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Smart Regulation in the Age of Disruptive Technologies

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SMART REGULATION IN THE AGE OF DISRUPTIVE TECHNOLOGIES

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A New Wave of Regulatory Governance?

- First wave: structural reforms (1970s-1980s)
 - Privatizations, liberalizations
- Second wave: regulatory reform (1980s-1990s)
 - Ex ante filters + “Less is more”
- Third wave: regulatory governance/management (2000s)
 - Policy cycle concept + importance of oversight
 - Better is more? Alternatives to regulation, nudges, etc.
- Fourth wave: coping with disruptive technologies (2010s)



Different approaches to regulatory governance

- **United States (1981-)**

- Mostly based on BCA, focused on secondary legislation
- Implicit space for experimentation due to lack of upfront regulation

- **European Union (2002-)**

- Focused on primary legislation, and policy coherence
- Precautionary principle often leads the approach to new technologies
- Strong focus on ethics and principles, but difficult multi-level governance

- **Many other countries**

- Mostly focused on red tape reduction, coupled with “doing business” reforms
- Slow tendency to cover also substantive compliance costs and enforcement costs
- Tendency to embrace smart regulation (Mexico, Colombia)



Competition **Collusion**

Access **Discrimination**

Digital Technology as “enabler”

Jobs **Unemployment**

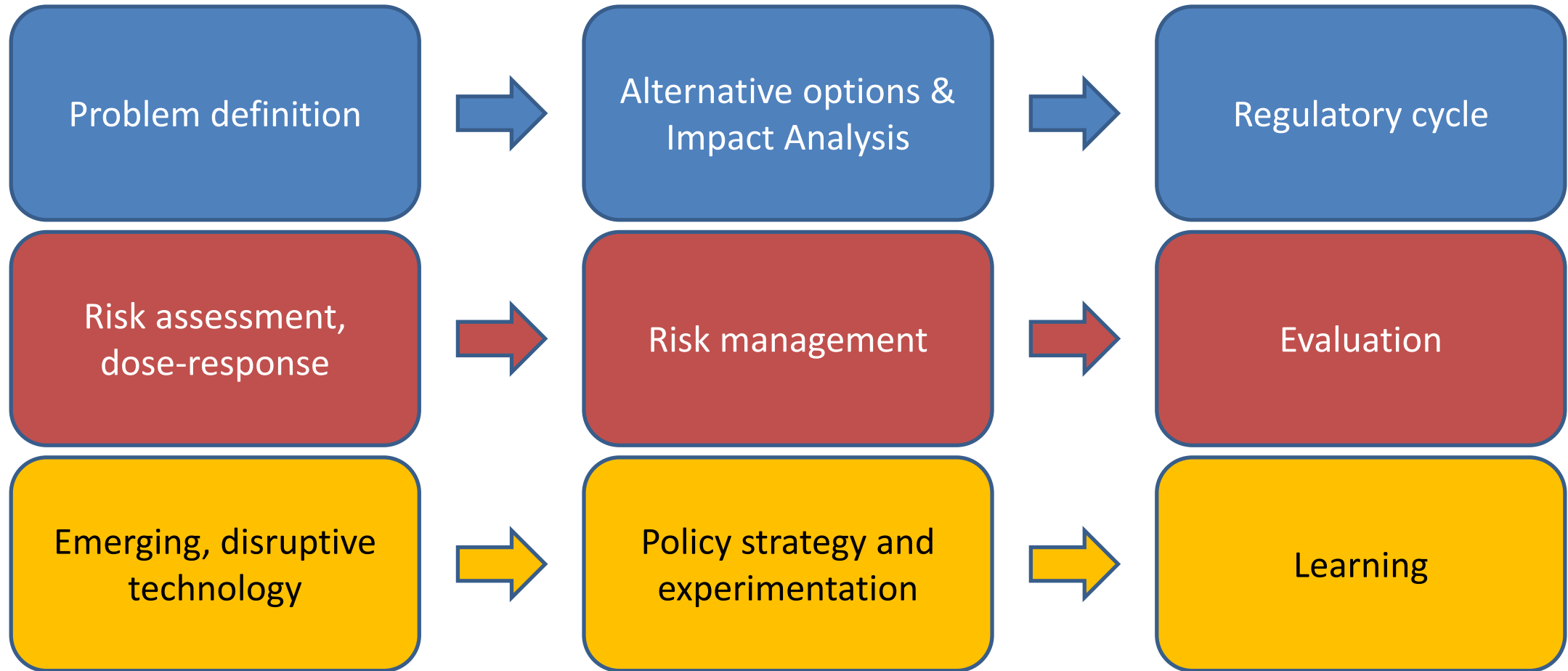
Enforcement **Infringement**



Features and trends of the digital economy

- Digitization and information goods
- End-to-end design (originally neutral)
- System goods and modularity/granularity
- Transition from goods to services (“age of access”)
- Increased virtualization (“softwarisation”)
- Multi-sidedness, network FX and “platformization”
- Competition for eyeballs (“attention merchants”)
- Ever-changing architecture and shifting of entry possibilities
- Big data, machine learning and data-crunching algorithms
- Dynamic pricing and price discrimination





- Scientific input and forecast
- Mission-led assessment
- Long-term pathways

- Mission-oriented options
- Pilots, sprints, sandboxes, tech-enabled regulation

- Ongoing evaluation
- Pathway updates



“Regulatory engineering”

• New screens

- Openness/neutrality
- Interoperability
- Scalability
- Contestability
- Resilience
- Enforceability

• New experiments

- RCTs
- (Virtual) sandboxes
- Ideation Sprints
- Rapid prototyping
- Regulation via “extensions”
- Co-regulatory schemes



Taxonomy of algorithmic approaches (Yeung 2017)

	Standard setting	Monitoring	Enforcement/ Sanction	Description
1.	Fixed	Real time reactive violation detection	Automated	Simple real-time sanction administration systems
2.	Fixed	Real time reactive violation detection	Recommender system	Simple real-time warning systems
3.	Fixed	Pre-emptive violation prediction	Automated	Simple pre-emptive sanction administration systems
4.	Fixed	Pre-emptive violation prediction	Recommender system	Simple predictive recommender system
5.	Adaptive	Real time reactive violation detection	Automated	Complex sanction administration systems
6.	Adaptive	Real time reactive violation detection	Recommender system	Complex real-time prioritization systems
7.	Adaptive	Pre-emptive violation prediction	Automated	Complex predictive sanctioning systems
8.	Adaptive	Pre-emptive violation prediction	Recommender system	Complex predictive recommender systems



The boom is yet to come!

- **Moore's law is not over:** emerging trend is “parallel computing”, achieving exponential growth by using a multitude of processors at the same time. And next one is quantum computing.
- **Platformisation is not over.** Blockchain/DLTs and other forms of dis-/re-intermediation will significantly change business models and consumption patterns with the help of AI
- **IoT is in its infancy.** 1 trillion connected devices expected by 2035, with massive changes in all aspects of our lives.



Bottom line: better regulation 4.0

- **Quantity.** Regulation is increasing and concentrating on higher layers of the Internet architecture (data, content, services, AI, DLTs, etc.)
- **Scope.** Increasingly oriented towards principles-based regulation (e.g. ethics of AI) coupled with outcome based rules (e.g. strict liability)
- **Type.** Regulation increasingly takes the form of co-regulatory schemes, or command and control rules coupled with extensive guidance and interpretation
- **Mode.** Increasingly experimental, and focused on on data management and reuse. Extensive use of AI by regulators leads to both risks and opportunities
- **Enforcement.** Will increasingly rely on private regulatory settings, such as arbitration and mediation set up by online platforms. But verification of compliance will remain a blind spot for many years
- **Impact.** To be constantly verified, leading to regulatory learning and feedback



Consequences for regulatory governance

- **Oversight becomes even more important, and coordinates experimentation and learning across government**
- **IT, e-administration, e-government and regulatory functions overlap and require enhanced merging/coordination**
- **Data management/policy, sentiment analysis, foresight and feedback loops enter the DNA of regulatory governance**
- **Stock v. flow: towards cumulative and interactive assessments of costs and benefits?**



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Thank you!