



# FA Product Description

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# Introduction to FA Platform

## About the FA Platform

The FA Platform is a cloud solution that can be utilized to perform and automate key front to back-office functions. These include but are not limited to Portfolio Management, Fund Administration and Reporting.

## Plans

The FA Platform is available in four plans:

- Activate
- Automate
- Accelerate
- Advance

The plans include all FA Applications and features (except Activate), they differ by customizability, support, SLA, business continuity, security and compliance.

This FA Product Description describes the detailed content of respectively plan and descriptions of all FA features included in the plans.

This FA Product Description may be modified by FA Solutions Oy at any time.

# Plans

## Overview

FA Platform is made available via four different plans:

- Activate
- Automate
- Accelerate
- Advance

The following tables indicate availability of a feature: = included, = optional, = not available

## Features and Functionalities

For more details, see [Product \[24\]](#).

## Applications

	Activate	Automate	Accelerate	Advance
FA Back				
FA Client Portal				
FA Front				
FA Fund Management				
FA Admin Console				
FA Developer				
FA Monitoring				

For more details, see [Applications \[72\]](#).



### NOTE

FA Developer application is used for building and managing custom extensions for the FA Platform. The availability of certain types of custom extensions depends on your plan, and therefore certain features in the FA Developer application will be limited accordingly. For more information on customizability, refer to the [Customizability \[8\]](#) section below.

## Features

### Standard Features

	Activate	Automate	Accelerate	Advance
Portfolio management				
Fund management				

	Activate	Automate	Accelerate	Advance
Corporate Actions	✓	✓	✓	✓
Analytics	✓	✓	✓	✓
Compliance - Investment Restrictions	✓	✓	✓	✓
Compliance - Regulatory	✓	✓	✓	✓
Model Portfolio Management and Rebalancing	✓	✓	✓	✓
Trade Order Management	✓	✓	✓	✓
Fee Management	✓	✓	✓	✓
Accounting	✓	✓	✓	✓
Payments	✓	✓	✓	✓
Settlements	✓	✓	✓	✓
Data Aggregation	✓	✓	✓	✓
Reconciliation	✓	✓	✓	✓
Communications	✓	✓	✓	✓
Reporting	✓	✓	✓	✓
Task Management	✓	✓	✓	✓
Document management	✓	✓	✓	✓
Access for advisors	✗	✓	✓	✓
Access for customers	✗	✓	✓	✓
Administration	✗	✓	✓	✓
Authentication	✓	✓	✓	✓
APIs	✗	✓	✓	✓
Developer tools*	✓	✓	✓	✓

\*The scope of available developer tools depends on your plan. For more information, refer to the [Customizability \[16\]](#) section.

For more details, see [Standard features \[25\]](#).

## Authority Reporting

There are selected authority reports available in all plans. For more information, please refer to the product description.

For more details, see [Authority reporting \[60\]](#).

## Connections to Third Party Services

FA Platform includes a set of standard connectors providing connectivity to the selected third-party services. In most cases, this requires FA Platform users to have a separate direct agreement with the 3rd party and directly pay the 3rd party fees. M2 and Signicat services are provided through FA agreements and FA will charge customers separately for these services.

	Activate	Automate	Accelerate	Advance
Bank and custody connectors <i>(M2 has an extra fee)</i>	✓	✓	✓	✓
	●	●	●	●
Market data connectors	✓	✓	✓	✓
Trading connectors	✗	✓	✓	✓
Office 365 Calendar and Email Sync	✗	✓	✓	✓
PEP and sanction checks	✗	✓	✓	✓
Signicat digital identification and signing <i>(extra Signicat cost)</i>	✗	●	●	●

For more details, which services are supported, see [Connectors to 3rd party services \[63\]](#).

## Customizability

	Activate	Automate	Accelerate	Advance
<b>Views/dashboards</b> - Additional customized views / dashboards	✓	✓	✓	✓
<b>Rules</b> - rule configurations by filling in standard "decision table" templates	✓	✓	✓	✓
<b>Integrations</b> - Integrate external applications against FA standard APIs	✗	✓	✓	✓
<b>Integrations</b> - Custom reader formats / mappings	✗	✓	✓	✓
<b>Integrations</b> - Simple custom integrations via camel routes	✗	✗	✓	✓
<b>Integrations</b> - Customized integrations based on custom queries and query API	✗	✓	✓	✓
<b>Integrations</b> - Customized integrations based on custom queries and query monitoring	✗	✗	✓	✓
<b>Queries</b> - Access to queries view & building your own queries	✗	✓	✓	✓
Custom profiles	✓	✓	✓	✓
<b>Reports</b> - Customized reports (JSReport)	✓	✓	✓	✓
<b>Reports</b> - Customized reports (query-based, saved view-based)	✗	✓	✓	✓
<b>Rules</b> - Create new custom rules with decision tables	✗	✗	✓	✓
<b>Analytics formulas</b> - Creating own analytics formulas (script-based)	✓	✓	✓	✓
<b>Fee formulas</b> - Customized fee formulas	✓	✓	✓	✓
<b>Processes</b> - Customized processes (flowable modeller)	✗	✗	✓	✓
<b>FA Front</b> - Customized FA Front views	✗	✓	✓	✓
<b>Widgets</b> - Customized widgets	✗	✗	✗	✓
<b>Other</b> - Other customized camels, processes, rules, scripts etc. deployed via AppStore/Administration	✗	✗	✗	✓

For more details, see [Customizability \[16\]](#).



## Support

### Support

	Activate	Automate	Accelerate	Advance
Self Service Support	✓	✓	✓	✓
Standard Support	✓	✓	✓	✓
Consultative Support	✗	✗	✓	✓
Developer support	✗	✗	✗	✓

For more details, see [Support \[10\]](#).

### SLA

	Activate	Automate	Accelerate	Advance
First Response / first resolutions times	Only first response time	Only first response time	Only first response time	First response / first resolution times
• Urgent	4hrs	2hrs	1hr	1hr / 8hrs
• High	16hrs	8hrs	4hrs	4hrs / 16hrs
• Normal	32hrs	16hrs	8hrs	8hrs / 32hrs
• Low	64hrs	32hrs	16hrs	16hrs
Reporting	Annual	Semi-annual	Semi-annual	Quarterly
Customer Service Manager with Service Management meetings	Annual per request	Annual	Semi-annual	Quarterly
Guaranteed up-time	95%	97%	99%	99.9%
Service level credits	✓	✓	✓	✓

For more details, see [Support \[10\]](#).

## Business continuity and security

	Activate	Automate	Accelerate	Advance
Deployment	Shared	Isolated	Isolated HA	Dedicated / Customized
Hosting location	Netherlands	Netherlands Other options: Switzerland, UK	Netherlands Other options: Switzerland, UK, Ireland, USA, UAE	Netherlands Other options: Switzerland, UK, Ireland, USA, UAE, Others - ask
Backups (retention)	✓ (7 days)	✓ (7 days)	✓ (7 days)	✓ (7-30 days)
Secure delivery of backups to customer	✗	○	○	○
IP Limitation	○	○	○	○
Geo-disaster recovery	✗	✗	✓	✓
Encryption (data in transit, data at rest)	✓	✓	✓	✓
Identity brokering (SSO) / User federation	✗	○	○	○

	Activate	Automate	Accelerate	Advance
Dedicated FA API instance				
Test environment (additional fee applied to an optional test environment)				
Additional test environments (additional fee applied to an optional test environment)				
Document Storage Capacity limit	25 GB included	50 GB included	200 GB included	500 GB included

For more details, see [Business continuity and security \[13\]](#).

## Compliance

	Activate	Automate	Accelerate	Advance
GDPR compliant				
ISO-27001 compliant				
ISAE3402 Type 2 Assurance report (SOC1)				
Annual security audit report				
Customised security audit				

For more details, see [Compliance \[14\]](#).

## Support

Support service is provided by FA Solutions to the clients who report FA system-related technical issues and request FA system-related usage guidance for functionality already implemented and in use in production. Support is provided to the client's trained main users. Support is offered via [FA Helpdesk](#) which acts as a single point of contact to all support related matters. FA's support serves clients during default business hours Mon-Fri 0800-1700 CET according to SLA defined in the agreement. SLA applies to production environment and after the customer has gone live with the FA system. The scope of the support depends on the support types included in the Plan. Different support types are described below. Services can be requested via Service Request. Please see [Services \[22\]](#) for more information.

### Self Service Support

Self Service support includes the client access to all documentation of FA Platform. Based on documentation ([FA Helpdesk](#) and [FA Documentation](#)), customers can independently browse/search the documentation, find answers and apply instructions to their questions.

### Standard Support

Standard support provides general assistance on product usage related questions and a forum for product related issue reporting. The Standard support is provided by FA's Customer Support team via [FA Helpdesk](#) ticketing system.

### Consultative Support

Consultative support provides case specific assistance on product usage related questions. Consultative support can be requested via [FA Helpdesk](#) ticketing system. The Consultative support is initiated via [FA HelpDesk](#) and if needed followed up by online calls. Consultative support is provided by FA's Customer Support or Professional Services team.

## Developer support

Developer support provides assistance on product customizability related questions. Product customizability options are described in the [Customizability \[16\]](#). Developer support is initiated via [FA Helpdesk](#) ticketing system and if needed followed up by online calls. Developer support is provided by FA's Professional Services team.

## SLA

FA Customer Services provides assistance and processes customer requests according to service level agreement which includes guaranteed response and resolution times, based on requests' priority classification and subscription Plan.

Request priorities are classified as:

**Urgent** request = issue is preventing the whole production

**High** request = issue is seriously impeding production

**Normal** request = issue is impeding production or preventing test usage

**Low** request = issue is general question, improvement or new feature request, or otherwise not impeding production by any means, has a workaround

Priorities are objectively evaluated and can be adjusted by Customer Services.

## Support 1st Response time / 1st Resolution time

Hours are measured during default business hours Mon-Fri 0800-1700 CET.

Response time means that the request is in progress or resolution suggestion is given by Customer Services. Response times, per subscription level, are defined in the matrix below. Resolution times are included in the "Advance" plan only. First Resolution time is the first time that an Agent sets a ticket to solved, Full Resolution is when a ticket is fully resolved and the customer does not re-open it with further questions or concerns. The time is specified as the time between a ticket creation time and the first timestamp the ticket was marked as solved. When the request is set as solved, pending, or on-hold, which stops SLA calculation, when for example a workaround, instruction, schedule for an improvement, new feature, or product defect has been provided. Resolution time SLA does not apply to requests recognized and then classified as change, new feature or improvement.

Priority	Activate	Automate	Accelerate	Advance
Urgent	4hrs / -	2hrs / -	1hr / -	1hr / 8hrs
High	16hrs / -	8hrs / -	4hrs / -	4hrs / 16hrs
Normal	32hrs / -	16hrs / -	8hrs / -	8hrs / 32hrs
Low	64hrs / -	32hrs / -	16hrs / -	16hrs / -

## Reporting

SLA reporting on requests and actual availability is provided according to Service Management meeting schedules per subscription Plan.

## Customer Relationship Manager with Service Management meetings

Customer Relationship Management function is part of Customer Services and is included in all subscription Plans as in the matrix below. It consists of service management meetings, reporting, info about new functionalities and features, and that helps customers to use and utilize FA more efficiently in their business.

Activate	Automate	Accelerate	Advance
Annual Service Management meetings with SLA reporting per request	Annual or semi-annual Service Management meetings with SLA reporting	Dedicated Client Relationship Manager and semi-annual service management meetings with SLA reporting	Dedicated Client Relationship Manager and quarterly service management meetings with SLA reporting

All customers are invited to new feature and version release online webinars, user group meetings facilitated by FA, and user summits.

### Guaranteed uptime

FA has 24/7 server monitoring with system availability uptime SLA as:

Activate	Automate	Accelerate	Advance
95%	97%	99%	99.9%

The following situations are excluded from the calculation of availability time:

- Time spent on the installation, alteration, or maintenance measures agreed upon by the Parties.
- Unavailability caused by factors outside of our reasonable control, including any force majeure event or Internet access or related problems beyond the demarcation point of the Supplier
- That being resulted from not following the guidelines described in the material or support provided by the Supplier
- Other Accepted Downtime situations

The service is considered available and up when the user is able to sign-in to the system and access all available applications. The system is considered available even if:

- The data is not up-to-date as the report updates processes are running in the background
- The system does not function as expected due to an error in the system or in the data
- The system is unusually slow to respond due to network issues outside FA
- Access to 3rd party application, service, or data is prevented due to reasons outside FA

### Service level credits per Plan

Credits can be refunded for only one of the SLAs that has higher percentage.

### Uptime SLA

Activate	Automate	Accelerate	Advance
If level of actual availability goes below / refund from monthly base SaaS fee	If level of actual availability goes below / refund from monthly base SaaS fee	If level of actual availability goes below / refund from monthly base SaaS fee	If level of actual availability goes below / refund from monthly base SaaS fee
Below 95% / 5% refund	Below 97% / 5% refund	Below 99% / 5% refund	Below 99.9% / 5% refund
Below 90% / 10% refund	Below 95% / 10% refund	Below 97% / 10% refund	Below 99% / 10% refund
Below 80% / 20% refund	Below 90% / 20% refund	Below 95% / 20% refund	Below 97% / 20% refund
Below 70% / 30% refund	Below 80% / 30% refund	Below 90% / 30% refund	Below 95% / 30% refund
Below 50% / 50% refund	Below 70% / 50% refund	Below 80% / 50% refund	Below 90% / 50% refund
N/A	Below 50% / 100% refund	Below 70% / 100% refund	Below 80% / 100% refund

The Availability Window is 24/7/365

Actual Availability = (Availability Window during the calendar month rounded to full minutes - (Downtime during the calendar month rounded to full minutes - Accepted Downtime during the calendar month rounded to full minutes)) / Availability Window during the calendar month rounded to full minutes \*100.

## Request SLA

Request SLA refund applies only to “Urgent” and “High” priority requests and is measured monthly.

Activate	Automate	Accelerate	Advance
Not applicable	Number of requests with breached SLA in month / Refund from monthly base SaaS fee	Number of requests with breached SLA in month / Refund from monthly base SaaS fee	Number of requests with breached SLA in month / Refund from monthly base SaaS fee
	1-3 requests / No refund	1-2 requests / No refund	1 request / No refund
	4-5 requests / 5%	3-4 requests / 5%	2-3 requests / 5%
	6 or above requests / 10%	5 or above / 10%	4-5 requests / 10%

## Business continuity and security

### Deployment

#### Datacenter locations

The FA Platform uses Microsoft Azure as a cloud hosting provider. Microsoft Azure is accredited with more than 90 compliance certifications and has data centers around the world. The FA Platform is hosted in data centers that provide the required IT infrastructure. For EU clients, SaaS environments are hosted in Netherlands, while secondary recovery location is Ireland. For non-EU clients, SaaS environments can be hosted for example in UK, US and UAE.

#### Isolated

Customer-specific FA Platform web application environment with secure namespace isolation hosted on Azure Kubernetes Service cluster. Data is stored on the customer-dedicated database server.

#### Isolated HA

Customer-specific FA Platform web application environment with secure namespace isolation hosted on Azure Kubernetes Service cluster. Data is stored on the customer-dedicated database server.

High availability with duplicated and zonally distributed Azure Kubernetes Service worker nodes. Option to do read operations from a separate read-replica database server.

#### Dedicated or customized

Dedicated FA Platform web application environment with customer-specific own Azure Kubernetes Service cluster. Data is stored on the customer-dedicated database server.

High availability with duplicated and zonally distributed Azure Kubernetes Service worker nodes. Option to do read operations from a separate read-replica database server.

Option to customize the installation setup e.g. by building site-to-site VPN to FA cloud, customer-specific SFTP services for complementing the setup.

#### Backups

Database backups with the option to restore the situation at any point in time within the last 7 days (30 days in the Advance Plan).

Daily file system-level backups with 7 days rotation (30 days in the Advance Plan).

#### IP limitation

Option to have access to FA Platform applications only from pre-defined networks.

#### Geo-disaster recovery

The database backups can be stored in another data center that is physically located in another geographical area. These backups are accessible even when the region your server is hosted in is offline. The

recovery time objective (RTO) is less than 12 hours and the recovery point objective (RPO) is less than an hour.

## Encryption

### Data in-transit and data-at-rest

The data transfer between the user's browser and FA Platform and also the FA application and their databases is secured. The data in transit is secured by encrypting data-in-transit with transport layer security.

The customer-dedicated database server uses the FIPS 140-2 validated cryptographic module for storage encryption of data at rest. Data, including backups and temporary file created while you run queries, is encrypted. Encryption uses the AES 256-bit cipher on the storage level, and the keys are system-managed. Storage encryption is always on and can't be disabled.

### Identity brokering (SSO) / User federation

FA Platform supports identity brokering and single sign-on (SSO) against identity providers with the following protocols:

- OpenID Connect v1.0
- SAML 2.0

In addition, FA Platform can federate external user databases. FA has support for LDAP and Active Directory.

Note, in some cases, the integration the counter-party (such as Microsoft AD) might be behind a firewall and requires a separate VPN to be setup. Therefore, whether these options are available, requires a case-by-case analysis with the counter-party.

### Test environment

Customer-specific FA Platform web application test environment with secure namespace isolation hosted on Azure Kubernetes Service cluster. Data is stored on the customer-dedicated database test server.

An ideal environment for user acceptance tests when upgrading versions of FA Platform applications. Data into the test database server can be optionally imported from production in order to try out new features with production-like data.

### Document storage

FA includes document management capabilities. Respective plans include Database allocation to store documents up to the defined level per plan. After reaching the defined Capacity limits an additional monthly fee will be applied. The current cost is €200 /month per the next 100GB of data storage.

## Compliance

### GDPR compliant

FA is GDPR compliant with the EU General Data Protection Regulation 2016/679 (GDPR). This means that we have implemented the required policies and processes to meet GDPR, both internally and for our customer installations.

### FA as a Processor

FA act as Processor for FA Customers' personal data stored by FA and our subcontractors. This is managed through Data Processing Agreements between FA and respective Customer and between FA and relevant subcontractors.

FA is keeping a record of processing activities carried out on behalf of our customers. These records, including valid subcontractors, are available in FA Helpdesk.

## FA as a Controller

FA act as a Controller for personal data like any other company. This includes, for example, HR data for FA employees and customer and prospect registers. We follow both GDPR and local laws in the countries we operate in.

## ISO 27001 compliance

FA is certified in accordance with ISO/IEC 27001:2013 standard. Within its organizational structure, FA has an information security management system (ISMS) that ensures the security of activities associated with developing, providing, and maintaining the FA platform. The goal role of the ISMS is to identify, assess and handle potential security risks. The ISMS ensures that FA has documented procedures for is also responsible for responding to security incidents and breaches, conducting audits and assessments, and providing training and awareness to employees. In addition to ISMS, the following practices are carried out by independent experts:

- Release penetration test and yearly penetration test  
Penetration tests involve simulating a real-world attack by ethical hackers or security testers who attempt to exploit vulnerabilities and gain unauthorized access to systems or data. Release penetration tests are performed before releasing new software or updates to an existing system to ensure that no new vulnerabilities have been introduced.  
Penetration tests are performed by certified personnel on dedicated testing environments.
- Monthly cloud review  
A monthly cloud review involves examining the security controls and configurations of the organization's cloud-based infrastructure to ensure that they are aligned with security policies and standards. The review includes evaluating access controls, encryption, network configurations, and other cloud security best practices  
The annual audit is an independent review of an organization's information security policies, procedures, and controls. The audit examines the effectiveness of the organization's security measures in protecting its assets, including data, systems, and networks.
- Annual audit

The ISO 27001 compliance certificate is available by the link: [ISO 27001 compliance certificate](#) .

## ISAE3402 Type 2 Assurance Report (SOC1)

FA is certified in accordance with the International Standard on Assurance Engagements (ISAE 3402), Type II Report also referred to as SOC 1. Annual audit reports are published in January.

The majority of the controls generally apply to all FA customers but only selected customer installations meeting required criteria are included in the testing samples and official general assurance report. The general annual assurance report is included in the FA plans Accelerate and Advance.

The report covers selected controls within the following control areas:

- Access Management (AM)
- Change Management (CM)
- Backup and Recovery (BR)
- Data Processing (DP)
- Sub-Processor (SP)

Customer-specific ISAE3402 Type 2 assurance report only targeting the customer environment can optionally be conducted at an additional cost on a time and material basis. The customized assurance report is only available for the Advance plan.

## Customized security audit

In addition to the FA annual security testing using an FA-defined cloud testing environment, it is also possible to conduct a customized security audit using the customer's own cloud environment and data.

This security audit can be conducted by the customer's own independently selected security company. FA will provide the required support to the selected security company and the customer will contract and pay directly for the services provided by the security company.

FA's external security company can be used for customer-independent security testing. The customer will then contract and pay directly to the security company.

The customized security audit is only available for plan Advance.

## Customizability

### Overview

The FA Platform has an extensive and ever increasing set of built-in features. Nevertheless, it is fairly common for users of the FA Platform to have unique requirements that the built-in features do not cover. This often happens with reporting-related requirements, for example: perhaps you want your PDF reports to reflect your unique brand, and contain information in a way that doesn't quite match our standard set of reports.

To bridge the gap between our built-in features and unique customer-specific requirements, the FA Platform supports extensive customizability. That means it's possible to extend the functionality of your FA Platform instance in many ways with customized features. To meet unique reporting requirements, for example, we provide a fully integrated report builder/server called [jsreport \[18\]](#) as part of the FA Platform.

This page lists and describes the various types of customized features that the FA Platform supports. If you are interested in how to build custom features for the platform, please refer to [FA Developer Guide](#).

### Integrations

#### Integrate external applications against FA standard APIs

**Overview:** FA's standard REST/GraphQL APIs enable other systems to list, search, add, and modify data in FA. This allows other systems to integrate themselves with FA.

**Limitations:** FA is the passive party in these kinds of integrations: FA's standard APIs are not developed to match specific customized integration needs with external systems. Instead, if our standard APIs do not match the requirements of the external system, the options are to either develop that external system, or to opt for one of the other customized integration options.

**Examples:** FA's customers may build their own websites, services, or mobile apps which utilize data from FA. FA's customers may build continuous integrations between their existing systems (e.g. CRM system) and FA.

#### Simple custom integrations via camel routes

**Overview:** Apache Camel (<https://camel.apache.org/>) is an open-source integration engine that can be used to connect data from external sources to FA, and vice-versa, in various ways and formats, and with various intermediate processing.

**Limitations:** Complex data-processing that requires nonstandard logic or scripting are not included in this integration option. If such an integration is required, one of the other integration options is required instead.

#### Examples:

- Read in various types of data from a nonstandard external source into FA
  - Based on SFTP or other data transfer mechanism for which Camel has built-in support
  - Perform intermediate data transformations based on data mappings or custom reader formats (see below)



- Pass the data forward to features such as importing or reconciliation
- Export data from FA to other systems

### Custom reader formats / mappings

**Overview:** Custom reader formats and mappers control how data from external systems is transformed before being processed in FA. Users of FA may build customized readers and mappers to support importing data in nonstandard data formats.

**Limitations:** Custom reader formats and mappings are intended for relatively simple data mapping and transformations such as choosing, renaming and re-ordering columns. They are not suited to complex data transformation tasks, such as combining data from multiple sources. Custom reader formats only support transaction, trade order and market price data.

**Examples:** Custom reader to import a nonstandard custodian's transaction listing into FA. Custom mapper to import chosen security information from Morningstar to FA.

### Customized integrations based on custom queries and query API

**Overview:** FA's standard query API is a REST API that returns data based on the results of a specified SQL query. The queries used with query API may be customized. Similarly to FA's standard APIs, the query API enables other systems to list or search for data in FA. Unlike the other standard APIs, the possibility of using customized queries via query API allows the responses/data to be modified to suit the needs of the specific integration case.

Even if FA's other standard APIs are able to return the required data, the performance of a customized integration may in some cases be optimized through the use of custom queries and the query API.

#### Limitations:

- Only suitable to data that is query-able.
- Only able to return a flat data structure.
- Only suitable for retrieving data; adding new data and modifying data through custom queries are not supported.

**Examples:** Performance-optimized custom integration to fetch specific information (e.g. customer / holdings information) for an online portal.

### Customized integrations based on custom queries and query monitoring

**Overview:** Query monitoring allows building customized integrations where FA periodically (or on-request) sends CSV files, e-mails or performs API calls whose content is defined by a customized query.

#### Limitations:

- Only suitable to data that is query-able.
- Only able to return a flat data structure.
- API calls only support GET and POST methods, with either basic authentication or header-based authentication.

#### Examples:

- Simple automated data export routines
- Simple trading integrations, where FA sends given trade information via file, e-mail or even API call to a broker or external nonstandard trading platform

### Other customized integrations deployed via AppStore/Administration

**Overview:** Customized integrations that do not fall into any of the other above categories, Unlike the other categories mentioned above, these customized integrations may make use of scripting features.

**Limitations:**

- These types of customized integrations have few limitations in terms of what they are able to do, but should only be used if the other alternatives are not viable.
- Customized integrations are relatively labor-intensive (expensive) compared to the other types of integrations, and are more challenging from a maintenance point of view.

**Examples:**

- Customized APIs to provide data that cannot reasonably be produced through a query, or in a non-flat structure
- Customized data imports that require advanced logic that mappers/readers are not able to handle
- Customized data connectors in cases where Camel's built-in components are insufficient
- Customized integration to an otherwise unsupported (nonstandard) CRM system that cannot be achieved through the simpler customized integration options above.

**Reports****Customized reports (JSReport)**

**Overview:** Fully customized reports in a variety of formats (PDF, Excel, text-based formats), developed with jsreport (<https://jsreport.net/>). Content, layout, and visuals of customized jsreport-based reports are tailor made to meet specific customer requirements.

**Limitations:** Data of the report is fetched with one or more API calls.

**Examples:**

- Tailor-made quarterly holdings and performance report
- Tailor-made transaction/trade confirmation report
- Customized authority/tax reports to fulfil nonstandard reporting requirements

**Customized reports (query-based)**

**Overview:** Simple tabular PDF reports with customized content. This is a fast and cost-efficient way to meet simple reporting requirements that require customized content.

**Limitations:**

- Format of such reports is fixed: standard header, footer, and a table with the content itself
- Translations for column names are not supported
- Only query-able data may be included

**Examples:**

- Simple positions/P&L/customers report with slightly different data than what FA's standard reports provide

**Rules****Rule configurations by filling in standard decision tables**

**Overview:** Filling in standard decision tables. The decision tables are excel files, which can be used to control how the FA platform behaves in various circumstances. The standard decision tables are provided by FA.

**Limitations:** This customization option is limited to the configurability that is supported by FA's standard decision tables. If the desired outcome is not supported by standard decision tables, then "Create new custom rules with decision tables" is needed instead.

Please note, that this customization category only allows for *filling in the variables* in decision tables, not *modifying* other parts of the decision tables. Modifications to other parts of the decision table falls under “Create new custom rules with decision tables”.

**Examples:**

### Create new custom rules with decision tables

**Overview:** Building new decision tables, or modifying standard decision tables, allows for customized behavior that is not supported by standard decision tables.

**Limitations:** Although decision tables may technically contain lots of logic or very complex logic, decision tables should not be used in this way. Decision tables should not contain extensive scripting.

**Examples:**

### Other

#### Additional customized views / dashboards

**Overview:** New dashboards, new saved search views. Saving views allows users to tailor FA to meet their requirements and workflows. Saved views are useful as-is, but may additionally be used in dashboards and as the basis for scheduled activities in FA.

**Limitations:**

**Examples:**

#### Customized FA Front views

**Overview:** Customized FA Front views allow tailoring FA Front content to meet various requirements in terms of functionality, content, and visuals. A customized view is made up of one or more of FA Front’s standard gadgets with customized configurations.

**Limitations:** Building entirely new gadgets to meet customization needs is not supported. This customization option is therefore limited to what is achievable by FA’s standard gadgets. In some cases, customized processes may be used to address specific customization needs in FA Front (please refer to “*Other customized processes, rules, scripts etc. deployed via AppStore/Administration*”).

**Examples:**

- Investor portal which displays information about holdings, with layout and styles that match customized requirements
- CRM/advisor portal which displays information about customers and supports selected actions, in accordance with customized requirements

#### Access to queries view & building your own queries

**Overview:** FA stores data in a relational database. The queries view allows you to write custom SQL queries to retrieve data from this database, to meet customized data retrieval requirements. These customized queries may be saved and shared between users, and used as a basis for customized integrations and reports (see above). Saved queries may also be used in customized dashboards.

**Limitations:**

- Custom queries are only allowed to retrieve data; custom SQL commands to add, delete or modify data are prevented.

**Examples:**

- Customized data exports for business intelligence or data mining requirements.

## Custom profiles

**Overview:** Custom tabs for simple data collection in the security, contact, and portfolio windows. This data may be viewed across various parts of the FA platform. These include contact, security, and portfolio search views, and FA Front.

### Limitations:

- Custom profiles do not support internationalization (translations)
- Custom profiles do not support validation (e.g. required fields)
- Custom profiles do not support interdependencies between fields, or complex logic (e.g. show/hide fields based on values of other fields)
- Custom profiles for other types of data are not supported

### Examples:

- Custom KYC profile to collect and store customized contact information for which FA doesn't have a standard field

## Creating own analytics columns

**Overview:** Users of FA are able to define customized columns for use in analytics+. This includes the analytics+ view, analytics+ API, and FA Front's analytics-compatible gadgets. Customized columns may be used to adjust the precision or presentation of a standard analytics+ column or key figure. Customized columns may also be used to combine or otherwise adjust value of standard analytics+ columns.

**Limitations:** Although customized analytics+ columns may contain complex scripting, building customized columns with extensive logic is heavily discouraged.

### Examples:

- Creating a version of an existing analytics+ field with lower precision e.g. rounding to zero decimals, or another name
- Combining existing columns together, e.g. column which sums up incidental charges and one-off costs (ex-post) into a single column

## Customized fee formulas

**Overview:** Fee formulas are used to calculate fees and generate fee transactions for e.g. asset management fees, performance fees, and estimated rebates. FA provides a number of standard fee formulas which may be used without any customization. If none of the standard fee formulas match the requirements (fee structure/calculation formula), a customized fee formula may be used instead.

### Limitations:

### Examples:

- Customized asset management fee formula
- Customized performance fee formula

## Customized workflows (flowable modeler)

**Overview:** Customized business processes may be modeled and handled with workflows that are defined via flowable modeler.

**Limitations:** Data collection with complex and interactive forms is not supported.

**Examples:** Simple customized onboarding process.

## Other customized processes, widgets, or scripts deployed via Administration

**Overview:** Some customized functionality or UIs cannot be achieved through the other types of customizations mentioned above. In these cases, we may be able to fulfil the requirements with custom pro-

cesses/widgets/scripts. These types of customizations are used to customize data processing, automate nonstandard operations and workflows, and build complex, dynamic UIs for data collection.

**Limitations:**

- These types of customizations have few limitations in terms of what they are able to do, but should only be used if the other alternatives are not viable.
- Customized processes/widgets/scripts are relatively labor-intensive (expensive) compared to the other types of customization, and are more challenging from a maintenance point of view.

**Examples:**

- Customized complex workflows that include dynamic UIs for data collection, e.g. custom client onboarding workflow.

# Services

## Overview

FA provides various services to clients. Services need to be separately requested and agreed upon with FA and services are invoiced based on time and material. The first step in the service request process is to agree on the scope and delivery timelines together with FA. Available services are described below. The table below describes optional (o=optional) services for each plan size.

	Activate	Automate	Accelerate	Advance
Data migration	o	o	o	o
Customization*	o	o	o	o
Training	o	o	o	o
Workshop	o	o	o	o
Other consultation	o	o	o	o

\*Allowed customizations depend on the plan size.

## Data migration

Clients can acquire data migration as an optional service from FA or a recommended third party. If FA is doing the data migration, the client needs to provide the following information for FA to estimate the required effort:

- Amount of data that needs to be migrated in CSV or XLSX format
- Number of clients
- Number of portfolios
- Number of transactions
- Number of securities
- Security types that the client operates with
- Start date from which transactions need to be migrated
- Contact person for data-related queries

After FA receives the data and related details, we will organize review sessions with the client and provide an initial estimate of the effort and schedule. The migration work is done based on time and material.

## Customization

The FA platform provides flexibility for customizations. Customization options depend on the plan size that the client has selected. A list of customization options for different plans is available in [Plans \[6\]](#). For detailed descriptions of different customization options, see [Customizability \[16\]](#).

## Training

FA provides various materials for clients to learn about the features and solutions we offer:

- Helpdesk - FA product features and client-specific documentation
- [FA Documentation](#)
  - General documentation and FA standard business solutions
  - FA Developer - developer-oriented instructions

Training focuses on the general features of the FA Platform. If the client needs training sessions and would like to have an FA consultant running the sessions, we can deliver this as a service. In such a case, the client should inform FA about the subject of the training. The consultant will then prepare, schedule, and run the training as requested.

By default, FA organizes the training online. We can also provide training on client premises if needed. In this case, the client is invoiced for the resulting time and travel expenses.

## **Workshop**

Workshops focus on client-specific business needs and workflows. Workshops can be arranged upon request.

The client needs to inform FA about the topic and background of the business workflow or issue that the workshop is meant to cover. An FA consultant will then prepare for the topic and arrange the workshop. After the workshop, FA will summarize the outcome of the meeting for the client.

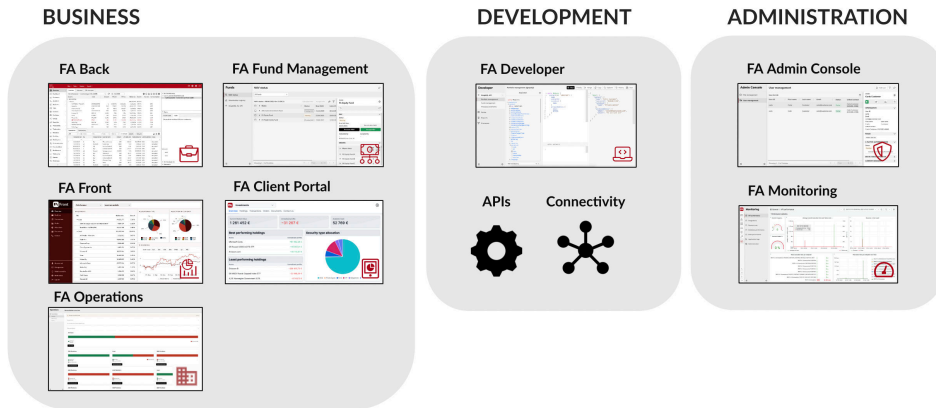
By default, FA runs workshops online. We can also provide workshops on client premises if needed. In this case, the client is invoiced for the resulting time and travel expenses.

## **Other consultation**

If the client needs consultation, they should reach out to FA. We will then evaluate if an FA consultant or an FA partner could provide the requested consultation.

# Product

## Applications in FA Platform

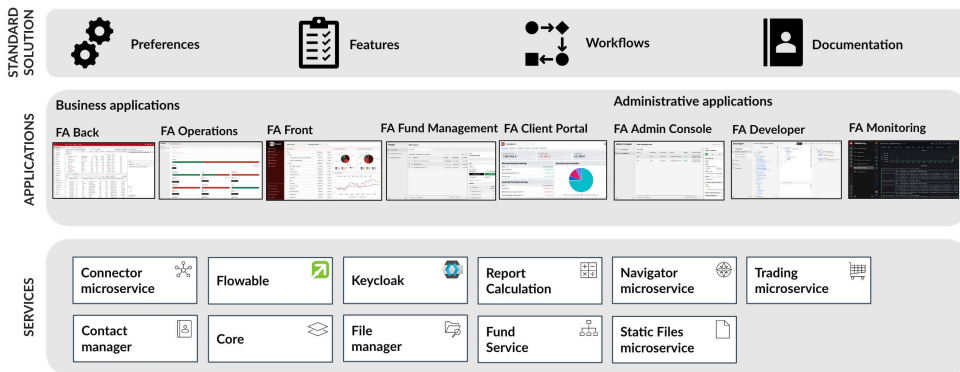


FA Platform consists of applications designed for different types of users for different purposes. We have grouped our applications under “business”, “development”, and “administration”, providing more context to the purpose of each application.

Users can access the applications they need to conduct their daily work. They can navigate between the applications through the global app bar on the left.

To learn more about the individual applications in FA Platform, see [Applications \[72\]](#).

## Structure of FA Platform



Overall, the structure of FA Platform includes a lot more than just the client-facing applications.

Below the application level, the structure of FA Platform includes micro-services. Micro-services can’t be directly accessed by the users, but they do their work in the background. Micro-services break down the underlying business and calculation logic to smaller pieces, handling the background operations for the client-facing applications.

On top of the application layer, between the users and the applications, we have the Standard Solution. Standard Solution provides a standard set of configurations and settings that follow our best practices. It makes standard functionality available pre-configured and ready to be used.

To learn more about the architecture of FA Platform, see [Architecture \[79\]](#).



## Features

### Standard features

### Portfolio Management

#### Overview

FA's real-time, transaction-based portfolio management provides you with an overview of your portfolios, holdings, and trades now or for any other time in the past. FA's Portfolio Management is a base for your Investment Book of Records (IBOR).

#### Functionality

##### Manage your data

- **Add, modify and delete contacts, portfolios, securities, market prices and transactions** - store relevant details for each type of data and manage the hierarchy of the data - who owns a portfolio, which portfolio transactions belong to and which securities transactions are linked to.
- **Adjust data-related preferences** - configure the options available in your categorizations and classifications on different levels to control what information you can store on different levels.
- **Store documents on your contacts, portfolios, securities and transactions** - upload documents on different levels, and categorize, rename or remove them through [document management \[47\]](#).

##### Search and access your data

- **Search for data through search views** - search views for contacts, portfolios, securities and transactions allow you to browse through and access your data. Select columns you want to view your data with, filter the data through selected columns, or use search criteria to save your search for later use.
- **Manage one customer on the Overview** - view and modify one portfolio, one customer's portfolios, or a group of portfolios in one screen. Portfolio hierarchy allows you to view investments and transactions aggregated on different levels, and other sections allow you to access basic information, memos, or documents.
- **Search for positions** - search which portfolios contain a position in specific security on a specific date.
- **View latest market prices and mass-update them** - search for latest market price entries in certain portfolios for specific types of securities and manually mass-add new market price entries for multiple securities for a specific date.

##### Position valuation

- **Real-time transaction-based calculation** - positions are calculated based on transactions in the system. When saving a transaction, position data in FA is directly up-to-date, and report recalculation is triggered to recalculate report data for analysis and reports.
- **Configurable position valuation based on FIFO or average price** - positions are valued based on valuation method selected for a portfolio or based on valuation method fixed for a security type. For example, you can value all future positions with FIFO even when your portfolios are set for the average price.
- **The daily market value of positions** - with daily end-of-day prices and FX rates stored under your securities, the system automatically calculates the daily market value of your positions and portfolios. In addition, accrued interest is automatically calculated for bond instruments when relevant fixing information has been filled in.
- **Aggregation of positions** - FIFO is always done per portfolio, but positions can be aggregated up to view combined positions of multiple portfolios. You can set up portfolio structure to apply currency conversion when aggregating portfolios.

##### Contacts

- **Store your contact information** - you can store your contacts with all relevant data, including for example juridical form (such as private person or company), classifications, identity, tax country, na-

tionality, language and external IDs (such as LEI or SSN). In addition, you can use tags, key figures and custom fields to store more details, and maintain notes related to your contacts.

- **Add, modify and delete address information** - you can store multiple addresses on each of your contacts, including for example postal address, email, and phone numbers. You can use addresses for example for communication and reporting.
- **Define representative structures within your contacts** - you can define who represents your contact, for example, your advisors can represent their own customers and your customers can represent their companies or children. A contact can have multiple representatives that can differ by representation type. Representative structures can be used to allow access to other contacts' information.
- **Define transaction numbering either on contact or portfolio level** - control whether you want the system to automatically generate a running external ID to your transactions on a portfolio level, or if your contact has multiple portfolios, on contact level to maintain unique numbering among contact's all portfolios.

## Portfolios

- **Store your portfolio information** - you can store your portfolios with all relevant data, including for example type, custody, language, juridical form, tax country and external IDs (for example for reconciliation or transaction aggregation). In addition, you can use tags, key figures and custom fields to store more details, and maintain notes related to your portfolios.
- **Select reporting currency and valuation method for each portfolio** - each portfolio's investments are valued in the reporting currency you select for the portfolio, allowing you to value different portfolios in different currencies. You can also convert the portfolio's investments to another currency for reporting. In addition, each portfolio's investments are valued either with FIFO or average price, depending on the valuation method you select for the portfolio.
- **Add, modify and delete account information** - store multiple cash accounts in different currencies in your portfolio to follow your portfolio's cash balance in different currencies. You can store account details, such as account number, BIC code and mandate reference, categorize your accounts based on their purpose, and store relevant information for calculating account interest. In addition to cash accounts, you can maintain accounts for other purposes - for example, you can have credit accounts, accounts for accruals, loans, and store account numbers for payments.
- **Follow your portfolio's performance against a benchmark** - link your portfolio to a general benchmark or define a portfolio-specific benchmark to follow your portfolio's return against the benchmark. You can define composite benchmarks (e.g. 60 % of index A and 40 % of index B), index values in different currencies are converted to portfolio currency with available FX rates, and you can define a benchmark consisting of an index and a fixed annual return. Your benchmark content can vary over time, and you can set up the interpolated benchmark, with values gradually increasing or going down over the period of time.
- **Set up a strategy for your portfolio** - you can set up a strategy and compare your portfolio's investments against it. A strategy is based on asset types with minimum and maximum shares. You can set up an interpolated strategy, with allocation shares gradually increasing or going down over the period.
- **Define portfolio hierarchies, ownership structures and asset management relationships** - structure your portfolio hierarchy with two-level main-portfolio / sub-portfolio structures, and define primary and secondary owners for each portfolio. In addition, you can define who manages your portfolio - for example, your advisors can manage their own customers' portfolios.
- **Generate running number as a portfolio ID** - you can let the system automatically generate a running number for your portfolios' IDs.
- **Group your portfolios manually or with dynamic criteria** - group your portfolios for searching, reporting and other actions that affect multiple portfolios at once. You can either manually maintain portfolio groups, or define dynamic groups with criteria to automatically add or remove a portfolio from a dynamic group.

## Securities

- **Store your security information** - store your securities with all relevant data, including for example type, country, marketplace, settlement place, issuer, rating, and different codes (ISIN code, trade code

and update codes to identify your security for example for different connectors). In addition, you can use tags, key figures and custom fields to store more details, and maintain notes related to your securities.

- **Add, modify and delete classifications and allocations** - categorize your securities either with static classifications or three-level allocations. Your security's allocation can vary over time, and consist of multiple asset types with percentage shares. For example, you can maintain "geographical allocation" with levels for "continent" and "country" and "GICS allocation" with levels for "sector" and "industry". You can use classifications and allocations for thorough reporting and analysis.
- **Define details for bond-related calculations** - define issue and maturity information together with fixing information (day count convention, frequency, fixing %, stub convention, business day contention, ex-coupon period and yield convention) for the system to calculate accrued interests on your bond investments. In addition to fixed-rate bonds, you can define individual fixings for floating rate notes, or define calculation details for index-linked bonds. You can also generate fixings for floating rate notes based on the base instrument and spread defined for the security. You can define the redemption schedule for amortized bonds.
- **Store security-related cost information** - store different cost details, such as management fee or kickback %, minimum trade amount, or a time-series of ex-ante and ex-post cost percentages for each of your securities.
- **Define holiday calendar and settlement date offset** - select a holiday calendar to distinguish between holidays and business days in your security's market and define a settlement date offset for settlement date handling. For example, you can define your securities to settle t+2, taking into account weekends.
- **Link your security to another security or portfolio** - to follow up underlying structures, you can link your security to another security (for example, you can link options, future and other derivatives to underlying instruments), or link your security to a portfolio in the system (for example, you can link funds and structured products to underlying portfolios).
- **Link external information to your security through an URL** - link information available online to your security through an URL. For example, you can store an URL pointing to KIID, brochures or other details of your security, and access the information internally and make it available externally for your clients (see [Access for clients \[32\]](#)).
- **Mass-modify unused securities to passive** - mass-update your unused securities to "Passive". You can select from securities that are not linked to any open positions, or from securities that have never been purchased into any portfolio.
- **Group your securities manually or with dynamic criteria** - group your securities to restrict the end client's access to trading. You can either manually maintain security groups, or define dynamic groups with criteria to automatically add or remove a security from a dynamic group.

### Security market prices

- **Add, modify and delete end-of-day market data for each security** - you can store up to 5 end-of-day close prices under each security - market data is used to calculate the daily market value of your positions. You can decide for each security or portfolio which close price you want to use to calculate market values or fetch the price of a security from another security. In addition, you can use multipliers to manipulate the prices, for example, to convert prices in pence to GBP or to handle bond prices quoted in percentages.
- **Monitor market prices** - you can also monitor your market prices to make sure your securities have gotten market prices recently enough and to make sure there have not been big changes in the prices. This allows you to ensure your market data and portfolio valuations are up-to-date.
- **Update the value of a security based on a linked portfolio** - you can also update the market data of a security based on the value of a portfolio in the system. Value can be determined based on the market value of the portfolio, the indexed value of the portfolio, or as a fixed percentage from the previous price. This allows you to for example add a fixed percentage to an index, or to group return calculations for hedged positions.

### Transactions

- **Store your transaction information** - you can store your transaction with all relevant data, including for example portfolio, type, reference, counter and external ID. In addition, you can use tags and descriptions to store more details.
- **Control when your transaction affects your portfolio** - separately define transaction date (when your transaction occurs), settlement date (when your transaction settles) and payment date (when your transaction is paid) to control your transaction's effect on your position, settled position amounts and cash balance.
- **Validate your transactions' values** - when entering transactions into the system, the system validates all calculations (units \* unit price = price +/- costs and taxes = trade amount) to ensure the values match. Valid transaction data ensures the accuracy of all calculations.
- **Track your portfolio's cash balance** - link your transactions to an account to directly follow your portfolio's cashflows and cash balance. For example, a buy transaction directly reduces your cash balance when linked to an account,
- **Handle relevant currency conversions between involved currencies** - each transaction can involve up to three different currencies (security currency, account currency and portfolio currency), and you can define required FX rates between these three currencies to convert values to different currencies. Report FX rate is needed between security currency and portfolio currency and account FX rate between security currency and account currency - system always asks for FX rates needed for each transaction.
- **Record a break-down of costs with cost categorization** - you can record a break-down of costs into your transaction, in order to identify and report all related costs separately. In addition, you can categorize all your transaction costs and cost transactions for reporting costs.
- **Differentiate between booked and original transaction values** - in addition to transaction values, you can record booked values into your transactions, or valueate your transaction on a later date when transferring it into your portfolio while still recording original values for tax purposes. In addition, you can re-valueate your positions for example at year-end with new booked values.
- **Record transactions that depend on another security** - define a transaction with second security and ratio when the transaction depends on another security than the transaction's security. For example, exchanges, issues and spin-offs are based on ownership of another security.
- **Mass-modify transaction status, tags or settlement date** - you can change multiple transactions' status, tags or settlement date at once, allowing you to mass-modify this information.
- **Create transactions from positions** - create a new transaction based on an existing position in your portfolio, or mass-create transactions to all portfolios that hold a position on specific security on a specific date.

### Contracts

- **Add, modify and delete contracts** - when you save a contract, the system automatically generates relevant transactions and securities to store the contract information, open future cashflow positions in the beginning of the contract and generate cash flows for the end of the contract.
- **Define contract information with fields relevant for each contract type** - you can define basic contract information, such as portfolio, reference, and counter, and contract-specific information, such as dates, currencies, values and accounts. Available fields depend on the contract type you select, allowing you to only enter information relevant for each contract type.
- **Valueate your FX contracts' future cashflows** - set up interest rates in the system and define yield curves for each involved currency for the system to automatically valueate, or calculate the discounted net present value, of future cashflow positions induced by your contracts.

### Other portfolio management tools

- **Create mark-to-market transactions on future positions** - generate cashflows that correspond to the value changes of the future instrument to "realize" the profits/losses based on the difference between the position's purchase value and market value. You can generate mark-to-market as often you want, usually on daily basis.
- **Transfer assets between portfolios**- move positions from one portfolio to another by filling in the number of units to transfer, or by defining percentage to transfer, when the system calculates the

number of units. Transferring assets can be used to collateralize assets by transferring them to a locked collateral portfolio, or to transfer assets from one custody to another.

- **Pledge portfolios, positions and purchase lots** - mark portfolios or certain positions as pledged. The system blocks these positions from trading. You can also unpledge positions when needed.
- **Check your portfolio's account balances** - the system can automatically check your portfolio's accounts, identify all cash accounts with a negative balance, and issue a warning.

### Supported types

Types	Description
<b>Contact types</b>	Customer, Asset manager, Counterparty, Accountant, Issuer, Custody, Lead Configure your own subtypes for further categorization.
<b>Portfolio types</b>	Configure your own portfolio types for categorization.
<b>Security types</b>	Stocks, Funds, ETFs, Bonds, Currencies, Currency crosses, Cash, Indices, Real estate, Art and similar, Amortizing bonds, Index-linked bonds, Futures, Forwards, Equity options, Interest rates, Discounts, FX Contracts (FX Spot, FX Forward, FX Swap), Private Equity, Loans, Cryptocurrencies. Configure your own types and subtypes for further categorization.
<b>Transaction types</b>	Account interest, Accrued fees, Add, Add contract, Asset management fee, Borrow, Buy, Buy close, Buy from customer, Buy open, Capital return, Cashflow in / out, Cost, Coupon, Deferral of accrued interest, Deferral of price, Deposit, Dividend, Dividend as shares, Dividend withdrawal, Exchange, Exercise call / put, Expire, Fund exchange, Fund redemption / subscription, Future cashflow in / out, Interest, Issue, Kickback, Margin call, Mark to market, Mature, PE - Call, PE - Commit, PE - Cost, PE - Profit, PE - Profit with market value change, PE - Return of capital, PE - Return of capital, callable, PE - Value change, Periodic fees, Profit, Profit share, Remove, Repay loan, Sell, Sell close, Sell open, Sell to customer, Split, Subscription, Subscription rights issue, Unit certificate, Unit holder deposit / withdrawal, Value adjustment, Withdrawal
<b>Contract types</b>	FX Spot, FX Forward, FX Swap

### Related links

[Portfolio management](#) in FA User guide

[Portfolio management](#) in FA Back reference

## Fund Management

### Overview

FA's Fund Management provides you with a tool to manage your funds including mutual funds, hedge funds, and private equity funds. It covers managing fund portfolios, calculating NAVs, maintaining shareholder registries, creating dividend payments and selected regulatory reporting. FA's Fund Management can efficiently handle various types of assets and currencies, different share classes, and complex fee structures.

### Functionality

#### Manage different kinds of funds, share classes, and fee structures

- **Manage multiple share classes** - FA Fund Management supports multiple share classes and currencies, with different fee structures and different valuation frequencies.
- **Keep track of fees, costs and kickbacks related to your funds** - set up fee formulas to calculate fees on your funds. In addition, you can accrue fees over time and capitalize them during your NAV calculation. You can also calculate share class-specific fees outside of NAV calculation and store them as pre-calculated fees.
- **Include subscription and redemption fees in the fund trade orders** - include transaction fees in the fund trade orders that are executed when you accept NAV. Transaction fees can be defined as a percentage from the trade amount or as a fixed amount. You can also define a client discount or edit the resulting amount per trade order if needed.
- **Pay out fund dividends** - Define dividend payments and create dividend transactions for your fund's shareholders.

- **Apply swing pricing for your fund** - calculate swing adjustment and choose if it has to be included in the NAV.
- **Accrue the fund performance fee with the contingent redemption method** - calculate equalized performance fee based on the schedule you define and have compensation trade orders created on the crystallization date.
- **Keep track of the accrued income** - calculate accrued income (for example, from bonds and coupons) for the period to use it for taxation purposes or paying out income distribution.
- **Handle FX hedging for the fund share classes in different currencies** - manage share class currency exposure with FX contracts. The accrued hedge is taken into account in the NAV calculations. When the contract is settled, the profit and loss is accrued to the fund.
- **Set up and edit your fund companies, funds and share classes** - fund company wizard, fund wizard and share class wizard allow you to set up a fund company, a fund or a share class or edit all relevant settings for an existing fund company, fund or share class.

### Calculate NAV for your funds

- **Calculate NAV for your funds** - calculate the Net Asset Value (NAV) of a fund or a share class together with a new unit price for fund shares. NAV calculation workflow consists of three steps: calculating NAV figures, previewing the result and possible warnings, and accepting NAV to publish it throughout the FA Platform. You can set up fund management to require four-eyes approval of NAV.
- **Set NAV calculation schedule** - define a schedule for NAV calculation for each of your funds. You can see when the next calculation is pending. If needed, you can calculate NAV outside the schedule.
- **Get warnings during NAV calculation** - get warnings during NAV calculation for example if you are missing market prices on the calculation date, you have large changes in your fund portfolio's positions, you have negative positions in your fund portfolio, you are missing some of the fees you should calculate, or the currency exchange rate has significantly changed.
- **Check investment limits during NAV calculation** - enable investment limit checks together with [Compliance - Investment Restrictions \[41\]](#) module to verify compliance with regulations and fund rules. For example, you can set up UCITS limits and check you are not breaching any limits before you calculate your NAV.
- **Roll back accepted NAV** - you can roll back the latest accepted NAV, when the system reverts all actions performed at NAV acceptance.
- **Track previous NAV calculations** - look into previous NAV calculation details through the audit trail of calculated NAVs. You can also track the parameters used in the previous NAV calculations or see the details of rollbacks.

### Handle subscriptions and redemptions

- **Manage the lifecycle of subscription and redemption orders** - enter subscriptions into and redemptions from a fund prior to NAV calculation with [Trade Order Management \[58\]](#) module. This allows Fund Management to price your trade orders during NAV calculation and to execute subscriptions and redemptions during NAV acceptance. Subscription and redemption fees can be automatically included in your transactions, with an option to edit them and define a discount per client.
- **Manage cash transfers related to subscriptions and redemptions** - NAV calculation automatically creates cash transactions to your fund portfolio's bank account, matching the value of the subscriptions into and redemptions from your fund.

### Maintain shareholder registry

- **Keep track of your shareholders** - shareholder registry shows you a list of your fund's shareholders along with their addresses and the number of units owned in each share class. You can also export your shareholder information into Excel.
- **Create unit certificates** - you can create unit certificates through the shareholder registry. You can see which shareholders have outstanding unit certificates in which share classes.

### Report your funds

- **Create and send out NAV reports** - create PDF and XLSX reports with NAV calculation details and enable sending them out via email.
- **Update share classes' allocation information based on fund portfolio allocation** - Fund Management automatically updates your share classes' allocation information based on your fund portfolio's allocation. This allows you to report your fund's allocation towards your shareholders.
- **Calculate, preview and accept fund statistics** - set up a schedule for calculating fund statistics separately from your NAV calculation, and use the three-step workflow of calculating, previewing and accepting the statistics. Fund statistics include KPIs and holdings on the fund and share class level. Once you accept the statistics, you can use them in your custom reports.

**Extend fund reporting with authority reports** - you can extend fund reporting with reports available in [External Reporting \[60\]](#) module.

### Supported formats

Format	Description
UCITS	Undertakings for Collective Investment in Transferable Securities (UCITS): UCITS Directive is a detailed, harmonised framework for investment funds that can be sold to retail investors throughout the EU.
AIFMD	Alternative Investment Fund Managers Directive (AIFMD): AIFMD applies to managers of funds that are not UCITS, including hedge funds, private equity funds, and real estate funds.

### Related links

[FA Fund Management](#) in FA Documentation

### Access for advisors

#### Overview

FA's Front for advisors allows your advisors to view the summary of their clients and enter trades on their clients' behalf, while removing the problem of data migration between systems. It gathers all relevant customer, portfolio and investment data combined with the functionality you need on a single platform, allowing you to efficiently manage your day-to-day work.

#### Functionality

##### Provide your advisors with a tool to manage their customers

- **Manage your customer relations** - you can manage and document your customer relations as required by the regulations of the financial industry. View your customer's investments, enter trades on their behalf, and document each meeting, phone call or event you engage with your customer for control over the entire life-cycle of your customer relationship.
- **Allow your advisors to access their own customers and leads** - you can allow each advisor to access only their own customers.

##### View your customers' investments and information

- **View your customer's investments** - you can view each customer's investment overview, holdings and transactions.
- **View your customer's basic information** - you can view your customer's basic information, such as address details and representatives.
- **View and modify customer memo** - you can view notes you or someone else has written related to your customer, and update the notes yourself.
- **Upload, edit and delete your customer's documents** - you can browse through documents stored for your customer. In addition, you can upload new documents, modify existing documents or delete documents from your customer.
- **Add, modify and complete tasks related to your customers** - you can create tasks linked to your customer with all the relevant information, including for example assignee, priority, description and attachments. This allows you to record each meeting, phone call or event you engage with your customer.

## Trade on behalf of your customers

- **Add trades on behalf of your customer** - you can add trade orders to your customers' portfolios for instruments that are marked as available for trading.
- **Accept or reject your customer's trade orders** - you can change the status of your customer's open trade orders to accept or reject them.

## Related links

[Access for advisors](#) in FA User guide

## Access for clients

### Overview

FA's Client Portal allows you to provide your clients with online access to their investments. You can use it as an interactive alternative to traditional customer reporting or provide your customers with a tool for online trading. FA's Client Portal allows your clients to view their investments whenever they want with secure authentication, and provides you with a competitive edge through enhanced customer experience.

### Functionality

#### Provide online access for your clients to see their own investments

- **Allow your clients to access their investments online** - you can allow your clients to access their investments online, and see their portfolios' information. Each client can access their own portfolios, and you can allow your clients to access investments of other parties they represent. For example, you can allow a client to see his company's or children's investments.
- **Provide view-only access to client accounts for advisors or support service** - you can allow certain users open FA Client Portal to view client data the way the clients see it. This access can be used for advising or troubleshooting purposes.
- **Provide access with desktop and mobile devices** - FA Client Portal runs in the web browser both on desktop and mobile devices, allowing your clients to access their investments both with desktop and mobile browser.
- **Authenticate your users with strong authentication methods** - you can extend your FA Client Portal with [Signicat Digital Identity and Signing \[69\]](#) module to require your users to authenticate themselves every time they log in.

#### Show your clients' investment data

- **View an overview of investments** - show your customer's assets, profit and available cash with one glance, either aggregated from all portfolios or for an individual portfolio.
- **View holdings, transactions and trade orders** - show your customer's all investments, all transactions, or all trade orders. Holdings, transactions and trade orders can be downloaded as an XLSX file.
- **View documents** - show the documents stored under your customer and documents related to securities. You can select which documents you want to show to your customers online and create document subsections to show in the Documents view.
- **View contact details** - show a "contact us" page with your company's details.

#### Allow your clients to trade online

- **Create deposits and withdrawals** - allow your clients to enter deposits into their portfolios and request withdrawals from their portfolios.
- **Create buys and sells** - allow your clients to create a buy or a sell trade order against a security they have selected. Your clients can initiate buys or sells against their current positions, or search for securities from a security list you provide them with. You can allow your clients to record orders with units or percentage of current position. [Trade Order Management \[58\]](#) module allows you to take forward the trade orders your clients create.



- **Define monthly investments** - allow your clients to set up monthly investments to shedule buy and sell trade orders into their portfolios.
- **Cancel orders** - allow your clients to cancel open trade orders in their portfolios.
- **Define which securities a client can trade** – Restrict the client’s access to trading with certain security groups.

#### Provide self-onboarding for your clients

- **Set up custom self-onboarding for your clients**- you can set up a custom self-onboarding for your clients using the [Developer tools \[46\]](#) module, allowing your clients to onboard themselves. Self-onboarding can consist of different steps - for example, your client first authenticates through the [Signicat Digital Identity and Signing \[69\]](#) module, fills in their basic information and answers your profiling and know-your-client (KYC) questions, after which the system saves the relevant data for your client to gain access to your FA Client Portal.

#### Customize the content and look and feel of your FA Client Portal

- **Configure FA Client Portal to match your company’s details** - FA Client Portal allows you to do simple configurations by uploading your own logos, filling in the Contact us page, and translating the visible texts to languages you want to allow your clients to use. By default, FA Client Portal is available in English.
- **Control which features are available for which portfolios** - FA Client Portal allows you to control which portfolios are allowed to receive deposits and withdrawals, buys and sells, and order cancellations from FA Client Portal. In addition, you can control which securities are available for trading, and which documents are visible.
- **Launch custom workflows** - FA Client Portal allows you to extend the functionality with custom workflows using the Developer tools module. If you have custom workflows in place, you users can launch them through the menu.
- **Build your own portal with FA Client Portal as a base** - FA Client Portal is an open-source application, allowing you to extend it to suit your needs. You can take the standard FA Client Portal as a base and develop on top of it on your own through adjusting, customizing and extending it to your needs.

#### Related links

[FA Client Portal](#) in FA Documentation

[FA Client Portal setup](#) in FA Admin Guide

[Customize FA Client Portal](#) in FA Developer Guide

## Accounting

### Overview

FA’s Accounting transforms your transaction data automatically into accounting entries, which can then be directly exported to your accounting system. FA’s Accounting also automates your end-of-period calculations.

### Functionality

#### Define and manage your accounting rules

- **Create, modify and delete bookkeeping accounts** - define sets of bookkeeping accounts with the bookkeeping account number and name to record your accounting entries to correct bookkeeping accounts.
- **Create, modify and delete posting rules** - define posting rules that are applied when the system creates accounting entries when you save a transaction. Each posting rule tells the system how to break down your transaction’s values into individual accounting entries, postings. For each posting, you can select which bookkeeping account it is recorded to, whether the posting is based on transaction date

or settlement date, and whether the value is recorded as debit or credit. You can group individual posting rules to sets of rules, and maintain multiple sets simultaneously.

- **Define posting rules for different levels with different criteria** - select what type of transactions an individual posting rule is applied for (such as "buy", "sell" or "dividend") - a rule can be applied to all transactions of the type, or narrowed to specific securities with security-related criteria, such as Security type, Country, Market place, Classifications or Issuer.
- **Linking posting rules to your portfolios** - decide per portfolio which posting rule sets to use to produce accounting material from that portfolio's transactions.

#### Generate accounting entries based on your transactions

- **Generate postings automatically based on your transactions** - every time you save or modify a transaction, your transaction is run through your posting rules, and accounting entries are created based on the transaction's values. You can choose to generate postings per portfolio or on a parent portfolio level. You can also manually modify posting information.
- **Search for postings** - after postings have been generated, you can view them on different levels: you can see postings generated per each transaction, each customer or portfolio, or all postings generated in the system.
- **Change the status of your postings to mark them as reported** - status of your posting corresponds with your transaction's status, and you can mass-update the status of multiple postings at once. In addition, you can mark you postings as "reported" to lock them from further changes, to indicate you have reported the posting to your accounting system.
- **Revert posting that have been already reported** - if you modify a transactions so that it would change postings you have already marked as reported, the system automatically generates counter-postings to revert the effect of postings that were already reported, and new postings to update the changes to your bookkeeping.

#### Export your accounting material to your accounting system

- **Export postings with the standard export format** - you can export your accounting material in our standard export formats, and upload the material to your accounting system. Your postings can be automatically marked as "reported" after you have exported them from the system. See below for available standard export formats.
- **Export postings with your own CSV format** - if our standard export formats don't cover your needs, you can define your own CSV format to match your accounting system's needs.

#### Calculate deferrals and valuations at year-end

- **Calculate deferrals of accrued interest** - calculate accruals for your bonds' accrued interests for bookkeeping purposes. The deferral transaction is the sum of accrued interests between the selected dates. This allows you to book accrued interests of bonds for the period you have earned them, prior to the actual interest payment.
- **Calculate deferrals of bond purchase price** - calculate deferrals for your bonds' purchase price for bookkeeping purposes. Linear method calculates deferral based on the bond purchase price versus its price at maturity, and constant yield method (also know as "amortized costs") calculates the deferral based on the bond's yield at the time of purchase versus its yield on the day of the deferral. This allows you to book purchase prices of your bonds periodically between purchase and maturity.
- **Calculate deferrals on non-bond securities** - re-valuate your other types of securities at year-end for bookkeeping purposes. The deferral transaction re-valuates your open positions' purchase value based on the market value of the position at year-end. This allows you "close the books" on your portfolios at year-end. You can also calculate separate adjustments for changes in currency and security prices, and configure how the re-valuation affects your portfolio's booked purchase value.
- **Calculate deferrals of accounts** - calculate profits and losses for your currency accounts. The process creates Cashflow in (Internal) and Cashflow out (Internal) transactions whose value equals the entire account balance, and which use the latest FX rate. The Cash out transaction realizes all profits on the cash account, and the Cash in adds back the account balance with the latest FX rate. The created transactions can then be used in accounting to handle account profits and losses.

## Supported formats

### Standard formats

Format	Description
Standard accounts	FA account chart based on the IFRS chart of accounts.

### Export formats

Format	Description
SIE	Process for exporting book keeping material in SIE format. The SIE format is an open standard for transferring accounting data between different software produced by different software suppliers. SIE Format is compatible with e.g. Microsoft Navision book keeping system.

## Related links

[Accounting](#) in FA User guide

[Accounting](#) in FA Back reference

## Administration

### Overview

FA's Administration provides system administrators with tools to manage system preferences and advanced configurations and monitor system health and logs.

### Functionality

#### Set up different searches for data in FA Back

- **Extend certain search screens** - extend certain search views by saving your search criteria for later use. You can save your search criteria only for yourself, or share them with other users.
- **Search data with SQL queries directly in the system** - write SQL queries within the application to search for data from the database. The result of your query is shown in a table. You can save your queries for later use, and share your queries with other users. In addition, you can parameterize your queries to react to user input or information linked to the logged in user. Data modification with SQL is prevented.
- **Gather relevant data into dashboards** - create dashboards to gather relevant data from different parts of the application into one screen. You can create and save their own private dashboards, or share dashboards with others based on user roles. Your dashboard can consist of saved search screens, a task list, or results of a saved SQL query.

#### Administer settings and preferences

- **Manage optional packages** - install optional packages that extend the standard settings, preferences or workflows, but are not necessarily needed in each installation. Optional packages include for example optional asset classes and types and sample bookkeeping accounts and posting rules.
- **Manage application preferences and settings** - control how certain aspects of the system behave through adjusting the available preferences or administering the available settings. For example, you can manage settings and preferences related to accounting, payments, and reconciliation.
- **Create business rules** - Adjust business rules with XLS decision tables that have conditions and actions. Decision tables can be used, for example, to calculate transaction fees, change trade order status, initiate payments, and so on.
- **Manage and create scheduled activities** - schedule certain activities (processes) in the system, when the system runs the action at the specified time. You can define your schedules with CRON syntax, and view, edit or delete scheduled activities in one place.
- **Configure standard integrations** - configure your standard integrations related for example to [Market Data Connector \[63\]](#) and [Trading Connector \[66\]](#) directly in the system. In addition, you can import

required certificates and keys (used to authenticate and verify parties when establishing the connection), or map data for external integrations to act as a link between two data structures (used for example when creating or updating security reference data).

- **Synchronize data between two FA instances** - synchronise data between two FA instances to keep the test data up-to-date with production data, or to exchange updates between separate FA installations.

#### Track an audit trail of modifications, user actions and system events

- **Track changes made to certain data** - track the changes made to certain data, including contacts, portfolios, securities, market data, transactions, trade orders, postings and certain system preferences. You can track the full change history of this data, allowing you to see who has changed what and when, and compare versions together to see the changes made.
- **Track user activity and system events** - track what information users have viewed, opened or exported along with certain system events, such as report data and market price updates. Audit trailing is done in the background for each logged-in user and for certain system events. You can search for entries in the audit trail, and each audit trail entry includes a variety of details, such as user, time, and screen, providing you with details to replicate what has happened.

#### Manage all documents

- **Search, download, upload, modify and delete all documents** - manage all documents and links to documents stored in the system. For non-administrative users, documents are only shown for the security, contact, portfolio, transaction or trade order they are linked to. You can search for all documents stored in the system, download them, upload new documents, rename existing documents, and delete documents.
- **Organize documents into folders and tag documents to categorize them** - you can move documents from one folder to another, or tag documents to categorize them across folders.
- **Mass-delete documents** - you can also mass-delete all documents matching your search criteria in one go.
- **Automatically scan uploaded documents for viruses** - as an alternative, the system can scan uploaded documents for viruses. If a virus is found, the document upload is prevented. Enabling virus scanning requires additional setup and agreement with FA.

#### Manage system files

- **Manage files in specific directories** - access certain system-level files and manually upload files to certain directories in the system. This is useful for example when resolving issues with file-based integrations, allowing you to re-upload a file to be processed again. In addition, you can re-upload failed files to retry processing them. You can manage files one-by-one, or delete and upload multiple files at once.

#### Monitor system health and browser through system logs

- **Monitor system statistics** - track performance characteristics and technical metrics for specific aspects of the FA Platform, and view the statistics as charts. For example, you can view certain metrics for API requests, specific integrations, database performance and report calculation.
- **Monitor processes in FA applications** - monitor processes that run in FA applications. You can see which processes have been running, how long they took, and if they were completed successfully.
- **View system logs** - view and search system logs for different parts of the FA Platform.

#### Receive notifications about events across FA applications

- Get notified when a process is completed successfully or with an error. The notifications are shown across the platform, no matter which app you are working with at the moment.
- View past notifications, mark them as read and save for later.

#### Related links

[FA Admin Console Reference](#) in FA Documentation

[FA Monitoring App Reference](#) in FA Documentation

[FA Admin](#) in FA Documentation

## Analytics

### Overview

FA's Analytics provides you with a detailed overview of your investments. It enables you to analyze your portfolios and securities in the system from different angles. Portfolio analytics lets you compare your investments, use a benchmark, and view how your investments have contributed to your portfolio's performance according to the Global Investment Performance Standards (GIPS). Security analytics provides security performance data and lets you compare it with the benchmark index.

### Functionality

**Analyze key metrics and group analysis results on your chosen levels and hierarchies**

- **Analyze your data with broad range of metrics** - select to analyze your data (see below for available metrics) and key performance figures according to GIPS - Global Investment Performance Standards. Certain key measures are also available as figures for 1, 3, 6 and 12 months and year-to-date (YTD).
- **Add your own metrics** - Calculate custom metrics based on your own formula, view calculated values and use them in reports.
- **Select a time period for your analysis** - you can manually select the start and end of your analysis, or select time period for your analysis from pre-defined options of *Current/Previous day*, *Last N days*, *Current/Previous week*, *Current/Previous month*, *Last N months*, *Current/Previous quarter*, *Current/Previous half-year*, *Current/Previous year* or *From beginning*.
- **Group your analysis with different attributes and levels** - group your portfolio analysis results with attributes such as *Portfolio type*, *Portfolio's country*, *Portfolio's contact*, *Security*, *Position*, *Linked security*, *Type*, *Subtype*, *Classifications*, *Country*, *Currency*, *Issuer*, *Issuer group*, *Asset class*, *Asset type* or *Assets and liabilities*. You can select from pre-defined groupings or build your own multi-level grouping with the available options.
- **Compare portfolio performance to portfolio strategy** - analyze portfolio performance, view portfolio return, volatility, and attribution and compare them to portfolio strategy using Brinson attribution analysis.
- **Include underlying positions in your analysis** - use the drill-down feature to view underlying positions of your investments, for example, positions of the funds you own. To be able to use this feature, you need to maintain the underlying positions in FA. You can visualize the drill-down hierarchy as a tree structure.
- **Export time series of underlying data** - download time series of underlying data used for analysis in the XLS or XLSX file. You can use this data to see how Analytics+ figures are calculated and how the underlying data has changed over time.

**Visualize the result of your analysis and export your data**

- **Pre-define sets of parameters and metrics** - choose different analysis measures as columns, define time period and grouping, and save your analysis as a tab. This allows you to pre-save different sets of metrics for continuous use.
- **Visualize certain results of your portfolio analysis with charts** - visualize return (%), market and purchase value and allocation with pre-defined responsive charts. You can interact with the charts for example by selecting different items from your analysis or changing the grouping to view different allocations.
- **Compare performance of different levels** - select different item from you analysis to visually compare the performance between selected instruments or groupings.
- **Export the results of your analysis** - export the key metrics as XLS or PDF, or print out the graphs as PDF or in common picture formats.

**Access analysis also via Analytics+ GraphQL API**

- **Perform analysis through GraphQL API** - you can access the full capabilities of the Analytics+ Engine via standard GraphQL API, allowing you to access all analytics via any web application. You can build custom requests to retrieve any analysis fields and groupings of your choice.

### Supported formats

Available metrics	Description
<b>Basic</b>	Analysis of basic measures such as <i>Average Market/Purchase Value, Share (%), Costs, (Un-)Realized Profits, Accrued Interest, Pos/Neg/Net Cashflow, Ex-post Costs, Exposure, Amount.</i>
<b>Performance</b>	Analysis of performance measures such as <i>Time-Weighted Return/TWR (total, security, FX), IRR, YTM, Duration, Max Drawdown, Consistency.</i>
<b>Risk-adjusted performance</b>	Analysis of risk-adjusted performance measures such as <i>Sharpe Ratio, Treynor, Information Ratio, Appraisal Ratio, Modigliani M2.</i>
<b>Statistical and risk</b>	Analysis of statistical and risk measure such as <i>Volatility, Correlation, Value-at-Risk, Alpha, Beta, Tracking Error, R-squared.</i>
<b>Private Equity</b>	Analysis of private equity fund measures such as <i>Commitment (total, remaining), Distributions, Paid in Capital, DPI, PIC, RVPI, TVPI.</i>

### Related links

[Analytics](#) in FA User guide

[Analytics](#) in FA Back reference

## APIs

### Overview

FA's APIs provide you with programmatic access to the data you have stored in FA, allowing you to build your own solutions on top of your portfolio management system. FA's APIs allow you to extensively manage the communication between FA and the other applications you develop and maintain.

### Functionality

#### Integrate FA with your own platforms and services through APIs

- **Search, add, and modify your data via API calls** - access data in FA through standard APIs. The fundamental data types (contacts, portfolios, securities, transactions, and trade orders) provide you with different options to search and modify data.
- **Generate and fetch reports** – get reports for specific contacts, portfolios, transactions, or trade orders in JSReport.
- **Browse and try out FA APIs** – browse documentation for the available GraphQL endpoints and define queries using interactive developer tools: see [API integrations](#) in FA Developer guide.

#### Manage data access

- **Restrict data access** - define whether or not a given user has access to a given portfolio's or contact's information.

### Supported formats

FA offers APIs based on two technologies – GraphQL and REST. We recommend using GraphQL APIs – they are constantly updated and provide access to all necessary data and functionality. Our REST APIs are in maintenance mode and are not actively developed.

### GraphQL APIs

GraphQL APIs provide access to the following data:

Data type	Description
Portfolio management	APIs for fetching and modifying positions, contacts, portfolios, accounts, securities, contracts, prices, transactions, trade orders, monthly investments and savings, and bookkeeping postings.
Investment objectives	APIs for fetching, modifying, and creating model portfolios, strategies and investment plans. APIs for running pre-trade limit checks.
Documents	APIs for fetching, uploading, and deleting documents.
Analytics	APIs for running strategy, portfolio performance analysis, and liquidity forecasting as well as for fetching portfolio and security analysis data.
Reporting	APIs for fetching report data and generating standard and custom reports.
Tasks	APIs for adding, modifying, deleting, and fetching tasks from FA Back.
Fund management	APIs for interacting with fund management features.
Reconciliation	APIs for fetching, updating, and deleting reconciliation-related data.
Queries	APIs for fetching and using SQL queries created in the <b>Queries</b> view in FA Back.
Preference	APIs for fetching tag definitions and holiday calendars. APIs for creating, fetching, and deleting default tax rates.
Logging	APIs for fetching audit logs and process logs. APIs for fetching the version history of contacts, portfolios, securities, transactions, and trade orders.

## REST APIs

### Basic APIs

Data type	View all	Find by id	Filter	Import	Modify	Delete
Contact	X	X	X	X	X	
Portfolio	X	X	X	X	X	
<b>Accounts</b>						
Bookkeeping	X	X	X			
Positions	X	X	X			
Security	X	X	X	X	X	
Transaction	X	X	X	X	X	X (status change)
Trade order	X	X	X	X	X	X (status change)
Market price		X (security id)		X	X	
Profile data	X	X		X	X	X
Preferences		X		X		

### Related links

[API integrations](#) in FA Developer guide

[API integrations](#) in FA Developer

## Authentication

### Overview

FA's Authentication provides you with tools to control who can log in to your FA, track when and where your users logged in, and what they did within the system. Options for two-factor authentication and tracking unsuccessful login attempts provide you with an extra layer of security. In addition, user roles and rights allow you to extensively control which features your users can use and what data they can see when they log in.

### Functionality

#### Authenticate to the system

- **Authenticate with your user ID and password** - with FA's authentication, each user logs in with their personal user ID and a password fulfilling the password policy.
- **Resetting a password** - reset your password via a password reset link you can order from the login page.
- **Two-factor authentication** - the authentication mechanism can be extended with a second factor (i.e. two-factor authentication). The second factor is a code generated by an authenticator app, which the user enters after successful login with username and password. Valid authentication requires that both steps are successfully passed.
- **Freezing the account for unsuccessful login attempts** - user ID is locked for an increasing period of time if the user types in an incorrect password too many times (i.e. brute force detection). During this time, the user is not allowed to log in, and can try again only after the freeze time has passed. Administrators can then unfreeze the account.
- **Alternative authenticators** - instead of FA's authentication, you can choose to use authentication through third-party identity providers such as [Signicat Digital Identity and Signing \[69\]](#) and Microsoft Active Directory. The supported protocols for external identity providers are OpenID Connect v1.0 and SAML 2.0. In addition, user federation via the LDAP and Kerberos protocols are supported, e.g. Microsoft Active Directory (AD).

### Manage users

- **Add, modify and delete user information** - store username, first name, last name, and email address. Add one or multiple user roles to your user, determining access rights for your user.
- **Link user to a contact in the system** - you can link your user to a contact in the system, for example you can link an advisor user to an asset manager contact or an end user to a customer contact. Linked contact is used to limit user's access to only certain customers and portfolios. You can add a linked contact manually, or you can automate the linking when your users login through an external identity provider.
- **Activate and deactivate users** - user's status allows you to mark your user as active, when the user is allowed to log in, or deactivate your user, when logging in is prevented.
- **Require a password reset on next login** - you can require a user to reset their password, and the system asks for a new password on next login.
- **Unfreeze a locked user account** - you can manually unfreeze a user account that has been locked for too many unsuccessful login attempts.
- **Follow last login dates and active sessions** - you can see per user their last login date and currently active sessions, allowing you to see when your users have last logged in and if they are currently logged in.
- **Allow your internal users to manage their own user account** - each internal user can manage their own user account details once they have logged in. This includes name, email address, password and two-factor authentication setup.

### Manage user roles and permissions

- **Assign user roles for your users** - you can select one or multiple user roles for each of your users to control which applications, screens and features they are allowed to access and use. In addition, user roles can be automatically assigned through a customization based on linked contact's characteristics or information received through an external identity provider.
- **Manage user roles and user rights** - you can add, edit and delete user roles, and group them into departments. You can define which rights are associated with each role role.
- **Limit access to customers and portfolios** - you can limit a user's access to only certain customers and portfolios when they log in. Users can either see only their own data, see other customers they directly represent (for example, advisors can access only their own customers' data or end users can access also their companies' or children's data through limited visibility), or see other customers they represent through a common representative (for example, advisors can access customers' data within their office, country or another common group through extended limited visibility).

### Access different parts of the system



- **Navigate between applications** - you can navigate between the different applications you have the right to access through the Global App Bar.
- **Share content in FA Back with different user roles** - you can share certain content in FA Back, for example saved search views or report packages, with the different user roles defined in the system.
- **Information on new versions of FA Back** - when you log in for the first time to FA Back after a version upgrade, you are presented with a popup with information about the new version.

**Related links**

[Logging in](#) in FA User Guide

[Users and accesses](#) and [Authentication](#) in FA Admin Guide

[User management view](#) in FA Admin Console Reference

**Communications**

**Overview**

FA's Communications allows you to send emails to your customer directly from FA, and receive your customers' replies to your messages. All sent and received messages are stored within your other customer-related information, providing you with a record of all customer communication in one place.

**Functionality**

**Send emails to your clients**

- **Send emails to selected clients** - you can send messages to your clients one-by-one, or you can mass-send messages to multiple clients at once based on a search. In addition, you can send messages to your clients based on transactions or trade orders created for them.
- **Define your emails as text or HTML and personalize your email content** - you can define the content of your email as plaintext or HTML. Built-in editor helps you to add HTML markup to the emails you send. In addition, you can define your email message subject and content with dynamic text, filling in data from the contact the email is sent to. This allows you to personalize your emails when mass-sending them - for example, you can include the email recipient's name within the email content.
- **Include attachments** - you can also include files as attachments to your emails.
- **Track what emails have been sent and to whom** - if you want to track what kind of emails have been sent and to which clients, you can choose to automatically record tasks from sent emails, linked to the email recipient. Follow the sent messages through the Task Management module.

**Supported formats**

Format	Description
Email	FA can provide email sending/receiving via Sparkpost ( <a href="https://www.sparkpost.com">https://www.sparkpost.com</a> ) OR FA can be configured to use your SMTP server.

**Related links**

[Communications](#) in FA User guide

**Compliance - Investment Restrictions**

**Overview**

With FA's Compliance - Investment Restrictions you can integrate investment limits together with pre- and post-trade compliance seamlessly into your workflows.

**Functionality**

**Define investment limits**

- **Analyze limits both pre-trade and post-trade** - you can analyze your portfolios' limits both "pre-trade" and "post-trade". Pre-trade limit analysis is based on analysing your current investments plus the effect of outstanding trade orders, or based on the investment plan you have defined for the portfolio. Post-trade limit analysis is based on analysing your current investments.
- **Define limits based on a snapshot analysis of your portfolio or values in custom fields** - you can define your limits with values available from analyzing your portfolio, enabling the system to analyze limits based on the data at hand. You can define limits based on different values, such as market value, amount, exposure, paid in capital, distributions, or commitment, include only certain kinds of positions through grouping and filtering, and only include top or bottom investments through sorting and limiting. Your limits can be based on an individual position ("individual stock") or group of positions ("all stocks"), or a sum ("stocks and bonds combined"). In addition, you can define limits based on values you have stored in your custom fields, allowing you to set limits based on more customized criteria.
- **Use portfolio strategy, investment plan or a model portfolio as a source for setting up limits** - you can analyze your portfolio against the minimum and maximum shares in your plan or model - a limit is OK if all positions are within min and max and Breached if a position is outside the thresholds.
- **Define warning and breach thresholds** - define minimum and maximum warning and breach thresholds, indicating what kind of values should induce a "warning" and what kind of values should be considered as "breached".
- **Group related limits into limit groups** - you can group related limits into limit groups, allowing you to manage and analyze limits as a group. For example, you can separately group "investment restrictions", "asset allocation limits" and "UCITS limits".
- **Export and import limits** - you can export the defined limits in XLSX, make changes and import them back into the system.

#### Analyze, check and monitor limits on your portfolios

- **Link relevant limits to your portfolio** - link limits to your portfolios to monitor the portfolio against its limits. Each portfolio can follow a different set of limits.
- **Analyze different limits pre-trade, post-trade, and based on investment plan** - analyze the limits linked to your portfolios on different levels: pre-trade, post-trade and based on the investment plan. You can analyze all levels at the same time, each level separately, or only a certain group of limits on a specific level. You can analyze limits for a portfolio, for an open trade order, or mass-analyze multiple portfolios' limits at once.
- **Include underlying positions (look-through) in the limit analysis** - analyze and check the limits with a look-through approach - for example, if you have a feeder-master fund structure.
- **Follow portfolio's limit statuses** - follow the limit status: "OK", "Warning" or "Breached". You can follow the status of each limit, as well as the portfolio's overall limit status: the portfolio's limit status on the different levels is set to *Breached* or *Warning*, if one of the portfolio's limits exceeds the threshold. You can also check the limits in the aggregated view to see the limit status of many portfolios at once. You can search your portfolios based on their limit status. You can also export limit analysis result as a report.
- **Drill into the limit analysis to reveal the causes of warnings and breaches** - after you have analyzed your limits, each limit analysis is broken down to individual position level with relevant details. This allows you to track what caused the limit to induce a warning or a breach, and how far over the threshold your limit is.
- **Monitor portfolio limits** - you can receive email notifications when the portfolio limits go over the thresholds.
- **Analyze and check pre-trade limits before accepting open trade orders** - you can check the open trade orders you are about to create against the portfolio's pre-trade limits in rebalancing in [Model Portfolio Management \[49\]](#) module, or analyze the limits when manually creating a new trade order through [Trade Order Management \[58\]](#) module.
- **Block portfolio from investing in specific types of instruments** - you can define "never have" rules on your portfolios, allowing you to prevent trades in certain types of instruments.

#### Track portfolio drift

- **Track portfolio drift through drift tracker** - you can set a target allocation for your portfolios in the form of strategy, investment plan or model portfolio (broken down to security or asset types level), set maximum bounds for drift and see which positions have drifted from your target and how much.
- **Monitor drift within your portfolios** - automatically flag drifted portfolios, and get warning emails if the system detects any drifts. You can choose to automatically record tasks from the warnings, and follow the warning tasks through the [Task Management \[57\]](#) module.

### Related links

[Compliance](#) in FA User guide

[Investment objectives](#) in FA User guide

## Compliance - Regulatory

### Overview

FA's Compliance - Regulatory provides you with tools for regulatory reporting, such as MiFID II and GDPR, and supports monitoring of both external and internal requirements from company-level rules to portfolio-specific restrictions.

### Functionality

#### Monitor your customers and portfolios

- **Monitor value drops in your portfolios and assets** - automatically send notifications when the value of a portfolio drops by 10% since its previous reported value or previous warning. You can also aggregate each client's portfolios and generate warnings based on drops in the aggregated value. You can decide to send warnings via e-mail directly to your clients, to your clients' representatives, and/or to specific other individuals. You can choose to automatically record tasks from the warnings, including a full list of all new value drops as a .csv file. Follow the warning tasks through the [Task Management \[57\]](#) module.
- **Monitor unused portfolios** - track and close portfolios that did not have holdings or transactions for the past period of time.
- **Monitor corporate clients' LEI codes** - keep track of corporate clients' LEI codes and their validity dates, and generate warnings when corporate clients do not have valid LEI codes.
- **Verify and update clients' information** - Update client information based on the Swedish and Finnish population registers (see [Contact Data Integration \[71\]](#)).

#### Generate regulatory reports

- **Report ex-ante / ex-post costs** - generate reports which break down your portfolio's ex-ante and ex-post costs according to regulation. These cost reports break down your costs into costs related to "Investment services" and "Financial instruments" (further broken down into one-off charges, ongoing charges, transaction costs, ancillary services, incidental costs, and other costs) and "Third-party payments", according to your cost categorization. These reports also show your portfolio's return before and after costs are applied: ex-post cost report shows actual performance and costs during a specified time frame, whereas the ex-ante costs report projects a given investment's or portfolio's costs into the future. You can import MiFID II cost information via [Data Aggregation \[45\]](#) (EMT file importer), or [Market Data Connector \[63\]](#) modules.

### Related links

[Compliance](#) in FA User guide

## Corporate Actions

### Overview

FA's Corporate Actions provides you with tools to automate corporate action management. FA's Corporate Actions allows you to control which portfolios to use, which transactions to create, which taxes to apply, and when to exercise the corporate action.

## Functionality

### Define corporate action details through pre-defined corporate action types

- **Select the corporate action type** - choose corporate action type among common cases such as *Capital calls and returns*, *Coupons*, *Dividends*, *Dividends as shares*, *Issues* and *Splits*. Different forms can be applied for different corporate actions - see a full list of supported corporate action types below.
- **Define corporate action details** - define details for the created corporate action transactions by specifying for example Security, Currency, Transaction type, Internal info/Memo, and format-specific details depending on the corporate action type.
- **Calculate taxes related to your corporate actions with pre-defined tax rates** - you can enter a tax percentage and tax type for your corporate action, when the system automatically calculates taxes related to the corporate action. In addition, you can define default tax rates related to a particular corporate action type to be used as a default. For example, you can pre-define a tax rate to be used for "Dividends" from "Swedish stocks" for "Private persons" in "Sweden".
- **Define the applicable FX rates** - if the corporate action is handled in a foreign currency, select applicable exchange rate for the created transactions or use the latest rate available as a default.

### Import corporate actions

- **Import dividends and splits** - import dividends and splits for equity securities from Bloomberg and run them automatically on the ex-dividend or split date.
- **Import corporate actions** - import corporate actions in the CSV file (see [Data Aggregation \[45\]](#)).

### Run corporate actions and mass-generate transactions

- **Mass-create transactions based on corporate action details** - run a corporate action to an individual portfolio, an individual contact or a group of portfolios in one go. Corporate action transactions are created to all affected portfolios in one go - the system automatically determines which portfolios are affected by the corporate action on the corporate action date.
- **Track who has entered corporate actions over time** - keep track of corporate action runs: who entered a corporate action, when, and which transactions were created as a result. In case of an error, you can also delete a corporate action run including all of its associated transactions.

### Schedule and automate certain corporate actions

- **Schedule a corporate action to take effect on a future date** - when entering corporate action details, you can choose to schedule the corporate action to be run automatically by the system on a later date. When scheduled, the corporate action transactions are created in the background on the scheduled time.
- **Create coupons, expirations and calls automatically based on bond information** - you can generate appropriate corporate actions for upcoming coupon payments, expirations and calls for bonds, based on the bond information you have entered in the system. You can populate appropriate corporate actions for coupon payments, expirations and calls manually, or you can schedule these to be created automatically at pre-defined times.

## Supported types

### Standard types

Type	Description
Account interest	Account interest is calculated based on the defined interest percentage.
Capital call	Capital call is calculated based on a defined call percentage and total commitment of the position.
Capital return	Capital return is calculated based on a defined return per share and each portfolio's share of the security.
Coupon payment	Coupon payment is calculated based on a defined coupon percentage. Both <b>fixed</b> and <b>floating coupon rates</b> are supported.

Type	Description
<b>Dividend</b>	Dividend is calculated based on a dividend per share and each portfolio's share of the security.
<b>Dividend as shares</b>	Dividend as shares is calculated so that the dividend paid per security is converted into dividend securities based on the purchase price of the dividend security. Incomplete share fractions also supported: if the amount of the dividend security received is not a whole number after the conversion, the rest of the dividend (the remainder) is paid as a regular dividend.
<b>Exchange</b>	Exchange is calculated based on a defined ratio, and exchanges the position in one security into one or more other securities. In addition to directly exchanging one security to another, the exchange corporate action supports dividing the purchase values of the original security to the new securities received in the exchange, as well as exchanging securities with different currencies.  Exchange corporate action can be used also for example for <b>mergers, fusions, spin-offs, redemption shares and convertible bonds</b> .
<b>Issue</b>	Issue is calculated based on a ratio and open purchase lots of a position when new securities are issued based on the ownership of another security.  Issue corporate action can be used also for example for <b>subscription rights issues and bonus issues / bonus share</b> .
<b>Redemption</b>	Partial redemptions use the redemption schedule and amounts specified for the bond. Expirations are calculated based on the maturity date and price specified for the bond.
<b>Split</b>	Split is calculated based on a split ratio.  Both <b>splits</b> and <b>reverse splits</b> are supported.
<b>Subscription</b>	Subscription is calculated based on a ratio and open position when new securities are subscribed based on the ownership of another security.

### Other supported types

Type	Description
<b>Bonus issue</b>	Supported through "Issue" - define the ratio with which you receive the bonus shares.
<b>Convertible bond</b>	Supported through "Exchange" - define the ratio with which you receive the shares your bond is converted into.
<b>Delisting / Remove</b>	Supported through "Dividend" form and "Remove" or "Sell" transaction. Delisting is calculated based on a unit price per share (or 0 price if you remove securities of no value) and each portfolio's share of the security.
<b>Expiration / Maturity</b>	Supported through "Dividend" form and "Expire" transaction. Expiration is calculated based on expiration / maturity price per share and each portfolio's share of the security.
<b>Merger / Fusion</b>	Supported through "Exchange" - define the ratio with which you receive the shares of the other company your security is merged into.
<b>Redemption shares</b>	Supported through "Exchange" - define the ratio with which you receive the redemption shares and percentage of the purchase value redeemed.
<b>Spin-off</b>	Supported through "Exchange" - define the ratio with which you receive the shares in the new company and percentage of the purchase value that remains in the old company and is transferred to the new company.
<b>Subscription rights issue</b>	Supported through "Issue" and "Subscription" - define the ratio with which you receive the subscription rights, and use the rights to subscribe the original security. Subscription rights issue can be managed according to different taxation schemes in Finland and Sweden.

### Related links

[Corporate actions](#) in FA User guide

[Corporate actions](#) in FA Back reference

## Data Aggregation

### Overview

FA's Data Aggregation allows you to automatically import data from a third party such as your custody, broker, or asset manager. FA's Data Aggregation validates your data and automatically saves it to correct customers, portfolios and instruments, thus minimizing human error.

### Functionality

#### Add new data or modify existing data in FA via importing

- **Import contacts, portfolios, securities, market prices, transactions, trade orders, account interest rates, FX contracts, model portfolios, corporate actions, postings and TWR data** - you can import

data into the system with different formats - see below for more details about the supported import formats.

- **Import data via manual file uploads, API calls or integrations** - in addition to importing data into the system through uploading the imported files manually, you can import data through API calls or different kinds of integrations. Automatic file uploads are available via [Bank and Custody Connections \[65\]](#) module or custom connections, which include reading files in .csv format sent via SFTP or via email from banks, custodians or other data providers.

#### Support for customized and specialized data formats

- **Build your own customized import file format for trades and prices** - define your own file readers for transaction, trade order and security price files, to read in .csv files which don't adhere to FA's standard file formats.
- **Change the import file delimiter** - configure the file delimiter for FA Format .csv files, allowing you to use your local file format conventions (comma-separated or semicolon-separated) for your import files.
- **Import MiFID costs** - import standard cost information to your securities in EMT format.

#### Supported formats

Format	Description
XLSX file	XLSX files are available for manual and automatic import to FA. Each FA object type follows a strict column-row structure, with object properties in columns and objects on each row.
Standard CSV file	Semicolon-separated (or comma-separated) files with .csv format (Windows-1252 encoding) are available for manual and automatic import to FA. Each FA object type follows a strict column-row structure, with object properties in columns and objects on each row.
Header-based CSV file	Comma-separated files with .csv format (UTF-8 encoding) are available for manual and automatic import to FA. The difference compared to the "Standard CSV file" is, that this file format allows rearranging columns and omitting unused columns.
API	Import-endpoint takes a structured list of FA objects in JSON format. The required and supported properties (represented by keys and values of the objects) match file-based importing.
EMT file	Standard .csv file to import MiFID cost information. Supported versions: EMT V1, EMT V3, EMT V4.

#### Related links

[Data aggregation](#) in FA User guide

[Importing](#) in FA Back reference

#### Developer tools

##### Overview

FA's Developer tools provide you with tools and instructions that enable you to extend FA Platform. These tools and instructions allow your developers to customize, automate and extend FA Platform beyond the standard features, and integrate it with other systems.

##### Functionality

The availability of developer tools depends on your plan, and therefore certain features listed below are limited accordingly. For more information, refer to the [Customizability \[16\]](#) section.

#### Make customized reports and data analyses based on the data available in FA

- **Create custom client reports** - you can use the fully-integrated reporting tool to create new report templates with HTML, CSS and JavaScript. FA Platform embeds *jsreport designer*, an online report-building tool, which allows you to develop custom reports of various file formats (PDF, XLSX, etc.) that your users can generate directly from FA.
- **Make custom data analysis** - you can analyze your data with the help of Python libraries like *pandas*, *plotly* and *pyfolio*. FA Platform embeds *Jupyter Notebook*, a tool that allows you to perform various data analytics and manipulation tasks through on-the-fly Python scripting.

## Extend the user interface and data fields

- **Add tabs and data fields for contacts, portfolios and securities** - custom profiles help you extend standard UI to collect, store, and view the data entered by the user. For example, you can create a custom profile to store ESG values on security or to store client-specific information on contacts. A custom profile is displayed as a tab that you can tailor to your needs and show for contacts, portfolios, or securities. A tab can contain components, such as text fields, drop-down menus, and date fields. Profiles are constructed with *Vaadin design* layouts and components.

## Create and automate workflows

- **Automate recurring tasks through business rules** - a business rule automatically triggers one or more consequences whenever an object is modified in FA and meets conditions defined in the rule. For example, you can set a rule to change a trade order's status when it receives tags indicating a successful validation. FA Platform incorporates *Drools business rule engine*, which allows you to deploy your custom rules by uploading Excel-based decision tables.
- **Streamline working with FA through custom processes** - with custom processes, you can improve workflows by eliminating unnecessary manual steps. For example, an onboarding process can automatically prompt the client for information, validate it, and, upon successful validation, create a new contact in FA. FA Platform incorporates *Flowable modeler*, which lets you design business processes to implement in external applications, and *Form.io form builder*, which lets you create form designs that can be rendered in external applications.

## Build integrations with other systems

- **Route data from and to the FA Platform through integrations** - you can integrate FA Platform with other systems and applications via files and message transfers. FA Platform embeds *Apache Camel*, an open-source integration framework that provides routing and mediation capabilities. With Camel, you can create integration flows to connect the FA Platform with other systems.
- **Manipulate data through GraphQL APIs** - FA Platform's APIs allow you to manipulate data from the FA Platform using a simple and intuitive query language. This allows you to retrieve data that you need while reducing the number of API calls. FA Platform's API implementation is based on *GraphQL*, a query language and runtime for APIs, which is designed for flexible and efficient data fetching and editing.

## Related links

[Customizability \[16\]](#) in FA Product description

[FA Developer Guide](#) in FA Documentation

## Document management

### Overview

FA's document management allows you to store documents under contacts, portfolios, securities, transactions and trade orders.

### Functionality

- **Search, download, upload, modify and delete documents** - you can upload documents to the system or store links to the documents that are publicly available. As an administrator, you can access and manage all documents and links to documents stored in the system - for other users, documents are only shown for the security, contact, portfolio, transaction or trade order they are linked to. You can search for all documents stored in the system, download them, upload new documents, rename existing documents, and delete any documents. The system also keeps track of document creator and last modification date and time.
- **Organize documents into folders and tag documents to categorize them** - you can move documents from one folder to another, or tag documents to categorize them across folders.

- **Mass-delete documents** - you can also mass-delete all documents matching your search criteria in one go.
- **Validate document uploads** – for security reasons, the system allows you to upload only certain file types, and you can define the maximum file size, how many documents you can upload, and with what frequency.
- **Send documents for signing** - you can notify your clients about uploaded documents waiting for signing. Your client can sign a document using [Signicat Digital Identity and Signing \[69\]](#).

## Related links

[Documents](#) in FA User guide

[Documents](#) in FA Admin guide

## Fee Management

### Overview

FA's Fee Management supports your portfolio-level fee management routines. It allows you to perform calculations from simple asset management fees to performance fees with High-Water Mark. To save you time, you can simultaneously mass-produce fees for multiple portfolios and run them for different time intervals.

### Functionality

#### Manage various types of fees and costs

- **Record costs associated with your transactions or record standalone fees** - record any number of different costs and fees associated with your transactions (e.g. costs associated with buying or selling) directly into the transaction itself. Alternatively, you can create standalone cost transactions such as asset management fees.
- **Define and categorize any number of different cost types** - for reporting purposes, you can categorize cost types according to ESMA's classification.
- **Keep track of implicit costs associated with your holdings** - you can also keep track of costs which do not show up directly as transactions in your portfolio, such as a fund positions' asset management fees.
- **Report your fees** - you can use [Reporting \[54\]](#) and [Compliance - Regulatory \[43\]](#) module to report your fees and costs in various ways. Costs and fees are included in various standard reports, and various regulatory reports allow you to for example report ex-ante and ex-post costs.

#### Manage fee calculation parameters and logic

- **Record various fee parameters to your portfolios** - keep track of portfolio-specific cost attributes, such as management fee percentages, and link portfolios to your cost formulas. You can link a portfolio to multiple cost formulas, and different portfolios may be linked to different formulas to control how fees are calculated for each portfolio.
- **Calculate fee percentages for your clients based on their AUM** - you can maintain AUM trigger levels, and calculate a fee percentage for your clients' portfolios when they exceed a pre-defined AUM threshold.
- **Use a standard fee formula to calculate fees** - you can use standard fee formulas (see below) to calculate fees, such as asset management fees, to your portfolios. Most fee formulas calculate one fee since the previous date the fee was calculated, while some formulas support calculating separate fees per position. Standard fee formulas are configurable, so you can adjust them to fit your needs.
- **Run rebate contracts** – calculate rebates based on a flat percentage or apply a complex percentage determined by the contract, day, transaction type, or security. Rebate functionality supports multi-tiered hierarchies of recipients, which lets you pay out rebates to the investors themselves, to the intermediate level (e.g. investors' sales representatives), or to the asset management/fund distributor company.

#### Calculate fees and rebates for your portfolios



- **Mass-generate fee transactions to your customers** - calculate a fee of your choice to an individual portfolio, an individual contact, or a group of portfolios in one go. Fees are calculated since the previous date the same fee was calculated in the portfolio until the fee calculation date.
- **Automate your fee calculation with a pre-determined schedule** - you can initiate fee calculation manually, or you can schedule your fee calculation to be performed automatically at pre-defined times.
- **Track who has calculated fees over time** - keep track of fee calculation: who calculated fees, when, and which fee transactions were created as a result. In case of an error, you can also delete a fee calculation run including all of its associated transactions.
- **Calculate rebates for your funds** - define which rebates are applicable for each portfolio and calculate rebates for your fund positions automatically.

**Manage accruals, capitalization and distribution**

- **Create accruals and capitalization** - in addition to calculating one fee to cover a longer period of time, you can gradually accrue fees over time and capitalize your accrued fees periodically. You can calculate accruals and capitalize fees manually, or you can schedule these to be performed automatically at pre-defined times.
- **Distribute fees and rebates to multiple portfolios** - you can distribute fees to portfolios based on their accrued fee or rebate transactions, or based on weighted average positions over time (in a corresponding security).

**Supported types**

Standard fee formula	Description
Fixed fee	Fixed fee, or fee based on the calculation period.
Relative fee	Fee defined as a percentage of AUM. Supports excluding account balances and/or positions of specific securities from AUM.
Performance fee	Fee calculation based on the portfolio performance (compared to a benchmark).
High-Water Mark	Deduct fees only if the portfolio's performance exceeds the historical performance, i.e. High-Water Mark.
Rebates	Calculate expected rebates/accruals.
Account interest	Calculate interest on your accounts.

**Related links**

[Fee management](#) in FA User guide

[Fees and interests](#) in FA Back reference

**Model Portfolio Management and Rebalancing**

**Overview**

FA's Model Portfolio Management supports model portfolios, investment strategies, and client-specific preferences and enhances your discretionary asset management approach. FA's intelligent rebalancing logic allows you to automatically apply your models to your portfolios.

**Functionality**

**Manage model portfolios and client-specific investment plans**

- **Create, modify and delete model portfolios** - you can create model portfolios with fixed content and shares, or you can create model portfolios with fluctuating shares, when model portfolio shares fluctuate as market prices change. Your model portfolio content can change over time: you can either update the fixed content and shares, or reference to a portfolio maintained in the system to update the content through the reference portfolio. Link your model portfolios to multiple client portfolios to follow which client is following which model. You can export a model portfolio in XLSX, make changes and import it back into the system.

- **Create, modify and delete client-specific investment plans** - you can create client-specific models through investment plans to consider your client's investment preferences. Your investment plan content can change over time.
- **Follow model-of-models structure** - your client portfolios may simultaneously follow multiple model portfolios with specific weight factors between selected models. Model-of-models structure is reflected into your client portfolios as a client-specific composite investment plan.
- **Set up a strategy based on asset types** - you can set up a strategy based on asset types with minimum and maximum shares. You can set up an interpolated strategy, with allocation shares gradually increasing or going down over the period.

### Rebalance portfolios to follow their models

- **Rebalance portfolios and realign investments to match the model** - analyze the portfolio content against the selected model, and get suggestions on what to buy and sell. The model can be based on a the portfolio's chosen model portfolio, investment plan, or strategy. You can rebalance portfolios one-by-one, or rebalance multiple portfolios in one go. You can choose if you want to generate buys only with currently available cash, include estimated cash received from sells, or include estimated cash from outstanding trade orders. You can specify if you want to use credit account balance and available credit for buys, and if you want to cover for the used credit. You can set the smallest threshold to initiate a buy or sell, and define if estimated fees should be taken into account. Other parameters allow you to fine-tune the outcome of the rebalance. At the end, rebalancing suggests trade orders, which you can fully or partially accept to be created into your rebalanced portfolios.
- **Align settlement dates of suggested trade orders** - fill in the transaction and settlement dates in trade orders so that buys are only executed once the sales are settled, preventing cash flow mismatches.
- **Rebalance with delayed real-time prices** - if you have connected to a [Market Data Connector \[63\]](#) that supports a (delayed) real-time price feed, you can rebalance your portfolios with the latest available prices you get from the market data connector. This allows you to use the latest available market data to estimate how much to buy or sell.
- **Automate rebalancing** - you can save different rebalancing option sets for different rebalancing strategies, and use these templates to schedule a rebalance to be run against selected set of portfolios at specified intervals. In addition, you can automatically check if a rebalance is ongoing for selected portfolios, ensuring that you don't automatically rebalance portfolios again while a previous round of rebalancing has not yet gone through.
- **Invest deposits through rebalancing or according to investment plan** - the system can react to incoming deposits to portfolios, and mark the portfolios to be picked up by automated rebalancing. In addition, the system can detect incoming deposits, and automatically create trade orders to invest the deposited amount according to the portfolio's investment plan.

### Follow rebalancing activities

- **Track rebalancing activities through audit trail** - you can track through rebalancing history who has rebalanced which portfolios, when, and with what parameters. You can see which trade orders were created from the rebalance and what were the portfolio weights prior to the rebalance. You can also cancel each rebalance, when all created trade orders and linked transactions are removed.

### Related links

[Rebalance](#) in FA User guide

[Model portfolio management](#) in FA Back reference

## Payments

### Overview

FA's Payments generates payment instructions in standard electronic formats and allows you to easily track the status of your payments. You can connect FA to your banks for automatically sending and receiving payment messages. Additionally, automated reconciliation of transactions and balances ensures you have full control of your payment cycle.

## Functionality

### Outgoing payments

- **Automatically generate standard format payment files** - create credit transfers based on your transactions, and send them forward to your bank as payment initiatives. Extract transaction costs in separate payment files. Automate your complex payment processes with accuracy, efficiency and extensive error handling.
- **Bulk outgoing cash transactions** - aggregate your payments into one bulk by summing up your individual cash transactions to avoid unnecessary transfers: outgoing payment files are generated and payment initiatives sent only for the bulked payments instead of multiple, individual payment transactions.
- **Monthly savings / withdrawals** - set up and register a plan and automatically generate payments based on the savings plan. You can use monthly withdrawals to handle withdrawals from pension accounts, such as Norwegian individual pension account (EPK).

### Incoming payments

- **Receive new transactions from incoming payment files** - read in standard format payment files to create new cash transactions to keep your clients' cash balances up-to-date. Receiving payments may trigger other events and processes, such as an initiative to invest new cash paid into the portfolio.
- **Update payment transactions based on incoming payment files** - read in standard format payment files to update your payment transactions with settlement dates and status information, when your payments have been carried through by your bank. Constantly know the status of your payments, and easily see which payments have gone through and when.
- **Reconcile your payments based on incoming payment files** - read in standard format payment files to reconcile your payment transactions against the actual payments by your bank. Automatically receive extensive error reports from mismatches in your payments or incomplete payment transactions.

### Outgoing mandates

- **Mandate reference generation** - automatically generate mandate reference numbers that are used for autogiro payment initiation.
- **Mandate initiation request** - send mandate initiation requests to allow direct debits on accounts in FA.
- **Mandate amendment request** - send mandate amendment requests to change existing mandates for direct debits on accounts in FA.
- **Mandate cancellation request** - send mandate cancellation requests to cancel a mandate for direct debits on accounts in FA.

### Incoming mandates

- **Mandate status handling** - receive mandate status messages and update information in FA accordingly.

### Automate your payment handling

- **Extend the degree of automation via bank and custody connections** - if you are using the payments module alone, payment files are downloaded and sent forward manually. Sending of payment files can be automated with [Bank and Custody Connections \[65\]](#) module.

## Supported formats

### Outgoing payment files

Files	Description
<b>pain.001.001.03</b>	<p>Credit Transfer, customer-to-bank Payments Initiation message.</p> <p>Part of ISO 20022 standard (universal financial industry message scheme).</p> <p>Specific formatting for domestic, International, SEPA, Danske and OP pain.001 files are handled as well.</p> <p>Urgent payment classification supported in domestic and international formats.</p>
<b>pain.008.001.02</b>	<p>Customer direct debit initiation.</p> <p>Part of ISO 20022 standard.</p>
<b>Nets direct remittance</b>	<p>A Norwegian format to send payments from one account to another.</p>
<b>Nets payment initiation</b>	<p>Payment by one-off mandate – Securities trading in Norway.</p> <p>Payment by one-off mandate is a service where the payee sends a file to Nets with transactions for automatic debiting of the payer's account.</p>
<b>Autogiro Payment initiation</b>	<p>Direct debit solution in Sweden for recurring payments.</p> <p>The file the company sends to Bankgirot contains the withdrawals to be made from the clients' bank account.</p>
<b>AvtaleGiro</b>	<p>Direct debit solution in Norway for recurring payments. Payment initiation and deletion formats are both supported.</p> <p>Settled payment claims from AvtaleGiro are reported to the payee as OCR giro accounting data. This means that the payee has to have an OCR giro agreement for the same account as the one set up for AvtaleGiro.</p>

### Incoming payment files

Files	Description
<b>camt.053.001.02</b>	<p>Account Statement, bank-to-customer Payments Maintenance / Cash Management message used to inform the account owner, or authorised party, of the entries booked to the account, and to provide the owner with balance information on the account at a given point in time.</p> <p>Part of ISO 20022 standard (universal financial industry message scheme).</p>
<b>camt.054.001.02</b>	<p>Direct debit credit notification used to inform the account owner, or authorised party, of single or multiple debit and/or credit entries reported to the account.</p> <p>Part of ISO 20022 standard.</p>
<b>MT940</b>	<p>Bank account statement developed by SWIFT. MT940 is an end-of-day statement file that details all entries booked to an account.</p>
<b>Nets direct remittance</b>	<p>Response file to the Nets direct remittance containing information on the transaction status.</p>
<b>pain.002</b>	<p>Payment status report used for informing rejections of payments in pain.001/pain.008.</p> <p>Part of ISO 20022 standard.</p>
<b>OCR giro payments</b>	<p>Direct debit solution in Denmark and Norway.</p> <p>The OCR reference is a unique reference enabling beneficiaries to identify incoming transactions by client. OCR is a collection service for all types of bills based on customer ID.</p>
<b>Nets payments</b>	<p>Direct debit solution in Norway.</p> <p>Response file to the Nets payment initiation containing information on settled and/or rejected transactions.</p>

Files	Description
Autogiro Payments	Direct debit solution in Sweden.  The Bankgirot file sent to the company containing approved and non-approved payments (based on payment initiation file).  We support both the old and new formats.

## Outgoing mandate files

Outgoing mandate files	Description
Autogiro Mandate file	Direct debit solution in Sweden.  The file with the payer's details that the payee sends to Bankgirot in order to register a new mandate.  A mandate agreement between a payer and a payee is a prerequisite for using Autogiro.
pain.009.001.01	Mandate initiation request (must be sent in advance of direct debit collections).  Part of ISO 20022 standard.
pain.010.001.01	Mandate amendment request (must be sent on existing mandates).  Part of ISO 20022 standard.
pain.011.001.01	Mandate cancellation request (must be sent on existing mandates).  Part of ISO 20022 standard.

## Incoming mandate files

Incoming mandate files	Description
Autogiro Mandate advice	Direct debit solution in Sweden.  The file Bankgirot sends to company containing approved and non approved mandates.
pain.012.001.01	Mandate status and acceptance report.  Part of ISO 20022 standard.
AvtaleGiro registration	Additional services provided by AvtaleGiro and Nets for registering for recurring payment in Norway. The user registers on a website and standard format file is sent back containing information on the registration.

## Related links

[Payments](#) in FA User guide

## Reconciliation

### Overview

FA's Reconciliation helps reconcile that your portfolios' positions are continuously up-to-date. FA's Reconciliation matches holdings in FA against information from your custodians and banks, identifying any mismatches.

### Functionality

#### Generate reconciliation reports

- **Generate reconciliation reports for manual reconciliation** - you can generate standard reconciliation reports to assist you with manual reconciliation. Reconciliation reports cover different portfolio values, for example, positions, and accounts. Reconciliation reports are designed to be generated in Excel format, allowing you to use the data with a spreadsheet.
- **Generate MT535 Statement of holdings** - you can export position balances in the MT535 file format to send to your distributor.

## Reconcile positions and cash balances

- **Compare positions and cash balances in FA against external data sources** - you can reconcile positions and cash balances on a specific date against corresponding values provided by an external system. Reconciliation can result in three different outcomes: "Position or account in external file not found in FA", "Position or account in FA not found in the external file", or "Mismatch between value in FA compared to external file".
- **View and correct reconciliation mismatches** - you can correct the mismatches within your portfolios while keeping the reconciliation results open at the same time. You can also re-run the reconciliation at any time to verify your corrections to your data. You can store information about reconciliations by adding notes and attaching documents.
- **Assign reconciliations** - you can assign reconciliations to other users for correction.
- **Reconcile individual portfolios, partial portfolios or aggregated values** - you can run positions reconciliation against individual portfolios, or reconcile multiple portfolios, such as a portfolio group, at once. You can also reconcile "partial" portfolios, for example when the reconciliation file only covers part of the portfolios' contents. Reconciling partial portfolios ignores mismatches when portfolios in FA contain positions that are not found in the external reconciliation file. You can exclude certain securities from reconciliation, for example, if you receive data for these securities from a different custodian. You can reconcile account balances on an individual portfolio's accounts, or aggregate all accounts with the same account number to reconcile the aggregate balance.
- **Reconcile cash account information received from the external data source with the information stored in FA** - Compare the account number, date and closing balance in the account statement received from the external source with the cash balance for that account in FA.
- **Track reconciliations** - you can view the history or reconciliations in the system and track the changes the users made in the reconciliation items.

## Extend the degree of automation

- **Extend the degree of automation via bank and custody connections** - the reconciliation module itself doesn't include automatically fetching reconciliation material from external sources. This type of automation requires extending the module with the [Bank and Custody Connections \[65\]](#) module. You can also use the reconciliation module's features manually by uploading reconciliation files into the system yourself.

## Supported formats

Files	Description
FA reconciliation file	CSV file containing position information.
MT535	A standard MT535 (SWIFT) message sent by an account servicer to an account owner.
MT940	A standard MT940 (SWIFT) message to send and receive end-of-day bank account statements.
CAMT053.001.02	A standard CAMT053.001.02 message used to send and receive end-of-day bank account statements. Part of ISO 20022 standard.

## Related links

[Reconciliation](#) in FA User guide

[Reconciliation](#) in FA Operations app

## Reporting

### Overview

FA's Reporting includes a wide variety of standard reports and the possibility for customized reports allows you to report versatile contents for various time periods. You can generate a report on the portfolio level or on the customer level - or even aggregate any data on a single report. Furthermore, to help you with your monthly and yearly reporting routines, FA's Reporting allows you to efficiently

mass-generate reports to a group of customers on one go, easily send reports via email directly to your customers, or conveniently publish reports online for your customers to access.

## Functionality

### Available reports and exports

- **Export data as PDF or XLS from tables** - search for data in a table in the system, select the columns you want to view, and click the XLS or PDF icon to export the data.
- **Generate standard reports** - standard reports come pre-installed, and use those to extract data from the system. Standard reports include information about your portfolios' history (for example profits and losses, cashflows, and value history) and present (for example allocations and positions).
- **Report templates based on queries** - you can generate report templates based on custom SQL queries you write in the system. Query-based report templates can be used like any other report.
- **Static and dynamic PDF report templates** - upload your own PDFs to the system, and use these PDF report templates as any other report. PDF report templates can be either static, or you can include information from the system with dynamic keys. For example, you can build a report front page outside of the system, and dynamically fill in customer name and address details on the page.
- **Dynamically fill in your own documents with information stored in the system** - in addition, you can dynamically fill in your own PDF, RTF or XLS(X) files with contact, portfolio and security information.

### Options to generate reports

- **Generate a report from the Report window** - you can generate individual reports from the Report window. Select which report you want to generate, and define the required parameters, such as portfolios and dates. Most reports support grouping the data with different options, such as security type, currency or country and filtering the report data with different options, such as security type.
- **Generate reports in your customer's language** - you can generate a report in your customer's language, when the preferred language is dynamically fetched from your portfolio information, or manually select which language you want to use. Most of the standard reports are available in English, Finnish, Swedish, Norwegian and Danish. In addition, a few selected report are also available in German, Spanish, Russian, Hungarian and Bulgarian.
- **Generate reports in different file formats** - all reports and report templates are available to be generated as PDF, in addition to which all standard reports are available as PDF, XLS, XLSX, CSV, TXT, DOCX and PPTX.
- **Combine individual reports into a report package** - you can multi-select individual reports to generate a combined report, or a multi-paged PDF containing data from multiple reports on separate pages. You can save your combined report as a report package for later use, and share packages with other users.
- **Mass-generate reports or aggregate data into a single report** - you can mass-generate reports to multiple customers or portfolios in one go, or aggregate multiple customers' or portfolios' data into a single report. For example, you can generate a monthly report to all your customers at once, or aggregate all your customers' information into one aggregated report.
- **Receive report generation status** - get a CSV, XLS or XLSX file that contains the report generation details, the number of generated reports, the number of failed and successful report generations.
- **Open reports as tabs on the Overview** - you can open standard reports as tabs on the Overview to extend the data available. You can print the report out as PDF or XLS or send as an email directly from the screen.
- **Schedule your report generation** - in addition, you can schedule generation of a report package to happen automatically in the background.

### Options for report distribution

- **Send reports via email** - you can send reports as an attachment directly to your customer's or portfolio's email address. You can define the message your email is attached to, pre-define email templates and include additional attachments to your email.

- **Publish reports to documents to show them online** - you can publish reports to your customer's or portfolio's documents, when separate report files are stored in document management. These documents can be shown online for your customers to view.
- **Send documents stored in the system via email** - you can upload documents or generate reports and send them by email. You can use this feature to check generated reports before sending.
- **Send reports via FTP** – send reports to a counterparty via FTP using custom Camel routes.

### Report styling

- **Use your company's logo in your reports** - updated standard reports, PDF exports and query-based report templates support showing your company's logo in the report header. In addition, you can fetch a different logo dynamically based on your portfolio's primary contact or representative, for example to use different logos for large institutional clients or clients managed by different offices.
- **Customized report header, footer and styles** - updated standard reports, PDF exports and query-based report templates depend on customizable headers, footers and styles. Header, footer and styling can be customized to for example use fonts, colours and formatting you prefer.

### Supported formats

Group	Available standard reports
Allocation	Allocation, Allocation by category, Allocation history (share) / (value), Allocation vs. Strategy
Profits / Losses	Capital gains, Performance and value history (also with accrued interest), Realized and unrealized profits (also with accrued interest, with accrued interest and TWR contribution, with currency profit), Realized profits (also in currency), Cashflow by category, Monthly performance, Performance and cashflows, Performance contribution breakdown
Positions	Positions, Positions by purchase lot
Postage	Norwegian letter cover page, Swedish cover page with address information
Transactions	Bank statement, Receivables and liabilities, Transactions / Trade orders (Export), Transaction / Trade order confirmation, Transactions

### Related links

[Standard reporting](#) in FA User guide

[Reporting](#) in FA Back reference

## Settlements

### Overview

FA's Settlements generates settlement instructions in standard electronic formats and allows you to track settlement status. You can connect FA to your custodians to send and receive settlement messages automatically.

### Functionality

#### Generate settlement instructions

- **Generate settlement instructions from transactions** - settlement instructions are provided to the user as text files. The full list of supported formats is described in the Supported formats section.
- **Generate settlement instructions to multiple custodians at once** - if generating settlement instructions from a collection of transactions which includes multiple custodians, FA creates multiple settlement files (one per custodian).
- **Tag transactions to indicate that settlement instructions have been generated/sent** - after settlement instructions are generated, the corresponding transactions may be tagged to indicate that.

#### Automate your settlement handling

- **Extend the degree of automation via bank and custody connections** - if you are using the settlements module alone, settlement files are downloaded and sent forward manually. Sending of settlement files can be automated with [Bank and Custody Connections \[65\]](#) module.



## Supported formats

Message types	Description
MT540-MT543	<ul style="list-style-type: none"> <li>MT 540 Receive Free Of Payment (<a href="https://www.iso20022.org/15022/uhb/finmt540.htm">https://www.iso20022.org/15022/uhb/finmt540.htm</a>)</li> </ul>
MT548 (ISO 15022)	<ul style="list-style-type: none"> <li>MT 541 Receive Against Payment (<a href="https://www.iso20022.org/15022/uhb/finmt541.htm">https://www.iso20022.org/15022/uhb/finmt541.htm</a>)</li> <li>MT 542 Deliver Free Of Payment (<a href="https://www.iso20022.org/15022/uhb/finmt542.htm">https://www.iso20022.org/15022/uhb/finmt542.htm</a>)</li> <li>MT 543 Deliver Against Payment (<a href="https://www.iso20022.org/15022/uhb/finmt543.htm">https://www.iso20022.org/15022/uhb/finmt543.htm</a>)</li> <li>MT 548 Settlement Status and Processing Advice (<a href="https://www.iso20022.org/15022/uhb/finmt548.htm">https://www.iso20022.org/15022/uhb/finmt548.htm</a>)</li> </ul>
CSV (Danske Bank)	CSV file specific to Danske Bank containing settlement information.
CSV (Handelsbanken)	CSV file specific to Handelsbanken containing settlement information.
CSV (SEB)	CSV file specific to SEB containing settlement information.

## Related links

[Settlements](#) in FA User guide

## Task Management

### Overview

FA's Task Management allows you to track upcoming and completed tasks to manage and schedule tasks for yourself and others. You can store all activities, meetings, and communication you've had with your customers as tasks under their information, manage your daily chores with assigned tasks, or react to the tasks the system provides you with.

### Functionality

**Record various kinds of upcoming, ongoing and past activities in the system**

- **Store your task details** - you can record tasks with all relevant data, including for example task type, assignee, due date, priority, duration, reference and linked contact. You can define your task with a title, description, and add attachments to your task. In addition, you can define default titles for different types of tasks.
- **Follow**
- **Follow your task status** - you can separately follow open and completed tasks. This allows you to for example produce "to do" task lists and see which activities you have completed. Most overdue tasks show up at the top of the open tasks list, and all open tasks with a due date in the past show up with an exclamation icon. Completed tasks are ordered based on most recent completion date.
- **View tasks linked to a customer or assigned to you** - you can view tasks linked to a selected customer to see what kind of activities the customer has been involved with. Alternatively, you can browser through tasks on the tasks view based on several predefined task lists, including who the task is assigned to. For example, you can see only tasks assigned to you, who the task may be assigned to, who created the task, when is the task due, and what is the task's status (open or completed). In addition, you can search for tasks based on the task type, title, content, assignee, priority, or linked user.
- **View contacts associated with tasks** - you can open a contact linked with a task directly from the task list, or search for all contacts linked to the tasks you have visible on the screen.

### Manage tasks

- **Create, modify and delete tasks** - you can create, modify and delete task details, and change the task status.
- **Mass-modify tasks** - system administrators can also make mass-modifications to tasks. Administrators can search for and filter tasks based on various criteria, mass-modify selected tasks' status (open/completed) and/or mass-delete the selected tasks.

## Continue ongoing workflows

- **View ongoing workflows and tasks** - you can view ongoing workflows, including custom workflows, and task lists within them. You can open a workflow to continue working with it.

## Related links

[Task management](#) in FA Back reference

## Trade Order Management

### Overview

FA's Trade Order Management enables you to manage an entire life cycle of a trade in an integrated, compliant, and transparent way. FA enables you to process a large number of trades and allows you to take your business to new levels.

### Functionality

#### Manage trade orders

- **Add, modify and delete trade orders** - you can store your trade orders with all relevant data, including for example portfolio, type, dates, and values for your trade order. In addition, you can store for example reference, counter and marketplace, and can use tags and descriptions to store more details.
- **Handle different types of orders and orders based on "units" or "cash"** - trade order management has been designed to support "buy" and "sell" type trade orders for investment instruments, and "deposit" and "withdrawal" type trade orders for cash. In addition, trade order management supports calculating trade orders based on "units" or "cash", allowing you to either place orders based on how many units you want to trade, or how much cash you want to use for your trades.
- **Search for trade orders** - search view for trade orders allows you to browse through and access your data. Select columns you want to view your orders with, filter the orders through selected columns, or use search criteria to save your search for later use. In addition, you can see un-executed trade orders on the Overview when looking at one portfolio, one customer's portfolios or a group of portfolios, and see the expected effect of outstanding trade orders on customer's investments.
- **Mass-modify trade orders** - you can mass-update the status of your trade orders, or mass-modify certain trade order information, such as tags, dates, units, prices, FX rates and costs.
- **Export trade order information** - export a list of trade orders into Excel, PDF or with a format you can use to import trade order information back to the system.
- **Create monthly investments** - generate recurring buy and sell trade orders into portfolios based on a schedule defined in the portfolio details.

#### Manage your trading flow

- **Gather trade orders from multiple channels** - you can enter trade orders manually, import trade orders with [Data Aggregatio \[45\]](#)n, or trade orders can be created by other modules, such as [Model Portfolio Management \[49\]](#) or [FA Client Front \[75\]](#). Regardless of where your trade orders come from, you can take them in the same way through your trading flow.
- **Validate your trade orders** - verify that your portfolios have sufficient units and cash to proceed with your trade orders. Validation approves or rejects trade orders to prevent withdrawing more cash than is available, selling more units than are available, or buying with more cash than is available. It also checks if the securities in the trade orders can be traded (you can restrict trading of a security in your portfolio options).
- **Send trade orders to marketplace** - export trade order information to a file or create a report out of your trade orders, and send the information to the marketplace or broker yourself. Alternatively, you can send trade orders automatically to the marketplace by extending trade order management with the [Trading Connector \[66\]](#) module.
- **Lock trade orders** - after you have sent your trade orders to marketplace, you can lock them in the system to prevent further modification to the information that has already been sent forward.

- **Update trade order information** - update your trade order information as your trade order is taken through your trading flow. You can update your trade orders in different ways to indicate for example status changes. If you are using one the trading connectors from the [Trading Connector \[66\]](#) module, the connector will automatically update your trade orders to reflect status changes and final execution details.
- **Execute trade orders** - once your trade orders have been executed in the market, you can execute your trade orders in the system in order to create transactions based on them. You can execute a single trade order, all buys or sells on the same instrument at once, or multiple trade orders at the same time with a file. When executing your trade orders, define the final transaction details, and optionally select to create market transactions and counter transactions to your trading portfolio.

### Bulk trading

- **Combine multiple client orders into a single bulk order** - you can bulk client orders of the same type (e.g. buy or sell), against the same security, currency, portfolio or portfolio owner. This combined bulk order is created into a dedicated bulk portfolio / trading portfolio, and sums up all the underlying client orders into one.
- **Execute the bulk order and distribute the executed transaction back to underlying client orders** - divide the shares you received by executing the bulk trade order back to the client portfolio,s in proportion to the original underlying orders. Distributing the bulk back to clients considers instrument-specific settings, such as how many decimals you can trade the instrument with.
- **Automatically adjust underlying orders or create supporting orders to handle certain trading restrictions** - sometimes bulk orders cannot be perfectly distributed to underlying client orders, for example there is a leftover cent or a fraction of a unit that should be divided between multiple clients. Bulk execution can handle such situation by adjusting the underlying orders or by creating additional "supporting orders" to cover for the remainders. In addition, bulk execution can automatically create "supporting orders" to meet requirements related to how many decimals you can trade the instrument with or what is the minimum trade size.
- **Manage fees in bulk trading** - bulk trading can calculate estimated fees based on a fee percentage, and distribute the fees from the bulk order back to the clients when the bulk order is executed. Bulk trading supports fees applied on the client orders, such as asset management fee, and fees applied to the bulk order, such as subscription fees - both fees are estimated in the bulk order and distributed back to the clients after execution.

### Supported formats

Available trade order statuses	Editable	Executable
Open	X	
Accepted	X	
Executable		X
Sent to execution		X
In execution		X
Partially executed in the market		X
Executed in the market		X
Settled in the market		X
Executed		
Cancelled		
Rejected		
Expired		

### Related links

[Trade order management](#) in FA User guide

[Trade order management](#) in FA Back reference

## Authority reporting

### External Reporting

#### Overview

FA supports selected reports requested by financial authorities and other stakeholders.

#### Functionality

##### Collect the data and generate reports

- **Gather all required data from FA to form the report** - gather all required data into reporting profiles, where the reports pick up the information.
- **Generate reports in the electronic format** - all electronic reports follow the specified formats, and they are validated (if possible) when generated. If validation fails, errors are listed and can be corrected before sending the reports. Supported reports are updated when necessary to keep up with the yearly changes in specifications. See below for supported reports and formats.

#### Supported formats

##### Authority reports

Report	Description	Notes
AIFMD	AIFMD reporting means reporting as referred to in the AIFM Directive (2011/61/EU) and the European Commission Regulation (2013/231).	AIFMD reporting guidelines ( <a href="https://www.esma.europa.eu/document/guidelines-reporting-obligations-under-articles-33d-and-241-2-and-4-aifmd">https://www.esma.europa.eu/document/guidelines-reporting-obligations-under-articles-33d-and-241-2-and-4-aifmd</a> ).
CRS/DAC2	OECD agreed information standard for the Automatic Exchange Of Information (AEOI) regarding accounts on a global level between tax authorities.	Current support only for FI and SE reporting.
FATCA	Reporting standard for reporting offshore assets for US tax payers (The Foreign Account Tax Compliance Act).	FATCA reporting summary: <a href="https://www.irs.gov/businesses/corporations/summary-of-fatca-reporting-for-us-taxpayers">https://www.irs.gov/businesses/corporations/summary-of-fatca-reporting-for-us-taxpayers</a> .
MiFIR	ESMA standard for transaction reporting.	Report file is verified with following authorities: FI, FIVA, CSSF and Cyprus. ESMA standard is strictly followed, but some of the identification rules differ between authorities. Automated solution currently available only for FI, FIVA and CSSF.
Notification of major holdings	A report that informs about changes in the proportions of shareholdings and voting rights in a company.	
SIRA/ PEF	Finnish reporting standard for reporting investment funds for Bank of Finland, Financial Supervision Authority and Statistics Finland.	Reporting for UCITS funds (SIRA) and private equity funds (PEF). SIRA reporting guidelines: <a href="https://www.suomenpankki.fi/en/Statistics/reporting-instructions/investment-funds/">https://www.suomenpankki.fi/en/Statistics/reporting-instructions/investment-funds/</a>
Solvency II	EU reporting standard for insurance companies to report their assets on a regular basis to the European Insurance and Occupational Pensions Authority (EIOPA) and European Central Bank (ECB).	The classifications and data needed for Solvency II reporting can be exported from FA to another system to produce Solvency II report.

##### Custody reports

Report	Description	Notes
DNB	AIFM report trustee report to DNB	XML file that includes information about initiated transactions, securities, NAV details.  Generates an XML file.

Report	Description	Notes
<b>DNB Custody report</b>	Custody report to report funds' assets, NAV calculations, cash and unit-holder transactions to DNB.	Generates an XML file.
<b>Futur Pension Transactions and holdings report</b>	Transactions and holdings to Futur Pension	XML files that contain information related to holdings and transactions. Information is provided on daily basis.  Generates one file for position information and one file for transactions.
<b>Futur Pension IDD report</b>	Ex-post costs to Futur Pension	XML file that contains information about ex-post costs for selected portfolios.
<b>SEB</b>	Depot Value and Transaction specification to SEB	Contains information provided to the insurance system with information about holdings, values and transactions of the depots owned by SEB Life. Information is provided on a daily basis.  Generates four files: holdings, transactions, cash, and dividends.
<b>SEB Custody report</b>	Custody report to report the breakdown of how each NAV was calculated to SEB	Generates an XML file.
<b>SEB Depository services</b>	Subscription and Redemption report to SEB Depository services	Contains information about fund subscriptions and redemptions. Information is provided on daily basis.  Generates one CSV file.

## External services

External services	Description	Notes
<b>Bloomberg PORT</b>	Portfolio holdings to Bloomberg PORT	Contains information about portfolio positions in CSV file.
<b>NAV Center</b>	Fund unit prices and dividends to the NAV Center database	
<b>SSB Fund Report</b>	Norwegian reporting standard for reporting fund share class capital, subscriptions and redemptions, and paid return to Statistics Norway.	
<b>VFF Fund report</b>	The report provides information about subscriptions, redemptions and reinvested dividend in funds to Norwegian Fund and Asset Management Association (Verdipapirfondenes Forening).	The report is in the text format (.txt).

## Tax Reporting

### Overview

FA supports generating certain tax reports for selected Nordic countries. For the supported tax reports, FA produces the required information in your tax authorities' electronic format and facilitates your end-of-year tax reporting by producing appropriate client printouts.

### Functionality

#### Collect the data to generate tax reports and client printouts

- **Gather all required data from FA to form the report to tax authorities** - gather all data required by the tax authorities into specific tax reporting profiles, where the tax report picks up the information. You can set up automation to collect the data, or you can enter data directly, especially if the required information is not directly available elsewhere in FA.
- **Generate tax reports in the electronic format required by your tax authority** - all electronic tax reports follow the format specified by the tax authority, and they are validated (if possible) when generated. If validation fails, errors are listed and can be corrected before sending the reports to the authorities. Supported tax reports are updated when necessary to keep up with the yearly changes in specification. See below for supported tax reports and formats.

- **Generate client printouts of the tax information** - you can send year-end tax information to customers using available client tax reports. Client printouts are either strictly specified by the tax authorities, or they include the content/elements specified by the authorities with FA look and feel. Either way, client tax reports provide customers a human readable tax reports of the same tax data used for electronic reports. See below for supported client tax reports.

## Supported formats

### Finland

Report	Au- thority	Client	Description	Version
VSAPUUSE	X		Annual information return of Purchase and sale itemization for Securities and Derivatives	1.0/2022
VSKTVYSL	X		Annual information return on interest subject to tax at source: Information specific for each interest type.	1.0/2022
VSOMHOIE	X		Annual information return of those who charge Asset Management fees	1.0/2022
VSTVERIE	X		Annual information return concerning Payments governed by Income Tax Act (TVL)	1.0/2022
VSRKOERI	X		Annual information return on interest payments, made to non-resident beneficiaries.	1.1/2022
VSULKOSE	X		Annual information return concerning transferred foreign dividends	1.0/2022
9A		X	9A Capital gains and capital losses from trading with securities. This is the form client needs to send to tax authorities, or report the same information using MyTax.	2022

### Denmark

Report	Au- thority	Client	Description	Version
Udkast til skatteopgørelse af frie midler		X	Client printout for equities and bonds. Report can be generated for private persons or companies, and instruments in private accounts can be taxed as "Realisationsbeskattet" or "Lagerbeskattet". Client can report the information on this printout using TastSelv.  Supported types: Rubrik 66, Rubrik 31, Rubrik 32, Rubrik 346	

### Norway

Report	Au- thority	Client	Description	Version
ASK	X	X	Stock saving account report, both tax authority and client report available. Client report has all the required information from authority report in human-readable format. ASK balance information can be updated separately, without running the report.	3.2
IPS	X	X	Pensions saving account report, both tax authority and client report available. Client report has all the required information from authority report in human readable format.	1.2
Saldorente	X	X	Cash balance and interest report, both tax authority and client report available. Client report has all the required information from authority report in human readable format.	3.0
Verdipapirfond	X	X	Fund holdings report, both tax authority and client report available. Client report has all the required information from authority report in human readable format, and is available for organizations and private persons.	3.1

Report	Au- thority	Client	Description	Version
Finansprodukter	X	X	Foreign stock and bond holdings report, both tax authority and client report available. Client report has all the required information from authority report in human readable format, and is available for organizations and private persons.	1.3
Avgifter		X	Client printout for fees, contains all the information required by the authorities. Client report has all the required information from authority report in human readable format.	

## Sweden

Report	Au- thority	Client	Description	Version
Kontrollavgift (KU)	X	X	Supported electronic formats: KU21, KU30, KU31, KU32, KU34, KU40, KU41, KU50, KU53.  Client printout includes the same information in a human-readable format.	8.0

## Connectors to third-party services

### Market Data Connector

#### Overview

Market Data Connector connects your FA with global market data providers to receive end-of-day (EOD) prices and instrument reference data, thus keeping your position valuations and instrument data up-to-date. You can connect to multiple market data providers simultaneously and flexibly fetch the data you need.

#### Functionality

##### Fetch instrument market prices

- **Connect your instruments to market data connectors** - you can connect to up to three market data providers simultaneously, and select which securities' prices to fetch from which connector. For example, you can fetch prices from separate connectors to your bonds and all other instruments. To do this, you can define a connector-specific update code for your security, or automatically fetch corresponding update codes to all securities the system can find through the connector.
- **Fetch the history of end-of-day prices to an instrument** - you can fetch the history of the EOD close prices for a security through a market data connector of your choice. You can configure the earliest date for which prices are fetched, to ensure you don't get prices for longer history than you need.
- **Automatically fetch newest EOD prices at night** - you can schedule nightly updates to fetch EOD close prices for all your securities. You can configure for how many days' prices you want to update each night.
- **Update prices for all securities for x number of days** - you can update prices for all securities for a selected time period - you can fetch prices for all securities for 7, 30, 365 days or since the configured earliest market data date.
- **Look for missing or delayed prices during the day** - all EOD prices might not be available at the same time when they are automatically fetched at night. This module provides you with a tool to search for and update missing or delayed prices multiple times during the day, to ensure you receive the latest available prices when they become available through the connector.
- **Fetch the intraday prices** - you can fetch the intraday prices for selected securities if these prices are provided by the market data connector.
- **Use intraday prices in rebalancing** - some market data connectors offer intraday prices. If your connector supports intraday prices you can use them to rebalance your portfolios with [Model Portfolio Management \[49\]](#).

##### Fetch instrument reference data

- **Connect your securities to security data connectors** - you can connect your securities to security reference data provider. The exact instrument information available varies from provider to provider, and may vary depending on your contract with the security data provider.
- **Create new securities with reference data** - you can search for securities by ISIN code or other available identifiers through the security data connector, and add them as new securities in FA.
- **Update your existing instruments with reference data** - you can update your existing security data with information provided by your security data provider. You can select which information you want to update, initiate the update manually or automatically update your security data on a scheduled basis.

### Supported service providers

To use the Market Data Connector module, you need to have access to one or more of the supported market data connectors listed below.

Connector	Instrument data	Market data (EOD)	Market data (intraday)	Details
Bloomberg	X	X		Fetch data with Bloomberg Data License by using Web Services protocol (DLWS).
CoinGecko	X	X		Fetch EOD prices and historical prices with CoinGecko API.
EOD Historical Data	X	X	X (15 to 20 minutes delayed)	Fetch data for stocks, ETFs and Mutual Funds.
Infront		X		Fetch data with Infront EOD API.
Keldan	X	X		Fetch security and market data for Icelandic securities via Keldan service from Kodi.
Morningstar	X	X		Fetch data with Morningstar On Demand APIs and Morningstar REST API. Morningstar On Demand API integration supports fetching all available security reference data, including ESG data. Morningstar REST API integration fetches security data from the following endpoints: DailyReturnIndex, FundShareClassBasicInfo, MorningstarRating, TrailingTotalReturn, AssetAllocationBreakdown, CountryExposure, DailyPerformance, RegionalExposureBreakdownRecentPort, MarketCapitalBreakdownRecentPort, CreditQualityBreakdownRecentPort, GlobalBondSectorRecentPort, GlobalStockSectorBreakdownRecentPort, StyleboxBreakdownRecentPort, CouponRangeBreakdownRaw, Attributes, InvestmentCriteria, ProspectusFees, PurchaseInformation.
Nordic Bond Pricing		X		Fetch EOD prices for bonds in the Nordics.
Refinitiv	X	X	X (15 minutes delayed)	Fetch market and security reference data from Refinitiv DataScope Select via REST API.
SIX		X	X (15 minutes delayed)	Fetch data with SIX apiD interface.
Stamdata	X			Fetch security information for bonds, indices and index prices in the Nordics.



## Bank and Custody Connections

### Overview

FA's Bank and Custody Connections allows you to easily manage incoming and outgoing files to your banks and custodians, for example, to automatically reconcile your holdings, read in your transactions, or settle your trades. You can connect to multiple banks and custodians simultaneously and manage how your files are transferred. FA's Bank and Custody Connections are available from automated and secure connections to semi-automatic approaches, and support multiple standard file formats for different banks and custodians.

### Functionality

#### Multiple connections at once

- **Choose your connection** - you can choose to use any of the standard connections available to automatically or manually import and/or read data from the corresponding custody. See below for supported connections.
- **Use any number of connections in parallel** - you can connect to multiple banks and custodies of your choice at once.
- **Automated and manual messaging with your banks and custodies** - you can have your files automatically transferred to and from your bank or custody in the background, or upload and download the files yourself manually.

#### Secure connectivity with your banks and custodians

- **Transfer the data securely** - FA uses secure SFTP and FTP connections and provides an additional layer of security by encrypting the file content using PGP if this is supported by the bank.

### Supported service providers

Connection	Pay-ments	Settle-ments	Transactions	Reconcili-ation	Positions
Danske Bank	• Automatic				
Nordea Bank	• Manual	• Manual • Pilot feature			
OP Bank	• Manual	• Manual			
SEB	• Automatic	• Manual			
SEB Depository services			• Automatic (ex- port)		
Swedbank		• Automatic • Pilot feature			
DNB	• Automatic	• Manual • Pilot feature		• Automatic (import)	
Futur			• Automatic (ex- port)		• Automatic (export)
Bloomberg AIM			• Automatic (im- port)	• Automatic (import)	• Automatic (export, cash posi- tions only)
Bloomberg PORT					• Automatic (export)
Connections available via M2Wealth			• Automatic (im- port)	• Automatic (import)	
For a full and up-to-date list of bank connections available through this integration, see <a href="#">m2wealth custody connections</a> .					

## Trading Connector

### Overview

FA's Trading Connector automates your trade order management by sending orders to your preferred trading venue. You can thus monitor the status and execution information of your trade orders in real time.

### Functionality

#### Send trade orders from FA to a trading platform of your choice

- **Send trade orders via a trading integration** - select trade orders in FA and send them forward to your trading platform. When sending orders via a trading integration, your orders are executed outside of FA. You can use one of the supported trading connectors, as long as the connector supports sending trade orders. You can also automate sending trade orders based on a schedule and custom criteria. For example, you can automatically send all buy and sell orders with status "Accepted" forward every day at 16:00.
- **Connect to multiple trading platforms simultaneously** - you can connect to multiple trading platforms at the same time, and you can route your trade orders to suitable trading connectors. For example, you can route your fund orders to Euroclear FundsPlace, while your stock and ETF orders are routed to Infront. You can also automate the trade order routing to the correct trading platform - automatic order routing requires additional configuration.

#### Automatically receive execution information about your orders from a trading platform

- **Receive order status updates and execution information on sent orders** - trading connectors support automatically updating the trade order status and execution/payment information to trade orders you have sent forward with one of our trading connectors. The exact frequency and content of these updates vary from connector to connector.
- **Receive drop copy session messages** - Receive near real-time information about trades executed in other trading platforms. The incoming feed of orders updates or creates new trade orders in FA. Drop copy sessions are supported in FIX formats only for certain connections (see the Supported formats and service providers table).

#### Send execution information on orders received in FA

- **Send order updates on the trade orders received by your fund** - select trade orders executed in FA and send trade order update messages and execution information from FA to your fund distributor. You can use one of the supported trading connectors, as long as the connector supports receiving trade orders. You can also automate sending trade order updates based on a schedule and custom criteria.

### Supported formats and service providers

To use the Trading Connector, you need to have access to one or more of the supported trading connectors listed below. Some counterparties require onboarding with a separate cost.

Connector	Description	Formats
Allfunds	Supports sending fund orders to Allfunds.	ISO 20022 version 3  Types: <ul style="list-style-type: none"> <li>• Subscriptions</li> <li>• Redemptions</li> <li>• Confirmations</li> <li>• Status updates</li> </ul>

Connector	Description	Formats
<b>Bloomberg EMSX</b>	<p>Supports <b>sending</b> equity, ETF, future and listed option orders to Bloomberg EMSX.</p> <p>Note that this connector is only for Bloomberg EMSX. Other Bloomberg trading connectors such as Bloomberg MTF are not supported.</p>	<p>FIX version 4.2</p> <p>FIX version 4.4</p> <p>Types:</p> <ul style="list-style-type: none"> <li>• New order</li> <li>• Order cancel</li> <li>• Order update</li> <li>• Confirmations</li> <li>• Status updates</li> <li>• Drop copy</li> </ul>
<b>Bloomberg FXGO</b>	<p>Supports <b>receiving</b> FX spot, forward, and swap orders from Bloomberg FXGO.</p>	<p>FIX version 4.4</p> <p>Types:</p> <ul style="list-style-type: none"> <li>• Execution update messages</li> </ul>
<b>Bloomberg TSOX</b>	<p>Supports <b>sending</b> fixed income (bonds) orders to Bloomberg TSOX.</p>	<p>FIX version 4.4</p> <p>Types:</p> <ul style="list-style-type: none"> <li>• Order staging</li> </ul>
<b>Calastone</b>	<p>Supports <b>sending and receiving</b> fund orders to and from Calastone.</p>	<p>ISO 2022 version 4</p> <p>Types:</p> <ul style="list-style-type: none"> <li>• Subscriptions (setr.010.001.04)</li> <li>• Redemptions (setr.004.001.04)</li> <li>• Switch order (setr.013.001.04)</li> <li>• Subscription confirmation (setr.012.001.04)</li> <li>• Redemption confirmation (setr.006.001.04)</li> <li>• Switch order confirmation (setr.015.001.04)</li> <li>• Subscription cancelation request (setr.011.001.04)</li> <li>• Redemption cancelation request (setr.005.001.04)</li> <li>• Switch order cancelation request (setr.014.001.04)</li> <li>• Order instruction status report (setr.016.001.04)</li> <li>• Order cancelation status report (setr.017.001.04)</li> </ul>
<b>DNB</b>	<p>Supports <b>sending</b> fund and ETF orders to DNB.</p>	<p>DNB proprietary format</p> <p>Types:</p> <ul style="list-style-type: none"> <li>• Outbound order</li> <li>• Status update</li> </ul>
<b>FundSettle</b>	<p>Supports <b>sending and receiving</b> fund orders to and from Euroclear FundSettle.</p>	<p>ISO 20022 version 4</p> <p>Types:</p> <ul style="list-style-type: none"> <li>• Subscriptions (setr.010.001.04)</li> <li>• Redemptions (setr.004.001.04)</li> <li>• Switch order (setr.013.001.04)</li> <li>• Subscription confirmation (setr.012.001.04)</li> <li>• Redemption confirmation (setr.006.001.04)</li> <li>• Switch order confirmation (setr.015.001.04)</li> <li>• Subscription cancelation request (setr.011.001.04)</li> <li>• Redemption cancelation request (setr.005.001.04)</li> <li>• Switch order cancelation request (setr.014.001.04)</li> <li>• Order instruction status report (setr.016.001.04)</li> <li>• Order cancelation status report (setr.017.001.04)</li> </ul>
<b>Infront</b>	<p>Supports <b>sending</b> equity orders to Infront Trading terminal.</p>	<p>Infront proprietary format (Infront Connect Trading API)</p> <p>Types:</p> <ul style="list-style-type: none"> <li>• tr_insert_order_request</li> <li>• tr_insert_order_response</li> <li>• tr_subscribe_orders_request</li> <li>• tr_subscribe_orders_response</li> </ul>

Connector	Description	Formats
<b>Euroclear FundsPlace</b>	Supports <b>sending and receiving</b> fund orders to and from Euroclear FundsPlace.	<p>ISO 20022 version 4</p> <p>Types:</p> <ul style="list-style-type: none"> <li>• Subscriptions (setr.010.001.04)</li> <li>• Redemptions (setr.004.001.04)</li> <li>• Switch order (setr.013.001.04)</li> <li>• Subscription confirmation (setr.012.001.04)</li> <li>• Redemption confirmation (setr.006.001.04)</li> <li>• Switch order confirmation (setr.015.001.04)</li> <li>• Subscription cancelation request (setr.011.001.04)</li> <li>• Redemption cancelation request (setr.005.001.04)</li> <li>• Switch order cancelation request (setr.014.001.04)</li> <li>• Order instruction status report (setr.016.001.04)</li> <li>• Order cancelation status report (setr.017.001.04)</li> </ul>
<b>Other counterparties with FIX connectivity</b>	<p>Supports <b>sending</b> equity, ETF, bond, future, and listed option orders.</p> <p>Requires additional configuration. Might require certification by a counterparty.</p>	<p>FIX version 4.2</p> <p>FIX version 4.4</p> <p>FIX version 5.0 SP2</p> <ul style="list-style-type: none"> <li>• New order</li> <li>• Order cancel</li> <li>• Order update</li> <li>• Confirmations</li> <li>• Status update</li> <li>• Drop copy</li> </ul>
<b>Other counterparties with SFTP connectivity</b>	Supports <b>sending and receiving</b> fund orders.	<p>Format:</p> <ul style="list-style-type: none"> <li>• ISO 20022 version 3</li> <li>• ISO 20022 version 4</li> </ul> <p>Types:</p> <ul style="list-style-type: none"> <li>• Subscriptions (setr.010.001.04)</li> <li>• Redemptions (setr.004.001.04)</li> <li>• Switch order (setr.013.001.04)</li> <li>• Subscription confirmation (setr.012.001.04)</li> <li>• Redemption confirmation (setr.006.001.04)</li> <li>• Switch order confirmation (setr.015.001.04)</li> <li>• Subscription cancelation request (setr.011.001.04)</li> <li>• Redemption cancelation request (setr.005.001.04)</li> <li>• Switch order cancelation request (setr.014.001.04)</li> <li>• Order instruction status report (setr.016.001.04)</li> <li>• Order cancelation status report (setr.017.001.04)</li> </ul> <p>Requires additional configuration. Might require additional consultation or development if counterparty deviates from the standard.</p>
<b>Interactive Brokers</b>	Supports <b>sending</b> equity, funds, and bond orders to Interactive Brokers.	<p>Format: FIX 4.2</p> <p>Types:</p> <ul style="list-style-type: none"> <li>• New order</li> <li>• Order cancel</li> <li>• Order update</li> <li>• Confirmations</li> <li>• Status update</li> </ul>
<b>Saxo bank</b>	Supports <b>sending</b> equity orders to Saxo bank.	<p>Format: FIX 4.4</p> <p>Types:</p> <ul style="list-style-type: none"> <li>• New order</li> <li>• Order cancel</li> <li>• Order update</li> <li>• Confirmations</li> <li>• Status update</li> </ul>

## Order Management Systems

FA allows you to connect to order management systems and receive information about executed trades.

### Functionality

#### Exchange information needed for trading

- **Receive information about executed trades** – receive transactions and position reconciliation data from the investment management system.
- **Send cash balance information** – automatically send cash positions per account and cash flows per account to another investment management platform where you create and execute trade orders.

#### Update investment information in FA

- **Automatically update portfolio positions** – have portfolio positions automatically updated in FA based on the data received from the investment management system.

### Supported service providers

Connection	Transaction	Reconciliation	Cash balances	Details
Bloomberg Asset and Investment Manager (AIM)	X	X	X	Bloomberg AIM is used for back-office operations and trading. It receives cash balance information, and after the trades are executed, sends transaction and reconciliation records to FA. Transactions import is done using the Online trade feed protocol.
	Import	Import	Export	
	Finalized transactions and missing securities		Account balances and cash flows from fund unit orders	

## Signicat Digital Identity and Signing

### Overview

FA's Signicat Digital Identity and Signing provides you with secure authentication methods which you can use when your clients are logging in to FA, when authorizing specific actions, or when electronically signing documents.

### Functionality

#### Securely authenticate your users

- **Allow your end users to log in to FA via Signicat** - you can allow or require certain users to authenticate themselves via Signicat in order to access FA.
- **Choose from different authentication methods** - Signicat provides various strong authentication methods for many European countries, ranging from bank ID authentication to document-based methods. You can pick which authentication methods your users should use - see table below for supported identity methods.
- **Customize the appearance of your Signicat sign-in page** - you can change the styling of Signicat's authentication pages to match your brand.
- **Create new users based on secure authentication information** - you can choose to automatically create user accounts for individuals who authenticate themselves via Signicat but do not yet have a user account in FA. This allows you to require authentication through Signicat on first login, but utilize features of the [Authentication \[39\]](#) module after first login.

#### Electronically sign documents

- **Send PDF-documents to electronic signing via Signicat** - ensure that the selected people sign the documents you send to them in a tamper-proof way. See <https://www.signicat.com/products/electronic-signatures/> for more information.

- **Define one or multiple signees to a single document** - you can define one or more signees for a document. If there are multiple signees, the document is considered to be signed and ready only after all the signees have signed the document.
- **Notify signees via e-mail and/or SMS** - you can send customized e-mails and/or SMS messages to document signees to notify them that a document is pending their signature.
- **Authenticate signees with your authentication method(s) of choice** - same authentication methods which are available for secure authentication are also available for document signing. See table below for supported identity methods.
- **Track the document signing status** - view who of the signees has signed the document, and which documents were rejected or expired.
- **Automatically save signed documents into the document library** - once all signees have signed your document, the signed, tamper-proof document is automatically downloaded into the FA document library.
- **Customize the appearance of your document signing page** - you can change the styling of Signicat's authentication pages to match your brand.

### Supported formats

Supported identity methods *
Norwegian BankID
Norwegian BankID (NBID) Biometrics
Swedish BankID
Finnish Trust Network (FTN)
MitID (Denmark's digital ID)

\* See a list of other available identity methods ( <https://www.signicat.com/identity-methods> ). FA supports methods that are based on OIDC (OpenID Connect).

## Office 365 Calendar and Email Sync

### Overview

FA's Office 365 Calendar and Email Sync allows you to synchronize selected emails and calendar events between your Office 365 and FA. This allows you to keep track of all client communication and client meetings, as required by financial industry regulations: relevant emails are automatically stored in FA, and meeting bookings synchronized between the two systems.

### Functionality

#### Automatically record Office 365 e-mails to FA

- **Synchronize selected users' Office 365 emails to FA** - record selected Office 365 users' emails as tasks in FA - see the table below for what information is synchronized from Office 365 to FA. Follow the recorded emails through the [Task Management \[57\]](#) module. Note that you can send emails through the [Communications \[41\]](#) module, but not through the synchronization.
- **Select which users' emails to synchronize** - you can choose which users' emails we synchronize, allowing you to only synchronize relevant e-mails.
- **Only synchronize e-mails related to client communication** - you can choose to only synchronize e-mails that are related to client communication, or linked to certain type contacts you have stored in FA. This allows the e-mail synchronization to ignore irrelevant internal communication.

#### Automatically synchronize calendar events between Office 365 and FA

- **Synchronize selected users' Office 365 calendar events to FA** - record selected Office 365 users' calendar events as tasks in FA - see the table below for what information is synchronized from Office 365 to FA. Follow the recorded calendar events through the [Task Management \[57\]](#) module.
- **Select which users' calendar events to synchronize** - you can choose which users' calendar events we synchronize, allowing you to only synchronize relevant calendar events.

- **Enable two-way synchronization between Office 365 and FA** - calendar event synchronization works both ways: you can choose to configure the synchronization so that new tasks are sent to Office 365 and recorded there as calendar events, new calendar events in Office 365 are recorded as new tasks in FA, and modifications to existing events flow from FA to Office 365 and vice versa.

## Supported formats

Format	Synchronized information
E-mails	<p>Task recorded in FA contain the following information from Office 365:</p> <ul style="list-style-type: none"> <li>• <b>Title</b> - e-mail subject.</li> <li>• <b>Completion date/time</b> - e-mail sending date/time.</li> <li>• <b>Owner/assignee</b> - user whose e-mail inbox the e-mail was synchronized from.</li> <li>• <b>Linked contacts</b> - contacts of selected type(s) who are in the e-mail's address fields.</li> <li>• <b>Description</b> - e-mail content (max 4000 characters, longer messages are saved as a task attachment).</li> <li>• <b>Attachments</b> - e-mail content as plain text and as HTML (if available). Additionally, if the e-mail contained file attachments, the task contains a text file attachment which lists those attachments. The files themselves are stored in the linked contacts' document libraries.</li> </ul>
Calendar events	<p>Tasks recorded in FA contain the following information from Office 365:</p> <ul style="list-style-type: none"> <li>• <b>Title</b> - event subject.</li> <li>• <b>Due date</b> - start time of the event.</li> <li>• <b>Assignee</b> - organizer of the event.</li> <li>• <b>Linked contacts</b> - attendees in the event.</li> <li>• <b>Description</b> - event description.</li> </ul>

## Contact Data Integration

### Overview

Connection to population registers lets you verify and update clients' information in the system by fetching it from the population registers.

### Functionality

#### Verify and update client information

- **Fetch contact information** - receive contact information, such as name and address, from population registers and use it to update contacts in the FA system.

### Supported service providers

To use contact data integration, you need to have access to the supported service providers listed below.

Provider	Description
Roaring	<p>Roaring lets you fetch client information from Swedish and Finnish population registers based on the social security number:</p> <ul style="list-style-type: none"> <li>• Swedish population register: name, address, deregistration, death date, guardian.</li> <li>• Finnish population register: name, address.</li> </ul>

## PEP and Sanction Checks

### Overview

FA's PEP and Sanction Checks ensure that you identify politically exposed persons (PEP), as well as companies and individuals included in global sanctions lists. You can also verify the results of any background checks for compliance purposes at any time.

### Functionality

#### Search PEP and Sanctions lists and flag contacts

- **Search selected PEP and Sanctions list databases** - search selected PEP and/or Sanctions list databases to find out if a person or a company is listed as PEP (Politically Exposed Person) or in Sanctions lists. For example, you can verify the status of a new client when adding them to the system.
- **Flag contacts who may be politically influential and/or on a sanctions list** - you can allow your compliance to verify the results of automatic flagging, and possibly override the flagging if the information is known to be inaccurate.
- **Automatically flag contacts who are listed in selected PEP and Sanctions list databases** - you can schedule automatic checks on all of your contacts, and flag them accordingly if matches are found from selected PEP and/or Sanctions lists. For example, you can use these flags to alert compliance or prevent creating new transactions to flagged contacts.

### Supported service providers

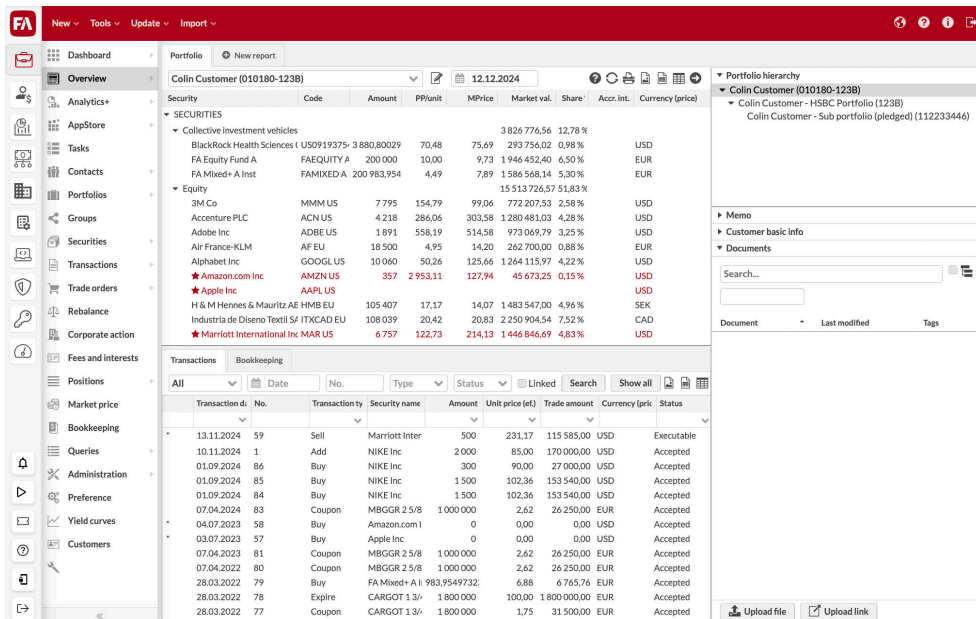
To use the PEP and sanction checks module, you need to have access to one or more of the supported service providers listed below.

PEP/Sanctions database	Description
Trapets (InstantWatch KYC)	Trapets lets you check your clients against PEP and sanctions lists.

## Applications

### FA Back

FA Back app is a portfolio management tool for professionals to manage all aspects of their day-to-day work. FA Back can be set up to exchange data with external systems via file transfers or APIs.



Main features of FA Back are:

**Portfolio management.** Maintain information about instruments, market prices, customers, portfolios, and transactions, including fees and taxes. FA Back automatically calculates portfolio positions based on the completed transactions, to ensure that portfolios are up-to-date.

**Analytics.** Analyse the portfolio figures and view the result as a table, graph or a pie chart.

**Trade order management.** Create, send out and execute trade orders to generate transactions for your portfolios. FA Back can be connected to a trading platform for exchanging trade order information.

**Corporate actions.** Create transactions based on corporate events for several portfolios at once.



**Fee calculation.** Calculate fees that affect multiple portfolios. FA Back saves the fee calculations you created and keeps track of the affected portfolios.

**Rebalancing.** Set a model portfolio and keep your investments within the investment plan.

**Bookkeeping.** Generate postings and accounting entries that can be sent to external systems for processing.

**Reporting.** Export data from FA Back as PDF or XLS, generate standard reports based on client's positions and transactions.

**Task management.** Keep track of the task list for you and your team.

**Utilities.** Set up a dashboard that shows everything you need on one screen. If usual search is not enough, run SQL queries to search and aggregate your data.

## Related links

[FA Back](#)

## FA Fund Management

FA Fund Management app allows you to carry out daily operations related to managing mutual funds.

The screenshot displays the FA Fund Management application interface. On the left is a sidebar with navigation options: NAV status, Fund analysis, Shareholder registry, Dividends, Orders, and GraphQL for API. The main area is titled 'NAV status (12/12/2024, 15:17:30)' and shows a table of funds. The table has columns for Name, ID, and Status. The funds listed are FA Fixed Income (FAFIX, Warning), FA Rente II (FARENTE2, Calculated), and FA TRITON Fund (FATRITON, Error). Below the table, there are buttons for 'CALCULATE NAV' and 'ACCEPT NAV'. To the right, a detailed view for 'Fund FA Rente II' is shown, including basic info (Fund ID: FARENTE2, Currency: NOK), NAV details (Status: Calculated, Next NAV date: 04/01/2023), and a table of orders with columns for Share class, Total co..., Total value, and Currency.

Name	ID	Status
FA Fixed Income	FAFIX	Warning
FA Rente II	FARENTE2	Calculated
FA TRITON Fund	FATRITON	Error

Share class	Total co...	Total value	Currency
FA Rente II A	0		NOK
FA Rente II B	0		NOK

**NAV calculation.** Calculate NAV for your funds. Set the schedule to see when NAV needs to be calculated. Adjust the checks to carry out when calculating NAV. Preview the calculation details and accept it if everything is correct.

**Shareholder registry.** View your fund's shareholders, share classes they own, and the purchase history.

**Fund analysis.** Preview, check and accept fund statistics for reporting, such as fund KPIs and fund holdings.

**Dividends.** Enter the dividend information and execute dividend transactions for the fund's shareholders.

**Orders.** View the fund trade orders.

## Related links

[About FA Fund management app](#)

## FA Operations

FA Operations is an application to manage middle- and back-office operations. It is a newer app that gradually replaces FA Back for operations-related functionality, with an initial focus on reconciliation. You can run FA Operations together with FA Back.

**Reconciliation overview**

Missing reconciliation data

Assigned to me

Reconciliation	Reconciliation date ↓	Matching items	Fixed items	Mismatching items	Total items	Details
SEB positions	05/09/2023	24	12	36	72	

Source portfolio ID	Source security ID	Source account ID	Errors	Comment	Details
-	-	FI123456789	Missing system data		
-	-	FI123456788	Missing system data		

Open reconciliations

**All items**

Fixed (96) Mismatch (288)

VIEW ITEMS

**SEB positions**

Mismatch (2)

Date: 01/09/2023

OPEN RECONCILIATION

**SEB positions**

Fixed (100) Mismatch (100)

Date: 02/09/2023

OPEN RECONCILIATION

**SEB positions**

Mismatch (2)

Date: 03/09/2023

OPEN RECONCILIATION

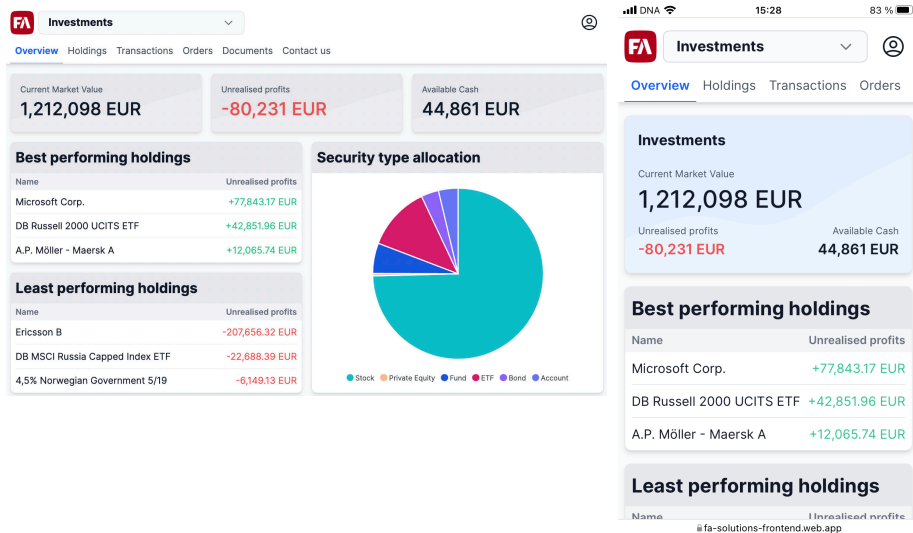
**Reconciliation** lets you reconcile position and cash account data stored in FA with the data you receive from external sources, for example, from your custodian or a bank. The History view provides access to all historical reconciliations in the system.

### Related links

[FA Operations](#)

### FA Client Portal

**FA Client Portal** is an app that provides access to investment information for your clients. The app runs in the web browser on desktop and mobile devices.



**Overview** provides a quick glance at the client's assets, profit and available cash. The user can view the aggregated data from all portfolios or for a chosen portfolio.

**Holdings** view shows the client's investments.

**Transactions** view shows the client's transactions for a chosen time period. The user can view the transaction details by tapping a transaction.

**Orders** view shows the client's trade orders. For each order in the list, the user can view the total market value and unrealized profit since start. The user can cancel trade orders that haven't been sent forward for execution.

**Documents** view shows documents for the selected portfolio or subportfolio. If the user selects total investments, all contact and portfolio documents are shown.

**Trading** view allows the user to browse securities on the markets and create buy trade orders.

**Deposits** and **Withdrawals** allow the user to deposit money to the portfolio cash account or withdraw money from it.

**Contact us** view shows your company's contacts.

## Related links

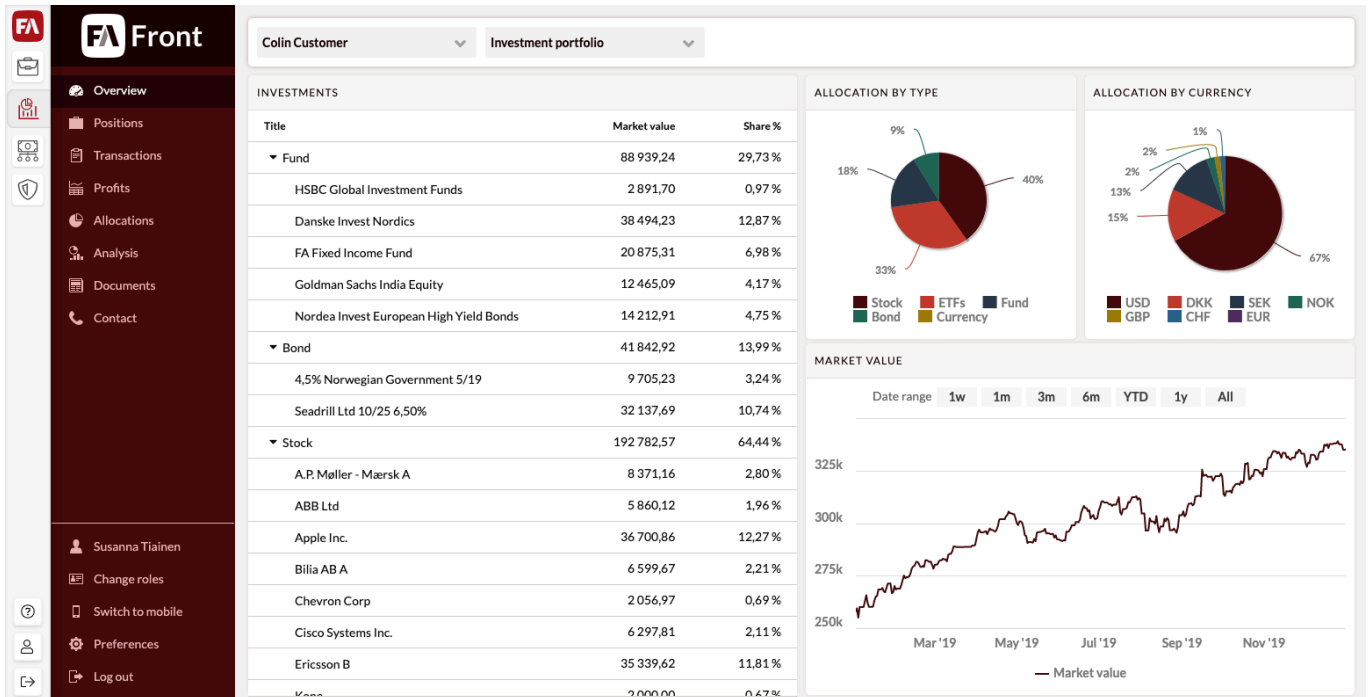
[FA Client Portal](#)

[FA Client Portal setup](#) in FA Admin guide

[Customize FA Client Portal](#) in FA Developer guide

## FA Front

**FA Front** allows you to build online views that present investment information for your end clients, advisors and employees. It also allows you to define the layout and adjust the app look and feel. Views configured with **FA Front** can be accessed both in desktop and mobile browsers.



FA Front provides you the following tools:

**Navigation and layout.** Build a navigation for the user to browse through different screens and design the layout for each of them.

**Standard widgets.** Build the content of your screen: use standard widgets to show your investment information as listings and graphs.

**Themes.** Create a theme that matches your company's look and feel. You can select the logo, modify the styles, fonts and colors.

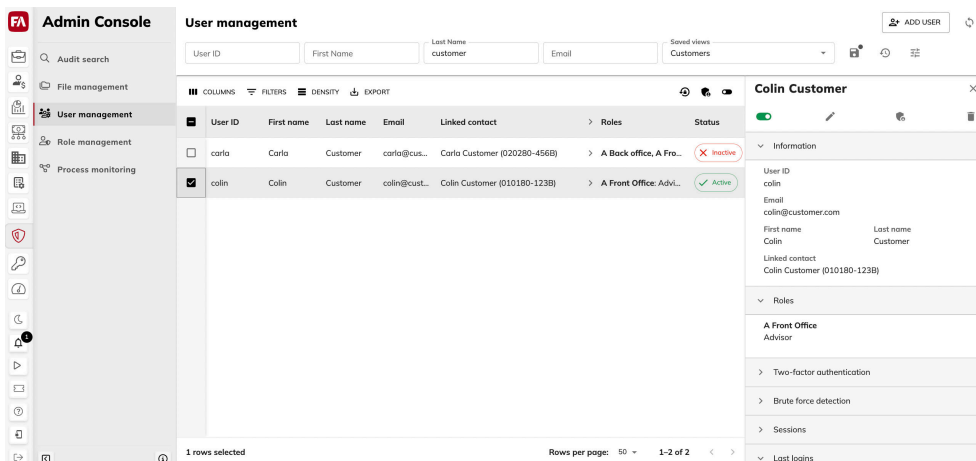
## Related links

[FA Front for customers](#) in FA User guide

[FA Front setup](#) in FA Admin guide

## FA Admin Console

FA Admin Console is an app for system administrators and IT specialists. It provides tools for managing FA user accounts and system-level files.



**Audit search.** Track user activity and system events (such as report data and market price updates) in FA apps.

**User management.** Manage FA platform user accounts and their access rights to applications.

**File management.** View and troubleshoot file-based integrations, **FA Back** and **FA Front** configurations and themes.

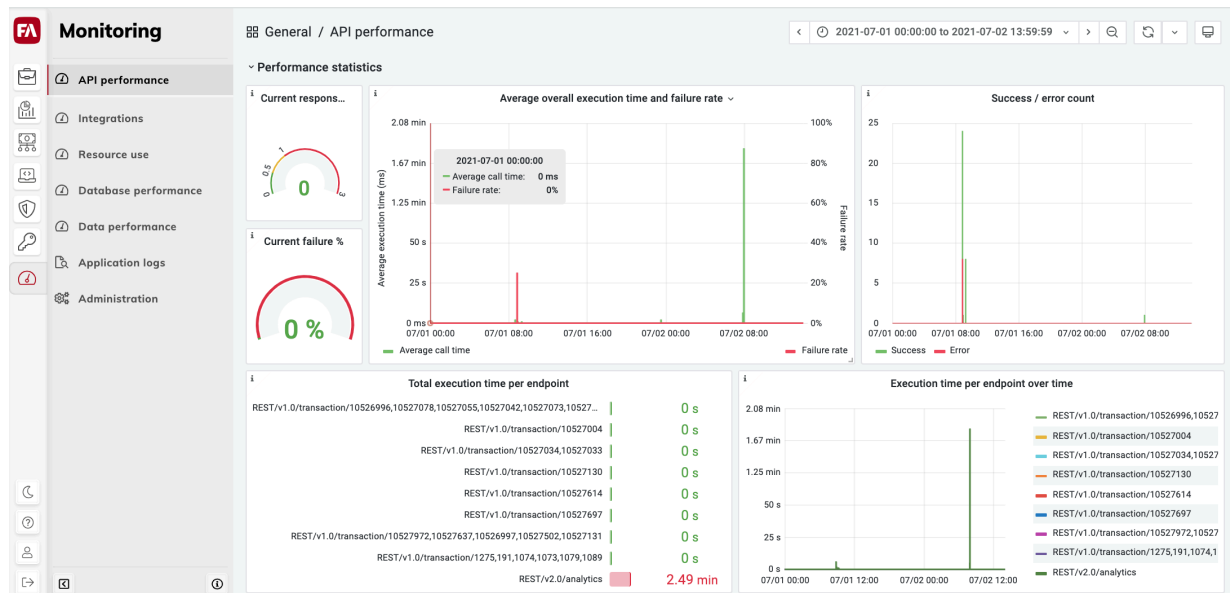
**Role management.** Add, edit and delete user roles, and group them into departments. Define which rights are associated with each role.

## Related links

[FA Admin Console Reference](#)

## FA Monitoring

**FA Monitoring** app tracks performance characteristics of FA apps and shows them on charts. You can monitor business flows and track the technical metrics for specific aspects of the FA Platform.



The **API performance** view shows statistics on API requests: request volumes, failure rates, and response times over time.

The **Integrations** view shows basic integration statistics for the [Trading connector \[66\]](#).

The **Database performance** view shows performance statistics and network traffic for the FA database.

The **Application and users** view shows the user activity statistics across FA applications.

The **Data modifications** view shows data change statistics in all applications that modify the core data of the platform (contacts, portfolios, customers, transactions, trade orders, and so on).

The **Report calculation** view shows statistics related to the throughput and speed of report calculation.

The **Alerts** view shows the charts with linked alerts that can trigger email and Slack notifications.

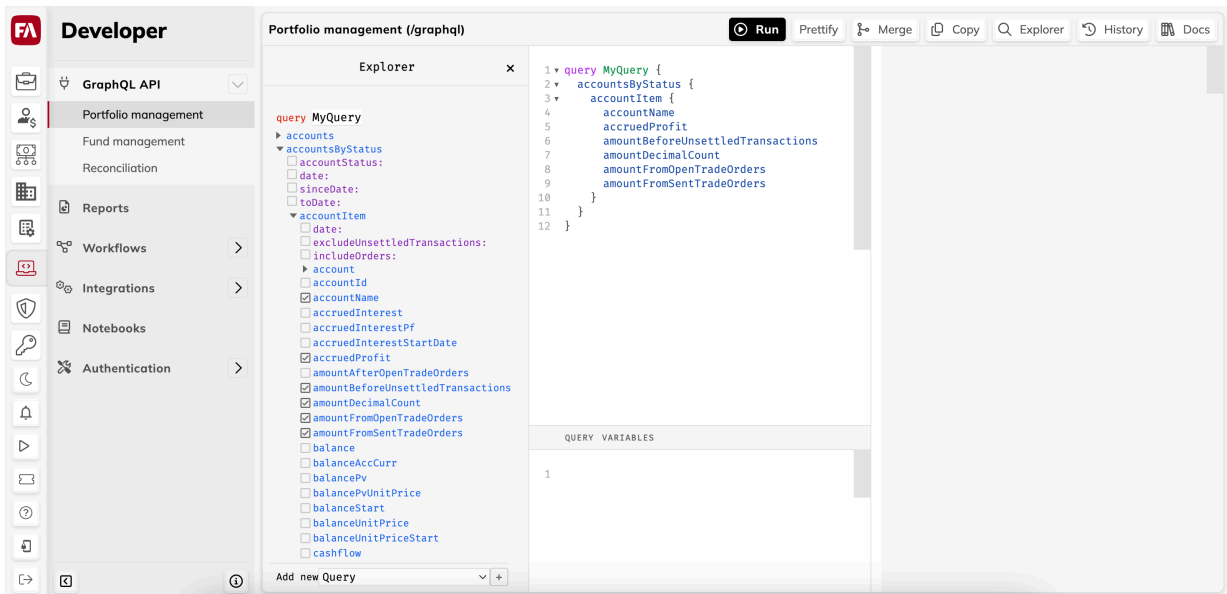
The **Application logs** view shows FA application logs.

## Related links

[FA Monitoring App Reference](#)

## FA Developer

FA Developer app gathers applications and services for the third-party developers who work with FA. The app lets you customize FA for your needs.



**GraphQL API.** GraphiQL client lets you query FA via GraphQL API.

**Reports.** jsreport designer can be used to develop tailored reports runnable in FA.

**Workflows.** Flowable modeler lets you design business workflows to implement in external applications. You can manage workflows in the Process admin view. Form.io form builder lets you create form designs that can be accessed via GraphQL API and rendered in external applications.

**Integrations.** Camel platform lets you create and manage file-based integrations with other systems.

**Notebooks.** Jupyter notebooks let you manipulate, analyze and present data from FA and external parties, as well as to store and share your work securely.

**Authentication.** Access to Keycloak folders lets you manage and deploy FA custom login themes and other authentication-related customizations.

## Related links

[About FA Developer app](#)

# Architecture

FA Platform is a software system that delivers services for investment management businesses. It is a server-side system that mainly interacts with users via web browsers and is in most cases delivered with a software-as-a-service model with a single-tenant approach. The server-side architecture is based on the distributed service approach.

Our architectural goal is to have a solid structure for an enterprise-grade system. An enterprise-grade system has the following characteristics:

## Reliable

The architecture supports the stability of the FA Platform, and allows it to perform predictably in terms of speed, throughput, and outcomes. This enables our clients to run business-critical workflows with the FA Platform.

## Performant

The architecture enables the FA Platform to perform within business requirements and expectations without unnecessary wait time. In order for the users of the FA Platform to be able to work efficiently, the system must be able to run the business workflows fluently.

## Scalable

The architecture allows the system to maintain reliability and performance regardless of the size of our client business. Reliability and performance is maintained through temporary peaks in usage, including resource-intensive ad-hoc operations while using resources efficiently. The FA Platform is offered as a service to different types and sizes of businesses within the investment management space and is, therefore, able to cope with the variations in operations. Utilizing the available technical resources efficiently is key to both good performance and cost efficiency.

## Secure

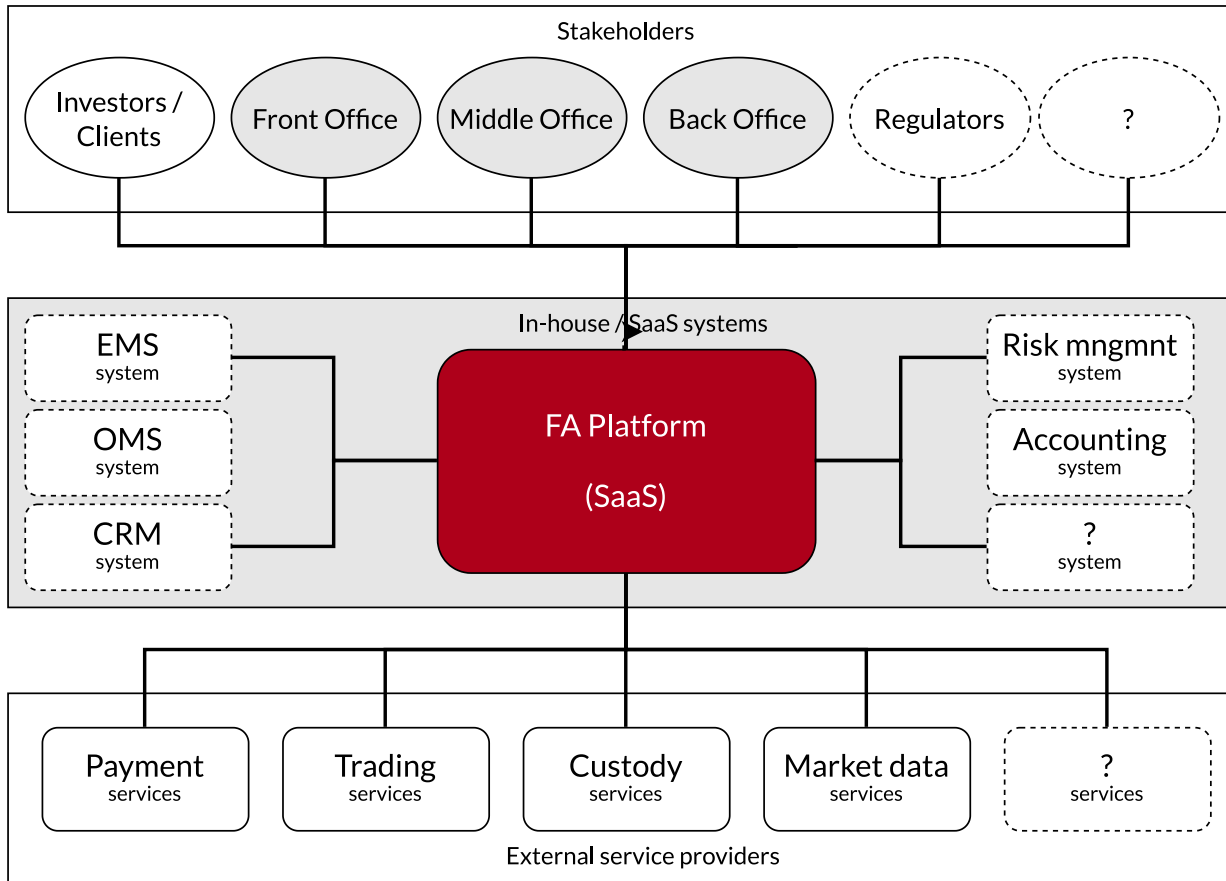
A software system offered as a service from the cloud must be secure and prepared to stand against attempts to breach or hack the system. The architecture supports keeping the system safe against these threats. In addition, the architecture is designed so that all critical information is isolated and distributed in such a way that the impact of potential breaches is minimized.

## Adaptable

The system is sufficiently adaptable to meet the various requirements that different types and sizes of investment management businesses place on it. These include both functional requirements as well as considerations such as cost efficiency. The architecture supports this adaptability. In addition, the architecture supports adaptability in terms of flexibly incorporating new technologies into the system when appropriate, while avoiding dependencies on specific software vendors.

## Context - Stakeholders and other systems

FA Platform is a key system within our client's software and services landscape. It interacts with other systems and is normally acting as a central repository of all key investments-related information and also as a hub between all the stakeholders, systems and services.



### Stakeholders

The main users of FA Platform are our client's own employees. The types of users depends on the capacity in which the FA Platform is used. Typically, the middle and back office users are the main types of users as the FA Platform is the core of all investment management operations. Optionally, the usage of FA Platform is extended to cover also the end-client facing operations including the end-clients / investors and front office users. In most cases, the regulators are also stakeholders even if they are not direct users of the FA Platform.

### In-house/SaaS Systems

FA Platform is often a central hub connecting with other systems within our client's system architecture. FA Platform does not require other systems to be available, but in many cases, our clients requires FA Platform to interact with accounting system. In some cases, also Execution management system (EMS), Order management system (OMS), Client relationship management system (CRM) and Business Intelligence systems (BI) are also involved.

### External service providers

The key external services for using FA Platform is market data services. FA Platform connects with multiple different market data providers that our clients are using. Additionally, when automating the workflows, additional services are also used including payment, trading and custody services.

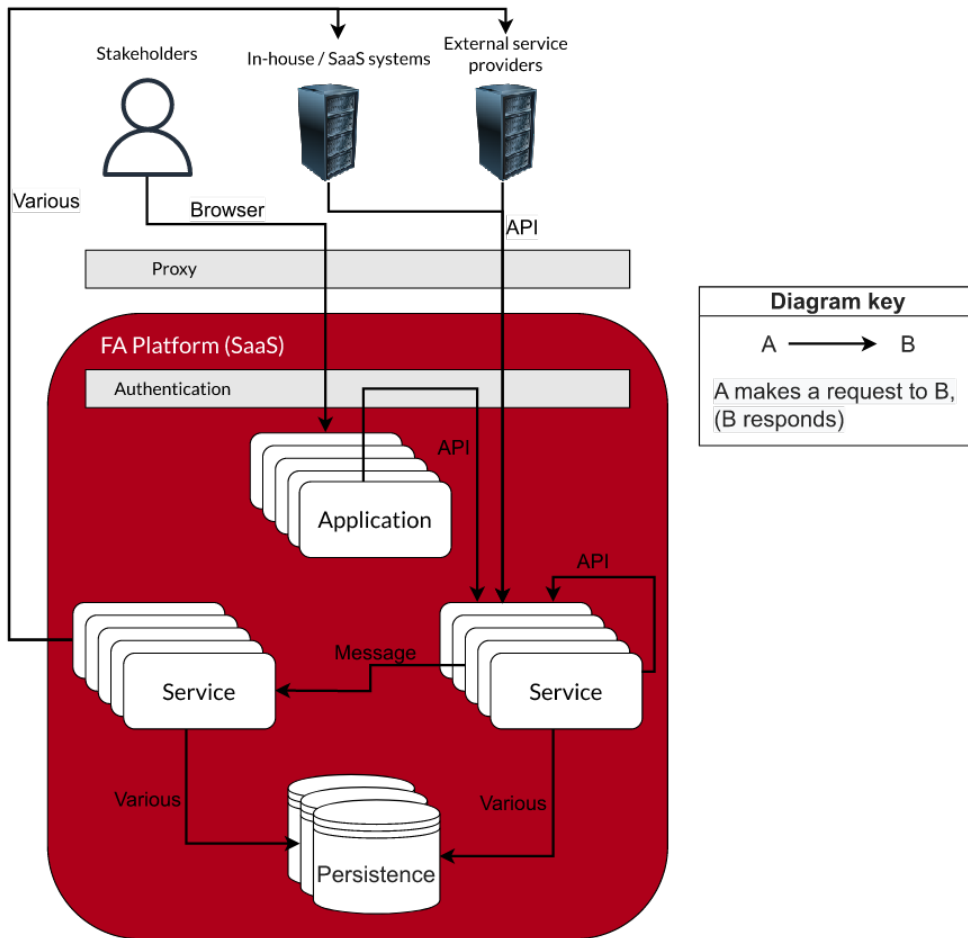
### Components - Structure and interactions

The FA Platform is a collection of applications and services, combined with a persistence layer, that is made available to customers as a SaaS service. It is most commonly accessed through a browser: users of the FA Platform log in and interact with the platform through its web UI.

Although the platform consists of a large number of applications and services, that complexity is hidden from users of the platform: they simply access various features and sections of the FA Platform without needing to know about the underlying architecture.



This section describes how users and external systems interact with the FA Platform, and how various parts of the FA Platform interact with each other, through synchronous request-response and asynchronous messaging-based models.



## Components

The FA Platform contains various applications, services, and persistence technologies.

- **Applications** provide user interfaces to features of the platform. They are rendered in the user’s browser.
- **Services** provide access data through API endpoints, and they perform various data processing activities. Services are not application-specific, but instead focused on specific functionality. Some services may be accessed from outside the platform via APIs. Some services are restricted to access by other services. A third category of services independently performs data processing tasks in response to events in the platform.
- **Persistence** for data is provided through various technologies, including SQL and NoSQL databases.

## Interactions

### Browser-based access

The primary way to access the FA Platform is through a browser. When the user enters the URL of their FA Platform instance, they get redirected to a centralized login screen. After successfully entering their credentials (username, password, two-factor authentication and/or integration with some external identity provider), the user is redirected to the application itself.

The user’s requests are routed to a specific application instance by a proxy, and they are authenticated based on the OAuth 2.0 protocol using JWT. Thanks to our centralized authentication model, users of

the FA Platform can seamlessly switch between applications without having to authenticate themselves multiple times.

Our preferred way of developing the FA Platform is to separate front-end applications from back-end services. With this approach, the user's data is provided to the user of the front-end application through API calls to a back-end service. GraphQL is our preferred API technology for this kind of communication.

Our backend services communicate with the persistence layer through a network connection using various protocols and formats (depending on the persistence technology in question).

### **Access to external systems**

The FA Platform provides a broad set of APIs that external systems may use to interact with the FA Platform. Systems access the FA Platform in a similar way to browsers: requests are routed by a proxy and authenticated with OAuth 2.0 and JWT. The main difference is, that API requests from external systems access our API endpoints directly, and bypass the browser / front-end application entirely. Another difference is that API requests from external systems are always stateless, whereas certain older parts of the FA Platform are currently session-based.

### **Service-to-service requests**

Various features of the FA Platform require our services to interact with each other. This is done in several ways:

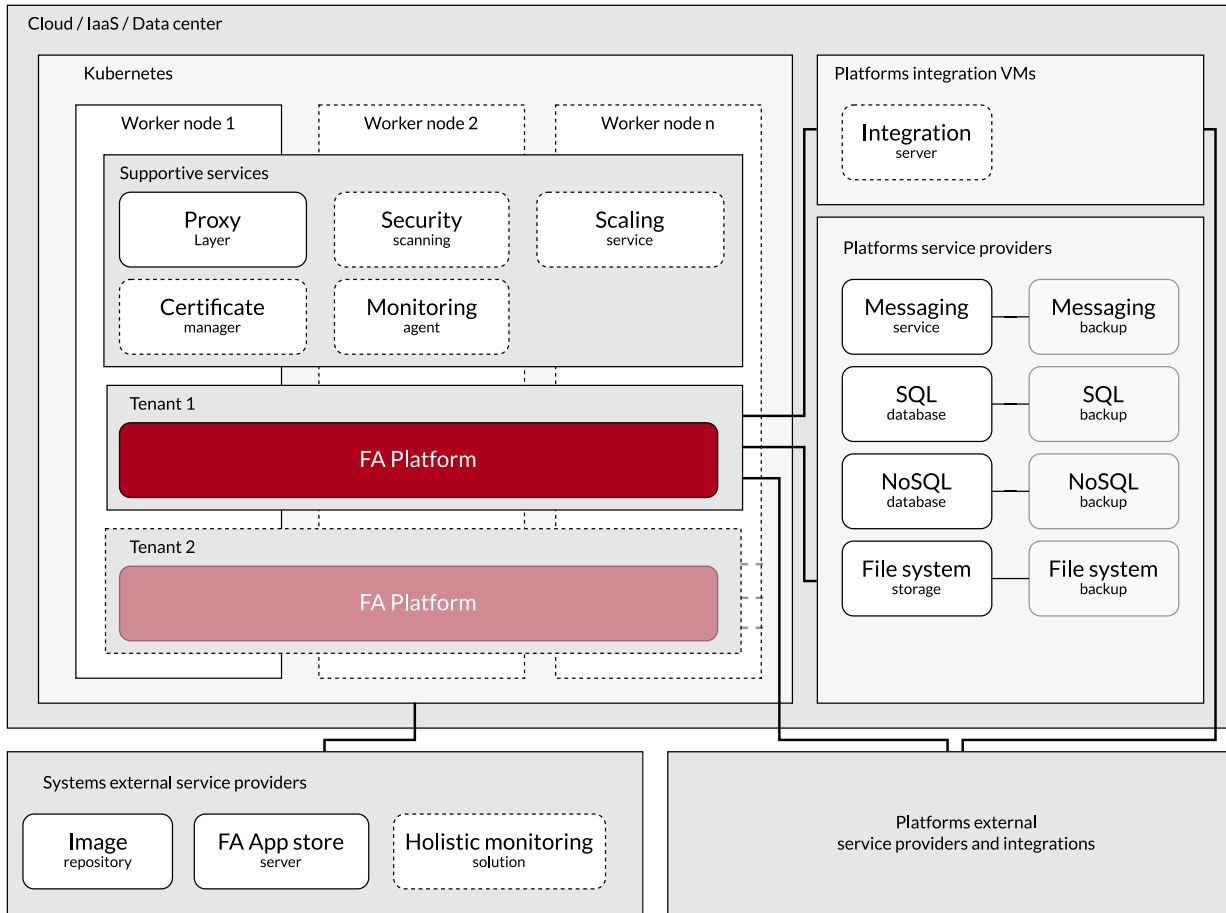
- Through the persistence layer (service A writes data, service B reads it)
- Through messaging (publisher-subscriber model or point-to-point)
- Direct service-to-service API call (service A calls an endpoint of service B, which responds)

### **Service-to-external-system requests**

The FA Platform supports integrations to various external systems. Fetching end-of-day pricing information is an example of a common integration between the FA Platform and an external system. Such integrations require our services to send requests to external systems with various different protocols (such as HTTP/HTTPS, FTP/SFTP, SMTP, TCP, SMTP), and transferring data in various different technical formats (JSON, XML, CSV, and so on) and content formats (proprietary formats, and standard formats such as PAIN.001, MT540, setr.010.001.04).

## **Containers - Deployment model**

This view presents a bird's-eye view of the system, showing how the different components are deployed and how they relate with each other.



The components with dashed borders refer to components that are not necessary to deploy FA Platform.

## Cloud / IaaS / Data center

The FA platform is designed to run on cloud provider. The platform is designed to be flexible and to be able to run on other cloud and service providers, as well as on-premises.

## Kubernetes

The FA platform is deployed on Kubernetes via utilizing Helm to manage the installation. Kubernetes is a container orchestration system for automating deployment, scaling, and management of containerized applications. It groups containers that make up an application into logical units for easy management and discovery. Kubernetes is an open-source system originally designed by Google and is maintained by the Cloud Native Computing Foundation. The workloads are automatically spread across multiple nodes in a cluster. These nodes are virtual or physical machines, depending on the cluster.

## Supportive services

Supportive services are services that are not part of the FA platform but are used to support the features of the platform.

- Proxy layer.** The proxy layer consists of Istio – a service mesh that layers transparently onto existing distributed applications. It is responsible for traffic management, policy enforcement, and telemetry collection. Istio is a platform to connect, manage, and secure microservices. Istio provides a straightforward way to create a network of deployed services with load balancing, service-to-service authentication, monitoring, and more, without requiring any changes in service code. Istio supports managing traffic flows between microservices, enforcing access policies, and aggregating telemetry data. Istio's control plane provides an abstract layer over the underlying cluster management platform, such as Kubernetes.

- **Security scanning.** The security scanning service is deployed on our Kubernetes services to monitor CVE and other configuration security issues. The CVE detection service is a simple and comprehensive vulnerability scanner for containers and other artifacts, suitable for CI. It detects vulnerabilities of OS packages (Alpine, RHEL, CentOS, etc.) and application dependencies (Maven, npm, yarn, etc.).
- **Scaling service.** The scaling service consists of KEDA which is a Kubernetes-based event-driven autoscaling component. It provides event-driven scale for any container running in Kubernetes. KEDA can monitor event sources like Kafka, RabbitMQ, Azure Queue Storage, and many more, and then scale the related deployments and jobs. KEDA is a community-driven project, and it is maintained by Microsoft and Red Hat.
- **Certificate manager.** Certificate manager or better known as cert-manager is a Kubernetes add-on to automate the management and issuance of TLS certificates from various issuing sources. It will ensure certificates are valid and up to date periodically and attempt to renew certificates at an appropriate time before expiry. It will also manage the creation and renewal of ACME certificates that are stored in a Kubernetes secret resource.

## FA Platform

FA Platform consists of multiple applications and services which are spread across the Kubernetes worker-nodes. The same Kubernetes cluster may have multiple FA Platforms on it, each segregated logically as well as isolated by resource usage, for example in network layer.

## Platform service providers

Platform service providers are services which are utilized by the FA Platform to provide functionality.

## Platforms integration VMs

Platform integration VMs are used in cases where we need to have integrations which come as inbound connections or require specialized software to integrate. It is not a common case for FA Platform to require such integrations, but it is a possibility.

## System external service providers

The system external service providers are services which are utilized by the infrastructure and FA Platform to provide its functionalities.

## Image repository

This repository is used for storing images for the FA Platform. On-premises it can be replaced with another image repository, for example Nexus, which would be propagated from the FA's image repository.

## Holistic monitoring solution

This solution is used for monitoring the FA Platforms and the infrastructure. For on-premises it can be left out.

## FA App store

The FA Platform is highly dependent on the FA App store as the platform installs processes and extensions via it. It also receives updates from it. The FA App store is a private repository, which is not accessible to the public and cannot be replaced by other means.

## Platforms external service providers and integrations

The platforms external service providers and integrations are services which are utilized by the FA Platform to provide its functionalities. These can be for example trading systems, payment systems, market data providers, etc.