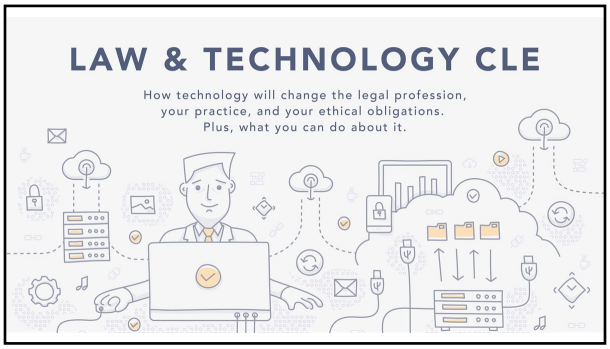


Understanding Emerging Technologies

Bryan Wilson

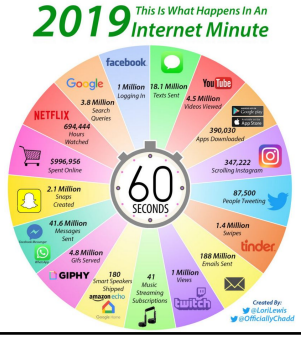
"A billion hours ago, modern Homo Sapiens emerged

A billion minutes ago, Christianity began

A billion seconds ago, the IBM personal computer was released

A billion Google searches ago…was this morning"

- Hal Varian (2014)



Why does this matter?

Data

We produce a lot of data

We can do a lot with data

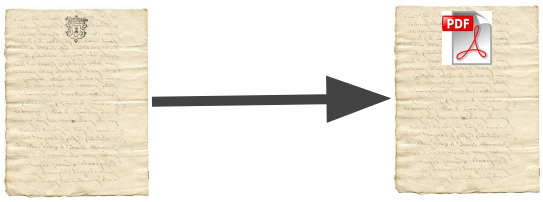
We can use patterns from the data to make better decisions

We can access data from different locations to improve processes

We can update the operating system of the law

What does the legal operating system look like?

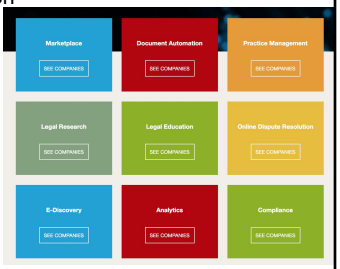
Initial Digital Adoption



Where are we now?

Current Phase of Adoption

In the current stage of change, apps and platforms provide faster, cheaper and more efficient methods for using, connecting and extending documents and messages.



What can the legal operating system look like?

Emerging Direction: Data (Not Just Digital Documents)

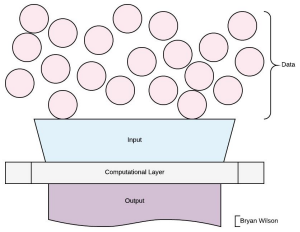
Toward Computational Law

How do we compute the law?

Traditional structure

Issue
Rule
Analysis
Conclusion

Current and future structure



Data

Input

Computational Layer

Output

What are these things and how are they connected?

Data

- Information from that can be used to make some sort of decision.
- In the legal industry, this information could be *static data* in the form of laws, regulations, or court filings. It could also be *live data* in the form of open data portals.

Created by Mello
from Noun Project

Input

- Disparate pieces of information are input into some standard form
- Note: creating forms requires high degree of specification for harmonizing BLT terms of art
  - Business
  - Legal
  - Technical

Created by Nathan Rofkahr
from Noun Project

Computational Layer

- Some layer of computation is applied
  - **Basic Functions**: Automatically send emails, create records, monitor compliance, etc.
  - **Advanced Functions**: AI, Machine Learning, Blockchain, and Smart Contracts

Created by Eucalyp
from Noun Project

Output

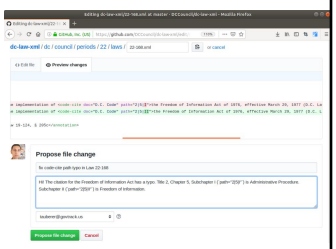
After data is input into a standard form and computational logic is applied, some output is generated. Outputs can be:

- Documents
- Reports
- Letters
- Dashboards
- Visualizations
- Notices
- Faxes
- Etc.

Created by Mani Cheng
from Noun Project

Bonus: GIT

- Updating DC Code on GitHub



Examples

TurboTax

Data: Turbotax has data about tax filings

Input: User inputs tax information

Computational Layer: Expert system helps calculate tax liabilities

Output: State and federal tax returns are generated

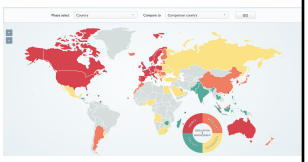
DLA Piper Global Data Protection Laws of the World

Data: DLA Piper has data about global data protection laws

Input: User can choose to compare data privacy laws between different states

Computational Layer: DLA Piper generates an overview of the data privacy laws from those states

Output: User sees a report and visualization of relative differences of laws between the states



Relativity Trace

Data: Relativity has data about insider trading and compliance regulations

Input: Emails and communications are continually monitored in real time

Computational Layer: Suspicious activity is identified and stored

Output: Dashboards visualize areas of compliance and notifications of non-compliance are generated

Artificial Intelligence and Machine Learning

What is AI?

AI has been around since the 1950s and refers to the use of computers to automate decisions or processes

There are two types of AI: Logic and Rules-Based AI and Pattern Matching AI (Machine Learning)

How does AI work?

Logic and Rules-Based AI works by coding different rules into a system. This type of AI includes expert systems and decisions trees.

Pattern Matching AI (Machine Learning) works by feeding a system lots of data and then studying the patterns that emerge from it.

What legal issues can AI help with?

Some examples of Logic and Rules-Based AI include:

- Chatbots to improve access to justice
- Compliance frameworks
- High frequency trading algorithms

Some examples of Pattern Matching AI (Machine Learning) include:

- Contract review automation
- Custom text analytics to identify documents as responsive or non-responsive in litigation
- Natural language processing to help improve legal research outcomes

Concerns with AI?

Lack of transparency

Algorithmic bias

Singularity

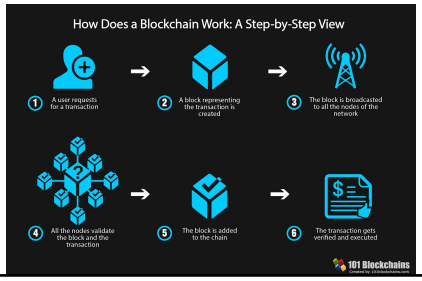
Blockchain and Smart Contracts

What is a blockchain?

"Blockchain technology enables the creation of decentralized currencies, self-executing digital contracts (smart contracts) and intelligent assets that can be controlled over the Internet (smart property). The blockchain also enables the development of new governance systems with more democratic or participatory decision-making, and decentralized (autonomous) organizations that can operate over a network of computers without any human intervention."

Aaron Wright and Primavera De Filipi: Decentralized Blockchain Technology and the Rise of Lex Cryptographia

How does a blockchain work?



What are Smart Contracts?

Smart Contracts are digital, self-executing contracts that are written in computer code.

How do Smart Contracts work?

```
contract MetaCoin {
  mapping (address => uint) balances;

  function MetaCoin() {
    balances[tx.origin] = 10000;
  }

  function sendCoin(address receiver, uint amount) returns(bool sufficient) {
    if (balances[msg.sender] < amount) return false;
    balances[msg.sender] -= amount;
    balances[receiver] += amount;
    return true;
  }

  function getBalance(address addr) returns(uint) {
    return balances[addr];
  }
}
```

Smart Contracts use a list of records that are cryptographically secured and generated to observe, verify, and enforce the terms written, or in this case, coded into a contract.

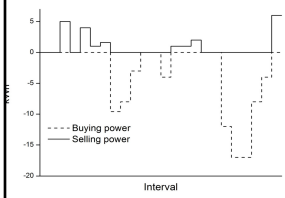
What legal issues can Smart Contracts help with?

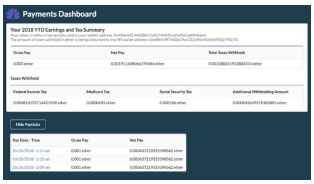
Some examples of Smart Contracts include:

- Banking and Financial Services
- Corporate Governance
- Decentralized Autonomous Organizations
- Fundraising
- Digital Identity Management
- Supply Chain Management
- Land Registry

Possible Use Cases with Smart Contracts

Distributed Transactive Power Grids





Auditable, Verifiable Transaction Records

Concerns with blockchain

Blockchain Governance

Bad code

Arbitration

Deleting $300 million

Questions

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