

A scalable and practical privacy-preserving framework

ENCRYPT

Konstantinos Kaltakis, Eight Bells Ltd.



At a glance



ENCRYPT: A Scalable and Practical Privacy-preserving Framework



ENCRYPT develops a scalable, practical, adaptable **privacy preserving framework**, allowing researchers and developers to process data stored in federated cross-border data spaces in a GDPR compliant way.



Horizon Europe – Work Programme 2021-2027 | **Increased cybersecurity 2021**

Call: HORIZON-CL3-2021-CS-01 | **Topic:** HORIZON-CL3-2021-CS-01-04 | **GA Number:** 101070670



Duration: July 2022 – June 2025



Funding Scheme: Research & Innovation Action | **Budget:** €4.392.540 | **EU contribution:** €4.392.540



ENCRYPT Consortium

14 partners from 8 European countries



1 x Start up



3 x SMEs



2 x Enterprises

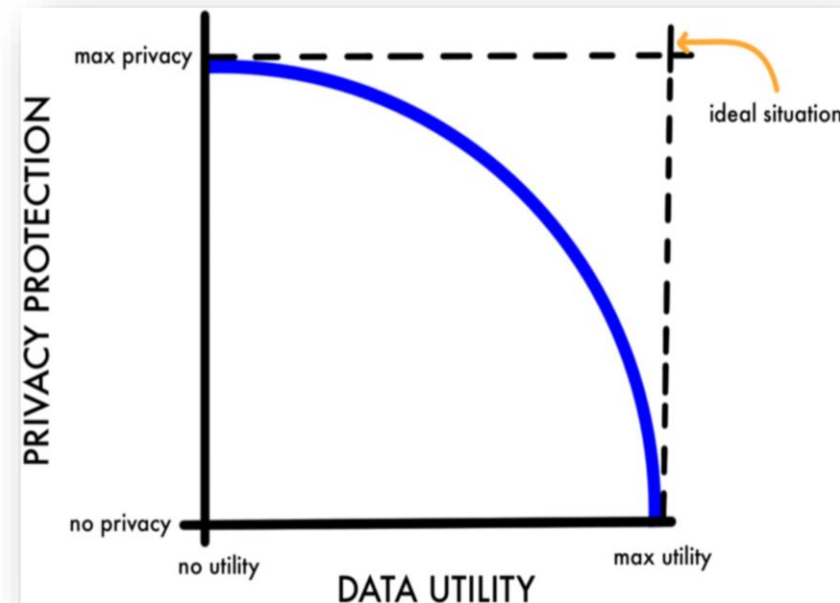


8 x Research Institutes & Universities



Challenge & Vision

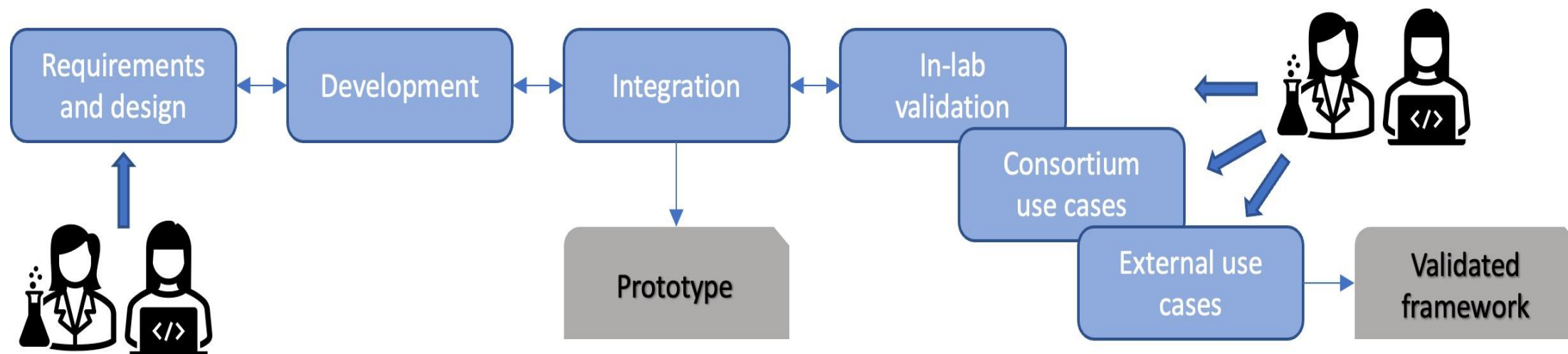
- Existing Privacy Preserve technologies such as **Homomorphic Encryption, Multi-Party Computation, Trust Execution Environment** or **Differential Privacy**, are promising at a small-scale level.
- For becoming mainstream security solutions, they need to overcome several limitations, as envisioned by ENCRYPT:
 - ✓ Scalability issue
 - ✓ Drawbacks of each technology threats & performance
 - ✓ Slow computation times
 - ✓ Easier to interact technologies
 - ✓ Provide AI-based recommendation system for personal data and performance
 - ✓ GDPR Compliant



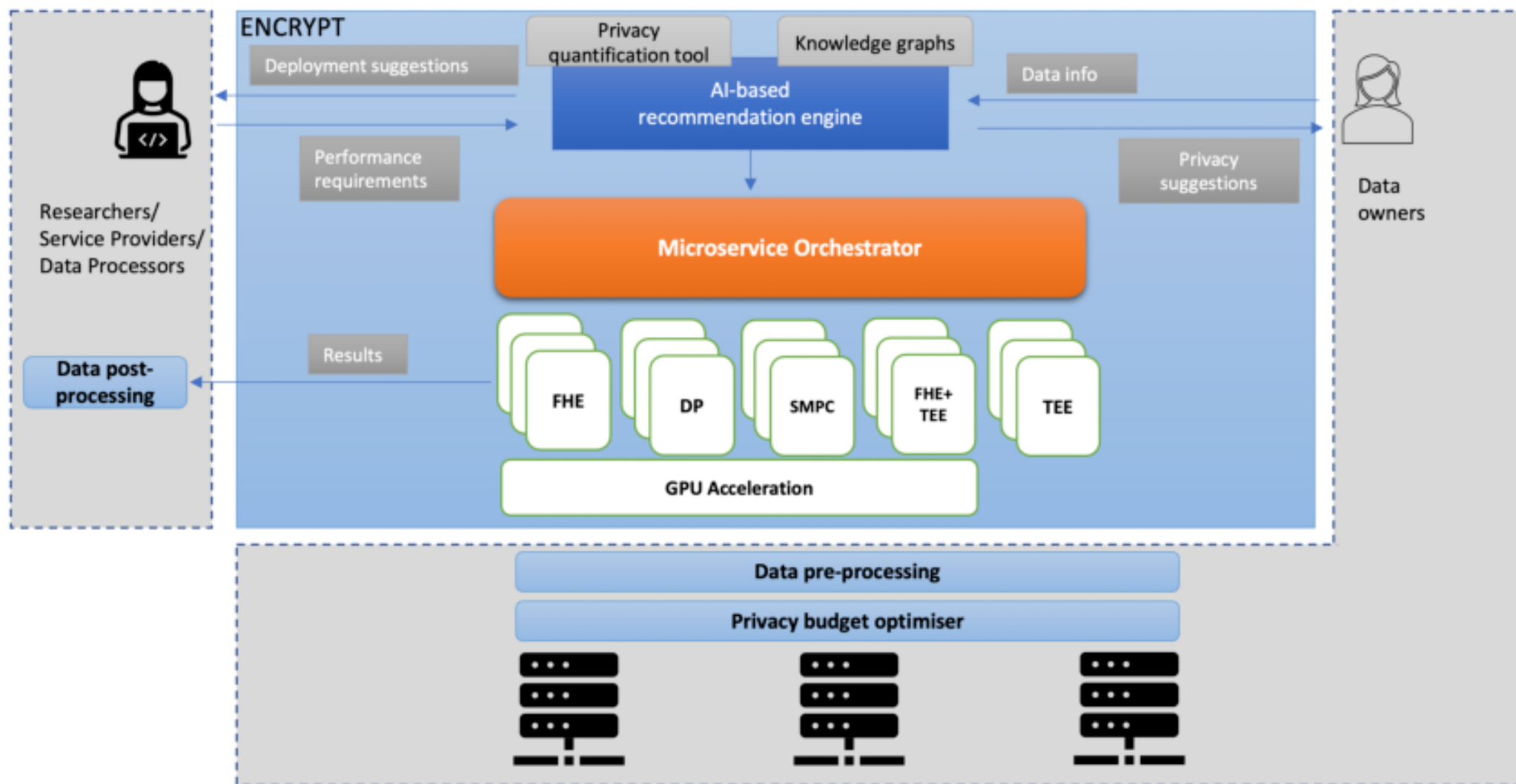
Objectives

1. To **improve the applicability and performance** of PP technologies towards GDPR compliant, cross-border federated processing of personal and other sensitive data, developing a **toolset of scalable, practical, and reliable PP technologies**.
2. To **improve the user-friendliness** of PP technologies facilitating the identification, understanding, selection, and adoption of PP technologies **by all actors**.
3. To foster, and inherently **support interoperability for PP processing of similar data types** across organisations, and across sectors.
4. To **promote GDPR-compliant common European Data Spaces and facilitate the exchange of CTI**, liaising with relevant initiatives and projects with a focus on standardisation.
5. To **ensure the applicability** of the developed solutions, **co-designing them with end-users**, and validating them in **realistic use cases** including federated data infrastructures with personal data.
6. To **strengthen the ecosystem of open-source developers and researchers** of privacy-preserving solutions disseminating, and exploiting open-source project results, as well as upskilling researchers.

High-level methodology



Encrypt Platform



Use cases

- **Health Domain:** supported by the Hospital Clinic of UNINA; it will validate TEE and TEE+HE technologies & **will result in protecting data from safety and privacy violations, while enabling full automation of the treatment process, at a fraction of the cost.**
- **Cyber Threat Intelligence Domain:** supported by CERTH as service provider/data processor, and EXUS, DBC, 8BELLS as data owners and end-users; it will validate DP and MPC technologies and the Knowledge Graph building software, & **will result in increased CTI awareness and resilience for data owners.**
- **Fintech Domain:** supported by EXUS as the service provider/data processor, EPIBANK as the data steward, and their customers as the data owners; it will validate FHE in a federated context and GPU hardware accelerator, & it will **unlock the value in sharing financial data without compromises on privacy and confidentiality.**

Impact

1. Improved scalable and reliable privacy-preserving technologies for federated processing of personal data and their integration in real-world systems.
2. More user-friendly solutions for privacy-preserving processing of federated personal data registries by researchers.
3. Improving privacy-preserving technologies for cyber threat intelligence and data sharing solutions.
4. Contribution to promotion of GDPR compliant European data spaces for digital services and research (in synergy with topic DATA-01-2021 of Horizon Europe Cluster 4).
5. Strengthened European ecosystem of open source developers and researchers of privacy-preserving solutions.

Thank you!

Konstantinos Kaltakis, MSc, MPhil
Cybersecurity Researcher/ Senior Project Consultant

konstantinos.kaltakis@8bellsresearch.com



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