Test Planning for FAC Fund Servicing Pilot

The aim of the fund servicing pilot is to use the FAC pilot operating environment to launch and operate a tokenised fund on a distributed ledger. This will exercise the end-to-end funds process and will include all oversight and reporting functions necessary to reflect the normal operation of a mutual fund.

The primary business objective is to confirm the feasibility of delivering a transformational platform for funds servicing, demonstrating significant operational and cost benefits to its participants.

The pilot will be focused on a UK OIEC model supporting the launch of a new kind of tokenised fund which is issued directly on the distributed ledger, with no support from conventional issuance structures. The experience and learning from the pilot will contribute to the planning for further development of the product.

Overview of Pilot Process

FAC will deploy a dedicated instance of an FAC Distributed Ledger network to support the fund servicing pilot. The testing will involve launching a fund onto the FAC platform with a tokenised share issuance and conduct 'day in the life' fund operations.

The aim is to replicate as far as possible the end-to-end workflows of the fund involving off ledger parties where necessary (i.e fund accountant and custodian) so that the impact of the distributed ledger model can be fully evaluated.

Preparation

Prior to the start of the pilot all participants will need an understanding of the proposed operating model and the implications of adopting distributed ledgers and tokenisation. FAC will facilitate this though an induction process and there will be additional workshops to deep dive into how the network operates, the roles and responsibilities of participants and the legal and regulatory implications for launching a tokenised fund.

Participants involved directly with testing will need to familiarise themselves with the system functionality and constraints (see appendix)

Functional Scope of Testing

Detailed test planning will be scenario based and will cover the principle functions of Launching and Operating a fund.

Test scenario	Rationale / Benefit
Setup and maintain a fund.	Demonstrates improvement in time to market for launching new funds. Customer experience and revenue opportunities.
Convert Investor and Fund fiat currency at the Cash Exchange and issue cash tokens onto the network.	Exercises the role of the Cash Exchange and its relationship to the bank. Revenue generation from operating digital exchange
Issue tokenised units for the fund onto the network.	Demonstrates the simplicity of fund issuance without the creation of a conventional asset

Test scenario	Rationale / Benefit
Setup and maintain investor records. (test scope limited by nominee node constraint)	Provides investors and service providers with experience of fund holding on FAC
Place, track and finalise investor buy, sell, transfer and switch operations with tokenised cash and assets on-ledger.	Demonstrates operational efficiency, cost reduction, reduced settlement risk and elimination of reconciliation.
Produce daily cash flow information against a cut-off point, load NAV prices and prices orders.	Demonstrates operational efficiency and cost reduction.
Demonstrate required controls and reports for regulatory oversight	Evidences adherence to regulatory requirements
Validate the accuracy and integrity of investor and fund cash and asset balances across a multi-day business cycle.	Validates integrity of register. Demonstrates risk reduction and improved regulatory oversight, and builds confidence in product and vision.

Test Approach

Testing will follow the typical 'day in the life of a fund' workflow (DITLOAF), from investors placing orders, through cut-off, valuation, pricing and settlement with all the associated controls, checks and decision points that are part of this process. (see appendix)

Once launched, the fund will be operated by the participants through a series of DITLOAF business cycles. The workflow is very similar to a conventional daily dealing forward priced fund flow, but there are significant differences in its execution that are achieved through the use of Distributed Ledger Technology.

Each business cycle will involve participants undertaking the following activities to input and process data on the FAC system:

- Entering investor orders (buys, sells and switches)
- Validating the data is shared across the network from the investor node to the fund servicing and fund manager nodes.
- Waiting until after a cut off point to upload NAV prices and apply these to orders.
- Orchestrating the issuance and cancellation of fund tokens and cash tokens to ensure the successful completion of the settlement process.
- Creating and checking reports generated by the system.

It is expected that a series of consecutive business cycles operated across a number of days will provide sufficient insight to the operation and dynamics of the FAC process to inform an evaluation of the FAC operating model.

Test Outcomes

At the end of the pilot, the following deliverables should have been achieved:

- A verified set of end-to-end workflows, built to conduct the daily operations of a fund and to meet all necessary oversight and reporting requirements;
- An understanding of the key components of the fund prospectus and service provider agreement for an on-ledger fund and a proven process for launching an on-ledger, token-based fund;

- A set of prioritised activities necessary to bring the system to a production-ready state;
- A definition of the future state operating model enabled by the proposed system; and
- A business plan for realising TA 2.0, along with an operational and commercial plan for bringing it to market.

Success Indicators

- A broader understanding among the participants of how FAC enables transformative opportunities for funds servicing;
- Confidence across the respective teams, in the FAC platform and the collaborative nature of the potential partnership;
- An agreed view of how close FAC is to a solution for funds servicing and what would be required to bring it to production;
- Commitment for participant and SAG global fund managers to support the further development of FAC.

Roles and responsibilities

Pilot Role	Pilot Responsibilities
FAC	• Deliver and support the FAC Pilot environment • Operate the cash exchange and other network service nodes • Facilitate the agreement of a test plan by participants • Familiarise the participants in the use of the FAC system and assist in the execution of test plans where necessary • Manage a record of issues and changes raised in the pilot
Fund Servicer	• Agree the test approach and expected outcomes • Collaborate to agree a test plan and timetable for its execution • Operate both the fund servicing and investor node • Assign resources to execute the testing and operate both the fund servicing and investor node • Represent the fund accountant, fund custodian and depositary perspectives in the execution of the test plan • Lead the evaluation of the pilot and the production of a report on its outcomes
Fund Manager	• Agree the test approach and expected outcomes • Collaborate to agree a test plan and timetable for its execution • Assign resource to participate in the testing and operate the fund manager node • Oversee the progress of testing and contribute to the final report on outcomes

Action Plan

This action plan defines the tasks, resources and timescales for a model pilot test exercise. This needs to be agreed with and adapted to individual participants reflecting their own resources, constraints and expectations.

As in all testing situations there is a balance to strike between the scope and depth of the testing and the benefits derived. A key planning criteria for the pilot was for a relatively light touch exercise but the outcomes can only be fully realised if participants in the testing have at least a thorough

understanding of the FAC operating model and are familiar with the operation of the system before they start testing. There is therefore a minimum level of participation that is necessary to achieve the outcomes and this is reflected in the proposed plan.

Tasks

Thorough preparation will enable a light touch but informative pilot with meaningful outcomes. Tasks to achieve this are:

1. Understand the FAC operating model and the impact on funds servicing (all participants after FAC workshops)
2. Validate and agree the approach and outcomes of the pilots (all participants)
3. Deploy a pilot testing environment (FAC)
4. Become familiar with the FAC system functionality and workflows (all participants supported by FAC)
5. Plan and agree test execution plan (all participants with FAC)
6. Execute test plan (all participants with FAC)
7. Review and report against outcomes (all participants with FAC

Resources

- Fund servicers will require at least one tester with a high degree of transfer agency subject matter expertise allocated for at least 10% of their time over the period of the test. A Business Analyst or an Operational resource with testing experience is recommended. Testers must be competent to quickly familiarize themselves with a new system and to appreciate the nature and impact of the underlying technology.

- Additional fund servicing test resources would extend the scope of testing and/or reduce the timeline, this is a variable for participants to consider.

- Although a single fund servicing resource can coordinate and conduct the majority of the testing on their own it is recommended that other participants, including fund managers, fund accountants and custodians are included acting in a limited capacity or simply as observers. This would enable the full end to end workflows and interactions to be explored in more detail from different perspectives.

Timeline

This template is for testing over a 6 week time period assuming 3-5 hours effort a week which is assumed to be a baseline for the minimum amount of testing required.

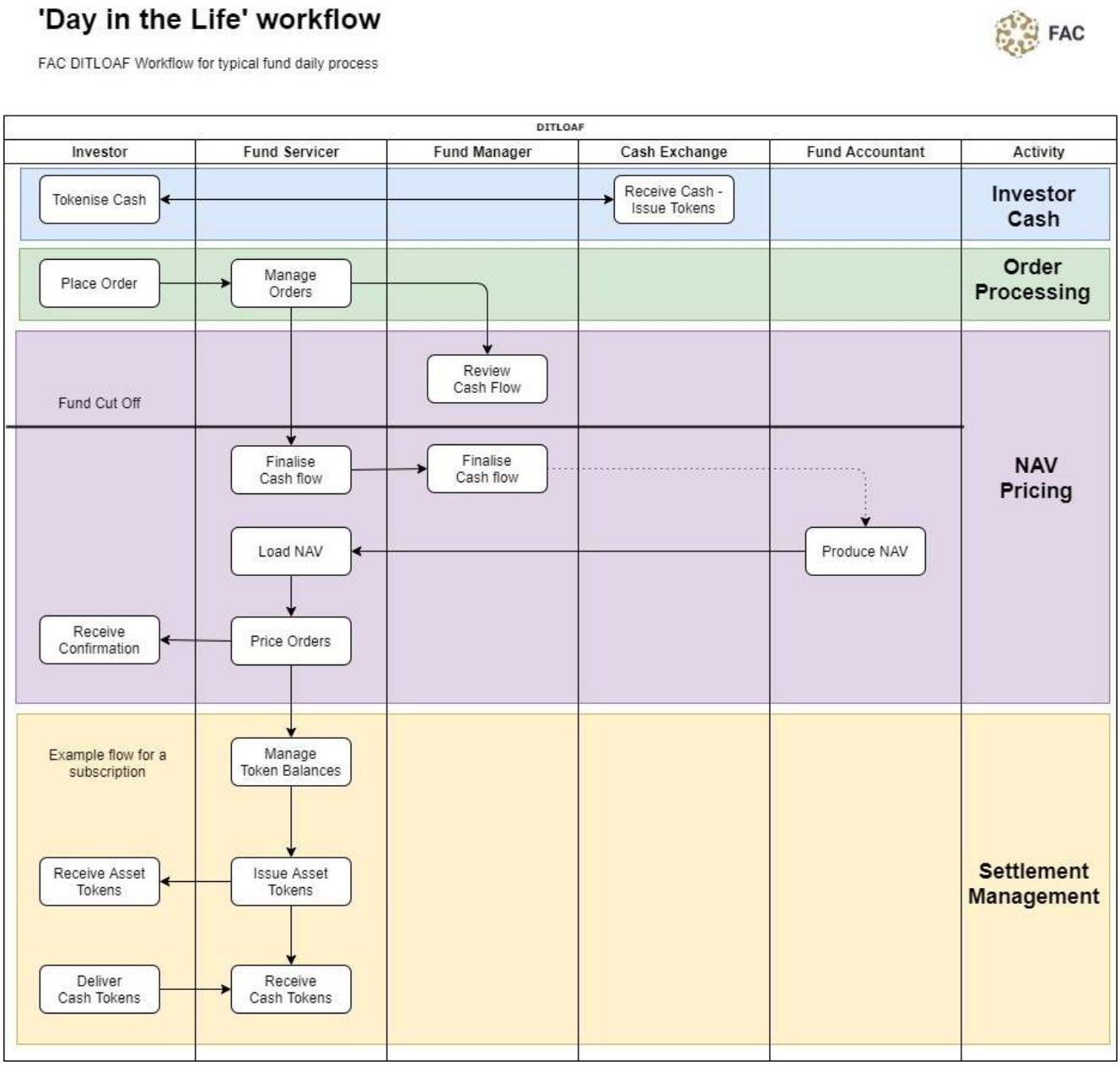
1. **Preparation – 3 weeks**
- Knowledge transfer on the operating model and impact of FAC should already have concluded at this point
- The preparation phase involves familiarizing testers with the system and agreeing the test execution plan.

2. **Test Execution – 2 weeks**
- Conduct at least 3 consecutive full business cycles for a daily fund.
- If multiple parties are involved some flexibility on timeline may be needed to achieve full participation.

3. **Conclude – 1 week**
- Review testing and produce conclusions

Availability, skillset and flexibility of allocated resources will have a significant impact on the final timeline.

Appendix 1 – A day in the life of a fund workflow



Appendix 2 – Definition of capabilities and constraints for pilot launch of a UK OEIC Share Class

Introduction

FAC's network has been built to a consensus specification, deploying internal FAC expertise and external guidance from the members of the FAC Strategic Advisory Group. While there has been a considerable amount of design and development activity (now approaching 3,000 man-days), the platform is still new: some functional areas will not be addressed in advance of the pilot, while others are still maturing. Consequently, there are a number of constraints, limitations and assumptions in the system build which will support the pilot. Clearly, a major purpose of the pilot is to provide us with guidance on priorities for future development. However, we are keen to be totally transparent about the capabilities planned to be in place for the pilot, and welcome early input to the roadmap. If there are critical developments which are required before the pilot can take place, then we need to identify these as early as possible, and close any critical gaps before the launch.

Dealing Calendar

We can support setting up a class of a fund that has daily dealing for subs and reds with a configurable cut off time. We can also configure:

- Non-dealing days for bank holidays;
- Weekly and monthly dealing schedules; and
- Split rules for subs and reds.

We do not expect to exercise all of this capability in the pilot.

Share Issuance Controls

We have implemented basic functionality to control on-ledger share issuance against a preconfigured maximum authorised number of shares. The system will prevent the issuance of fund shares that exceed the authorised maximum. We have also built a daily report of shares issued and cancelled, for reporting to the Depositary. This is based on a template provided by RBC, and so will require validation by other participants and their Depositaries.

Dealing Rules / Constraints

Fund classes will typically have dealing rules/constraints, for example maximum and minimum orders and % of total. The rules are not yet configurable for automated application in the FAC platform, but there is functionality in the GUI for the TA to track these manually, to review them and to reject orders that don't meet the required criteria. We assume that, because we are piloting a pooled nominee model, these requirements are less significant than they would be in full a retail model.

Fees and Commissions

So far, we have only implemented a simple initial charge as a % of the order value. Once again, the pooled nominee model is expected to minimise these requirements in the context of the pilot, but if there are specific requirements for the proposed launch fund, then we would need to understand these. Further work on fees and commissions is also planned as a follow-up to completion of the pilot exercise.

Pricing and Valuation

There is the potential in FAC to implement a fully-automated price feed for the pilot but that is dependent on partner engagement: the requirements will be partner-specific, and we will need the partner's cooperation in supporting an automated feed at their end. In our development to date we have kept to a simple NAV model and not incorporated any pricing adjustments, such as swing pricing, anti-dilution levels or equalisation. Once we look at the NAV feed in more detail there may be additional data items which we need to take into FAC.

Client Reporting

We have built basic client reporting in FAC, providing contract notes and statements; these need to be validated against a UK OEIC template as part of the pilot process. Our assumption is that the main outstanding requirements will relate to static text items, terms and conditions and disclaimers, which are not as important in the pilot. Again, we assume that, because we are piloting a pooled nominee model, these requirements are less significant than they would be in full a retail model.

Tax Reporting

UK tax reporting requirements (fund and investor) have not yet been incorporated beyond a very basic report of transactions by period, available from the fund node. Further analysis is needed with input from partner SMEs, fully to define the requirements. Again, the assumption is that the pooled nominee model reduces the requirement for client tax reporting.

Client Suitability

There is no support in FAC for a MIFID like fund/client suitability assessment. As with the areas above, our assumption is that these requirements are met outside the FAC platform because we are supporting a pooled nominee model for the pilot.

Operation of the Fund Node

The fund node in the FAC model is operated by the fund itself (i.e. by the ACD) or by a fund service provider delegated from the ACD. We need to confirm that the roles and operations at the fund node are appropriate under existing regulatory definitions; these include:

- The maintenance of a pool of cash tokens at the fund node for settlement liquidity;

- The maintenance of a pool of fund tokens at the fund node, again for settlement liquidity – the equivalent of the manager's box; and
- The issuance of fund tokens for this purpose, on the risk of the fund.

Our current assumption is that these operations are acceptable from a regulatory standpoint, but this assumption is untested. We need to work with our partner and the FCA to confirm that these roles and operations are acceptable for a regulated UK OEIC.

Renunciation of Share Purchases

FAC currently has no facility for renouncing shares purchases. We believe that there may be a requirement to enable investors in UK OEICs to renounce a purchase up to 10 days after the initial order. As title in a DL context is evidenced by the holding of tokens at a node, the implementation of this facility will not be directly equivalent to a renunciation, but may be more akin to a contractually-entitled sell-back. We need to confirm the regulatory interpretation of this facility.

Reporting Consolidation

Since we are launching a class of an existing OEIC umbrella alongside conventionally-issued classes, there will be a requirement to for input to a consolidated regulatory and financial reporting facility. Our default assumption for the pilot is that this will be achieved manually, and supported by data available from the GUI. As an alternative, once we have more insight into the partner's requirement, we could define a report to support this specifically.

Access Control

In the current version of FAC, we do not yet support a user access control model on the fund node. There is only a single 'super user' on the node which has full access to all functionality: there are no maker/checker or supervisor/manager controls which would be expected in a conventional production operating model. We do have such controls on the investor node, and rollout to the fund node is planned, but this is unlikely to be available for the start of pilot.

Cash Exchange

We propose to implement a Cash Exchange in the pilot. The Cash Exchange takes deposits of client money, and holds these in a pool in safe-keeping. The segregation of entitlement to the cash in the pool is defined by the location of cash tokens on-ledger. We need to confirm that this method is acceptable under current client money rules.

Asset Exchange

We do not propose to deploy an Asset Exchange in the pilot, and all shares will be issued (and cancelled) directly on-ledger from the fund node. Our assumption is that we will deploy an Asset Exchange after the pilot, in order to support the migration of conventionally-issued shares onto the ledger. The Asset Exchange is a more independent, but more complex option for the issuance and redemption tokens on-ledger: it depends on the willingness of the investors to move across to the tokenised form of the fund.
The complexity of the Asset Exchange will all be handled within the FAC environment. The existing shareholder deposits conventionally-issued shares at the Asset Exchange; these are held as collateral for the issuance by the Asset Exchange of tokens on-ledger. The main register is held off-ledger, with all tokenised shares held in the name of the Asset Exchange. This is similar to the pooling of cash at the Cash Exchange: the segregation of title to the shares is given by the on-ledger location of the tokens. We need to confirm that this is acceptable from a regulatory perspective.

Given the legal and regulatory analysis is still at an early stage, and a draft prospectus is still outstanding, there is a possibility that there are some as yet unknown requirements which will need to be fed into the build plan. We propose to work with our partner to surface these requirements.