

Computable Contracts Project: Executive Summary

Stanford University CodeX Center for Legal Informatics

SUMMARY

“Computable contracts” are contracts that computers can read, understand, and execute. This project aims to develop a general protocol for expressing computable contracts, as well as a series of open-source software tools for creating them. The protocol will be flexible, extensible, and compatible with existing technologies including blockchain and financial contracting standards. The software tools will be free, open-source and user-friendly. The overall project goal will reduce contracting transaction costs and empower individual users and large and small businesses to engage in low-cost, electronic contracting.

1. Overview

Computable Contracts are legal contracts that computers can understand, assess for compliance, and execute. Ordinarily legal contracts are written in natural language such as English. However, great efficiencies can be gained by expressing contracts in a manner that computers can read, process, and understand. Some benefits of such data-oriented, computable contracts are:

- Computers can determine compliance with terms
- Contracts can be self-executing
- Increased analysis of contract obligations and risk
 - Computable contracts can be “inputs” to other systems (e.g. assessing contract portfolio risk)
- Transactions costs of contracting dramatically lowered

1.1.1 The Problem

Computable contracts exist today to a limited degree. However, despite their economic promise, there are several problems that are keeping computable contracting constrained:

Absence of Standards: Today there are few, if any, flexible and open contracting standards. Those efforts that exist are tied to particular technological implementations (e.g. block-chain for ledgering) or a narrow range of contract functionality (e.g. a blockchain “smart-contract” implementing only of a narrow subset of contracting functionality.) By contrast, “computable contracting” encompasses the full range of contract functionality.

Domain Specific: Existing electronic contract efforts tend to be domain specific. For instance, the finance industry has developed significant computable contracting capabilities, but the technology and protocol is largely oriented to finance and are not extensible to contracting generally or to other economic domains.

Absence of Software Tools: Many existing computable contract efforts use protocols and software that are proprietary or not widely available. Individuals or small businesses who wish to create computable contracts often have no open source tools.

Insufficient Interdisciplinarity: Existing computable contract efforts tend to be heavily tied to particular disciplines (e.g. computer science or finance), and may not incorporate the most recent research or expertise from other relevant domains, such as law, economics, business, and the humanities.

2. The Computable Contracts Initiative

The Computable Contracts Initiative is based at Stanford University’s CodeX Center for Legal Informatics and aims to

provide a broad and flexible platform for computable contracting functionality, including a protocol for expressing computable contracts and a series of software tools.

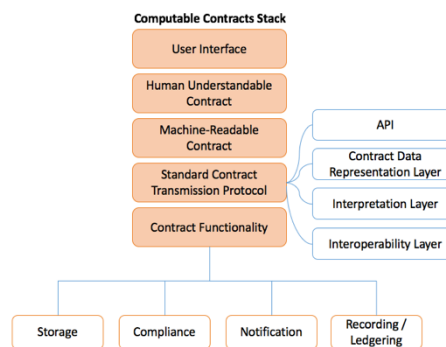
2.1.1 Computable Contract Protocol

The project will design a standard protocol and “conceptual stack” for expressing computable contracts. The protocol aims to be:

Flexible: The protocol will be adaptable to cover the vast variety of contracting scenarios, from financial contracts, to real estate transactions, to ordinary purchase and sale agreements of goods.

Domain Tailorable: Although the protocol is general, the project will provide contract “templates” tailored to specific domains and common contracting scenarios (e.g. financial securities). Users will also be able to create context specific templates.

Technologically Independent but Compatible: The protocol stack (pictured below) will be technologically agnostic and not tied to particular technological implementations. It aims to be flexible, capable of both linking to existing technologies but also adaptable to future developments. Thus, the protocol will be will be fully compatible will popular existing technologies (e.g.



blockchain). However, this adaptability will also allow implementation of contract functionality in alternative technologies (e.g. databases for ledgering rather than blockchain).

Interdisciplinary: The project aims to integrate best-practices, expertise, and state-of-the art academic research from multiple disciplines including law, computer science, business, economics, entrepreneurship studies, and science and technology studies.

2.1.2 Open Source Software Tools

The project will also develop a series of high-quality, open-source software tools so that the public can easily create and implement computable contracts.

3. Project Members

The Computable Contracts project is led by Oliver Goodenough (Professor, Vermont Law School), Susan Salkind, (Fellow Stanford Codex Center) and Harry Surden (Professor, University of Colorado Law School). Our team is composed of members from the business, technological standards, and academic community from a variety of disciplines including law, computer science, business, the social sciences, and the humanities.