

# Missing Components of Successful Computational Law

Unfortunately, several ... elements ... are underdeveloped or even missing from current legal and regulatory system processes. These include: specification of system performance goals, measurement and evaluation criteria, testing, robust and adaptive system design, and continuous auditing.

Legal Algorithms — Code is law, and law is increasingly becoming code. This change is being driven by the growing need for access to justice and the ambition for greater efficiency and predictability in modern business. Most laws and regulations are just algorithms that human organizations execute, but now legal algorithms are beginning to be executed by computers as an extension of human bureaucracies. Already, computer tools are commonly used to help humans make legal determinations in areas such as finance, aviation and the energy sector, most of the logic is computerized and subject only later to human oversight. Even court proceedings are becoming increasingly reliant on computerized fact discovery and precedent, which will likely lead to more and more cases being settled out of court. Moreover, the execution of legal algorithms by computers is likely to dramatically expand as digital systems become more ubiquitous.

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# MIT Computational Law Report (MITCLP)

## Stakeholder(s):

### Alex "Sandy" Pentland :

*Our faculty sponsor, Prof. Alex "Sandy" Pentland, examines the ways in which law, itself, functions as an algorithm. The legal profession now has an opportunity to transition from being a cost center and a source of friction, to a center for new business and opportunity creation.*

### Legal Profession :

*Implications for the Practice of Law — What does this mean for lawyers and legislators? Historically, legal careers have begun with the drudgery of wordsmithing and searching through legal documents. In the manner as happened with spell check and web search, this work is now being streamlined by AI-driven document software which searches large document stores to*

*find relevant clauses and suggest common wordings. These trends are often seen as reducing the demand for legal services, but there are also new opportunities for developing legal agreements using tools originally intended for creating large software systems. These tools are beginning to allow lawyers and legislators to design much more agile, interpretable, and robust legal agreements. As a consequence, the legal profession has the opportunity to transition from being a cost center and a source of friction, to a center for new business and opportunity creation. The goal of this Computational Law Report is to help seize this opportunity, to support new legal scholars in their enthusiasm for using new digital technologies, and to improve our systems of contracts and governance.*

## Vision

Our systems of contracts and governance are improved

## Mission

To make laws more responsive and precise

## Values

**Judgment:** ... as legal algorithms transition to being executed by computers, we must be careful not to lose the guardrails of human judgment and interpretation to ensure that the legal algorithms improve justice in our society.

### Intepretation

**Oversight:** We must continue to safeguard, and even substantially increase, human oversight of our legal algorithms.

**Responsiveness:** We must also recognize that current legal and regulatory systems are often poorly designed or out-of-date. As we transition to computer execution of legal algorithms, we have a unique opportunity to make laws more responsive and precise.

### Precision

**Performance:** Relatedly, we should recognize that many legal algorithms fail to achieve their intended aims, or have unintended consequences, and we must ask if there is a better method of ensuring the performance and accountability of each legal algorithm.

**Accountability**

**Efficiency:** How can we achieve greater oversight and accountability of legal algorithms while harvesting their potential to provide greater efficiency, ease of access, and fairness?

**Ease of Access**

**Fairness**

**Learning:** The obvious answer is to learn from the human-machine systems framework which has evolved over the last century to become the standard practice in designing and fielding of human-machine systems across the world.

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## 1. Goals

### *Document and share system performance goals*

The creation of a new system of legal algorithms (e.g., a law and associated regulation) requires a debate among citizens and legislators concerning objectives and values which results in a clear specification of the overarching goals of the systems' objectives. The failure to specify objectives increases the likelihood that the resulting legal systems will fail to provide good governance and may produce negative unintended consequences.

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## 2. Criteria

### *Document and share measurement and evaluation criteria*

To have any chance of determining whether or not something is a success, we need to have an appropriate point of comparison. For example, how do we know when the system is performing well? How do we know when each module (individual algorithm) within the system is performing well? The connection between the measurements and objectives must be clear and very broadly understood by citizens. Without this understanding, the informed debate demanded by our governance system, and the informed consent of the governed, is unlikely.

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### 3. Testing

#### *Test new legal algorithms*

Currently, laws proposed by the United States Congress undergo simulation testing by the Office of Budget Management, and often regulations are subject to simple cost-benefit and environmental evaluation. Helpful as this testing may be, it is inadequate if we are to build responsive and adaptive algorithmic legal systems. More seriously, there is almost no tradition of testing new legal algorithms (whether executed by human bureaucracies or by computers) on a representative (and consenting) sample of communities. This failure to test is hubris, tantamount to believing that we can build systems that are perfect ab initio. It is a recipe for creating low-quality legal systems.

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## 4. Modularity & Auditability

*Make the system of legal algorithms modular and continuously auditable*

Robust adaptive system design — The system of legal algorithms (e.g., a law and associated regulations) must be modular and continuously auditable, with a clear connection between measurement criteria and system goals, such that it is easy to revise or update modules (legal algorithms) and module organization. A failure to implement modern system design tools makes it likelier that the resulting legal system will be opaque, unresponsive to harms, and difficult to update.

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## 5. Auditing

*Continuously audit the modules and overall system performance*

Continuous auditing — Systems of legal algorithms (e.g., a law and associated regulations) must have an operational mechanism for continuous auditing of all modules and overall system performance. Such auditing requires involvement and oversight by all human stakeholders, and must include, by default, the capacity of those stakeholders to modify algorithms or system architecture so that the system meets specified performance goals. The failure to audit ensures that we will have serious failures of our legal system as society and our environment evolve. I suggest that ability to modify algorithms be accomplished by requiring regulators, legislators, and courts (as appropriate) to respond promptly to stakeholder concerns.

### Administrative Information

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