

Digital Identities and Internet of Things

Stuttgart 2017: Anonymität und Authentifizierung im vernetzten Fahrzeug

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Digital Identities and Internet of Things

- The European Single Market, GDPR and (eIDAS)
- ISÆN an eIDAS-compliant electronic identification
- Distributed Ledger Technology (DLT)
- Automotive and Internet of Things (IoT)

V Smart Data



Sicheres Identitätsmanagement im Internet

Eine Analyse des ISÆN-Konzepts (Individual perSonal data Auditable addrEss) durch die Smart-Data-Begleitforschung im Auftrag des Bundesministeriums für Wirtschaft und Energie

• Challenges







Digital European Single "Market"

- A majority of respondents is of the opinion that the EU, Member States' authorities and companies need to take action to address the issues raised around digitalisation.
- 312 Million EU citizens use the internet every day
- In 2014, 44% of the citizens shopped online, but only 15% of those in EU countries
- Two-tier e-commerce: Citizens focus on domestic offers or US companies
- Almost no revenues from EU cross-border citizens
- > 70% of internet users fear that e-commerce collects too much personal data



Source: EU digital single market factsheet final (20150504)

 \rightarrow A European Single Market requires trustworthy and secure electronic business processes between companies, citizens and the public administration



Identities in the real and virtual world

- People's digital presence is their digital interactions, and traces through a multitude of online platforms and media
- People have more than one digital presence (such as Facebook/Twitter/Google/Instagram)
- Digital life is becoming inextricably linked with a person's physical life.
- Need for validated personal data not only for administrative procedures in the public sector

Challenges: Trust and security? Principle of data economy? Multiple identities? Pseudonymity? Anonymity?





GDPR – General Data Protection Regulation of the European Union

- Unification of national regulations for processing personal data by private companies and public administration (May 2018)
- Lex loci solutionis applies to institutions outside the EU if they offer goods or services inside the EU or do profiling of data collected in the EU



- Extended duty of disclosure
- Right of deletion and portability of data

Technological solutions to implement the regulations through "Privacy by Design" and "Privacy by Default"



The eIDAS regulation: A chance for the European Single Market?

- EU regulation on electronic identification and trust services for electronic transactions in the internal market (September 2014)
- Mutual approval of eIDs starting from September 2018
- Defines a common regulatory framework for electronic identification and trust services, effective throughout Europe
- Mutual approval of national eID systems



Goal: EU-wide basis for secure and efficient electronic transactions



ISÆN – Individual perSonal Auditable addrEss Number

- French initiative, extends eIDAS, level 2 and 3 possible
- Store personal data on smartphone
- Approve personal data by social networks, certified institutions, ..., health card, identification cards
- Hash(s) of personal data for internet communications; inference of personal data impossible
- Data economy: e.g. transmission of confirmed age suffices for age verification, no further data required





ISÆN – Processing Personal Data



Registry for approval/refusing of data usage/processing







Distributed Ledger Technology (DLT)







Distributed Ledger and Personal Data

- Registration (1)
- Transfer secured information about personal data (2) stored on Mobil phone, about externally stored information (3) and grants access
- Query user data and encrypted response (4)

Ledger records permissions and transactions of personal data and link/hash to externally data sets →Personal Data as a Service →GDPR conform





GDPS – Global Data Positioning System







Conclusion

- DLT infrastructure to scale digital identity at extremely low costs with significant improvements in security
- Reputation and identity systems have been maintained on a site-by-site basis; with DLT, reputation can be established through all sites
- DLT-based digital identity service could enable consumers to retain better control of their information
- Merchants are likely to verify identities more frequently—which consequently reduces the risk of fraud
- Privacy benefits to consumers only one place to store your privacy information



Automotive: Stakeholders and Services

- Manufacturer/Supplier
 - Lifecycle, monitoring
- Vendor/Sale
 - Know your customer, advertising
- Garage/Repair Shop
 - Appointment, preventive maintenance
- Assurance
 - Contract design, driver monitoring
- Owner/Driver
 - Management of data sharing
- App-Development/Services
 - Access to data, mobility services









Challenges of IoT in the Large









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Toward the Internet of Things





Open networks;

centralized Cloud

Now

Future



Open networks; P2P / distributed clouds

source: adapted from IBM Institute for Business Value (2015)

Centralized;

closed networks





IoT – Challenges (I)

- Interoperation of device functionality and connectivity will be increasingly important
- Connecting everything from cars to toothbrushes leads to rich data (history) → challenge is preventing its abuse
- Central collection and processing enables intruders to use and abuse the devices and generated data
- Centralized systems have a tendency
 - To create single points of failure,
 - To create walled gardens and lack of transparent







IoT – Challenges (I)

- Future-proof architecture
 - Interoperation of devices and their functionality and connectivity
 - Consumers replace smartphones and PCs every 18 to 36 months, but
 - e.g. cars and their sensors have to last for years
 - Traditional centralized computing models are sub-optimal for the Internet of Things
- Lack of functional value / Broken Business Models
 - Simply enabling connectivity does not make a device smarter or better
 - Most business models are "sell user data" or "targeted advertising"









Solution (?) - Digital Ledger for the Internet of Thinks

- Digital ledger as a tool for
 - Registration of devices
 - transaction processing
 - coordination among interacting devices
- Devices manage their own roles and behaviour
- Resulting in an "Internet of Decentralized, Autonomous Things"



Quelle: adapted from IBM Institute for Business Value (2015)







By Scott Adams



Weiterführende Informationen zu Identifikationssystemen, den rechtlichen Grundlagen in Deutschland und den technischen Details von ISÆN finden Sie in unserer Studie.

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Vielen Dank für ihre Aufmerksamkeit!



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