**Fundamental POCs**

DLT Technology: Hyperledger fabric

| **#** | **POC Theme** | **POC Name** | **POC broad objectives** | **Hyperledger challenges** |
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| 1 | Transactions & Holdings Registry | 1. Transactions Ledger 2. Holdings Registry | Simple orders and registry of investors holdings, with all involved parties acting as participants (i.e. without onboarding “sponsored” investors.  Part I strives to demonstrate that the business logics of ordinary transactions are well supported: validation, valuation, retrieval. Part II: focuses on how relevant data about inflows and holdings may be retrieved. All other POC’s are all built on this base. | Chaincode data modelling (granularity, definition of the relevant state variables).  Registry entries refer to anonymous investors. Funds may themselves be investors in other funds.  Demonstrate HL can manage Ledger and positions (i.e. last position is generally easy to retrieve; historical positions are cumbersome in V0.6) |
| 2 | Product Master | Product Master – Registration | Demonstrate the ability to register a new fund with a regulator, following the existing business workflow.  Demonstrate the flexibility of our model: multiple jurisdiction | Global directory vs Regulator vs Issuer directories  Events & Messaging to external parties (mediated through (a) regulator or (b) issuer) |
| 3 | Product Master | Product Master – Service agreements | Model and enforce agreement between funds and investment service providers, such as accountant, custodian and transfer agent (not a dist. agreement). | Initial agreement is reflected in endorsement policy.  Endorsement policy / peers change management? |
| 4 | Settlement | Orders settlement – SWIFT interface | Demonstrate how the platform may leverage existing SWIFT messaging standards to operate.  Investigate various settlement scenarios (there are many options on the table) | Conceptual interface with messages triggered by HL events vs more realistic interface with actual SWIFT messages  SWIFT security assumed to be managed by an external gateway)  How events/messages may be *consensually* acknowledged.  Demonstrate how such a trusted messaging is possible (interacting with chaincodes) |
| 5 | Settlement | Orders Settlement – Settlement scenarios | Investigate different settlement scenarios (security vs payment), with or without participating custodian banks (fund custodian / investor custodian) | Cash is assumed to be externally managed; i.e. a trusted member (let’s call this role “Transfer Agent”) operates the SWIFT gateway to the banking / settlement system(s) (scenario dependent)  Explore various scenarios, depending on the member status of various custodians in the loop: member custodian may participate to the validation of the message (therefore pushing further out the role of transfer agent, as they collectively act as a transfer agent) OR may not participate, in this case they fully trust the transfer agent.  Another variant is Euroclear: Euroclear acts as a (trusted) gateway to its member custodians. We should investigate how a reconciliation-free protocol may be established with Euroclear members which do not participate the consensus (by themselves, but Euroclear acts on their behalf |
| 6 | Distribution | Intermediated Distribution | Demonstrate order earmarking.  Keep track of the full chain of distribution intermediaries  Possibility to demonstrate PRIIPS & KIID (sections about fees transparency) | Registry entries must fully reflect order earmarking. Non-peer readers may get aggregate data (depending on their profile / earmarking key)  Data versioning: EOM snapshots have some business value: more advanced setups may well extend this idea by keeping End-Of-Month position and possibly a time-weighted monthly position average (main inputs to trailer fees computations). |
| 7 | Distribution | Investors Onboarding & KYC | Investigate how investors may be identified and onboarded (digital ID) Demonstrate how to abide by KYC regulatory framework | All about signing for sponsored investors and collecting required data.  The KYC service is essentially a zero-knowledge proof mechanism published by a distributor to other actors.  We acknowledge the fact that there is no “universal digital ID” available but there, but that it may come (soon or later, it will)  Therefore, the platform has to support a variety of external identification schemes, starting with a plain scan of ID cards.  The POC should provide a stylized version of external identification input in order to demonstrate:  Onboarding sponsor (i.e. distributor) is able to prove that ID verifications has been performed (in other words, how a distributor connects its own KYC scheme to the platform)  This party is able to prove that suitability checks have been performed |
| 8 | General | Data privacy | Data payload may be public, restricted or private  Demonstrate how a DPKI may be deployed and used. | Privacy handled at the application level |
| 9 | General | Scalability | Ability to cope with high volumes.  Target: 100 million transactions a year on 100 000 funds, with 100 M investors, 5000 issuers and 50 various other service providers. | Fabric scalability.  Co-localization pros and cons.  Application simulator. |

**Toward prototypes: extended POCs, covering business processes more extensively**

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| **#** | **POC Theme** | **POC Name** | **POC broad objectives** |
| 101 | Investors Registry | Cross-jurisdiction orders | Orders abide by multiple jurisdictions, with a focus on LUX and FR, possibly IRL |
| 102 | Investors Registry | Distribution Fees Management | Calculate & Collect Various fees, such as entry/exit fees (excl. trailer fees)  Management fees are out of scope, and more generally all fees charged to the fund (this is the scope of the fund accountant, which accounts for such fees in the NAV)  Conceptually we have 2 kinds of fees: upfront fees (entry, exit, and all sort of distribution fees charged by intermediaries on “loaded” share classes – think MIF-2) AND trailer fees (charged by distributors to fund managers) |
| 103 | Investors Registry | Multi-model registry | RTA, CSD and registered form models  Support for multiple forms of ownership. |
| 104 | Investors Registry | Adjustments & Transfers | Extended order types  This POC could have been named “Shit Happens”.  It is a demonstration of the platform capabilities to be extended to special kind of orders, which are not initiated by an investor, but are adjustments initiated by a registrar.  This flexibility show how real world issues may be tackled by operators |
| 105 | Product Master | Corporate Actions – Closure & Merger | Cover a product’s life-cycle |
| 106 | Product Master | Document production; KIID, … | Generate regulatory documentation  Include commercial documentation as well.  The POC objective is simply to demonstrate how we may extend the fund chaincode in a proper document database with stamped, versioned documents which reflect the actual chaincode state.  This extends to various fact sheets and marketing documents attached to the chain code and which may be appended by a distributor to its own fund chaincode directory. |
| 107 | Settlement | Corporate Actions – Dividend | Demonstrate how a fund pays a dividend |
| 108 | Distribution | Distribution agreements & Trailer fees | Handle distribution agreements and calculate accurate trailer fees |
| 109 | General | In-platform invoicing & payment | Ability to orchestrate services invoicing and payment |
| 110 | General | Security | Ability for all participants to communicate securely with each other |
| 111 | Distribution | UCITS, multiple agreements |  |
| 112 | Distribution | Robo advisor | An out-of-DLT add-on to deliver an integrated user experience |
| 113 | General | Change management | Hyperledger challenge: chaincode versioning & upgrade. Same with data models. |
| 114 | General | Trusted time service |  |
| 115 | Legal | Fiscal filings |  |
| 116 | Legal | Party agreement | Fund manager, custodian, etc.. are regulated roles. A workflow with the regulator ensures that participants received an agreement |

**POCs for niche processes**

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| **#** | **POC Theme** | **POC Name** | **POC broad objectives** |
| 201 | Investors Registry | French FCPE registry | Ability to onboard another registrar. Closely linked to 103: basically, this is just an application within a specific regulatory framework. Fundamentally, FCPE is much like administering shares issued under a nominative form. However, there are a number of specific issues, like employer’s over-subscription on behalf of its employees. |
| 202 | Investors Registry | Irish hedge funds, with series | Manage constraints for investment in fund’s series. |
| 203 | Investors Registry | Registry of Insurance Life Contracts | Investors registry, on the insurer’s side |
| 204 | Investor Registry | Pledged subscriptions: case of infrastructure or real estate funds | Ability to manage orders as pledges, with actual payment upon issuer’s calling |
| 205 | Product Master | Close-ended funds, Mandates & managed accounts | Ability to manage private information on product and to handle complex structures (e.g. insurance mandates) |
| 206 | Investors Registry | US hedge funds, with equalization factor | Ability to convert amounts in units using an equalization factor rather than a NAV |
| 207 | Investors Registry | Formula-linked funds | Funds with predefined subscription periods |

**POCs situation along the Fund Management Value Chain**

