

CompuLaw

*Computable Law*

*ERC-Advanced Grant*

*Grant agreement N. 833647*

COMPULAW

Computable Law

<http://site.unibo.it/compulaw>



# Overview

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*EUI-UNIBO*



European Research Council  
Established by the European Commission

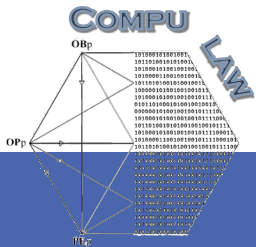
Grant Agreement n. 833647

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January 27<sup>th</sup>, 2020  
Bologna

# Compulaw

- Regulation of computations (processes and systems) through an integrated legal and technological framework
- Epistemic, technical and normative guidance for computable law and law compliant computations.
- Two institutions involved:
  1. The European University (law, economics, and regulation theory)
  2. The University of Bologna
    - a. CIRSIFID - Centre for Legal Informatics (legal informatics and legal logic)
    - b. Department of Computer Science and Engineering (computing and AI)

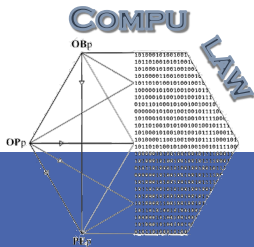


Kick-off meeting

Bologna, January 27th, 2020

# Compulaw: The issue

- **Humans need to monitor computations and anticipate** their illegal or unethical behavior
  - **Real-time monitoring is impossible** for speed of computational entities, and the number of them and of their interactions.
  - **Hard constrains cannot be specified at the design stage** for complexity and adaptivity of computations and diversity of deployment contexts

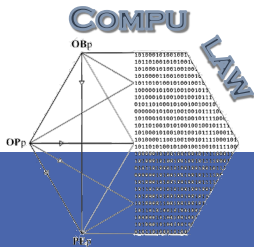


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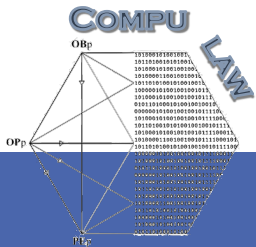
# The solutions: Computable law

- The **law must become computable**, an internal component of computational processes
- legal norms, values and principles must be mapped onto, and partially translated into
  - **computable representations** of legal information and reasoning, that
  - **are processed by computational entities.**



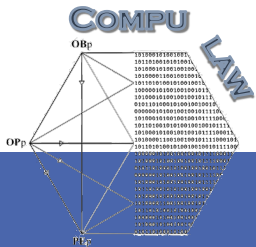
# From implicit to explicit law-by-design

- **Law-by-design: from implicit to explicit**
  - **Implicit law-by-design:** systems designed in such a way as to make illegal behaviour more difficult (*security measures*)
  - **Explicit law-by-design:** systems that represent law explicitly and operate effectively on the basis of this knowledge (*computable law*)



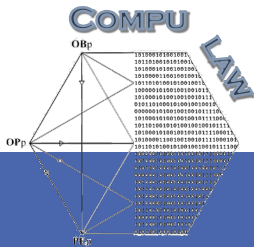
# Explicit compliance-by-design

- Autonomous and potentially dangerous technologies generates risks, conflicts of interests and coordination issues that must be addressed:
  - according to the law and
  - by those systems themselves at run-time, without direct human intervention
- How
  - apply legal norms and principles,
  - justify their behaviour accordingly,
  - and ask for human assistance when needed and feasible.



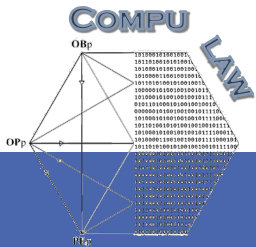
# Artificial Legal Agents (ALAs)

- **Artificial Legal Agents (ALAs)**, entrusted with applying the law to their own and others' behaviour, in multi-agent contexts.
- ALAs should be **capable and motivated** to comply with legal norms and principles that apply to their activities (driving cars, making contracts, etc.).



# Humans and computations

- **Socio-technical conditions** for the correct design, deployment and monitoring law compliant computations
  - Computable law as a **human enterprise**, over which society should maintain full ownership and control
  - **Joint cognitive” engagement** of designers and deployers, to determine the goals, the scope, and the limitations of the ALAs’ autonomous action.





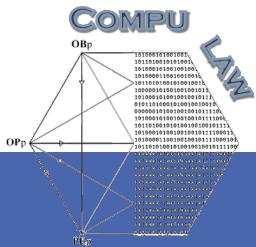
# Computable Law: crucial aspects and issues

- what legal requirements in what domains and to what extent should be made computable
- what technologies and architecture should be used
- how top-down compliance should be combined with predefined rules and learning from cases
- how normative conflicts should be addressed
- how rules should be interpreted and applied according to legal values/principles
- what formal/substantive legal constraints should govern the design and deployment of ALAs

# What theoretical background

- computable models of legal contents and reasoning,
- normative governance of multiagent systems,
- logical models of norms and argumentation,
- natural language processing and machine learning as applied to the law
- information/algorithms/machine ethics, on roboethics, etc.

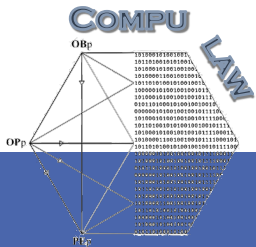
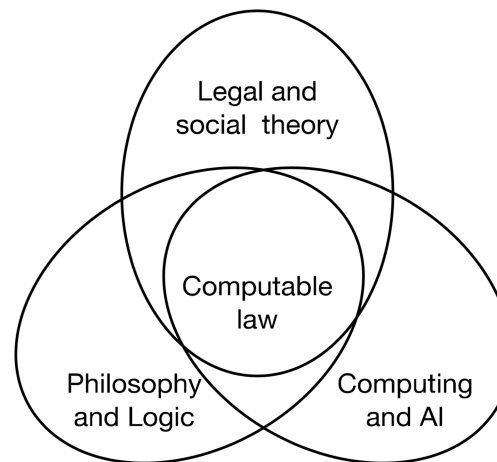
**A comprehensive theoretical framework, informed to both legal theory and computer science, is still missing**



# AI for law and governance: current projects and initiatives (some examples)

- **Compulaw** – Computable Law (EU ERC project)
  - **InterLex** - Advisory and Training system for Internet-related Private International Law (EU DG-Justice Project)
  - **CrossJustice** - Knowledge, Advisory and Information Tool for Criminal Procedural Rights (EU DG-Justice Project)
  - **LAILA** - Legal Analytics for Italian LAW (Italian National Project - PRIN)
  - **SAFELAND** – Automation in ATM (Horizon 2020 – SESAR)
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- Council of Europe + III E, **certification** of AI in judicial systems
  - **RloE** – Rights of Internet of Everything (Law, Science and Technology EU **Joint PhD**)

# A framework for computable law: the 3 main clusters



Kick-off meeting

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Thank you!

Giovanni Sartor