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<https://stanford.zoom.us/j/398858470>

One Page “White Paper” Outline

Intro: Use cases can be helpful to add grounding and context and provide an observable, measurable and objective basis for assessing success at meeting the intended goals and outcomes.

These are the kinds of use cases we think would be useful or worth pursuing for next steps

A List of Possible Use Cases

Use Case	Value (1-10)	Effort (1 hard - 10 easy) Build	Effort (1 hard - 10 easy) Adopt
Treasury and Actus Variations: financial regulation through visibility, standardization, and transparency [raw notes] Actors: Regulators (Maybe Insurers, Market Analysts, etc) Actions: Financial Analysis of Markets	7	6	3
Master Contracts	4	10	10

Blockchain smart contracts for sales escrow			
Access to Justice / Life Cycle events / consumer protection	5-8 (less \$ more impact)	5	4
Service Level Agreement:			
Telecom	8	9	7
IIoT	9	8	7
Cust-Service	4	7	

1. Treasury and Actus Variations

- a. Managing system risk among financial institutions – the office of financial research wants to see what’s going on – the connections between institutions – at an ecology / ecosystem level. OFR wants transparency and visibility into all the contracts in the financial system. Trades, interest rate swaps,
- b. Bank of England/FCA regulations. It’s a guild. It’s not taught in school.

2. Master Contract:

- a. Example 1: ISDA is a good example.
- b. Example 2: Supply Chain, “Trading Partner Agreement” is a great example. For specific samples, see:
<https://github.com/mitmedialab/LSP2017/blob/master/ExampleTradingPartnerAgreements/EDI%20Trading%20Partner%20Agreement.pdf>
- c. Potential Stacks and Architectures approaches: Adapting 3-tier master / participation / transaction model to fully computable contracts.

3. Blockchain smart contracts for sales escrow

4. Access to Justice use cases

- a. Name change? Power of Attorney?
- b. A2J -- help people not miss court dates

5. Access to Law

6. Service Level Agreement: On SLAs one thing we have seen is obligation or penalty flow down to subcontractors. This is a problems faced in multiple industries. Service level agreements for telecom (TM Forum standard)

<https://www.networkworld.com/article/2199747/lan-wan/top-10-telecom-contract-mistakes.html>

- a. Telco.
- b. IoT.
- c. Customer Service.
7. M&A Transaction
8. Mortgages
9. Supply chains
10. International commercial terms / international trade
11. Contracting against a fully automated factory; I, for one, welcome our new Skynet overlords.
12. Analyze privacy policies and terms of service; observe when they change. Dan would like to discuss this with Jameson.
13. GDPR

Converging to a Use Case Landscape

1. Are we able to articulate a specific scenario involving users using CC?
2. What is the value created by applying CC to this use case?
3. What is the effort required to apply CC to this use case?
4. How acute is the market/user demand for this use case? If we build it, will they come?
5. Who is the initial user?
6. Is somebody else already working on this? ("Yes" is OK – we just want to identify and list at this stage.) How mature is their work?
7. What enabling technologies need to arise, and what roadblocks would need to be removed, for this use case to operate?
8. Re effort: What are the required inputs / variables / taxonomies for the use case?

Meeting Again would be Helpful To:

Track 1: Prototyping

Simple SLA components. Computability analysis.

Track 2: Business case

Jay product engineering framework: For each case (adapt this for Stanford context) -- how we'd apply the use cases and matrix we've determined today:

--- Take top 3-4 use cases. Full business cases. Market opp. Key results. Talk to Users...

History

Objectives: what seeking to achieve

Key Results (Success Metrics)

Risks associated.

Dependencies. (what do we need to create to make this work)

3-5 year business case -- what inputs needed. What expected ROI each year. Identify from product engineering viewpoint -- allocation of resources. Engineers. Product managers. GTM people.

Y by Y analysis of product focus... who are people involved. Milestones in each year. Quarterly basis.

Raw Notes

What are some resources relevant to the use cases?

Taxonomies. Inputs from 3rd parties.

ACTUS - Financial contracts and institutions - systemic risk.

Before financial crisis, focus was on individual banks as standalone entity

But bank is just a collection of financial contracts - assets & liabilities

After financial crisis, realized the network was important.

- **Before financial crisis**
 - **focus on individual banks**
 - **bank as a standalone entity**
 - **bank is just a collection of financial contracts**
 - **assets**

- liabilities
- need to be able to represent contract in a way that represent all the things that influence value
 - obligations in both directions
- After crisis
 - to understand systemic risk, need to know how banks are interrelated
 - in 2 ways
 - 1
 - by fact that when ou value all assets .& liabilities and fails
 - will spill over
 - 2
 - lack of liquidity
 - what are cash flow obligations between different banks
 - If Bank D has many cash flow obligations going out
 - short of liquidity
 - if bank and financial markets are liquid
 - no problem
 - Bank D can go out and get \$
 - but if seize up
 - unable to pay
 - fails
 - triggers cascading failures
 - Key to understanding network as a whole
 - understanding all the individual contracts
 - what are cashflow obligations embedded in contract
 - how do they change when state of the world changes
 - at heart of understanding financial markets
 - why having computable financial markets is so important
 - Modern financial analysis
 - how liquidity
 - how income changes
 - how value changes
 - Implementable solution
 - collection of individual financial contracts
 - if concerned about cashflow
 - with right computable contracts
 - relating to cashflow obligations
 - can do internal risk management at bank better
 - transaction processing better
 - and if you're a regulator
 - have ability to gather transactional data in algorithmic standard
 - oversight

- for microcredential regulation
- asset liability management
- allows real time understanding of condition of bank
- AND
 - understand real systemic risk
 - between all nodes in the system

Identify what else in financial contracts should be automated to increase the value.

Total economic impact - saving another financial recession.

How much would banks / regulators pay for this software.

Estimate from Morgan Stanley -- with adoption of standard like this - opex would go down 10-30% (\$2-300/yr)

Master Contract:

A Common Pattern

Three-tier system:

1. master agreement, which is industry standard: “to have and to hold, for richer or for poorer”
2. participation agreement between parties, which agrees to abide by (some configured instantiation of) the master agreement: “I, Alice, do take thee, Bob”
3. transactions, which are high volume and potentially fully automated: “your turn to feed the baby”

Dispute Resolution and Arbitration

What happens when there are bugs in a contract? How do we undo TheDAO? Consider the Mattereum model, with a council of arbitrators.

Value: 4. cost savings. Ability to analyze spend cycles. Why are people buying this -- what is the marginal benefit? 1) cost of paying lawyer to do this. 2) lawyers themselves using this 3) raw economic value for ecosystem e.g. Amazon -- better standards for sale of goods and services... [Kauffman as potential funder....]

Effort Build: 10 --- very little effort. Adoption: For new startups --- 10.

- 1) Model is tight, and internationally standardized. Tonnes of XML/JSON projects -- to make this quantifiable. Well-settled standard.

Structural pieces of supply chain perhaps not so valuable -- the verification part of the inputs / quality control -- the fact these are computable -- makes them verifiable.

Examples of Master Agreements that can be Modeled

- <https://github.com/mitmedialab/LSP2017>
- <https://sovrin.org/trust-framework/>

Access to Justice use cases

NB A2J Author (CALI - John Mayer)

Wills / uncontested divorces -

NB Doc automation vs. CompK --- e.g. QDRO - qualified domestic relations order -- includes numeric asset transfer issues potentially amenable to CompK

Issue: computability is not high. Not just about doc automation.

Citizen/consumer contracts dealing with ... [Govt? Counterparty]
Consumer protection oriented

Lifecycle event...

Key expert: Bonnie Hough -- CA Courts head of self-help

Landlord tenant Traffic accidents.

Access to Law: Business-related for individuals: Access to credit. Payday lending

Double-bottom line.

Value: SROI -- 1st and 2nd order ecosystem value.

High social value. Low market opportunity.

Value - important to note this is regarding what goes beyond current contracts.

Jay: RL / LZ only touched tip of iceberg in terms of value in this area.

Sandy Pentland -- 2nd order ramifications -- lifecycle interactions -- thinks if we could measure this better then we could have much better understanding of size and dynamic of underlying issues in cities and neighborhoods -- game changer for policymakers and funders / legislatures /

agencies -- right now, just throwing money at things that may or may not work -- cannot measure or calibrate or allocate effectively --- 2nd order -- we could win the war on poverty. 8 or 9 value.

Social & financial -- non-binary.

Effort:

Build: so many people who want to share, not incentivized against sharing.

From pure engineering standpoint -- difficulty of doing CompK not high. Difficulty -- myriad of contracts and jurisdictions. Difficulty more 5-6.

Adoption: 3? Imposed? By regulator? How to make easier -- consortium of vendors...

“Click-Through” Electronic Contracts - the “Agree” to terms and conditions.

I signed something / clicked through something, some time ago, and I have no idea what it means to me. EULAS / software clickthrough / ToS; when an employee clicks through are they binding their employer? How do employers track these kinds of contracts?

Innocent consumers who are subject to contracts of adhesion with onerous terms.
(example: [Equifax breach binding arbitration](#), +class action waiver) - public policy angle, headlines. Required to be used in disclosure.

[GDPR coming into effect May 2018 -- c.f. Y2K! - any living EU citizen with PII, no matter where your co is located, penalty is 4% of Global Revenue.] - computable compliance

Telco SLAs

Focus on idea of uptime. \$ penalties if not up and running.

Actors: Telco providers.

Their customers (other telcos and business users)

Generally standardized SLAs. Standard practices. Vendors have market power. But may have 2 big vendors that may negotiate. Agreements will include same stuff, but numbers are different.

- Real world SLAs are more complex. Measurements at all different levels. Many complex calculations that go into what terms violated for how long. Measurement is well understood. 2 aspects that CompK addresses (not being done right now).
 - is the complex SLA enforceable (hold up in court)
 - Taking computation and turning it into a smartK (Eth / Hyperledger) to help automate the execution of the ongoing SLA (esp. Re settlement)

Value: \$100Ms in litigation fees. 8-9

Effort: [success -- network monitoring. Easy integration with enterprise. (see [TM Forum ppt.](#)) Start with small contract with very few parameters. To deliver the 8-9 value...

Now have the CDL like language to compute contract. (Didn't have before with TM Forum prototype).

Sending structured data through a REST interface... much easier.

I-IoT SLAs

Same thing as Telco SLAs -- enterprise deployments of IoT networks

Fleet management.

Industrial IoT.

- Service Level Agreements (telecom, IT, enterprise IoT deployments)
 - Low hanging fruit. As companies have millions of IoT sensors deployed -- SLA: are they up / down / accurately collecting -- On top of legacy users (telecoms), many new companies entering the space.
 - Relies on tech, #s, objective data/oracles, can flow up to CompK.

Verizon is deploying nationwide narrowband IoT network -- people will start deploying networks of IoT sensors on top of that.

Value: 9 - jameson + brian.

Effort: more difficult than telco, by 1

-- pretty new. Don't know what SLAs look like. Many are hidden.

Folks who want to deploy and make \$ -- telcos and newcos

More greenfield -- lowers adoption difficulty?

Orgs seeing themselves as platforms --e.g. GE = predix

No-one will serve products anymore -- services everything.

IT SLAs

Cust Service SLAs

Jay-- used to do Global cust service on legal side -- companies like Apple, any hardware providing company, provide their own customer support. At Apple -- had SLAs with home-based customer service providers. All foreign customer service providers. Basis -- customer satisfaction.

Apple: Cust-satisfaction dictates payment/discounts.

Other companies: Call time / Speed of resolution / Ability to resolve on 1st vs 2nd escalation.

Can use CompK to take data and determine \$\$ payment.

Large cos outsourcing C-S to US/foreign entities. Metrics in those contracts to determine whether pay \$X / \$X-discount / \$X+Y

Current: Very manual process -- manual reporting. Ambiguity. Freq ~each month.

Value: 6-7 -- sophisticated companies.

[vs. ability to compute on spreadsheet -- most of work, gathering metrics. 1] 3-4

If look at value in terms of current practices -- limited.

If we look at capabilities that are rules based management of lifecycle customer relationship -- may be more overall value. Look beyond SLA?

Effort: build - 7

Adopt: (difficult -- major players -- outsourcing C-S to others)

- **Mortgage Finance as represented by an interconnected web of contracts:**
Standard Financial Contracts between a borrower and a mortgage originator, contracts between originators and securitizers, contracts between mortgage servicers and securitizers, contracts between borrowers and private mortgage insurers, an overlay of statutes and regulations that bear on the mortgages, automated underwriting required by Fannie and Freddie, contracts between the investor and the securitizer, etc.
- **Master Services Agreements -**
 - **Service Level Agreements (telecom, IT, enterprise IoT deployments)**
 - **Low hanging fruit. As companies have millions of IoT sensors deployed -- SLA: are they up / down / accurately collecting -- On top of legacy users (telecoms), many new companies entering the space.**
 - **Relies on tech, #s, objective data/oracles, can flow up to CompK.**
- **Trading Partner Agreements - There are standard, widely used**

Other Things That Came Up

an identity infrastructure for electronic signatures and digital signatures

a reputation infrastructure that attaches to the identity infrastructure, that sucks less than Equifax!

post-execution management – how do we revoke consent?

a signature tool – integration with DocuSign / Adobe Sign / HelloSign, etc - tracking everything we've ever signed

Intros

From Andrew Burt to Everyone: (09:11 AM)

This should be the concrete use case working group?

From Dan Rubins to Everyone: (09:11 AM)

Same here, Krishna

From Krishna Sundaresan to Everyone: (09:14 AM)

Cool

From Brittmy Martinez to Everyone: (09:16 AM)

This is the “Use Case” Group (B).

From Me to Everyone: (09:17 AM)

i am seeing your chats

i will take notes here.

the Bank of England and the FCA are doing a pilot project to see if they can make their regulations machine-executable.

this group can align with that use case.

From Andrew Burt to Everyone: (09:21 AM)

The UK’s Bank of England (BoE) and Financial Conduct Authority (FCA) are conducting a proof of concept designed to bring financial regulation into the machine age. The underlying goal of the concept is to produce model driven, machine readable, and ultimately machine executable, regulations to enable faster, more efficient regulation and compliance within the financial services industry. If successful, the project could fundamentally change how the financial services industry understands, interprets, and reports regulatory information (and the way that governments create and promulgate regulation writ large).

From Andrew Burt to Everyone: (09:21 AM)

To aid in this proof of concept, the BoE and the FCA are looking for interested participants, with backgrounds in law or computer science, to determine the feasibility of embedding regulations within software. Opportunities for participation include the ability to take part in:

From Andrew Burt to Everyone: (09:21 AM)

- **A two week “TechSprint,” beginning in November 2017, to assist in the creation of an initial corpus of marked-up regulation in a machine readable format. This TechSprint will culminate with an initial working prototype, along with an assessment of the open source and long-term potential of the project.**

From Andrew Burt to Everyone: (09:21 AM)

- **A longer-term study, beginning in 2018, exploring the lessons learned from the prototype and recommendations on best next steps.**

So they want to take their regulatory handbook, translate it to SBVR, and work towards making that executable

From Me to Everyone: (09:23 AM)

greetings to Dan from LegalRobot

From Me to Everyone: (09:24 AM)

Krishna from CruxIQ

David Fisher is here, from Integra Ledger, a public blockchain for the legal industry.

Dazza Greenwood from law.mit.edu, runs a consultancy; advises David’s company and consortium.

From Me to Everyone: (09:26 AM)

Tony Lai from legal.io: a legal service delivery and referral management infrastructure company. Also a CodeX Fellow heading the blockchain working group.

John Wilmes from TM Forum; also algorithmic intuition.

From Me to Everyone: (09:26 AM)

Dustin Wehr, CS / Mathematician from Legalese.

Meng Wong, CS / Biz Guy from Legalese.

Christian Berzley

Carlos Gomez from Thomson Reuters

Jameson Dempsey from Legal Hackers; also a lawyer!

Allan Mendelowitz from actusrfrf.org

From Me to Everyone: (09:29 AM)

Brian Donnelly from Columbia Law School

and our friendly note taker lurking in the back Brittany Martinez

Jay Mandal - SAP

Julian Bryant - Gruter Institute