

Data Sharing and Interoperability in Digital Ecosystem: A Regulatory Toolkit Approach

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*University of Warsaw, Data Sharing within
the EU Digital Market*

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Problem(s) relating to data markets

- Lack of transparency
- User lock-in
- Natural monopoly
- Contestability due to network effects
- Unfair value appropriation

What market failures justify what regulation?

	Online intermediation	Online search	Social networks	Video sharing platforms	Interpersonal communication service	Operating systems	Cloud computing services	Online advertising
Economies of scale	1	2	1	1	1	1	2	1
Economies of scope	2	1	2	0	1	1	0	1
Direct network effects	0	2	1	2	1	0	0	0
Indirect network effects	2	2	2	1	2	1	1	1
Lock-in and lack of multi-homing	0	1	1	0	0	0	2	1
Informational asymmetry	1	1	2	1	1	1	0	1
Importance of continuity and availability	1	1	1	0	2	1	2	1
Negative externalities	0	0	1	1	0	0	1	1
Superior bargaining power	1	1	1	1	1	0	1	1
Solidarity	0	0	1	1	0	1	0	0

More cautious approach: sector-specific

EU data sharing law: banking, electricity, motor vehicles, postal services, data spaces, etc.

South Africa's online intermediation platforms orders (2023):

- Search
- Travel & Accommodation
- E-commerce
- App stores
- Online classified
- Online advertising

An alternative approach: ecosystem-specific

- Digital platform: **entity that brings together economic agents and actively manages network effects between them.**
- Digital ecosystems: a group of actors with multi-lateral and generic complementarities which are not hierarchically controlled
 - Needs a specific structure of relationships and alignment of value
(**orchestrator** ← → complementors)

Ability to navigate market complexity

Ecosystem characteristic	Source of economic power	Measurement of economic power	Theory of harm
<p>Multitude of products, services, and actors in diagonal, non-hierarchical relationships across multiple markets</p>	<p>Multi-level entry required to compete with ecosystem sponsor</p> <p>Ecosystem sponsor can spread risk and capital across markets</p> <p>Ecosystem sponsor can re-combine and re-use assets across markets (scope economies)</p>	<p>Aggregate residual demand on ecosystem basis (e.g. cluster market methodology in Staples merger)</p> <p>10-K forms</p> <p>Synergistic specificity among ecosystem sponsor offerings</p>	<p>Tying, self-preferencing</p> <p>Violation of non-competition law rules (e.g. privacy) which gives competitive advantage</p>
<p>Fluidity of focal point: The focus of the ecosystem can change but still remain within its boundaries</p>	<p>Ecosystem sponsor can choose/shift in which market economic power is exercised</p>	<p>Control of more than one (potential) focal point</p>	<p>Re-direct consumers within the ecosystem to avert disruptive entry</p>

Ability to shape market structure and orchestrate market relationships

Ecosystem characteristic	Source of economic power	Measurement of economic power	Theory of harm
Initial focus of competition: onboarding and differentiation	Ecosystem sponsor can shape market relationships to maximize value creation within the ecosystem	Process of technical standard formation/adoption, and of contractual relationship formation (qualitative)	Coercion/Strong incentive to use the ecosystem Exclusion through predation, discrimination, exclusive dealing
Mature focus of competition: combinatorial experience	Ecosystem sponsor chooses strategic intermediation loci in ecosystem to maximize value appropriation	Degree of complementors' margin squeeze (quantitative) Lerner index (quantitative) Betweenness centrality (quantitative)	Exploitation of complementor dependence Predation Leveraging rule-setting power to influence choice

Ability to shape market structure and orchestrate market relationships

Ecosystem characteristic	Source of economic power	Measurement of economic power	Theory of harm
Product/service complementarity with synergistic specificity	Combined value of own/affiliate products/services larger than separate values or with non-affiliate products/services (economies of consumption)	Consumer sensitivity to added-value features	Building economies of scope into products Leveraging through mixed bundling
Product/service interdependence	Strong inclusion/exclusion effects (i.e. switching to a different product in one market automatically causes switching products in other markets too)	Degree of joint usage and churn rates of ecosystem sponsor products/services (quantitative)	Leveraging through tying Portfolio power

Definitions of interoperability

- “ability to **exchange and mutually use the information** which has been exchanged [...] to permit all elements of software and hardware **to work** with other software and hardware and with users ***in all the ways in which they are intended to function*** “
(Software Directive and Digital Markets Act)
- “ability of the **digital content or digital service to function** with hardware or software different from those [...] normally used”
(Digital content Directive)
- “ability of **two or more data spaces or communication networks, systems, products, applications or components to exchange and use data in order to perform their functions**”
(Data Act)

Legal obstacles

- **Patents**

- Software-implemented invention

- **Copyright**

- Software interface, if original expression
 - Also in upper layer: programming language and data format (*SAS v WPL*) and graphic user interfaces (*Softarowa*)
 - But: de-compilation and “black-boxing” exceptions (for *lawful users*)

- **Trade secrets**

- Interface specifications
- But: reverse engineering exception (not harmonized)

Legal obstacles: database protection

- Database: “collection of independent works, data or other materials arranged in a systematic or methodical way and individually accessible”.
- *Sui generis* protection (art. 7) for qualitatively and/or quantitatively substantial investment in obtaining, verification or presentation of contents:
 - right to prevent extraction and/or re-utilization of the whole or of a substantial part of the contents of that database
 - repeated and systematic extraction and/or re-utilization of *insubstantial* parts of the contents of the database which conflicts with a *normal exploitation* of that database or which unreasonably prejudice the legitimate interests of its maker

Legal obstacles: copyright in minable datasets

- Right of reproduction (art 5 Database directive and 2 Info soc. directive)
- But exemption for:
 - TDM for “research purposes” for research organisations and cultural heritage institutions (art 3 DSM directive)
 - TDM more generally, if right holders have not expressly reserved their rights “in an appropriate manner, such as machine-readable means” (art 4 DSM directive)
- Reinforcement with protection for Technological Protection Measures against unauthorized acts (art 6 Info soc. Directive)

Legal obstacles: data protection

- Explicit consent necessary for special categories of data
- Legitimate interest test depends on adoption of *appropriate safeguard measures*
- Further processing: compatibility dependent on *appropriate safeguards*
- Research: exception to purpose limitation and storage limitation only where *appropriate safeguards*

Towards more effective interoperability: a greater role for consortia

- Functions:
 - Setting standards
 - Identifying issues and sharing best practices
 - Coordinating SSOs
- IPR policies all based on disclosure +
 1. Non assertion *pledge* with reciprocity
 2. FRAND for essential IP
 3. Z-RAND with reciprocity
 4. Z-RAND with objection



Competition issues in cooperation agreements

- Does the safe harbor hold for “club-based” standardization?
- Is disclosure of *essential* IP a sufficient safeguard against abuse, especially where protection does not depend on filing?
- To what extent can an agreement limiting the availability of licenses to a specific type of licensees or users amount to a restriction of competition?
- What about agreements prohibiting reverse engineering or other activities outside the scope of protection?

What else can be done?

- Exempt certain horizontal cooperation agreements (✓)
- Guidance on private sector data sharing (✓)
- Financial incentives- see U.S. HITECH Act 2009
- More specific measures beyond voluntary initiatives?
 - Subject to rigorous market study
 - Gradual approach based on market failures and effectiveness of solutions

Should this be a regulatory priority?

- Article 173(1) TFEU requires EU and MS to ensure that the conditions necessary for the competitiveness of the Union's industry exist, which include:
 - speeding up the adjustment of industry to structural changes;
 - encouraging an **environment favourable to initiative** and to the development of undertakings throughout the Union, **particularly SMEs**;
 - encouraging an **environment favourable to cooperation** between undertakings; and
 - fostering **better exploitation of the industrial potential** of policies of innovation, research and technological development.

Building a toolkit approach: data sharing layers

- **Scope of data:** aggregate/anonymized; individual-level (personal), except for inferred data and metadata; Individual, except for inferred; Individual-level in its entirety.
- **Scope of right:** exception for scraping and circumvention of TPM; access to data; access with limited use (e.g. developing competing services); share & delegate third party; share with limited use; share with limited beneficiary (possibly with prohibition for specified targets to solicit or commercially incentivize sharing); limitation on internal use.
- **Compatibility with IP and data protection:** without prejudice (?); mandatory license; subject to confidentiality; no adverse effects.
- **Compensation for access/use:** No limitations; FRAND; RAND; Reimbursement of costs; free
- **Interoperability standards:** commonly used and machine-readable format; allowing basic/specified functionalities; functional equivalence; full equivalence; industry/ecosystem-agreed standards; open interfaces (publically available and free).
- **Timing:** within specific timeline; continuous and real time, “where applicable”
- **Other factors:** alienability and delegability, quality (structure/validation)

Thank you!

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