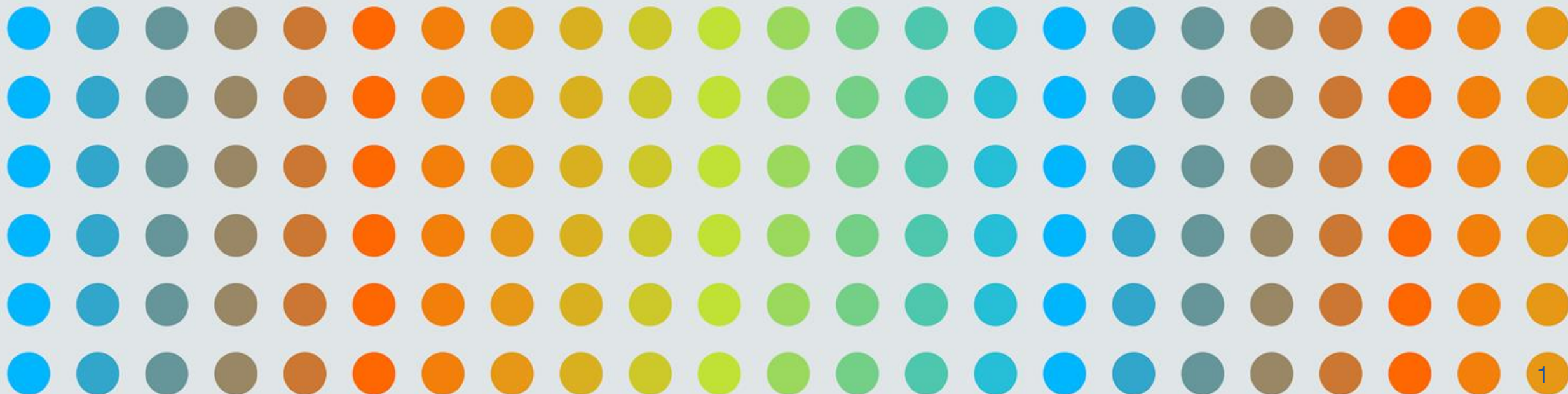




Privacy-enhancing technologies (PETs): tools for public good?

Calum Inverarity

21 September 2023



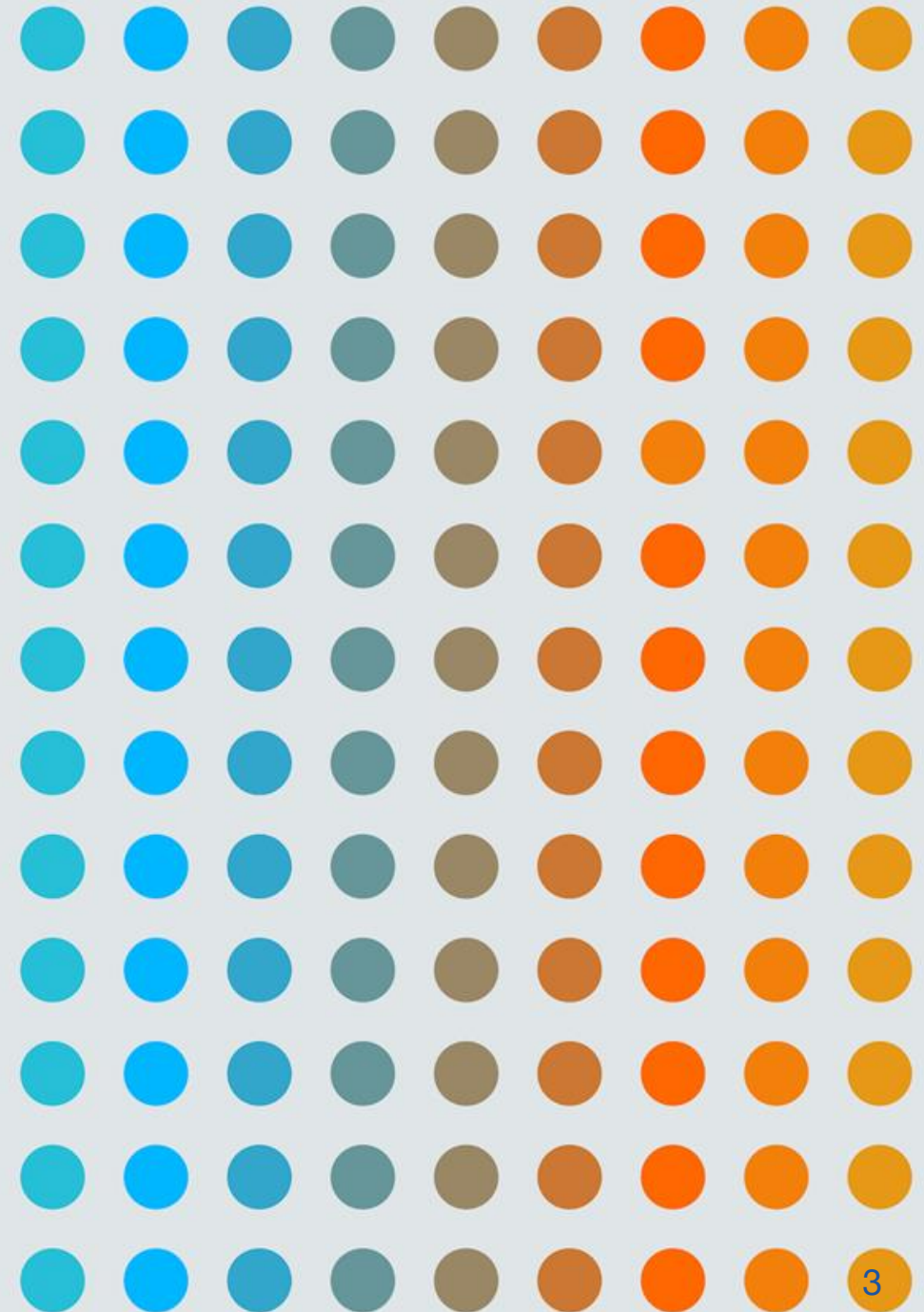
Agenda

- **What are PETs?**
- **Why now?**
- **PETs for public good**
- **Remaining challenges**
- **Bad PETs?**

What are PETs?

Privacy-enhancing technologies

(PETs) are tools and practices that enable greater access to data that may otherwise be kept closed for reasons of privacy, commercial sensitivity or national security.



Why now?

- **Stronger data protection legislation** - eg GDPR, CCPA and similar legislation that is now being adopted throughout the world
- **Increased demand for data privacy** - in response to scandals that have exposed sensitive data about people, through negligence and intentional efforts such as cyberattacks
- **Increased government support** - PETs being viewed as having potential to create efficiencies and spur further data enabled innovation, particularly in light of increased interest in LLMs and AI

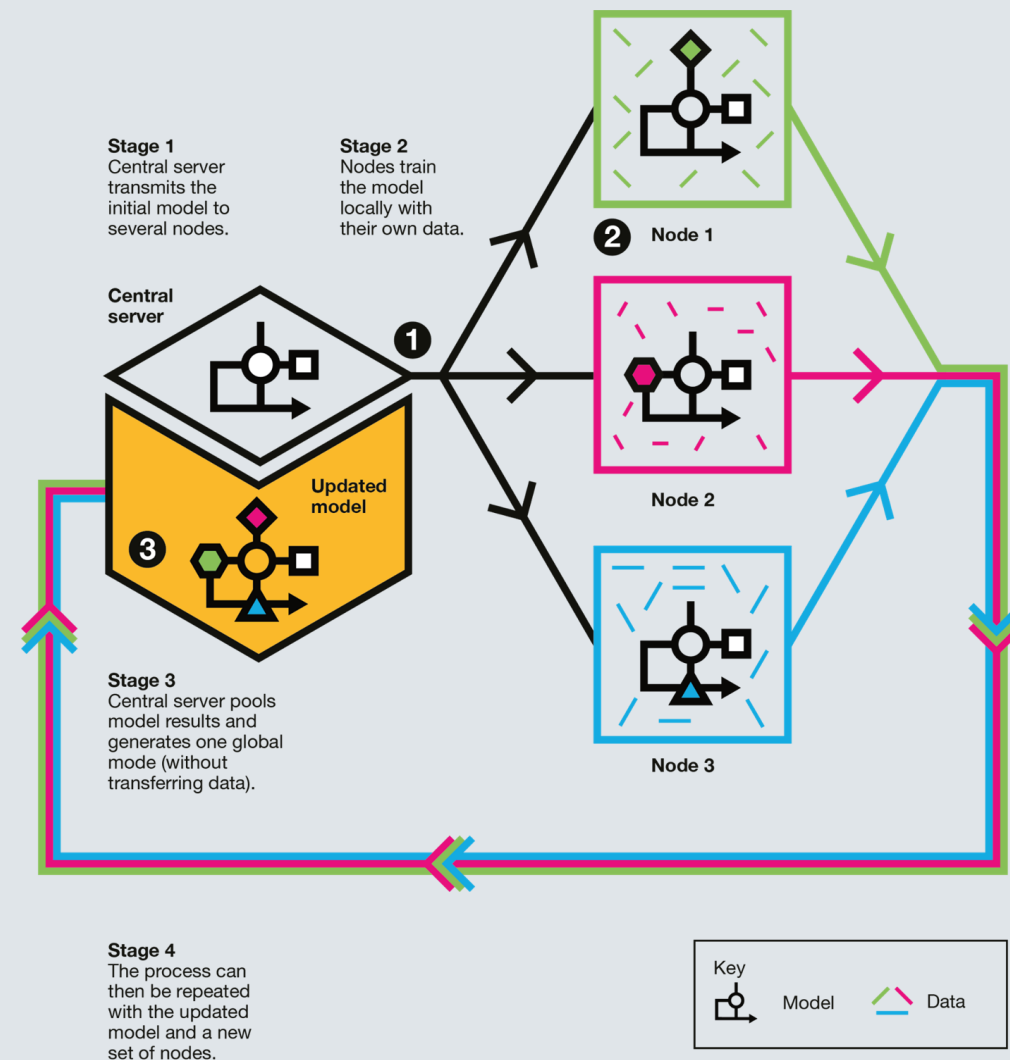
Privacy Enhancing Technologies (PETs) Prize Challenges winners



Source: <https://www.ukri.org/blog/privacy-enhancing-technologies-pets-prize-challenges-winners/>

PETs for public good

- **Training machine learning models** - increasing access to distributed, sensitive datasets to improve accuracy and generalisability
- **Conducting privacy-preserving analysis** - such as identifying trends that indicate illicit activity is taking place
- **Increasing access to sensitive data for research** - perhaps where PETs have been most readily applied in the public sector so far



Source: https://www.theodi.org/wp-content/uploads/2023/01/ODI_Federated-learning_-_an-introduction-%E2%80%93-Considerations-and-practical-guidance-for-prospective-adopters-report.pdf

Remaining challenges

Assessing federated learning suitability

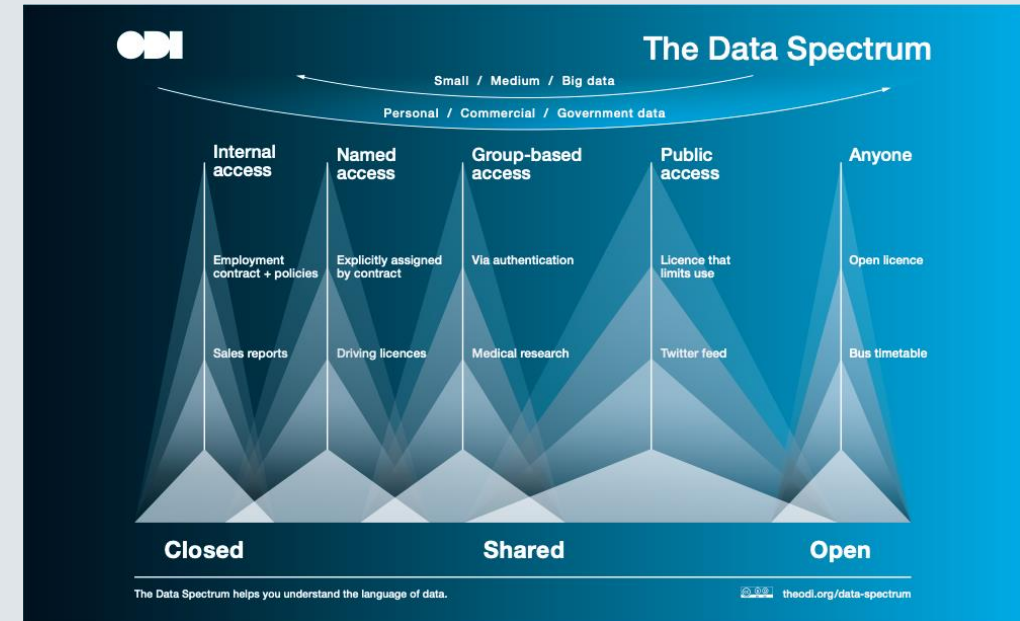


*The diagram above represents our qualitative assessment of the potential benefits that could be realised with FL, and may help assess the suitability of the technology to specific use cases. The size of each circle represents the relative potential to help organisations realise benefits such as scalability (highest potential), resource savings (medium potential), performance/accuracy (medium potential), compliance (low potential) and confidentiality (low potential), and security (very low potential). These benefits are interconnected and dependent on many factors; some illustrative considerations are included.

- **Privacy isn't always the primary concern or benefit** - this can muddle perceptions of these technologies and provide a false sense of security in what they can do
- **Still relatively few examples being used in practice** - while their applications are increasing, the bank of evidence for these technologies remains somewhat limited
- **Not yet reached the watershed moment** - some PETs are being used more extensively than others, however a degree of hesitancy remains

Bad PETs?

- **Might PETs divert focus from Open Data?** Why make data open when it can be securely shared on a wider scale?
- **Irresponsible use can damage trust in these technologies** - many of these PETs are being trialled out to do previous practices, such as targeted advertising, more effectively. How can we steer their wider use towards public good?
- **Potential for privacy-enhanced *surveillance*?** PETs are powerful technologies and their use will require oversight to ensure that they are not misused



Source: <https://theodi.org/about-the-odi/the-data-spectrum/>

Thank you

**Calum Inverarity - Senior Researcher
and PETs Lead**

calum.inverarity@theodi.org

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Open Data Institute

Kings Place

5th Floor

90 York Way

London N1 9AG

United Kingdom

info@theodi.org

+44 (0)20 3598 9395