

## Conference Call Notes 6 September 2016

### Feedback

IR Swaps - already something under way in R3.

CB to take a look, give an update on that.

Various PoCs announced on syndicated loans and others as well as IR Swaps.

LT also aware of IR derivatives PoC.

- this is not ready for public display or comment.

### Detailed Discussion

2 dimensions:

The asset class The process - i.e. pre-trade, post trade, clearing settlement and custody. Many of these are in different points in the process.

(not applicable to IR Swaps)

Metaprocess - creation of the digital asset, through trading to transfer (settlement)

TC: in the R3 stuff, IR Swaps have only been looked at a use case level. Projects seem to be more focused on the distributed ledger implementation, using simple instruments to test how the distributed ledger work (they have built their own). So if we come top down from the process and detailed instrument models there is a useful point to meet in the middle.

R3 is producing the infrastructure where we are not.

Our domain here is the "SmartContract" domain. within that, this is where we play, not on the consensus algorithms or the data fabric. We are aiming to creating something that is universal.

That is, FIBO being the modelling of the data and the behaviour in the smart contract, rather than the coding. this is what is a good way to document the process and the data, whereas R3 is interested in defining the programming language for the smart contracts. So we are at the conceptual level (MB).

R3 are looking to or have contacted ISDA, FpML and SWIFT - per the physical standard of the day for that constituency. We are also interested in input to risk analytics, counterparties information and so on.

There are several initiatives also looking at Smart Contract ontologies as well as the physical stuff noted above. These groups won't have the desire to get in to specific ontologies. But they are seemingly also pursuing ontologies in some of these initiatives. Groups have picked up on the Smart Contract metaphor and transposed this into a whole spectrum of things.

R3 having a Smart Contracts summit in London on 16 November. TC to ask if they want us to come along.

Use FIBO IP as a starting point.

MB we can probably transform from a conceptual FIBO to a more physical RDF artifact that can be posted as non repudiable blocks in BC.

For this project, aim to engage the community with this approach.

Do we have enough business decision makers who are actively involved.

PoC - conceptual from FIBO, and some implementation into physical ontology so we have something to show. this is the PoC.

BUT... what is it that makes something a Smart Contracts thing? Modeling the process and data is useful whether we do Smart Data or not.

The PoC we are talking about is providing a model and semantics approach, which should then make the logic behind these understandable by business people, then they can verify that.

SmartContract is a very specific thing; in the context of one ledger system, where the data consists of a series of txns. A txn is posted into the network and if a consensus of the participating nodes agree it is acceptable it becomes part of the ever-growing network. The SC is the set of conditions that must be true for that txn to be considered valid. That is the content of that txn and of the prior txns that go into that record. That is what someone has to fit into to be considered a smart contract. Meanwhile the ontology describes in more general terms what it means for something to be an IR Swap. If we describe an IR Swap in FIBO it can be implemented in a number of ways eg as a legal contract, a realization in a non SC program (machine exe) and also a realization as a SC as the BC world defines that term. What we are after is to connect those worlds with a way to show how having an ontology level description either eases the process or allows one to validate that the SC does what you want it to do - or even to generate the code for a SC.

The above describes the connection between a conceptual view of the world and a realization of that in the SC world. Consider denotational vs operational semantics.

Where this could have an SC flavour to it is that SC has particular process steps, where at each step there are inputs e.g. things that people own (things stored in the ledger) e.g. assets, ccy. the txn step will have those inputs and produce some outputs. Mark the i/p's as used up, the o/p's then marked for future steps or txns. For example A has 10K\$ and one has 10K GBP. Direct the money to the right people. What is trickier is if you don't just have the sum above, one might have e.g. 2 lots of 5K or an unevenly matched amount e.g. 5K + 6K. focus on process and outputs.

These I/p's and o/p's describe parties' ownership. this is not the only possible thing. An I/p could be something else entirely e.g. a trusted party posts a closing price for a given stock to the ledger. Then someone else can have a process step that consumes the stock price. Example, for an option.

We do ourselves a disservice by describing anything in this forum as a Smart Contract. This is a very generic term. Ken's description of the SC above is in the context of the blockchain, but really a SC doesn't care where it is stored or how. The BC element is providing the confidence in where it is stored or how. So we don't need BC to store a SC.

Also differentiate between what SC is, what it does and how it is used.

here: what it is.

There are different use cases associated with that. Fundamentally we are trying to describe the digital asset itself. So we should get rid of the nomenclature of Smart Contract and put it in the context of digital asset or digital identification. Be neutral as to the underlying storage underneath it. Example: a one to one loan between person A and their bank. no-one else need to see that. True for all bilateral contract relationships - no-one needs to see beyond that. Start at the top on this.

Do we have financial txns in FIBO? Yes, in various flavors.

So we should bring forward the txns material that is in Red FIBO. then the things people are interested in will fit into the txns ontology. Move the process forward.

Suggestion: We start by considering the processes people use. Then we looked at details on one of the processes. CB noted these did not need to be SCs. But they are all process things. so why not start with Activity Diagrams showing how these things work.

These will get us to the PoC.

Start from conceptual and take it down to something on the wire.

The conceptual ontology relates to the conceptual view of the process.

FIBO has process semantics in Red FIBO but none of these have hit the GitHub ecosystem yet.

Start with a simple activity diagram.

For IR Swap txn, such an activity diagram would be really valuable. Start getting visual things going, be able to see the differences in the processes.

PR: BPMN would be more valuable as a way of sharing processes with business people.

BT: Activity diagram is easier to reconcile to an ontology.

BPMN allows you to represent any modeled element as inputs or outputs to processes. From a standard PoV there is no issue with BPMN but we don't know how well tools make use of that flexibility.

BPMN is harder to relate to the ontology.

PR: BPMN is extensively used with business audiences.

We can explore next week whether BPMN or UML Activity is more amenable to defining an upper ontology for the primitives of that language. Red FIBO right now does this at the Activity level but not BPMN.

Let's try both.

Next week: let's split the FDTF Workshop component into 2 parts, and have a part dedicated to the above question.

See also the papers CB circulated last week. Can re-send if needed. Will re-send.

Ding th work

1. IR Swaps - who is familiar with the workflow side of these, and IR Swaps in general?

- SSC - so let's talk to them.

Get a list of all the process sites from them.

Talk to SSC. TC can help validate that.

- if you just did message for ever change in a swap's life e.g. fixing, it can get a bit spammy. Usually separate from stuff that represents changes to the swap itself.

So this information feeds in to how the commitment is discharged.

Also when you initiate an IR Swap, you also have to post margin and initial variation margin. When you do a non cleared IR Swap you need to post the initial margin on Day 1. This deals with any expected variation in the swap. then you also need to post variation margin when it exceeds the initial margin as agreed in the contract. When the IR changes, one party is in the money, one is out of the money then you need to change collateral almost on a daily basis. also depends if the IR Swap is netted or is a stand-alone entity against the other IR Swaps which are exposed to that same legal entity, which also depends on what level entities are combined. So there will be .... Also, is this in the Master Agreement or the Swap? Potentially both. when you have central clearing you may not need to have so much margining. Use of standard derivatives.

LT can also help validate along with TC on what we produce.

Maybe we start with ones that don't require so much margining messaging in the first instance.

If a non cleared IR Swap because this unusual there will be different messages

Another possible idea equity common stock - look at clearing and settlement of these. this covers currency and ID questions. DTCC stock etc. - where and how you can settle such a thing. Also make use of FIGI.

Are the simpler swaps immune to the complex margining requirements? LT: No, you still have to put margins on these. All you open trades are netted against one another in eg an exchange derivatives.

Confirm this SSC.

2. Bond primary market - MB can take crack at this.

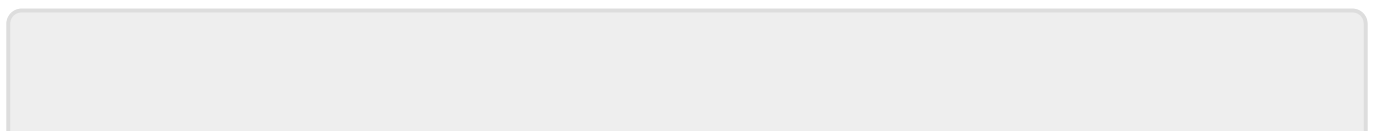
Focus on syndication.

LT can validate this for us.

MB to pass along details of the Hyperledger London Meetup group.

In Chicago next week:

PR, LT, MB, BT, RN, KT and CB to be added to the circulation for this so he gets the agenda which has the dial-in details.



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