



Interop

The **PROMISE** *and* **PERILS** *of*
HIGHLY INTERCONNECTED SYSTEMS

URS GASSER

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INTEROP


The ability to transfer and render useful data and other information across systems (including organizations), applications, or components.


“Art and science of working together”


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CASE STUDY
DRM-
Interop
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CONTENTS

Introduction: Why Interop Matters 1

PART I

The Theory of Interop

- ONE The Technology and Data Layers 21
- TWO The Human and Institutional Layers 39

PART II

The Promise and Perils of Interop

- THREE Consumer Empowerment 57
- FOUR Privacy and Security 75
- FIVE Competition and Uniformity 89
- SIX Innovation 111
- SEVEN Systemic Efficiencies 129
- EIGHT Complexity 145

PART III

Solving for Interop

- NINE Getting to Interop 157
- TEN Legal Interop 177
- ELEVEN Interop by Design: The Case of Health Care IT 193
- TWELVE Interop over Time: Preservation of Knowledge 211
- THIRTEEN Architectures of the Future: Building a Better World 231
- Conclusion: The Payoff of Interop as Theory 255

Acknowledgments, 263
Notes, 265
Suggested Readings, 275
Index, 281

EXAMPLE 1:

Smart Cities



OBSERVATIONS

- Solutions to big societal problems increasingly depend on interop
- Various degrees of interop
- Interop as design challenge
- Benefits are manifold
 - Systems efficiency
 - User autonomy and choice
 - Innovation and economic growth



Institutional layer
(Organizations, Law & Policy)

Human layer

Data layer

Technological layer

EXAMPLE 2:
Open Platforms



Hack the Graph

Build with the Open Graph. Integrate deeply into the Facebook experience. Grow lasting connections with your users.

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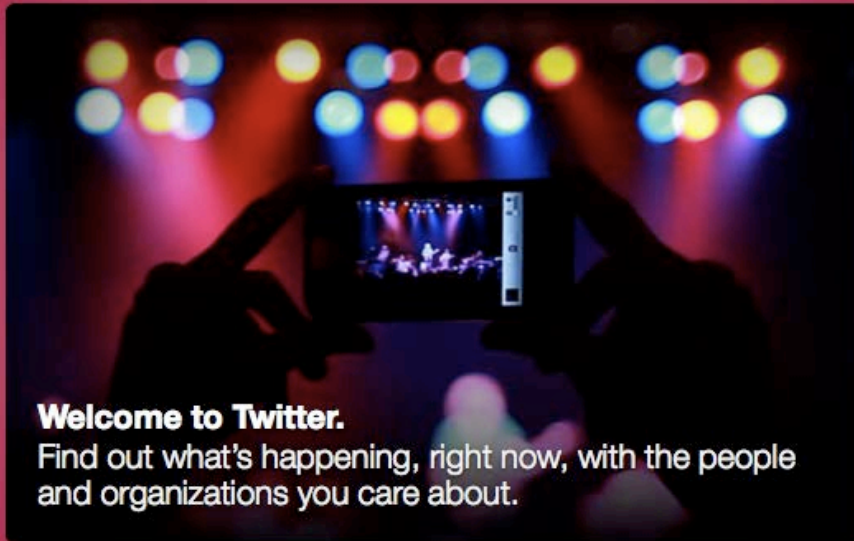
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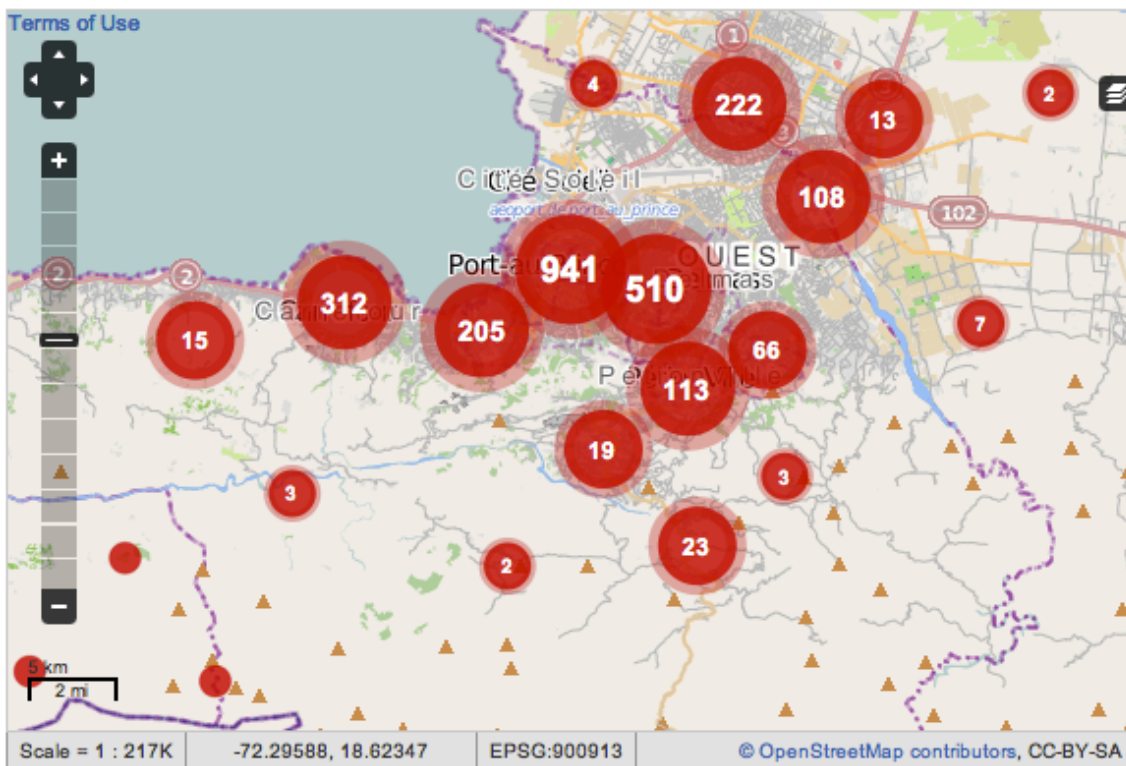
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- 4. MENACES | SECURITY THREATS
- 5. INFRASTRUCTURE DAMAGE
- 6. NATURAL HAZARDS
- 7. SECOURS | SERVICES AVAILABLE
- 8. AUTRE | OTHER

OBSERVATIONS

- Interop – competition – innovation cycle
- Theories of innovation
 - Generativity (Zittrain)
 - User-driven innovation (Von Hippel)
 - Small-step innovations (Christensen)
- Caveat: Competition for the market; anti-competitive behavior (e.g. standards)
- Also: Diffusion of innovation (e.g. HDTV)

EXAMPLE 3:

Credit Cards

Buy Now, Pay Later?

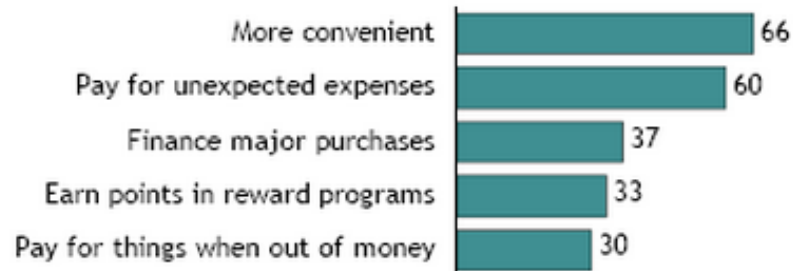
	-----Family Income-----				
	All Adults	Under \$30K	\$30K-\$49K	\$50K-\$99K	\$100K & over
	%	%	%	%	%
Have credit card as a regular expense	58	46	59	69	74
Pay in full	24	14	21	28	39
Make a payment	31	29	37	36	31
Depends (vol.)/Don't know	3	3	1	5	4
No credit card as a regular expense	41	54	40	31	25
Don't know	<u>1</u>	<u>*</u>	<u>1</u>	<u>*</u>	<u>1</u>
	100	100	100	100	100
Number of respondents	2,000	481	359	478	313

Notes: Have credit card denotes those who say they have a credit card payment as a regular expense.

PewResearchCenter

Reasons for Credit Card Use

Percent saying each is a reason they use credit cards

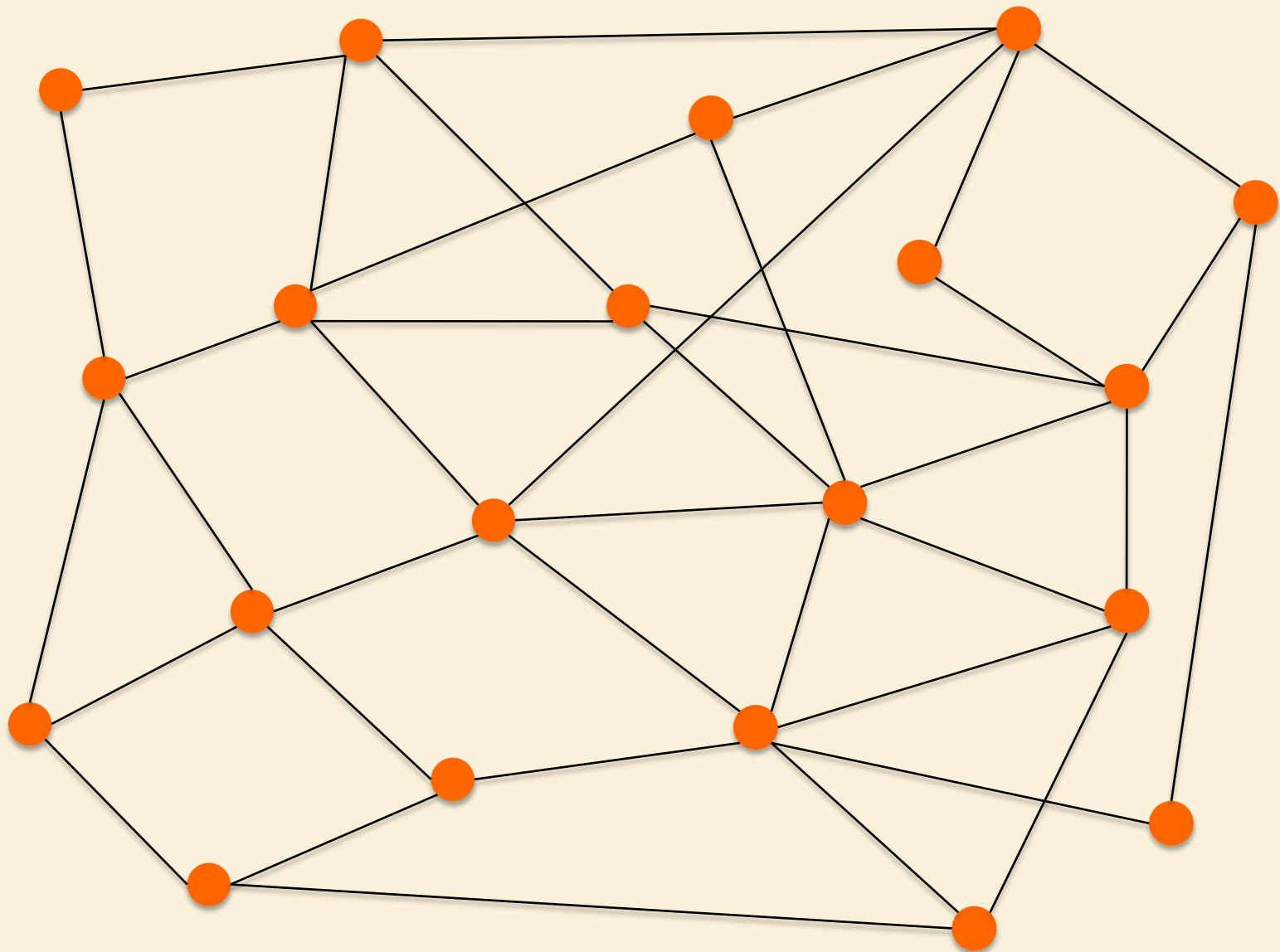


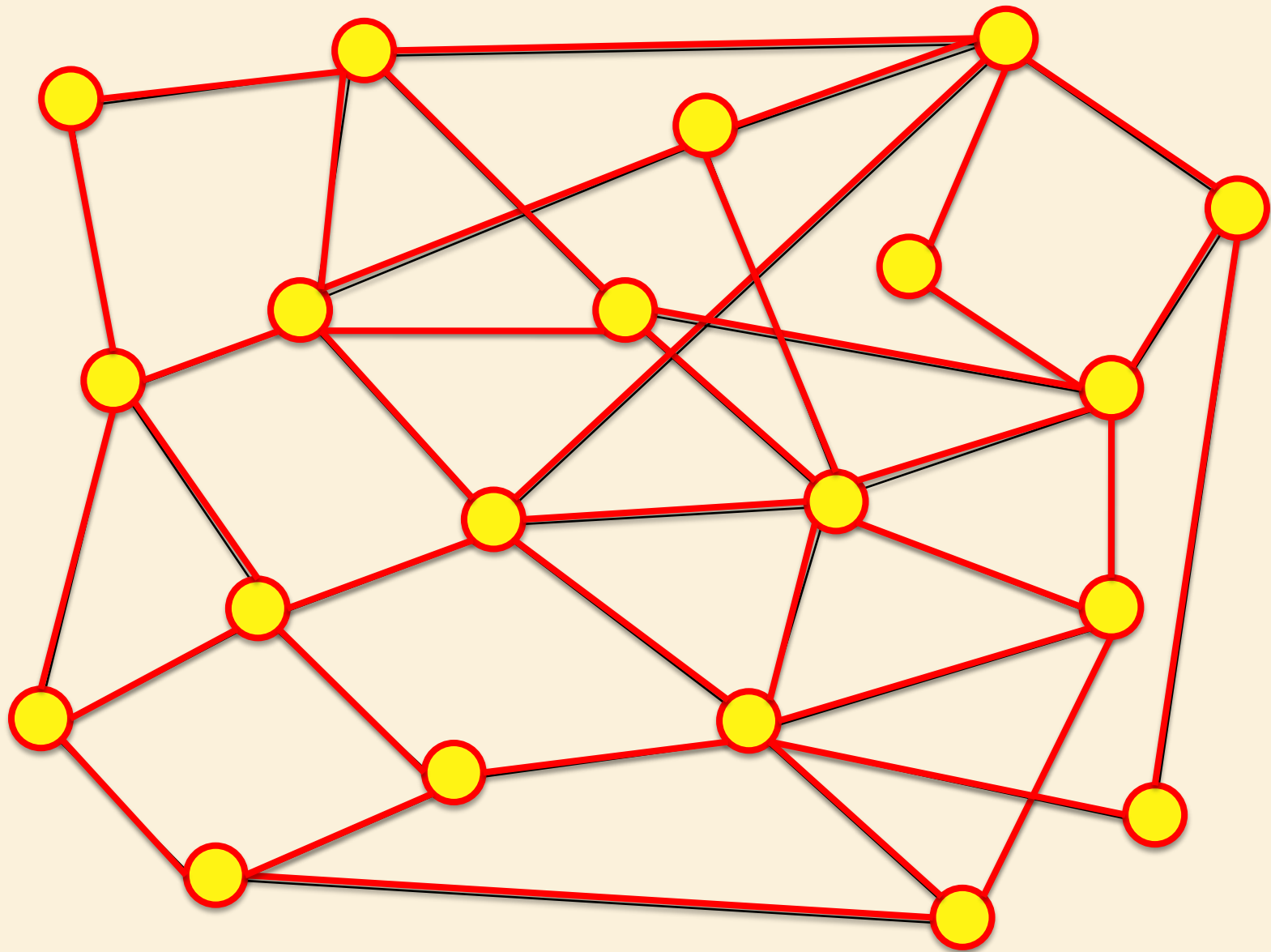
Notes: Based on 1,222 respondents who have a credit card payment as a regular expense.

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OBSERVATIONS

- Privacy and security as possible drawbacks of high interoperability (multiple entry points)
 - How about diversity?
- On balance, however, benefits outweigh risks
- Privacy and security as design/implementation problems
 - “Design” includes not only technology, but also law, social norms, and shaping of market forces
 - Importance of Open Standards





EXAMPLE 4:

Mobile Phone Chargers

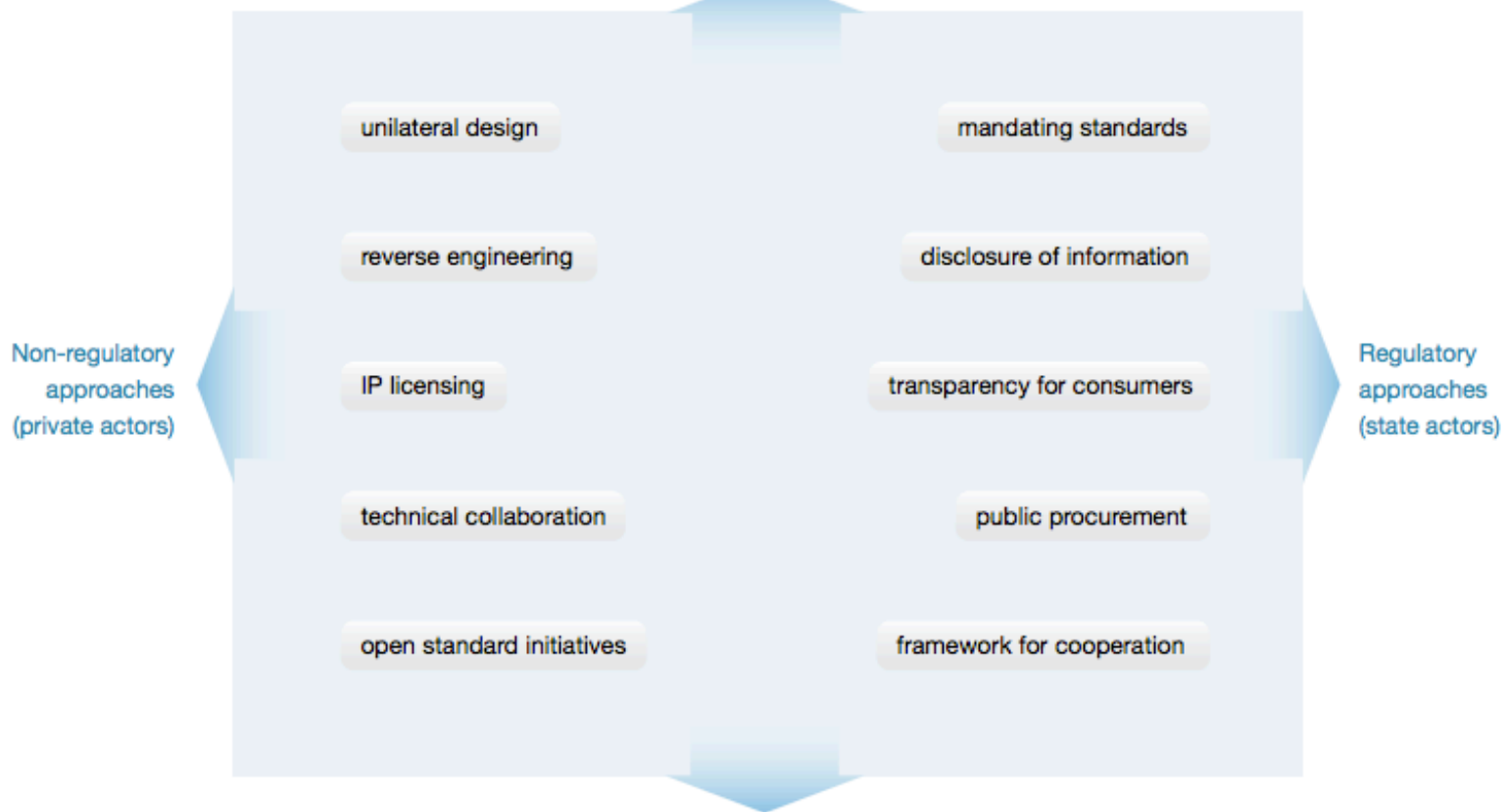




OBSERVATIONS

- Achieving interop can take a long time
 - Many actors
 - Legacy problems
 - Complexity
- Many ways to work towards more interop
 - Private vs. public sector driven approaches
 - In this example: “legislation by threat”

“Unilateral” approaches



Non-regulatory approaches (private actors)

Regulatory approaches (state actors)

“Collaborative” approaches

HARD QUESTIONS

- How much interoperability for what purposes?
- How to get there?
- In particular, role of government
 - Time of intervention
 - Legitimation
 - Effectiveness and efficiency
- Management of interop over time
- Methodological challenges

THANK YOU

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