**Appendix B: Hyperledger smart contracts**

**Hyperledger smart contracts**. DLT Technology: Hyperledger fabric. This appendix introduces chaincodes as the Hyperledger implementation of smart contracts and the proposed application model for TheFundsChain.

**Hyperledger Smart Contracts: chaincodes**

**Chaincodes deployed on TheFundsChain fabric**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Chaincode** | **Fully qualified name** | **Instances deployed by** | **Main intent** | **Supported workflows** | **Maintaining Peers** | **Endorsing Peers** |
| Party | Party – Directory of participants | An instance by jurisdiction  CTK : caretaker or REG | List of parties with roles by jurisdiction | Party Agreement | All participants | REG |
| Time | Time service | Single global instance  CTK : caretaker | Deliver trusted timings | (query only) | All participants | CTK |
| RegFundDir | Regulated Funds Directory | One instance per regulator  REG: regulator  [domestic instances may be customized) | List of registered funds within a jurisdiction | Fund registration  Domestic distribution agreement  LEI and security identification  Circulation on a settlement (DVP) system | REG  LEI  STL  SIA | REG |
| Investor | Investor’s KYC directory | One instance per distributor  DIS: distributor | Privately stores KYC information | Investor onboarding | DIS  (REG) | DIS |
| Portfolio | Investor’s portfolio of funds assets | One instance per distributor  One instance per participating investor  DIS: distributor  INV: investor (as participant) | Portfolio of funds assets (possibly cash) | Orders | DIS  (INV) | DIS |
| Fund | Investment Fund | One instance per fund (covering all share classes)  ISR: issuer  Fund may be customized for specific products | Fund master data, Investor holdings & NAVs | Orders  NAV publication  Fund registration  Domestic distribution agreement | CUS  TAG  ACC  ISR | Ibid. |
| DistFundDir | Distributed Funds Directory | One instance per distributor  DIS: distributor  [instances may be customized) | List of d terms of distributed funds + distribution agreement | Distribution agreement | DIS  ISR | DIS |

**TFDC chaincodes specifics**

*Chaincode “Time”*: this chaincode has no state and support no transition. Its interface is just a query that is forwarded to a trusted time server. The objective is simply to deploy a trusted container to wrap this call.

Alternative to chaincode: Zookeeper service

Chaincode “Fund” is perhaps too complex. Some part of the complexity (fees, assets custody) should be handed over to companion chaincodes. There is definitely a case for separating assets. But this is a remote thought…

Investor: this chaincode has only one peer[[1]](#footnote-1)… Remain to be seen whether regulators might demand to be peer also (e.g. black listing, CTF…).

DistFundDir: remain to be seen if issuers are considered peers (can the list of peers of a chaincode be changed?)

1. In this case, the consensus is NOOPS and not PBFT. [↑](#footnote-ref-1)