Tools and Rules

Innovative Tools and Technologies to Prevent and Fight Fraud and Corruption in EU Funding:
Can Blockchain Technology Be the Key to Locking Out Fraud in Agriculture?

CSD, Standing Up To State Capture:
Innovative Methods to Investigate Fraud and Corruption in EU Funding for Agriculture,
13-14 September 2018, Sofia, Bulgaria

Challenges to State Capture prevention

Fraud Detection

- Verification of prices and payments
- Verifications of market prices
- Verification of ownership structures
- Checks of price estimations

Fraud Prevention

- Transparency
- Strict Procurement Procedures
- Tamperproof Documents
- Secure Communications

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Tools for fraud detection and tools for fraud prevention
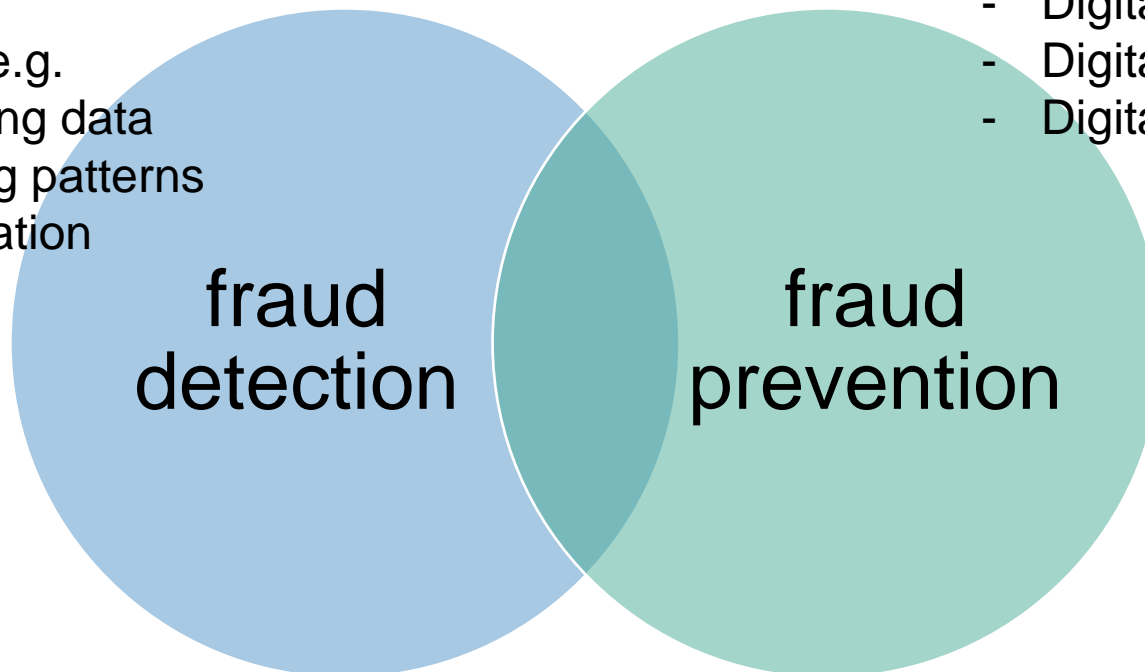
Analysing tools, e.g.

- INSPECT
- LiDaKrA

Functions e.g.

- correlating data
- detecting patterns
- Visualization

Securing Integrity of data and data trails, e.g.

- Cryptography
- Digital Timestamps
- Digital Seals
- Digital Signatures

fraud
detection

fraud
prevention

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Problem that LiDaKrA - Addresses

➜ Accessible Data Online – Finding the needle in the haystack

Cumbersome search

Based on FuhSen: A
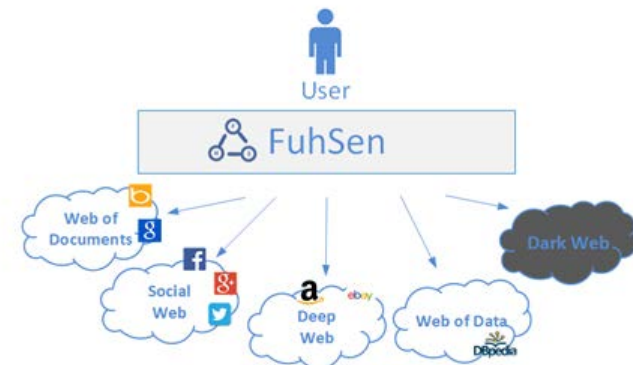Semantic Federated
Search Engine

Problem that LidaKrA Addresses

➔ Making sense of diversified data,

Cumbersome search

Structured & simplified search

Federated Search Approach

FuhSen

**A Semantic Federated Search Engine to search and integrate pieces of knowledge from heterogeneous Web sources**

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Fedrated Search Approach

FuhSen

**A Semantic Federated Sea...
to search and integrate p...
knowledge from heteroge...
sources**

- FuhSen relies on semantics encoded in vocabularies to integrate data collected from a federation of heterogeneous sources.

- It utilizes semantic similarity measures to determine relatedness between two entities.

- Highly similar data molecules are aggregated into an integrated molecule that corresponds to the answer of a keyword based query.

- Finally, molecules of information are enriched with semantics and displayed to the user

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FuhSen DEMO
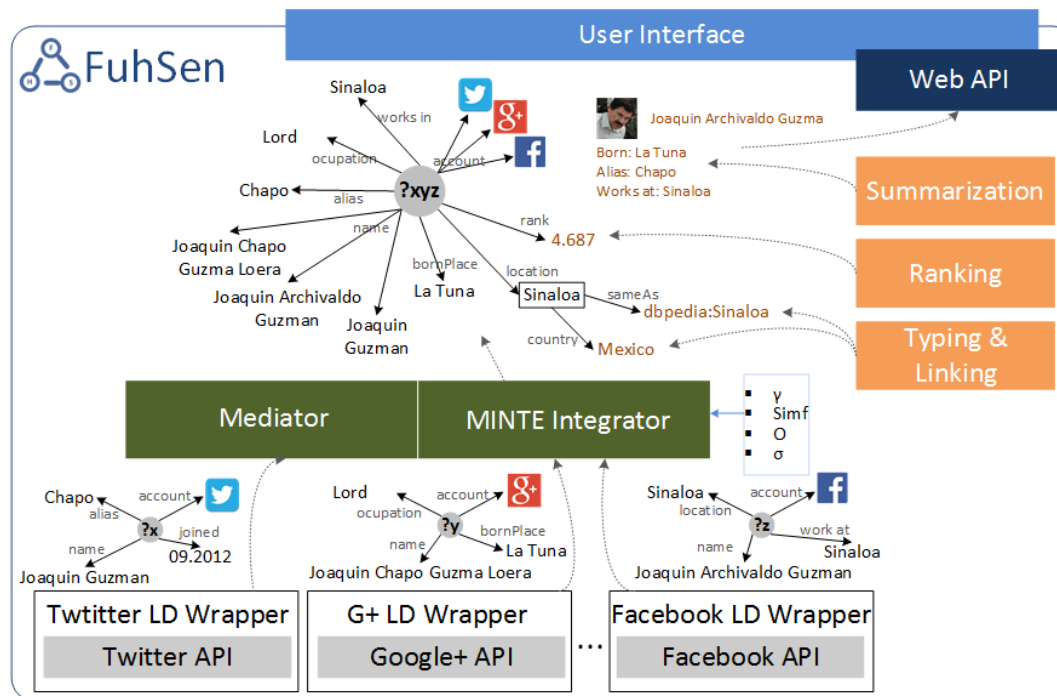
FuhSen Benefits & Value Proposition
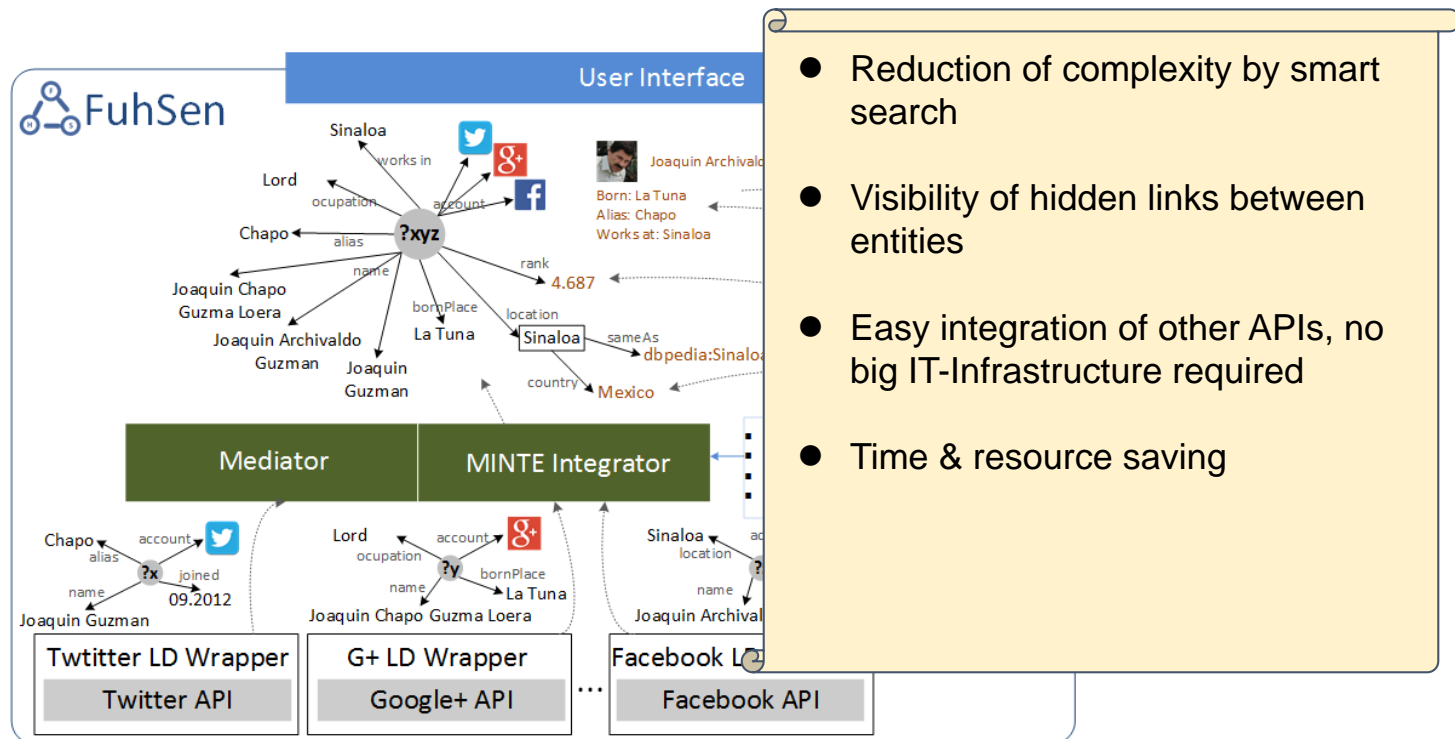
- Reduction of complexity by smart search

- Visibility of hidden links between entities

- Easy integration of other APIs, no big IT-Infrastructure required

- Time & resource saving

Linked **Da**ta **Kr**iminal **A**nalyse

Wie sieht das dann aus?

Linked **Da**ta **Kr**iminal **A**nalyse

Wie sieht das dann aus?

Linked Data Kriminal Analyse

Wie sieht das dann aus?

Leveraging technology

Internet

(Offline) Databases + Documents

Seized Materials

Regulatory EU framework for fraud prevention - Direct

- Article 325 of the Treaty on the Functioning of the European Union (replacing Article 280 of the EC Treaty).

- Establishment of OLAF (Decision 1999/352/EC) and regulations and agreements defining OLAFs role (e.g. EU/883/2013).

- Horizontal EU legislation concerning on-the-spot checks/inspections in the Member States

- Sectoral EU legislation concerning provisions on the prevention and detection of irregularities

- Sectoral EU legislation concerning the notification of irregularities and recovery of misused funds

- Conventions on the harmonisation of EU criminal law

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Regulatory EU framework for fraud prevention - Indirect

General Data Protection Regulation – GDPR (2016/679)

Directive regarding the processing of personal data by competent authorities for the purposes of the prevention, investigation, detection or prosecution of criminal offences – Police-Directive (2016/680)

- Regulation applies directly in all member states, directive has to be transposed.

- Personal data is information concerning the personal or material circumstances of identified or identifiable individuals.

- Protection of fundamental rights to privacy (Art. 7, 8 Charter Fundamental Rights EU).

- Data Protection Acts usually address the security of systems with personal data.

- Rules detail examples for specific security measures.

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Co-Regulation of Privacy

Police-Directive 2016/680
Has to be transposed into law of Memberstates

Privacy Laws of Memberstates
Transposition of Police-Directive and necessary adjustments to GDPR

GDPR
Applies directly. Usually does not apply to the work of law enforcement agencys..

Police-Directive 2016/680

Privacy Law Memberstates

GDPR 2016/679

Additional specific law of Memberstates, e.g. Police Procedural Law

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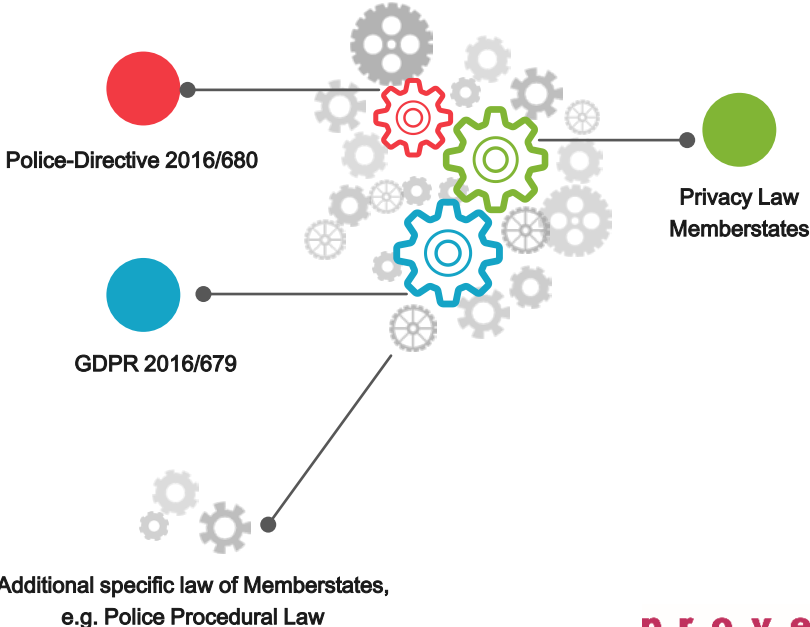
Challenge – Striking the Balance

Freedom

Law
Enforcement
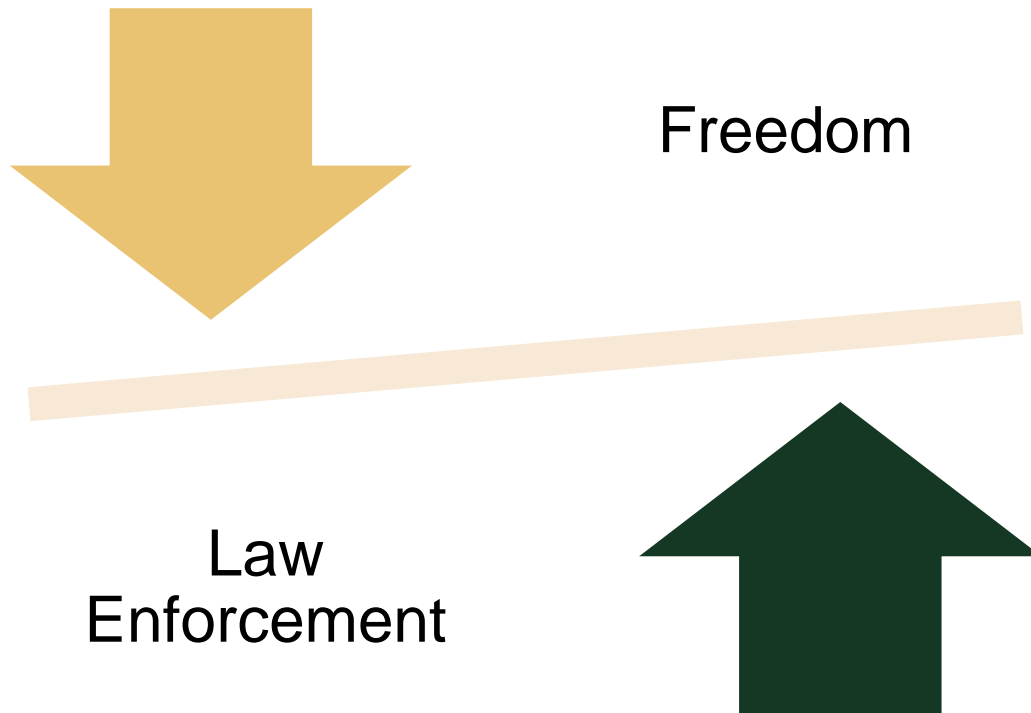
Regulatory framework for fraud prevention

What is an appropriate measure?

- Evaluation of the risks inherent in the processing,

- Implementation of measures to mitigate those risks.

- To assess data processing risk, consider e.g. risk of
    - accidental or unlawful destruction,
    - loss,
    - alteration,
    - unauthorized disclosure or access to data and
    - possible physical, material or non-material damage.

- Security measures should ensure an appropriate level of security, including
    - confidentiality,
    - taking into account the state of the art,
    - taking into account the costs of implementation in relation to the risks,
    - taking into account he nature of the personal data to be protected.
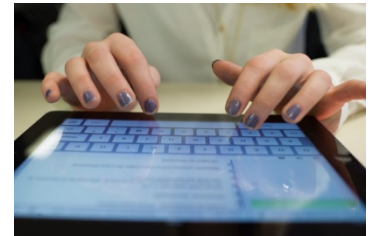
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Trust Services and legal framework

Goals of cybersecurity for data protection must be

Trust Services and legal framework

Legal framework for of electronic transactions and electronic market.

Goals are to ensure Integrity and Authenticity of data.

Trust Services and legal framework

Regulation on electronic identification and trust services for electronic transactions– eIDAS (2014/910)

Trust Services are electronic services normally provided for remuneration which consists in the creation, verification, and validation of

- electronic signatures,

- electronic seals,

- electronic time stamps,

- electronic registered delivery services,

- certificates related to above mentioned services,

- creation, verification and validation of certificates for website authentication,

- preservation of electronic signatures, seals or certificates related to these services.

Difference between "trust services" and "qualified trust services".

Later are in accordance with Art. 2 Nr. 17 eIDAS,
trust services, that comply with the relevant requirements of the Regulation.

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Trust Services and legal framework

- All trust services use encryption to facilitate security.

- Assessment of the technical security depends in particular on the *security compatibility of the algorithms and parameters used*.

- Detectability of forgery depends largely on the suitability of the hash method used.

- Over time the compatibility of cryptographic algorithms for security may be compromised.

- Threats come from advances in computer and software technology as well as from advances in mathematics and cryptography.

- These advancements are monitored by the supervisory authority and evaluated with respect to their impact on the security of the algorithms and associated parameters used.

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Rules of Evidence in eIDAS

Non-discrimination clauses

Art. 46:

An electronic document shall not be denied legal effect and admissibility as evidence in legal proceedings solely on the grounds that it is in electronic form.

Art. 25 (1), 35 (1), 41 (1), 43 (1):

… shall not be denied legal effect and admissibility as evidence in legal proceedings solely on the grounds that it is in an electronic form or that it does not meet the requirements for qualified [trustservice].

electronic documents

electronic signatures

electronic seals

electronic time stamps

electronic registered delivery services

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General rules of evidence

- Evaluation of evidence in general pursuant to Codes of Civil Procedure.

- Principle of free evaluation of evidence, Weighing of evidence lies within the discretion of the court.

- Few statutory exceptions to principle exist.

- Burden of proof (onus probandi) for facts, usually lies with the person who brings them up in their favour (semper necessitas probandi incumbit ei qui agit).

- The burden of proof may shift according to specific laws.

- Legal presumptions usually shift the burden of proof.

- Legal presumptions are usually rebuttable.

- Prima facie evidence in case law exist as way to lower the standard of proof for one party; burden of proof does not shift.

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Rules of Evidence in eIDAS

qualified electronic signatures

Art. 25 (2):

A qualified electronic signature shall have the equivalent legal effect of a handwritten signature.

Recital 22:

It is for the national law to define the legal effect of trust services, except if otherwise provided in this Regulation.

Recital 49:

… a qualified electronic signature should have the equivalent legal effect of a handwritten signature.

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Rules of Evidence in eIDAS

qualified electronic seals

qualified electronic time stamps

qualified electronic registered delivery services

Art. 35 (2): A qualified electronic seal shall enjoy the **presumption** of **integrity** of the data and of **correctness of the origin** of that data to which the qualified electronic seal is linked.
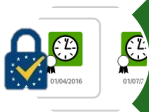
Art. 41 (2): A qualified electronic time stamp shall enjoy the **presumption** of the **accuracy of the date and the time** it indicates and the **integrity** of the data to which the date and time are bound.

Art. 43 (2): Data sent and received using a qualified electronic registered delivery service shall enjoy the **presumption** of the **integrity** of the data, the **sending** of that data **by** the identified **sender**, its **receipt** by the identified addressee and the **accuracy of the date and time** of sending and **receipt** indicated by the qualified electronic registered delivery service.

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Rules of evidence in eIDAS

- Member states must adhere to non-discrimination-principle of electronic documents and trust services.

- Members states are free to regulate evidence value of qualified electronic signatures.

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- They at least have to be equivalent legal effect to handwritten signature.

- Presumptions in eIDAS for Qseal, Qtstmp und Qdelivery apply directly.

- Apply to all legal avenues and judicial branches, with the exceptions of criminal procedures. The later lies without the scope and reach of regulation.

- Presumptions in eIDAS are rebuttable.

- They are rebutted by evidence which shows that in the particular case it is unsafe to arrive at a particular conclusion.

- Presumption do not change burden of proof.

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eIDAS and Blockchain

- Blockchain provides trail or chain of evidence by default.

- series of timestamped data records that link together, forming the chain.

- each transaction proves that consent was given by the senders of a transaction by providing digital signatures.

- Blockchain falls under non-discrimination clause(s) of eIDAS.

- Blockchain in general does not fall under evidence rules of eIDAS.

- Acceptance of electronic signatures not uniform.

- eIDAS leaves member states free to set their own signature requirements for a transaction.

- only type of signatures universally recognized by all EU states are qualified signatures → equivalent legal effect of a handwritten signature.

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eIDAS and Blockchain

- Signatures used on most blockchains meet the criteria laid out for advanced electronic signatures, Art. 3 No. 11 eIDAS

- Public blockchains provide a way for anyone to approve a transaction regardless of by whom, where or how the signature is created.

- User of qualified signature needs approval from a TSP (Identification by approved method).

- Can blockchain signatures be qualified signatures? Yes if every signatory undergoes process required for obtaining a certificate.

- But qualified signatures defeat the purpose of a decentralized public ledger.

- Local legislation on electronic signatures can be leveraged to get legal effect from any electronic signature.

- In case of a conflict, the circumstances of the signing then determine whether the agreement is legally binding.

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Conclusion

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Sources
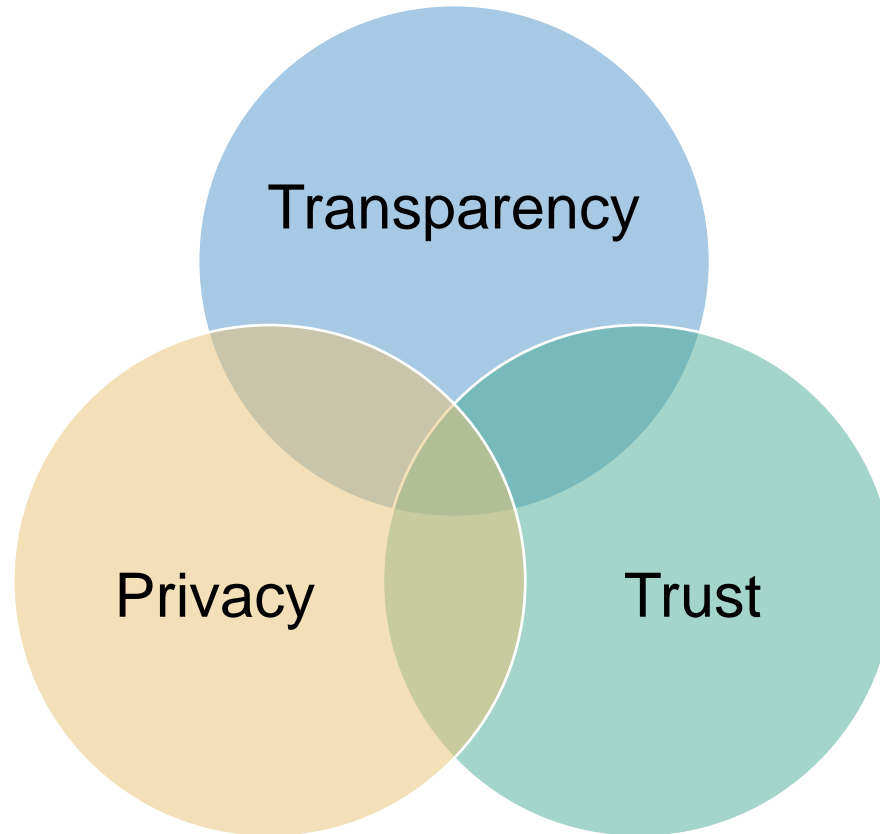
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Thank You!

Questions?

Feel free to contact me.

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