting these types of licences, Honest Brokers ensure that scientific findings can have a wider impact, reaching beyond the academic community to influence policy makers, industry leaders, and the public at large. This approach not only fosters a more inclusive environment for knowledge sharing but also enhances the societal benefits of research.

Another critical area where Honest Brokers exert influence is in upholding high standards of **peer review** and **quality assurance** in scientific publications. Ensuring that research undergoes rigorous peer review processes is *fundamental to maintaining the credibility and reliability of published findings*. By advocating for strict adherence to these standards, Honest Brokers help safeguard the integrity of scientific communication, ensuring that the findings presented are robust and worthy of public and professional trust.

Together, the practices of promoting open access, advocating for open licences, and ensuring rigorous peer review standards play an integral role in advancing the principles of Open Science, contributing to a more transparent, accessible, and impactful scientific endeavour, where knowledge is shared freely and the quality of information is maintained at the highest level.



e. Open Data

By promoting the principles of FAIR (Findable, Accessible, Interoperable, Reusable), Honest Brokers enhance the visibility, accessibility, and usability of scientific data. Ensuring that data is findable and accessible broadens

its reach, interoperability facilitates its use across various platforms and studies, and reusability maximises its utility over time. This approach not only extends the life and value of data, but also promotes a culture of transparency and efficiency in scientific research.

Accompanying the push for FAIR data sharing, Honest Brokers emphasise the importance of providing comprehensive **metadata** and **documentation**. Such documentation is crucial as it aids users in **understanding the context, methods, and limitations of the data**, thus enabling more effective and accurate use of the information. Clear and thorough documentation ensures that data can be interpreted correctly and reused in different scientific endeavours, thereby enhancing the overall quality of research outputs.

Moreover, Honest Brokers play a critical role in ensuring the **protection of privacy through the anonymization or aggregation of data** when necessary. This practice is essential when dealing with sensitive information, as it allows for the sharing and use of valuable research data while safeguarding individual privacy. By implementing such measures, Honest Brokers help maintain a delicate balance between openness and privacy, ensuring that the benefits of open data are realised without compromising ethical standards.

By advocating for FAIR data sharing and ensuring the protection of privacy, Honest Brokers **facilitate a more robust and ethical open data environment**, contributing in turn to the advancement of scientific knowledge and the integrity of research practices.



f. Open Source Software

The use and development of Open Source Software significantly enhances transparency, as the underlying code is available for examination and modification. It also fosters reproducibility, ensuring that scientific results can be independently verified by others using the same tools, especially for data analysis and visualisation. Furthermore, Open Source Software promotes collaboration among researchers by allowing them to contribute to and improve upon existing projects, thereby driving innovation and efficiency in scientific processes.

Additionally, Honest Brokers emphasise the importance of **sharing code and algorithms openly**. By making these resources available, they ensure that the scientific community can review and reuse computational methods, which is essential for verifying results and building on previous work. This openness not only supports the scientific method by facilitating reproducibility but also accelerates the pace of discovery by allowing researchers to adapt and improve existing algorithms for new purposes.

Engagement with the Open Source community is another area where Honest Brokers play a vital role. They actively participate in this community by contributing to software projects, reporting issues, and seeking support when needed. Such engagement not only helps in addressing and resolving technical challenges, but also promotes a culture of continuous learning and improvement. Through collaboration and knowledge exchange within the community, software quality and innovation are markedly enhanced, benefiting the wider scientific community.

Supporting the openness of code helps ensure that scientific research remains as open, transparent, and collaborative as possible, building trust in scientific findings and facilitating advancements in various fields of study.



g. Open Peer Review and Quality Assurance

Open Peer Review is a method where both the identities of the reviewers and their feedback are made public. This approach enhances transparency, as it allows the broader community to see who is evaluating the work and what critics are being made. Additionally, it fosters accountability and constructive dialogue, enriching the peer review process by inviting broader participation and critique that can lead to more rigorous and robust scholarly communication.

Honest Brokers also encourage the adoption of **preprints and other non-traditional publication models** that facilitate overcoming restrictions imposed by publishers. Preprints represent a significant shift towards more rapid communication of research findings, allowing researchers to disseminate their results quickly to the community without waiting for the often lengthy peer review process, and ensuring the due credit to the authors.

This immediate sharing can accelerate scientific discovery and foster timely discussion on emerging topics, but the content shared through preprints must be treated carefully because the revised final articles might end up quite different. Meanwhile, non-traditional publication channels, such as blogs or community forums, offer additional venues for scientists to share their findings and engage with diverse audiences, including the public and policymakers, thus expanding the impact and reach of their work.

By advocating for **clear and consistent review guidelines**, Honest Brokers help ensure the integrity and fairness of the review process. These efforts are crucial for maintaining the **credibility of published research** and for building trust within the scientific community and beyond.



h. Open Collaboration

Honest Brokers not only collaborate among themselves but also extend their efforts to include knowledge brokers. By sharing expertise and resources with fellow professionals, Honest Brokers enhance the collective understanding and credibility of their work. This mutual exchange amplifies the impact of their contributions, as pooling diverse insights and skills leads to more robust and comprehensive outcomes in their mediation tasks.

Honest Brokers place a strong emphasis on **networking** and building relationships with policymakers and other key stakeholders. Establishing and maintaining these connections is essential for effective communication and influence. Building trust through consistent and open communication also ensures that their scientific advice is considered and valued in policy discussions.

Additionally, Honest Brokers are deeply involved in **engaging with the public**. They undertake outreach and educational initiatives to bridge the gap between science and society, promoting a more informed citizenry capable of making knowledgeable decisions about complex scientific issues. Public engagement is **vital for fostering a society that values and understands the importance of scientific research** and its implications for policy and everyday life.



i. Access Restricted Research Outputs

Honest Brokers face the dual challenge of promoting openness while respecting confidentiality, particularly, when dealing with restricted data.

Balancing these two aspects involves carefully **navigating the availability of restricted data**, where strategies such as **anonymization** or implementing **embargo** periods play a critical role. These methods allow Honest Brokers to maintain the necessary privacy and security of data while still making the findings accessible after a set period or ensuring that sensitive details are obscured to prevent misuse or violation of privacy.

Honest Brokers should also actively advocate for **open access policies** that encourage the dissemination of scientific outputs in a manner that is both ethical and beneficial to the broader community. By pushing for more open access to research findings, they urge researchers and publishers alike to make data and results publicly available, which enhances the transparency and utility of scientific research. However, this advocacy is always tempered with a **respect for ethical considerations**, ensuring that the drive for openness does not compromise the rights or confidentiality of individuals involved in the research.

Preserving the **confidentiality** of restricted information remains a top priority. Honest Brokers make sure that all data, especially that which is sensitive or personal, is handled with the utmost care. This involves implementing robust data protection measures to safeguard participant privacy and adhere to legal and ethical standards. By doing so, Honest Brokers **uphold the integrity of the scientific process and maintain the trust placed in them** by both the research community and the public.



j. Scientific Uncertainties

In the complex field of scientific research, Honest Brokers play a crucial role in managing scientific uncertainties with a focus on accuracy and transparency. Recognizing and acknowledging the inherent uncertainties and limitations in research findings is fundamental to their responsibilities.

Honest Brokers **strive to clearly communicate the degree of uncertainty** in the

results and openly discuss the potential for future revisions. This transparency is essential not only for maintaining the **integrity** of the scientific process but also for **building trust** with stakeholders who rely on this information to make informed decisions.

Honest Brokers are committed to providing evidence-based advice. This entails basing their recommendations on the **best available scientific evidence**, ensuring that these suggestions are supported by robust and credible research. They carefully avoid **oversimplification** or **misrepresentation** of the data, recognizing that such practices can lead to **misinformation** and potentially harmful decisions.

Responsible communication presents scientific findings in a manner that is both accurate and accessible, carefully explaining the uncertainties involved. This approach helps stakeholders to **fully understand the limitations and potential implications** of the research, fostering a more nuanced appreciation of the complexities involved.



k. Open Research Infrastructures

Open Research Infrastructures offer a framework for enhanced accessibility and collaboration, supporting the access to valuable data, tools, and expert insights. These resources are pivotal for advancing research and innovation, providing the necessary support to explore new ideas and refine existing ones. For this reason, Honest Brokers actively engage with providers of research infrastructures.

Engaging with Research Infrastructures involves a **deep understanding of the capabilities and limitations** of these infrastructures. Honest Brokers collaborate closely with providers to ensure that the resources are not only accessible but also optimised for use. This collaboration often leads to improvements and developments within the infrastructures, enhancing their capability and efficiency for the broader research community.

Furthermore, Honest Brokers are advocates for the **openness** of these infrastructures. They promote the use and development of Open Research Infrastructures, pushing for policies that **ensure open access to data, tools, and services**. This advocacy is

driven by a commitment to fostering transparency, reproducibility, and progress in scientific research.



l. Information Overload

Honest Brokers face the challenge of information overload, i.e. a phenomenon where the volume of data and publications can become overwhelming. To effectively manage this, one fundamental strategy is the use of systematic literature reviews.

This method involves meticulously identifying, assessing, and synthesising relevant scientific literature. Systematic reviews are crucial as they help manage information overload by filtering the vast amounts of data into a coherent, comprehensive understanding of the research landscape. This not only ensures that Honest Brokers are working with the most relevant and significant information but also aids in establishing a solid foundation for further research and policy recommendations.

Another key technique employed is **data visualisation methods** to present complex information in a clear, accessible, and digestible format. By transforming intricate data sets into visual formats, such as graphs, charts, and maps, they enable researchers and policymakers to quickly grasp essential insights and discern emerging trends.

Prioritisation and filtering of information also play a critical role in managing information overload. Honest Brokers prioritise and filter research outputs based on their relevance and credibility. This involves **distinguishing between the most crucial and reliable sources** and setting aside less pertinent or questionable data.



m. Tools Based on AI

In the rapidly evolving field of scientific research, Artificial Intelligence (AI) tools play a crucial role in enhancing efficiency and effectiveness. Honest Brokers harness the power of AI to manage large and complex datasets

with ease. AI algorithms are particularly adept at identifying patterns, trends, and correlations that might elude human analysts. This capability allows researchers to uncover valuable insights that can drive scientific advancements and inform policy decisions.

Natural Language Processing (NLP) is employed to analyse and process text data. This technology is instrumental in extracting meaningful information from unstructured data sources, such as scientific papers, social media, and online forums. NLP enables researchers to synthesise a vast amount of textual information into actionable insights.

Machine Learning (ML) could be used to automate tasks such as data classification, prediction, and forecasting. By automating these often repetitive and complex tasks, ML algorithms significantly reduce the time and effort required, thereby enhancing productivity and allowing researchers to focus on more strategic aspects of their work.

While the benefits of AI are substantial, Honest Brokers also address the **ethical considerations** and **limitations** associated with its use. One primary concern is the potential for bias and fairness issues in AI algorithms. It is crucial to ensure that the data used to train these models is representative and free of biases to prevent the perpetuation of existing inequalities in the analysis.

The **transparency and explainability of AI models** are vital factors to understand how decisions are made by these tools, in order to be able to identify any underlying limitations or uncertainties.

Moreover, despite the capabilities of AI, the **importance of human oversight and judgement** cannot be understated. *AI tools should be viewed as supplements to human expertise, not replacements.* Researchers must continue to apply their critical thinking skills and professional judgement in conjunction with AI technologies to ensure responsible and effective outcomes.

6 Conclusions

The role of the Honest Broker is multifaceted and complex, requiring impartiality and trustworthiness as they serve as intermediaries in negotiations, transactions, or disputes. They must navigate these responsibilities without favouring any side or harbouring personal interests in the outcomes. This role is crucial in maintaining the integrity of the mediation process between conflicting parties.

These guidelines underscore the critical importance of integrating the Open Science paradigm into every aspect of the Honest Broker's activities. By promoting Open Science, Honest Brokers can enhance transparency and accessibility, which are vital for effective mediation.

Furthermore, we have explored the significant challenges and opportunities that Honest Brokers may encounter in their roles. The document provides practical solutions that leverage Open Science resources to address these challenges, thereby facilitating a more informed and equitable mediation process. By adopting Open Science practices, Honest Brokers can ensure that their mediations are conducted on a foundation of credibility and inclusivity, ultimately fostering more robust and sustainable outcomes.

Authors details

Mario Locati is a technologist at the [Istituto Nazionale di Geofisica e Vulcanologia \(INGV\)](#), Italy. He is an expert in Research Data Management, Institutional Data Policies and he is the coordinator of the Data Management Office. He earned a “Master in Management of Research, Innovation and Technology” from the Politecnico di Milano and participated in projects at national level supported by the Italian Civil Protection Department and European research funded projects in the field of Seismology related to EPOS ERIC since 2006. He is currently participating in the Skills4EOSC project.

Federica Tanlongo is head of the Communication Unit at [EPOS ERIC](#) in Rome, Italy. She holds a degree in Philosophy of Science and a second-level ICT Master’s in Management and Design for Multimedia Communication at Sapienza University. Before joining EPOS, she coordinated the Communication Unit of GARR, the Italian National Research and Education Network (NREN) for nearly 20 years. Since its launch in 2018, she contributed to the establishment of ICDI, a national initiative for coordinating national research infrastructures towards Open Science. She contributed to various EOSC-related working groups and projects, including Skills4EOSC. An expert in traditional, web, and multimedia communication, and technical-scientific dissemination, she has been involved in numerous international projects.

Betty Evangelinou is a Senior Project Manager at the [National Infrastructures for Research and Technology \(GRNET\)](#) in Greece. She holds a diploma in Electrical and Computer Engineering from the Aristotle University of Thessaloniki, and has taken part in several national and European co-funded projects as a Project Manager and/or Technical Consultant, covering activities of EU Innovation Project & Financial Management, Business Development and R&D proposal writing, with expertise in Business Analysis and Quality Control of IT solutions. She is currently the coordinator of Work Package 3 “OS training for evidence-based policy and public administration” of the European project Skills4EOSC.

Giulia Dotta is a geologist and works as Postdoctoral Research Fellow at the [Istituto Nazionale di Geofisica e Vulcanologia \(INGV\)](#) in Pisa, Italy. With a degree in Earth Sciences and Technologies, she obtained the PhD in Earth Sciences with a thesis focused on advancing remote sensing techniques aimed at landslide characterization and monitoring. In 2022 she got involved with Open Science world and she started her collaboration with INGV Data Management Office. Her research activity revolves around the sharing of scientific data according to FAIR principles, focusing on the improving of web services availability adopting established international standards with the aim to enhance data interoperability and accessibility.

Massimo Cocco is a physicist and Director of Research at the [Istituto Nazionale di Geofisica e Vulcanologia \(INGV\)](#) in Rome, Italy. He has been the coordinator of the EPOS (European Plate Observing System) Preparatory Phase project (2010–2014) and he is currently coordinating the EPOS Implementation Phase project (2015–2019). EPOS is the ESFRI infrastructure aiming at the integration of research infrastructures for solid Earth Science (www.epos-ip.org). His skills include scientific data generation and integration as well as research infrastructure management. His expertise also covers the management of seismic networks and geophysical monitoring research infrastructures. His research interests are focused on the physics of earthquakes and faults, more

specifically on earthquake dynamics and fault interaction, seismicity patterns and earthquake occurrence. He has interests in all aspects of the mechanics of earthquake and faulting from observations of natural faults through geophysical and geological measurements to experimental faults at the laboratory scale. He is currently the Executive Director of the EPOS ERIC research infrastructure, a landmark in the ESFRI roadmap.

Stefano Cacciaguerra is Head of the Computer Science Laboratory situated in Bologna, Italy. , Ph. D in Computer Science, Master in Management of Research, Innovation and Technology and Degree in Computer Science, Senior INGV technologist, he participates in the Big Data Association, in International Foundation Big Data and Artificial Intelligence for Human Development and INGV delegate to Italian Computing and Data Infrastructure. Involved in systems administration, computer networks and security, storage systems, parallel computing in the scientific field, disaster recovery, virtualization and cloud.

Skills4EOSC: Creating an EOSC-Ready European Workforce

Skills4EOSC 'Skills for the European Open Science commons: creating a training ecosystem for Open and FAIR science' is funded by the European Commission Horizon Europe programme (GA 101058527). Coordinated by Consortium GARR and supported by 44 partners in 18 European countries, Skills4EOSC will set up a pan-European network of competence centres to speed up the training of European researchers and harmonise the training of new professional figures for scientific data management.

The project officially started on the 1st of September 2022. Over the next three years, it will work to provide Open Science Commons and create an EOSC-ready skilled European workforce, connecting existing Competence Centres in open science and scientific data management. The aim is to develop common methodologies, activities and training resources to unify the current training landscape into a collaborative and reliable ecosystem and to provide dedicated community-specific support to leverage the potential of EOSC for open and data-intensive research.

Skills 4 eosc

zenodo LINKEDIN X
www.skills4eosc.eu

Skills4EOSC has received funding from the European Union's Horizon Europe Research and Innovation Programme under Grant Agreement No. 101058527 and from UK Research and Innovation (UKRI) under the UK government's Horizon Europe funding guarantee, grant number 10040140.

Supporting

eosc



Co-funded by
the European Union



UK Research
and Innovation