

Open and Reproducible Science

A Local Perspective

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Slides



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Open science is an essential part of my work

- **Work on open source software** developed by global science community: BART¹
- Workflow designed for **publication of paper figure scripts**^{2,3,4}
- Institute⁵ has strong focus on open and reproducible science
 - Biannually reproducibility event days⁶
 - Continuous integration for paper reproducibility
 - Tutorials, Webinars, Workshops,...

⋮

¹Berkeley Advanced Reconstruction Toolbox, M. Uecker et al., 2013. ²[Github:mrirecon/raga](#) ³[Github:mrirecon/bloch-moba-misc](#)
⁴[Github:mrirecon/bloch-moba](#) ⁵Institute of Biomedical Imaging, Prof. Dr. Martin Uecker ⁶Scholand, Zenodo, 2024

Which Influence has Open and Reproducible Science?

Global/Community Perspective

- **Democratize access to research**¹
- **Enhance accountability of research integrity**¹
- **Facilitate the self-corrective process of science**¹
- **May increase productivity**²

⋮



¹Center for Open Science, @cos.io/about, 09.01.2024

²OECD Science, Technology and Industry Policy Papers, No. 25.

Global/Community Perspective

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→ Local Perspective

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Local Perspective

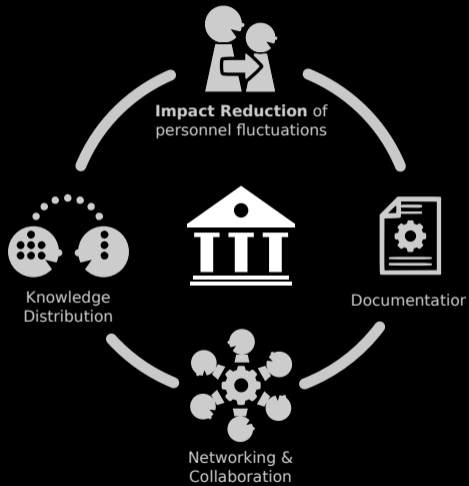


Institutional



Personal

Local Perspective: Institutional

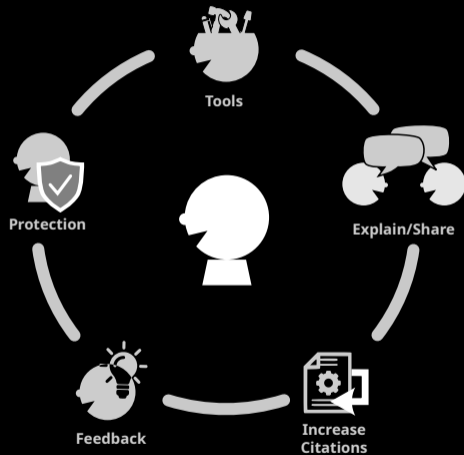


- Improves documentation and collaborations
- Simplifies knowledge distribution
- Reduces impact of personnel fluctuations

Local Perspective: Personal

General:

- **Protects** from accusations of research misconduct¹
- **Increases** paper **citation rates**^{2,3}
- Strong indicator of **rigor, trustworthiness, and transparency**¹



¹Alston and Rick, Bull Ecol Soc Am, 2020.

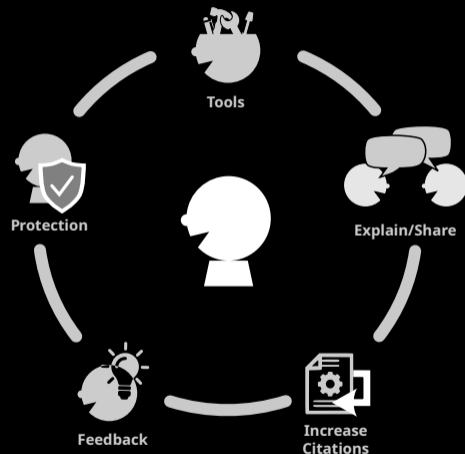
²Piwowar et al., PLoS ONE, 2007.

³McKiernan et al., eLife, 2016.

Local Perspective: Personal

From Experience:

- Helps me **explain** and **share my work**
- Enables me to quickly and **simply modify analyses** and figures
- Gives me **feedback about errors** and typos in abstracts and publications



How to Learn About Open and Reproducible Science?

Learn About Open and Reproducible Science

Reactive

- Loss of data and documentation



- Long starting periods for new employees

- Difficulties to reproduce others or own work



⇒ Happens too often... → **Proactive Learning**

Learn About Open and Reproducible Science

Proactive

- Create internal guidelines/policies
- Regular internal training/event days (The Reproducibility Day¹,...)
- Visit events (OSA Info-Day,...)
- Read examples² and guidelines³
- Attend courses (University, Organizations⁴,...)
- **Learn from supervisors, co-authors, and reviewers**



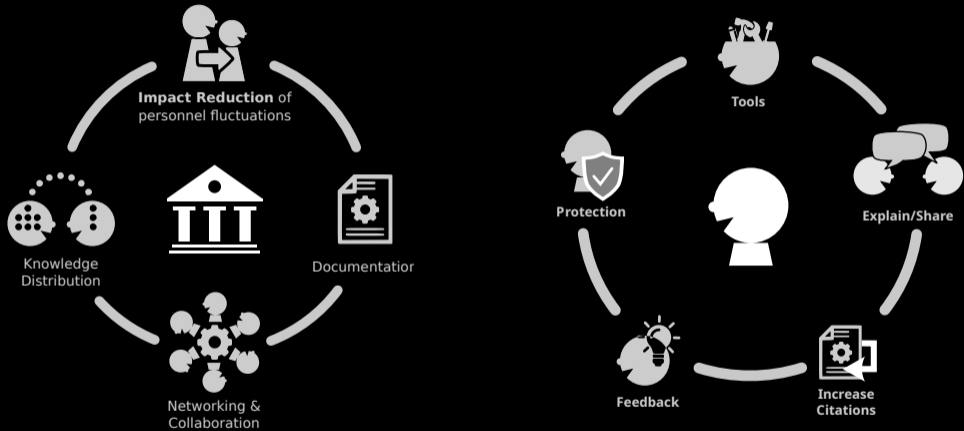
¹Scholand, Zenodo, 2024

²Lasser, Commun. Phys., 2020.

³EC2U-RI4C2, D7.3 - Open Science Guidebook

⁴eurodoc: ambassador training

There are many reasons for Open and Reproducible Science!



Thank you for your attention :)