Research Center for
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University of St.Gallen

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The Berkman Center for Internet & Society
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ICT Interoperability and eInnovation

Some Conclusions from a Transatlantic Study

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Research Project Overview

– How can innovation be promoted in the ICT space? What's the role of governments?
  - Anecdotal evidence suggests that *interoperability* plays an important role
  - *Internet* as the ultimate interoperable design to which more and more non-interoperable systems have converged
– Framing a research initiative:
  - How can interoperability and innovation in the IT space be conceived?
  - What‘s the relation between interoperability and innovation? What are benefits and drawbacks of interoperability?
  - How can interoperability be achieved in situations where it is desirable?
– Research design:
  - Three in-depth case studies (DRM, Digital ID, Mash-ups), plus secondary case studies, synthesis in White Paper „Breaking Down Digital Barriers “
  - Methodology: Qualitative research (quantitative studies where available); multi-stakeholder workshops and interviews

Some General Conclusions from Case Studies

– No uniform definition of interoperability

– Important characteristics of „interoperability“:

- Interoperability means different things in different contexts
- Technological perspective on interoperability is too narrow
- Various stakeholders‘ perspectives to be included
- Definition should not predetermine the ways in which interoperability can be achieved
- Interoperability is not black-or-white (instead, „levels of interoperability“)
- Working definition: Interoperability as the ability to transfer and render useful data and other information across systems (incl. organizations), applications, or components

– „State of Play“ depends, *inter alia*, on stage of technological development, market characteristics and dynamics, as well as legal factors

Potential Benefits (1/3): Innovation & Competition

– Hypothesis: Interoperability is good for innovation

– Strong anecdotal evidence that high levels of interoperability have led to innovation:

- Email as prime example of the „generative internet“
- Facebook-apps as examples of „user-driven innovation“
- New business models emerge, e.g., due to interoperable ID systems

– Theoretical basis and concepts (ICT-context)

- Zittrain‘s „generative internet“ (technology’s capacity to generate change)
- Von Hippel’s „user-driven innovation“ (users, not R&D departments)
- Innovation as „incremental improvements“ (a la Christensen)

– However: Impact on „radical“ innovation less clear

→ Interoperability can negatively affect certain types of innovation (see next slide)

Potential Benefits (2/3): Innovation & Competition

– Support in competition theory: Interoperability leads to increased competition (reduction of lock-in effects and market entry barriers) and, as a result, to more innovation

– However:

- Possibility of anti-competitive behavior in the context of interoperability initiatives (e.g. hijacking standard-setting initiatives)
- Incentives to innovate not only on the „level playing field“, but due to lack of interoperability → Schumpetrian competition for the market

– Lack of reliable empirical evidence

→ Interoperability does not always lead to more innovation; requires a „case-by-case analysis“ (see, e.g., anti-trust case analysis)

Potential Benefits (3/3): Beyond Innovation

– Interoperability enhances user autonomy and choice
– Interoperability also often increases freedom of other stakeholders (flexibility)
– Interoperability reduces access barriers both to digital content and a great variety of services (e.g. e-commerce platforms)
– Interoperability enables emergence of niche-markets (long-tail); increases variety of applications (e.g. Facebook)
– Interoperability is a crucial building block of an open ICT ecosystem that, in turn, is believed to foster innovation and growth

Pro Memoria: Potential Drawbacks

– Increased vulnerability of components or systems due to increased number of access points to data

– Privacy risk as a consequence of increased complexity of interoperable systems and increased access to such systems

– Achieving interoperability, especially via government-led top-down approaches, might adversely affect business models that are built upon lock-in (e.g. iTunes - iPod; Amazon - Kindle)

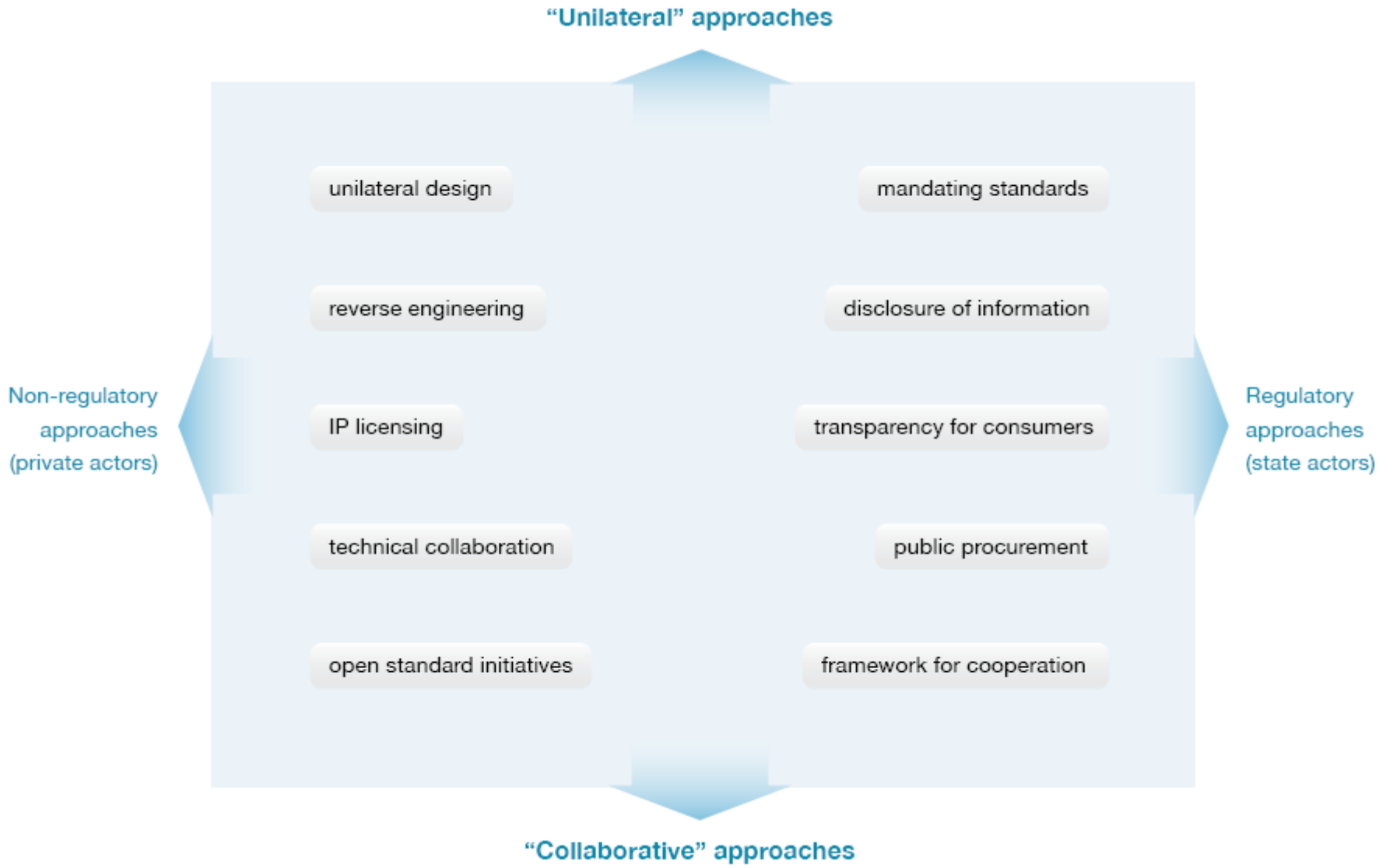
→ Mostly (important) implementation problems, not arguments against interoperability

Conclusions

– Benefits of ICT interoperability far outweigh its potential drawbacks in most situations. Interoperability is generally a sound public policy goal due to its largely positive effects on innovation and competition and in light of normative arguments (consumer choice, ease of use, etc.)

– ICT interoperability should be promoted, where efficient to do so, not for its own sake, but because it tends to lead to other public benefits in the digital age.

Approaches to Interoperability: Framework



Selected Approaches (2/3): Disclosure of Interoperability Information

– French IP provision on DRM interoperability (2006) as a case-in-point

- Software publishers, manufacturers of technical systems, and service providers may contact newly created regulatory body to request disclosure of interoperability information (for a fee)
- Sanctions in case of non-compliance with agency‘s order

– Assessment

- Effectiveness: Depends on concrete implementation, e.g., amount and characteristics of information to be disclosed, number of parties granted access, sanctions, …
- Efficiency: Questionable (e.g. administrative costs)
- Flexibility: Generally good responsiveness to changes in technology, market environment, etc.

Selected Approaches (3/3): Public Procurement

– Exercise market power by favoring interoperable products or services when undertaking procurement decisions

- Example: Finland's tax board implemented Liberty Alliance procedures when improving tax e-collection process.

– Assessment

- Effectiveness: Limited to areas where government's procurement decisions have considerable and lasting market impact (often not the case)
- Efficiency: Relatively efficient
- Flexibility: Relatively low, exercise of procurement power can create technological lock-in on the part of the government

Conclusion: Process Solution to Interoperability

– Identify the actual end goal or goals (interoperability as a means, not a goal)
– Consider the facts of the situation (incl. key variables like time, maturity of the relevant technologies and markets, user norms, ..)
– In the light of goals and facts, consider possible options against benchmarks like effectiveness, efficiency, and flexibility
– Consider blended approaches (e.g. supporting standard setting process in combination with procurement power)
– In most cases, the private sector is best-suited to address the interoperability challenge
– States may play convening role and should remain poised to intervene in case of abuse or if problems persist

Thank You!

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