ATxSG 2022 'Trust in Data' Roundtable

Report on Key Insights

1. At Asia Tech x Singapore (ATxSG) 2022, IMDA and OECD organised a roundtable on the subject of 'Trust in Data' on 1 June 2022, with participants from 16 organisations, comprising big technology companies, businesses from various sectors, government and research institutions. The purpose of the roundtable was to solicit views on issues of maturity, use cases and deployment barriers for Privacy Enhancing Technologies (PETs).

Maturity of PETs

2. There was consensus that 'PET' is an umbrella term for a set of processes and tools to enable the flow of insights without the disclosure of data, and that some PETs like Federated Learning (FL), Multiparty Computing (MPC) and Homomorphic Encryption (HE) are market ready. PET deployment can be observed in current products, especially those of Big Tech companies, but less so in other sectors.

3. The participants highlighted that there is a need to understand the specifics of a use case before matching it to the right PET. For example:
    a. Key cause of concerns in data flow: e.g. if the data can be moved but not in its original form, then a PET like Homomorphic Encryption may allow computations to be done on encrypted data itself. However, if data must not leave its environment at all, then a PET like Federated Learning could be considered.
    b. Complexity of computation required for the use case: e.g. PETs like Multiparty Computing are better suited for running more complex computations as compared to PETs like Homomorphic Encryption or Zero Knowledge Proof.
    c. Size of data ecosystem e.g. PETs like Differential Privacy or Synthetic Data Generation are generally able to scale up to a larger data ecosystem as compared to PETs like Multiparty Computing which heavily rely on communication architecture.

Such details could help determine whether a specific PET or a stack of PETs is viable for a use-case. To this end, a compendium of PET use cases with such details could help better educate the market.

4. The participants also acknowledged that there is currently a lack of standards for PET services, such as privacy thresholds required to correctly balance the outcomes of obfuscation and usability which are often dependent on the type of queries or the use case. There were also no benchmarks yet to assess technological capabilities of PET solutions and no security protocols to check for risks.

5. In the absence of standards, or an accredited list of solution providers, adopters may not be able to afford the time or risk to individually evaluate the technical and financial viability of PET solution providers. Acknowledging that there is no similar standard available internationally and recognizing that there may be an opportunity to embark on the development of international standards for PETs, participants nevertheless suggested focusing efforts domestically first.

Use Cases of PETs

6. The roundtable participants suggested that use cases linked to a higher outcome or a social good could help overcome the challenge of communicating the value PETs bring to adopters and end-users. These use cases could be:
    a. Managing pandemics by using PETs for building models which can predict metrics such as rate of infection, rate of hospitalization, etc;
    b. Facilitating ESG reporting which often requires commercially sensitive data that could be kept confidential by use of PETs; and
    c. Prevention of financial crimes by using PETs for cross-border data flow.

7. Further, there was support for application of PETs in use cases which are multi-jurisdictional, involve highly regulated data (e.g. financial or healthcare data) and require moving computing code to data rather than moving data to the code.

Role of Governments

8. The roundtable suggested that increasing the adoption of PETs would require governments to play the role of conveners of use cases, standards and regulatory guidance.

9. Some governments were already encouraging the flow of data with trust, e.g. Germany's International Data Spaces, which has developed a reference architecture to achieve both "data sovereignty" and trusted data access. It was emphasized that key to understanding policy implications involving PETs is for governments to work with industry on use cases with demonstrable value. PETs were also being considered among the items to be discussed in multilateral summits such as the G7 in Tokyo in 2023.

10. There was also an expectation that governments would provide greater regulatory clarity on the application of PETs. Even though existing data laws may offer some flexibility for valid PET use cases, there are unanswered questions about when those laws may apply, such as:

    a. Would personal data protection obligations apply if the data can be rendered "uncrackable" by a PET?
    b. In which scenarios can use of PETs amount to an exemption recognised in the existing regulations (e.g. exception to consent obligation)?
    c. What are the permissible means for data holders to outsource tasks to PET services for purposes of sharing of data with 3rd parties like research institutes?

11. Participants also felt that governments can play a key role in setting standards, starting domestically, followed by international adoption. It was emphasized that any PET standard must be contextualised to scenarios where it was used, e.g. standards to safeguard against risk of reidentification in the use of PETs like Anonymisation or Differential Privacy could be gradated depending on the degree of obfuscation or noise (respectively) added to the original dataset. As such, PET standards could be set by means of sandboxes where adopters can experiment with PETs and help reveal critical points where standards need to be established.

12. Further, there were suggestions for Governments to financially support pilots by private sector players prepared to experiment with PETs and identify technological and regulatory boundaries

in real world applications. Such support from Governments could also help innovation/technology teams secure management buy-in to consider PETs for addressing data barriers their organisations face.

Conclusion

13. Overall, the roundtable discussions revealed that the adoption of PETs can be increased if there is greater knowledge about their technical and regulatory bounds in real world applications. This warrants governments and businesses collaborating on pilots of PET use cases and gaining hands-on experience to build such knowledge. Such efforts must also attempt to bridge the trust gap between users and solution providers of PET, finding ways to benchmark the latter's technical capabilities and business viability.