

LEGAL, ECONOMIC, AND TECHNICAL PERSPECTIVES ON
INTEROPERABILITY OR
HOW TO GAIN NORMATIVE STRENGTH VIA TECHNICAL
DETERMINATION BY LAW

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- I. Setting the scene: Data access, data interoperability and the well-being of consumers and society at large
- II. Overview: Interoperability and its technical, economic and legal implications
- III. A check on the EU policy approach
- IV. Conclusions
- V. How to gain normative strength?



Data interoperability as means to achieve social and economic welfare due to increased data sharing and not an end in itself

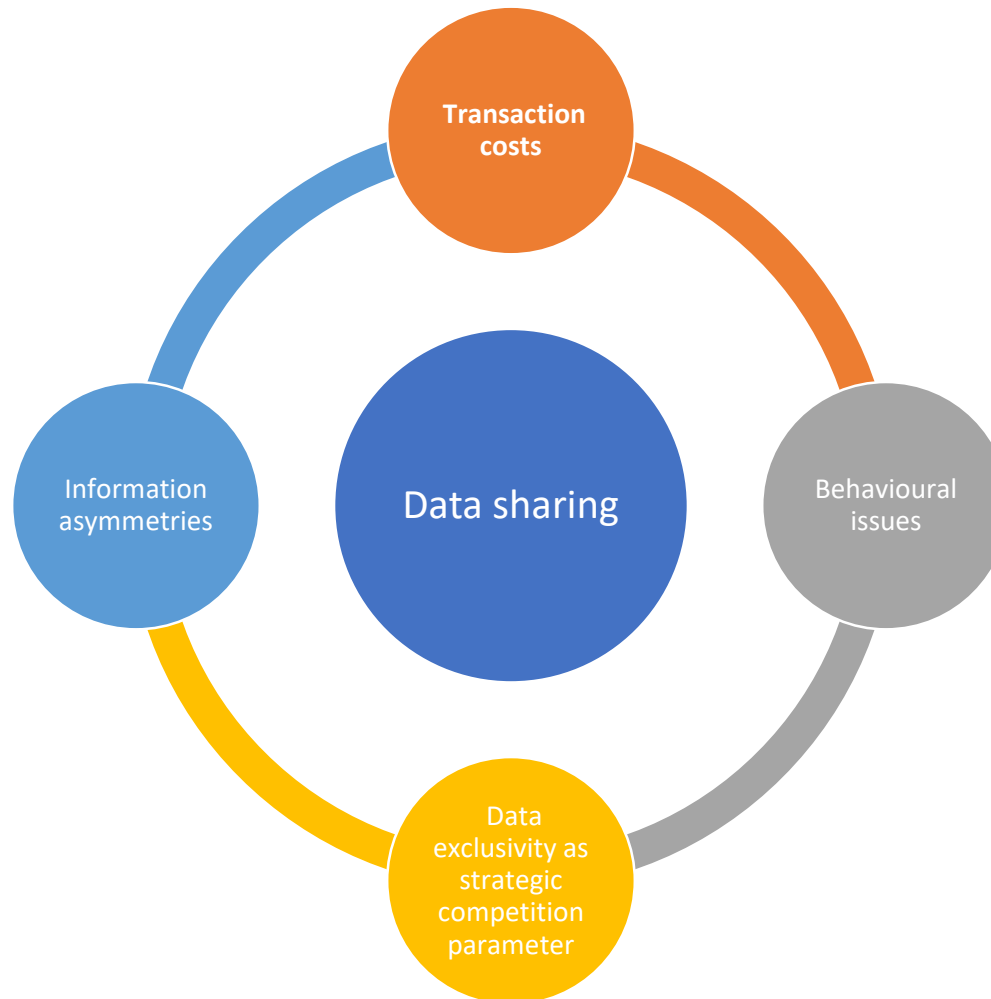
Economic characters of digital data:

- non-rivalrous nature and excludability (no public good)
- still risk of positive externalities of data commons that may lead to reduction of investment incentives (Tragedy of the Commons)
- other negative externalities and costs (privacy, algorithmic governance, security risks, competition) which are typically not internalized by firms
- multipurpose function of data requires a holistic view and creates complexity
- different attributes of data --> taxonomy of data
- real-time access to data is key for a lot of the current digital data-driven business models and data value circles (4 "Vs" of data – velocity, variety, veracity, volume)
- information paradox and incomplete contract theory

1. The obstacles to data sharing and the need for legal intervention



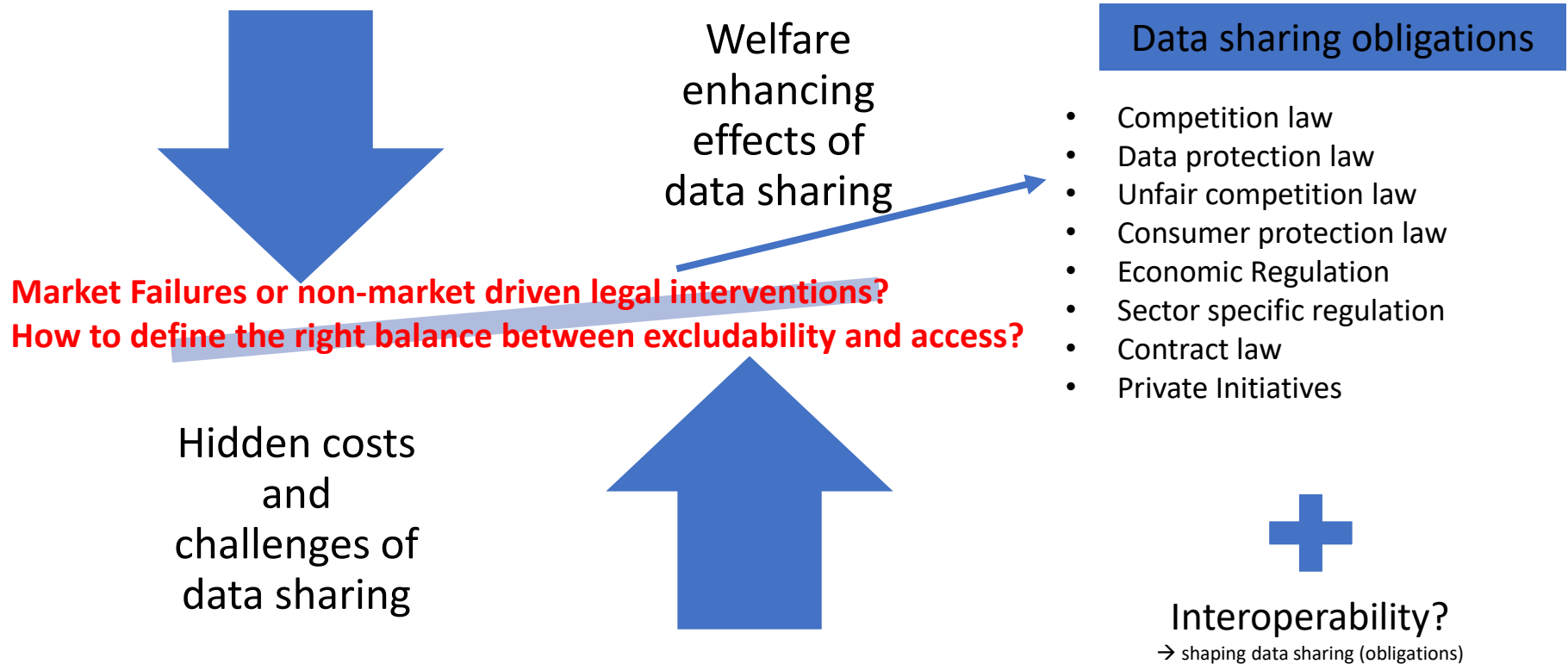
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2. Defining the right scope of data access intervention by states – theoretical background and existing legal regimes and legal policy approaches



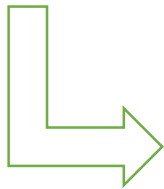
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Interoperability

Technical

- Structural (connectivity)
- **Syntactic**
- **Semantic**
- Organisational



Competition Law & Economics

- Vertical** – inter-brand competition
- Horizontal** – intra-brand competition
- Platforms + Data:** Do traditional market considerations apply? Data specific economies of scope (across markets)

Legal

- **Direct Regulation (data governance)**
„by design and default“
 - Command and control
 - Regulatory self-regulation
 - Private ordering
- **Indirect Regulation via the access right**
- **Constitutional Legal Framework**
- **IP and Trade Secrets**

API

- ‘Type of software interface that allows for software to work with each other and enables seamless data exchange’
- Specifications vs implementations

Data Standardisation

- **Data formats** (syntactic level)
- **Data models** (syntactic and semantic level)



1. Technology : Data formats and data models

Structured data

- CSV files
- Databases (SQL)

Semi-structured data

- XML/JSON
- Web pages
- Email

Unstructured data

- Audio
- Video
- Image
- Natural language
- Documents

Structured: CSV (Comma-Separated Values)
- rigid tabular format

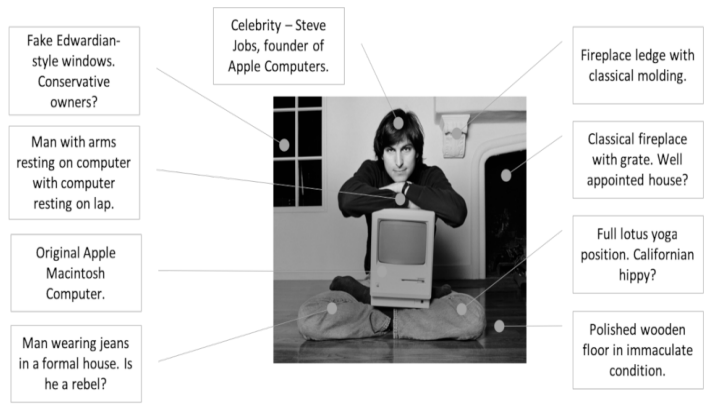
```
Year,Make,Model,Description,Price
1997,Ford,E350,"ac, abs, moon",3000.00
1999,Chevy,"Venture ""Extended Edition""",4900.00
1999,Chevy,"Venture ""Extended Edition, Very Large""",5000.00
1996,Jeep,Grand Cherokee,"MUST SELL!
air, moon roof, loaded",4799.00
```

Semi-structured: JSON (JavaScript Object Notation) -
hierarchical shape + range data attributes

```
{
  "firstName": "Jonathan",
  "lastName": "Freeman",
  "loginCount": 4,
  "isWriter": true,
  "worksWith": ["Spantree Technology Group", "InfoWorld"],
  "pets": [
    {
      "name": "Lilly",
      "type": "Raccoon"
    }
  ]
}
```

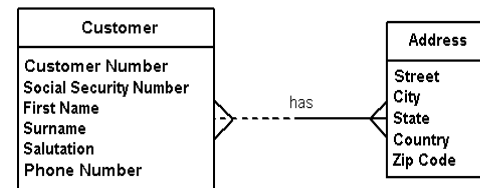
1. Technology : Data formats, data models and APIs

Unstructured Data Cf. Johnson (2019) The Myth of Unstructured Data



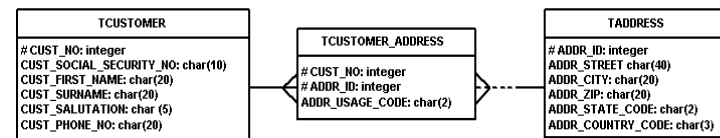
Simple data models Cf. Ambler (2006)

Figure 1. A simple logical data model.



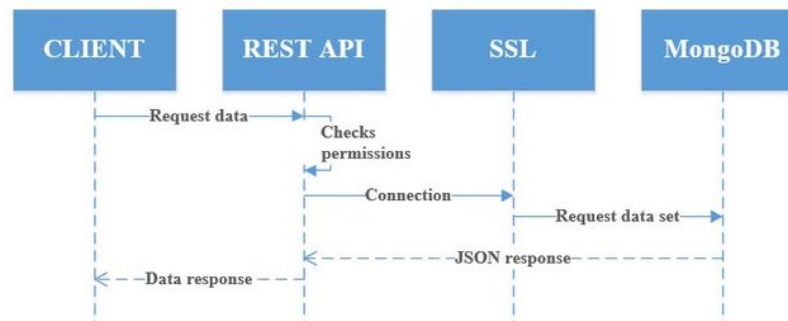
Copyright 2002-2006 Scott W. Ambler

Figure 2. A simple physical data model.



Copyright 2002-2006 Scott W. Ambler

Data request of a client API call Cf. Zabasta et al (2018)





2. Economics of interoperability: From market failures, public utilities and standardization options

Starting point: Lack of interoperability not necessarily source of market failure or public utility case. But: increased data interoperability may have positive welfare effects

Traditional View	4 paths to interoperability (Farell/Scimroe (2012))	Interoperability and Standardization	The special case of data interoperability	New technological, legal and institutional approaches
<ul style="list-style-type: none">• Monopolistic market failure<ul style="list-style-type: none">• Horizontal (-) BUT US: Aspen Case, EU (-) DMA?• Vertical: System competition is enough• Restrictive view on the aftermarket doctrine. But: Theory of contestability (Cf. GC Microsoft Case, DMA)• Exclusionary abuse of dominant firm is needed• Natural Monopolies (economic efficiencies due to monopolistic standards)	<ul style="list-style-type: none">• Standard wars• Unilateral imposition of a standard• Collective standard setting• Adapters and converters (Attention: Indispensability Criterion (-) Apple Fair Play case)	<ul style="list-style-type: none">• No one-size-fits-all• Issues of decentralized standard setting<ul style="list-style-type: none">• Positive externalities and lack of full internalization• Knowledge Problem• Path dependency effect (Katz/Shapiro (1985), Shapiro/Varian (1999))• Static solutions for a dynamic issue (lock-in)• Issues of centralized standard setting	<ul style="list-style-type: none">• Tendency: Increasing welfare due to increased data interoperability (but negative externalities!)• Vertically existent data standards and the need for a horizontal solution --> open platform approach that supports multiple application domains and cuts across silos (ICT Standardisation Priorities)• Real-time access• Trust• Transaction costs should be limited (Cf. DMA and SME/start-up entry)	<ul style="list-style-type: none">• Open APIs (Transport London, UK Banking Sector)• Mandatory opening up of API specifications and meta data (Cf. Regulatory Technical Standards in the Payments Sector) --> more tailored legal solutions• New institutional approaches<ul style="list-style-type: none">• European data spaces• Gaia-X, Financial Big Data Cluster• PIMS



3. Legal Framework: Interop enablers vs. IP and Competition law: APIs

- APIs specifications free implementation essential to innovation in computing “TO CONTROL THE INTERFACE IS TO CONTROL THE INDUSTRY”
- **BUT** also **key for efficient data driven innovation!**
 - Competing options to choose from: trade-off decisions
 - Balance choices % practical modular design & precise metering of access
 - APIs allow from controlling follow on innovation + innovation capabilities of data ecosystems (thus, also their monetization)

Issue: Potential norm collisions – IP/TS vs. access? (cf. Article 20 (4) GDPR) **What is the role of IPRs?**

1. Appropriation of APIs via IPRs?

1. Copyright = **Functions are not protected as computer programs BUT**

Case *Bezpečnostní softwarová asociace v. Ministerstvo kultury* (2010) CJEU C-393/09: software interfaces ≠ computer program ≠ software copyright YET if APIS = “author’s own intellectual creation” = independent work (**not justified**) **WEB SERVICES? Choices for interfaces re implementation?**

± Oracle v Google (SCOTUS) “copyrightability of API specifications” (delays due to Covid-19)

2. Trade Secrets = **YES**

3. Patents = **Possible**

Not as such but in embedded CII. Technical effects test

Specifications will not be part of patent application – hidden information



3. Legal Framework: Interop enablers vs. IP and Competition law: APIs

2. What happens if a 3rd used the underlying right when establishing data interoperability?

- Copyright = 🗑️ (reproduction)
- TS = 🗑️ if lawfully acquired (no easy to differentiate acquisition and use) reverse engineering OK but art 6 (decompilation) as **legal valid duty** so reverse engineering 🗑️
- Patents = 🗑️

3. Can users of API rely on the existing system of E&L?

- Copyright = Very complex – NO
- Trade Secrets = Uncertainties – need of clarification in the TSD
- Patent = (upcoming?) UPC Agreement = uncertainties
 - If patent law needs to provide a limitation over the same acts as the Copyright Software Directive, wouldn't this mean that code functions are given patent protection?
 - How the © decompilation limitation could be applied in the field of patents?
 - Tacit admission of including "as such" using a back door?

CONCLUSION: **OVERALL NO RELIANCE**

Competition law & APIs

Issue: Restricted APIs provide chance to lock-in - Refusal to deal cases

Microsoft case – interoperability peculiar role

But: access to API information might not be always indispensable (CJEU – Contact Software (2017))

Switzerland (BVerwG B-831/2011 - Six Payment Services; 18th Dec. 2018) - narrow interpretation of the scope of copyright and prevalence of fair competition: API information was indispensable



III. A check on the EU policy approach

- **A European strategy for data (COM(2020) 66 final), February 2020**

- **Identified issue:**

- Data interoperability and quality are key issues that are holding back the full realisation of the data economy

- **Strategy is unclear:**

- **No overly detailed, heavy-handed ex ante regulation**
 - frameworks that shape the context, allowing lively, dynamic and vivid ecosystems to develop
- **Legislative framework for the governance** of common European data spaces
 - prioritises interoperability requirements and standards within and across sectors
 - strengthens the **governance mechanisms** [...] towards a more harmonised description and overview of datasets, data objects and identifiers to foster data interoperability (i.e., their usability at a technical level) between sectors and, where relevant, within sectors
 - No command and control regulation but regulatory self-regulation?
 - How does sector-specific and horizontal approaches can be combined?

- **Different legal proposals:**

- Digital Services Act: grey list of gatekeepers: **interoperability ex-ante obligation / remedy?**
- Data Governance Act: References to the Fair Data Principles & EIF in EM. The proposal focuses on intermediaries and public sector information (B2G). **Data interoperability does not seem to play a key role?**
- Digital Markets Act: interoperability obligations (Art. 6)- **remedy, but how should it work? Need of clarification.**
- Upcoming presentation of Data Act (possibly after Easter)

The Sisyphus work of demystifying data interoperability...

1. Understanding the technology is key

- Vast **information asymmetries** → top-down regulation is difficult and „outdated“ → Private initiatives or hybrid endeavours are key (e.g., Gaia-X, Data Transfer Project, London Unified API)
- Data interoperability has the power to govern data sharing and could render legal intervention irrelevant → „**code is law**“ (e.g., plug-and-play APIs)
- The more focus on open standards and data models (FAIR Principles) the less complexity of APIs

2. Fallacy of interoperability as a goal instead of means to an end

- Pre-designed **data interoperability by default** (data governance regulation) = key enabler
- **Pros and Cons** of interoperability under traditional competition and innovation consideration + other market failures (e.g., privacy, competition) should be thoroughly assessed

3. Legislature is right in refraining from heavy handed ex ante regulation

- **Innovation** in interfaces and data should not be hampered

4. Outlook - Oracle v. Google relevance: Copyrightability of API specifications = indirect competition policy in software dependent markets

5. Need of a more comprehensive regulatory approach towards data governance solutions: potential to better address conflicting IPRs, technical impediments, lower transaction costs, more data security, trust and legal certainty.



V. How to gain normative strength?

- Hybrid solutions toolbox addressing different levels
 - Technology is (again) key
 - Flexibility is key – but
 - How to find adequate solutions to dynamic issues with static tools?
 - How to constantly monitor?
 - Public enforcement advantages:
 - Decrease of transaction costs
 - Better addressing of behavioral issues
 - Hopefully, tackling informational asymmetries
 - Mandatory opening of the specifications of the APIs (Regulatory Technical Standards - PSD2)
 - Mandatory opening of metadata (Cf. Open Data Directive)
 - Regulatory self-regulation solutions + institutional approach
 - Sector specific and tailor-made solutions



Thank you very much for your attention!

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