



Advances on Societal Digital Transformation
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Smart Contracts for Privacy-Preserving Identity Management: Ethics, Regulatory and Technical Challenges

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Who we are



- Tetiana Vasylieva

Researcher and Legal Consultant

She deals with Privacy, Data Protection and Cybersecurity within the EU R&I projects.

She obtained a Specialist Degree in Commercial and Labour Law from the Interregional Academy of Personnel Management (Kyiv).

- Luigi Briguglio

Senior Researcher and ICT Consultant

He deals with Software Architecture, Data and Project Management within the EU R&I projects.

He obtained a Master of Degree in Electronic Engineering from the University of Padua (Italy).

We deal with topics of the IMPULSE R&I project



Identity Management in PUbLic SErVICES

Identity Management

Ethics and Regulatory Framework

User-centric design approach

Smart Contracts and Icons

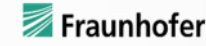


<https://www.impulse-h2020.eu/>

15 PARTNERS

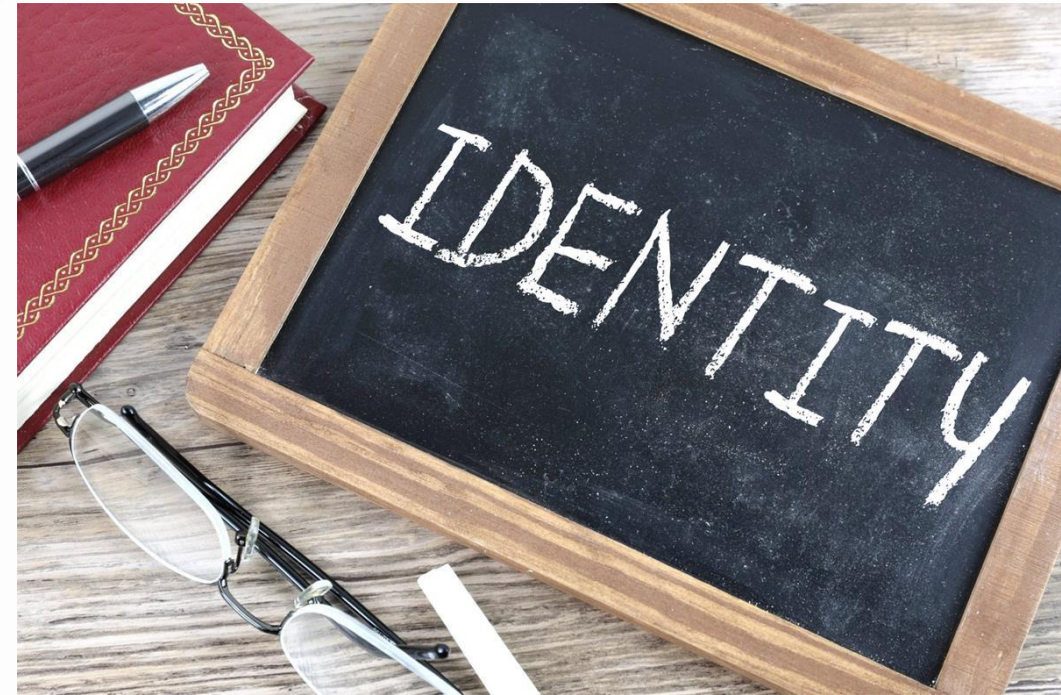
6 PUBLIC ADMINISTRATIONS

9 EUROPEAN COUNTRIES



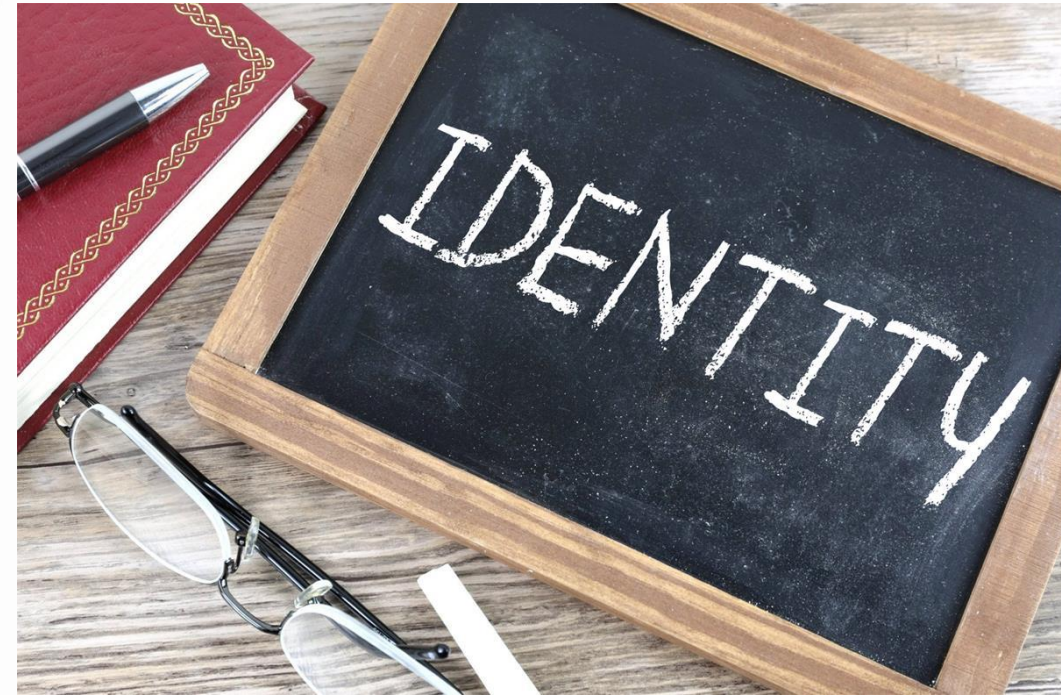
Identity Management

- Internet Access as a Human Right
 - United Nations, "The promotion, protection and enjoyment of human rights on the Internet," July 2021.
- Defining Identity Management
 - Identities of an individual in the digital world
 - You can't spell Identity without an "I"
- Identity Management Models
 - Centralised
 - Distributed
 - Decentralised
- IMPULSE: Decentralised, Blockchain-based, GDPR-aligned.



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Ethics and Regulatory Framework

- Blockchain-based Identity Management and Regulation Gap
- The EU General Data Protection Regulation (GDPR) and Blockchain Applicability
- Self-Sovereign Identity (SSI) Considerations
 - You fully control your own personal data
- eIDAS 2, European Digital Identity Wallet and Electronic Ledgers: open issues and opportunities in Identity Management



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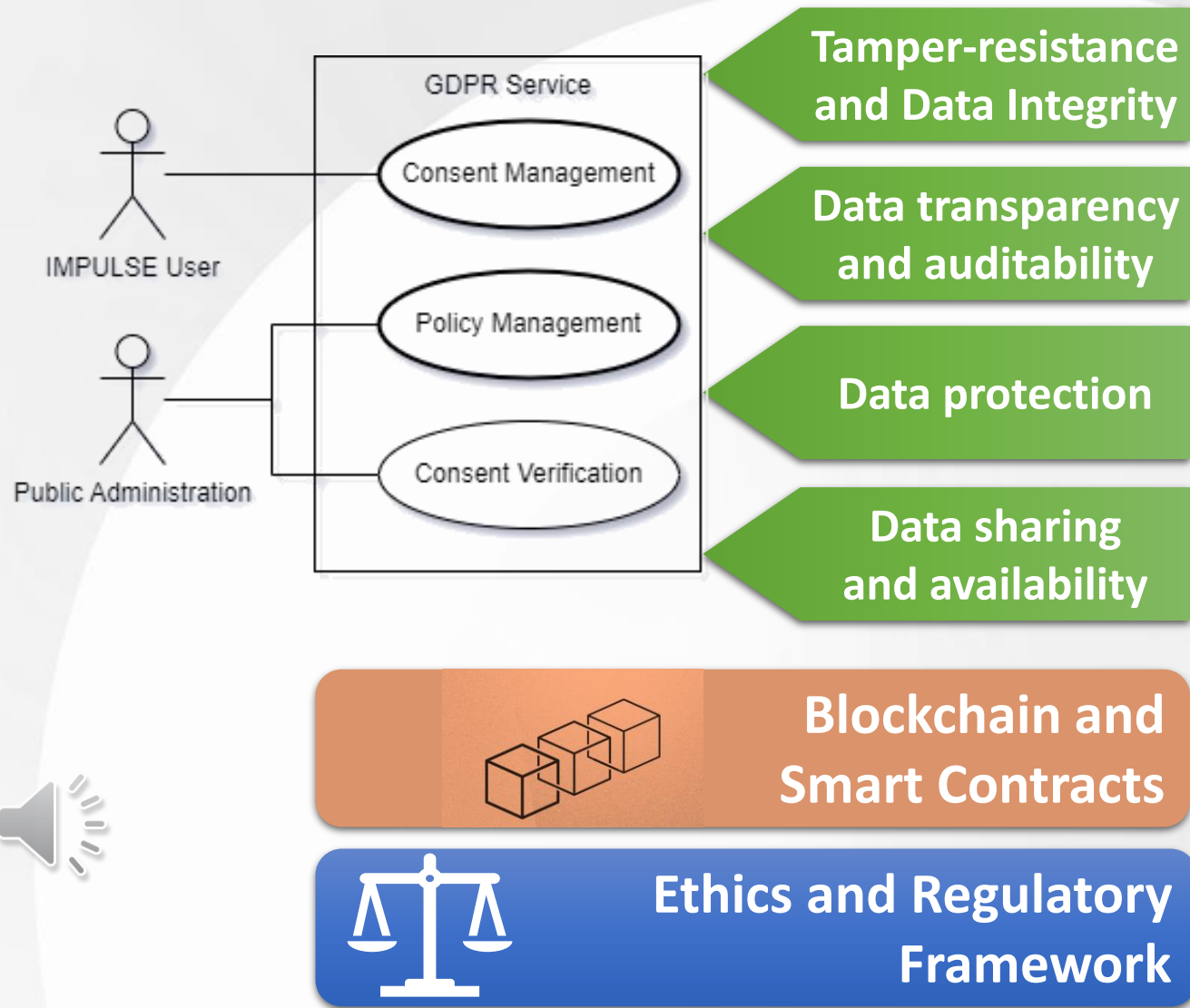
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User-centric design approach

- Building on top of the **Ethics and Regulatory Framework**
- Adopting a **decentralised model**, where each node of the network shares and replicates copy of data
- Implementing with **Blockchain, Smart Contracts** and pseudonymisation mechanisms



Smart Contracts and Icons

- **Smart Contracts** manage Consents of the Users to share their own personal data
- **Pseudonymisation** mechanisms (hash functions) ensure legal constraints
- **Icons** simplify privacy policy and empower users to take decisions



Conclusion and Future work

- **User-centric models and approaches for Identity Management**
 - **Self-Sovereign Identity** model, suggested in **eIDAS2 proposal**, empowers citizens with full control on their own personal data
 - **Blockchain and smart contracts**, together with pseudonymisation mechanisms, play a relevant role in managing data exchange among parties respecting privacy and security constraints
 - A new **iconic approach** for privacy policies and consents is evaluated:
 - usual long text with a lot of jargons (hard to be fully understood)
 - replaced with icons, based on Italian Data Protection Authority proposal
- Lesson learned: by adopting an “**ethics-by-conception**” and **multidisciplinary** approach (where **SSH and STEM** work together), any technology can be applied and be aligned with ethics and regulatory frameworks
- Proposed solution will be adopted, updated and extended in future apps



Grazie!



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