



ALTO* Investment Product Roadmap

Second edition – March 2021

Confidence
must be earned

Amundi

Amundi | Technology

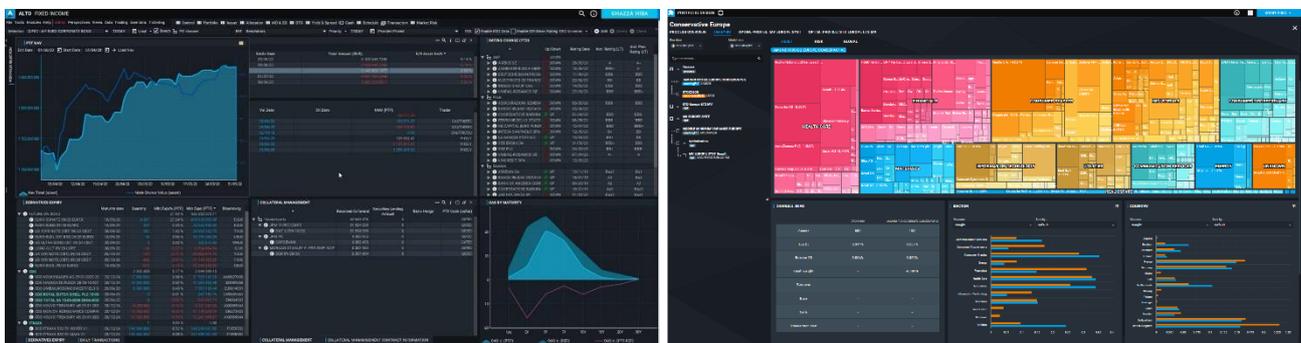


ALTO* Investment Product Roadmap

Editorial

ALTO* Investment introduces new Portfolio Management System functionalities

Amundi Technology, a leading provider of innovative technology and services, is pleased to present this **second edition of the ALTO* Investment Product Roadmap**. Here is where we introduce recent developments and upcoming enhancements, as always delivered on a rolling basis for the Front Office, Trading, Middle Office, Risk & Compliance, Performance and Reporting modules.



Guillaume LESAGE, COO of Amundi

“It gives me great pleasure to announce the creation of Amundi Technology, a new business line dedicated to enhancing development and support for the solutions we make available to our clients. While ALTO* Investment leaps to mind, we are here for all the many solutions we’ve released in the last two years. These include financial advisory with We Save, mandate

employee and group savings, investment compliance and more. These technological offerings have also been enhanced with ‘à la carte’ services, such as market data management, dealing, middle office and reporting.

Amundi Technology combines under a single banner the teams responsible for maintaining, commercialising and supporting the solutions we offer our clients. This amounts to no less than 700 experts in R&D and project management based at two hubs in Dublin and Paris, with local teams throughout Europe, Asia and America. This business line continues the recognised ability of Amundi’s teams to deploy solutions and transform operational models — whether for Amundi’s own needs, through merger and development projects, or by deploying solutions for external clients worldwide. The new organisation is in line with the continuity of services our clients currently enjoy. We aim to provide even higher service quality thanks to even larger, more expert support teams, as well as greater integration with the R&D teams, all to better support the development of our clients.





Partnerships and new clients

- p. 6 A Front-to-Back offering with CACEIS
- p. 7 Strategic Alliance with BNY MELLON
- p. 9 What Our Clients Are Saying
- p. 10 Investment Compliance Solution

What's new in ALTO* Investment?



Front Office

- p. 12 360° Overview of Your Assets with **ALTO* Dashboard**
- p. 13 Integrating **Portfolio Design**, Construction and Optimisation
- p. 14 Bond Index Tracking Steps into the Future
- p. 15 **ALTO* Private Assets** for Alternatives
- p. 16 Powering your **Investment Research**
- p. 17 Enhancing **Dealing Platform**



Middle Office

- p. 18 **Cash Management**: Optimise and Secure your Treasury Process



Reporting

- p. 18 Integrating and Enhancing Reporting Capabilities



Risk & Compliance

- p. 19 **ESMA** Liquidity Risk Solution



Data & Research

- p. 20 ESG Technology for Sustainable Investing



What's next in ALTO* Investment?



Front Office

- p. 21 **Advanced Portfolio Analysis**
- p. 22 **Insurance multi-accounting: IFRS9, French GAAP**
- p. 22 **COO & CIO Management Cockpits**
- p. 23 **Dealing Platform Enhancement**



Middle Office

- p. 24 **Reinforcement of Trade Processing and Settlement**
- p. 24 **ALTO* Ticketing: Enhancing User Support Experience**



Reporting

- p. 25 **Next Generation Open Platform**



Risk & Compliance

- p. 25 **ESMA Liquidity Risk solution: Compliance Integration**
- p. 26 **Investment Compliance Solution Enhancement**



Data & Research

- p. 27 **Tailor your ESG Strategy**
- p. 27 **Transforming your Data Storage**

Lab Initiatives

- p. 28 **ALTO* Backtesting**
- p. 28 **Mailbot**
- p. 29 **Quant Center in Dublin**

Partnerships and new clients

A Front-to-Back offering with CACEIS

The Front-to-Back solution, ALTO* x CACEIS, covers technology and operational services and benefits from dedicated organisation combining close client support and industrial shared service centers. This solution ensures a full STP order workflow from Front and Middle Office tools avoiding data discrepancies, reconciliations and ensuring data confidentiality. The solution covers:

| Technology | Operational services | | |
|---------------------|----------------------|---------------|---------------------------------------|
| ALTO* Investment | Dealing | Middle office | Custody and fund administration |

Joe SALIBA, Deputy CEO, CACEIS



“Combining CACEIS’ and Amundi’ expertise enables us to extend the scope of our ‘Execution-to-Custody’ model to include processing of front office operations. The new outsourcing solution guarantees rigorous operational management across the entire value chain and will contribute to achieving our client’s efficiency objectives.”

For further information, please refer to the press release, available at:

<https://int.media.amundi.com/assets/eng-042020-amundi-services-and-caceis-pdf-d6c2-b6afb.html?lang=en>

Partnerships and new clients

Strategic Alliance with BNY MELLON

Amundi and BNY MELLON are forging an agreement to collaborate on the integration of ALTO* Investment with BNY MELLON back-office technologies. This integration offers substantial value to shared clients and select operations of both firms, improving their operating models. The result will be increased efficiency and effectiveness with greater data integration, simplified workflows, and advanced analytics.

Our primary goal is to offer our users a distinctive value proposition. For example, clients can access cash information from BNY directly through the ALTO* Investment platform. The interface between our two platforms enables users to take advantage of the cash integration view. The advantages for ALTO* users are:

- A direct and accurate view of the cash transactions;
- A support for cash reconciliation where Middle Office have direct access to data.

Amundi and BNY MELLON will pursue an ongoing research partnership and development investments to roll out further innovative solutions in the future, seeking always to increase the breadth and depth of their technology integration and capitalise on new digital solutions.

The ALTO* x BNY MELLON integration provides numerous benefits to the clients:

- Power investment decision-making by delivering near real-time actionable insights directly into the front office;
- Create operational efficiencies by increasing automation and straight-through processing, and simplifying workflows;
- Accelerate innovation through flexible technology and leading-edge integration tools;
- Improve transparency throughout the investment lifecycle through data integrations and exception- based monitoring tools.

For further information on this alliance, please refer to the press release, available at:

<https://uk.media.amundi.com/news/amundi-and-bny-mellon-announce-strategic-alliance-to-power-investment-lifecycle-e0fc-098bc.html>

Partnerships and new clients

Joseph EL GHARIB, *Head of Business Development, Amundi Technology*



“Despite the Covid-19 crisis, 2020 has been a very successful year for ALTO* Investment. First, the platform has proven its robustness in facing this exceptional situation. Our experts, operating production centres and back-up sites performed outstandingly, ensuring continuity of technology and services. Second, ALTO* Investment expanded significantly in France, Spain, Switzerland and China.

These achievements confirm and strengthen the international scope of ALTO* Investment and demonstrate the added value Amundi Technology brings to the Asset Management industry. We are excited to be deploying ALTO* Investment in China and Spain through two major partnerships this year with Bank Of China Wealth Management and Sabadell, respectively. By choosing our technology, our partners illustrate how ALTO* Investment can perfectly accommodate all types of industry players, anywhere in the world.”



ALTO* Investment rolled out in China at Amundi BOC Wealth Management

Amundi BOC WM offers Chinese institutional and individual investors top-flight asset management products and asset management services nationwide. The joint venture draws on the characteristics and strengths of each shareholder. This includes leveraging Amundi’s international and industry-leading investment management capabilities as well as the firm’s advanced services and expertise. Specifically, Amundi BOC Wealth Management portfolio managers enjoy the features ALTO* Investment, Amundi’s Portfolio Management System, which provides end-to-end coverage of the entire investment management life cycle, including portfolio analysis and simulation, order management and execution, risk management, compliance, performance and client reporting.

ALTO* Investment deployed within Sabadell Asset Management

Discussions about migrating Sabadell Asset Management into the ALTO* Investment, which began in March 2020, culminated in a go-live roll-out on Monday, 16 November. Despite the Covid-19 crisis, teams working on the project successfully met the project’s original deadline. Totalling some €20 billion in AuM, Sabadell’s 150 portfolios, which include mutual and pension funds, have been migrated onto the ALTO* Investment platform. ALTO* Investment is now the sole Portfolio Management System for Sabadell Asset Management, as part of a solution package that also covers Dealing services with order execution provided by Amundi’s Dealing desk.

Partnerships and new clients

What Our Clients Are Saying

ALTO* Investment was deployed for several new clients in the course of 2020, and we're proud to say that all projects were delivered, despite the Covid-19 crisis and lockdowns, thanks to Amundi Technology' commitment to ensuring continuity of services and deployment. The implementation of migration to the ALTO* Investment platform was carried out jointly with each of our clients and successfully completed on time.



Celine LEMAITRE, *CEO of MOBILIS Gestion (France)*

"The choice of ALTO* Portfolio Management System as a new portfolio management and order execution tool for our portfolio managers allows MOBILIS Gestion to strengthen our investment process to focus on our core business, asset management and the needs of our clients. Despite the pandemic, the MOBILIS Gestion and Amundi teams were able to jointly complete the implementation project for use within the given timeframe."

Jean-Baptiste BARENTON, *Managing Director of LONVIA Capital (France)*

"The choice of Amundi and CACEIS grants us access to a solution covering all the business services required by our management team, and one that is based on the best market standards. The proposed front-to-back solution gives us a valuable tool to support the growth of our assets in a strong and secure environment for our customers."

Katia COUDRAY, *CEO of Asteria Investment Managers (Switzerland)*

"At Asteria IM, we develop investment solutions that are financially profitable and have a positive impact on society and the environment. We want to offer our clients the opportunity to commit to a more sustainable future for our planet while guaranteeing them financial gains. To achieve this, we choose to work with partners who understand our constraints and who can offer us tools and quality service. Amundi presented us with a first-class solution, based on its management experience, which helps us in our current and future growth."

Investment Compliance solution

The Investment Compliance platform for Depositaries and Fund Administrators

ALTO* Investment Compliance is a powerful and flexible solution designed for asset servicing companies to ensure trustee controls and compliance monitoring for their Depositary and Fund Administrator duties and services.

Most importantly, it covers the entire value chain: flexible rule coding interfaces (regulatory, prospectus or client-specific constraints), interactive breach management, 360° oversight dashboards and compliance reporting factory. The solution offered by Amundi Technology leverages core components of ALTO* Suite, the investment platform, benefiting from the latest innovations and a continuous delivery organisation. ALTO* Investment Compliance can be deployed on both cloud and on-premises infrastructures.

Investment Compliance and Trustee Control value chain

1

Program and Design Investment Rules

ALTO* Portfolio Analysis can be used to design a visual representation of portfolio breakdown & ratios, as well as provide a visual and real-time testing solution for rules empowered with Front Office engine & analytics



2

Manage Breaches

ALTO* Investment Compliance is a state-of-the-art platform for swiftly taking action on breaches and provides 360° monitoring on all incidents



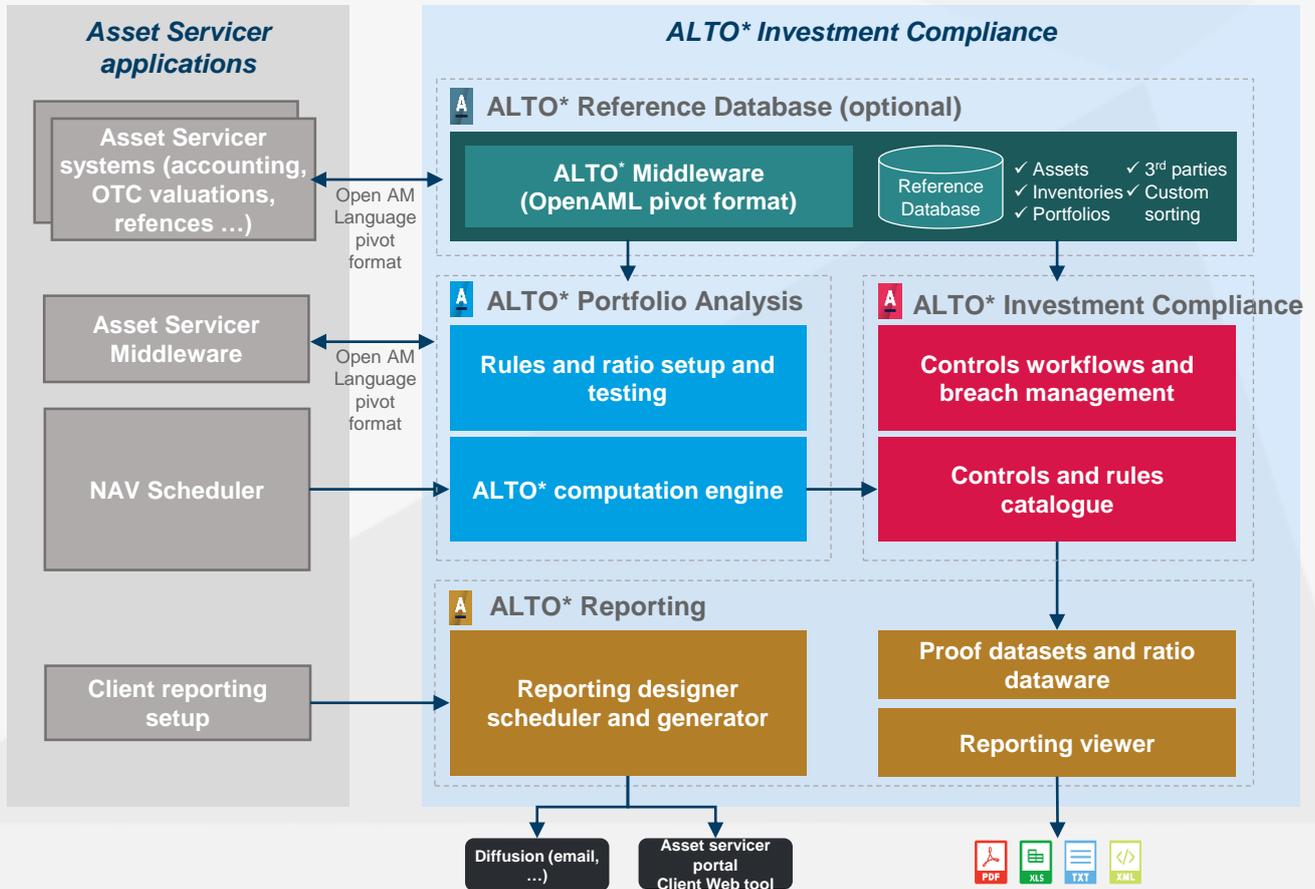
3

Produce Client Reporting

ALTO* Reporting is a flexible and scalable platform for accessing ALTO* data and preparing bespoke reports in any format



Investment Compliance solution



Main advantages

- Manage a range of regulatory, statutory and complex client-specific constraints;
- Based on a Front Office engine with a comprehensive library of analytics and scenarios;
- Total transparency on calculated ratios & storage of “proof of result”;
- State-of-the-art incident management platform;
- Scalable, flexible and consistent client reports that cover ratios and all client analytics;
- Based on ALTO* Open Asset Management Language, open-source data model for Asset Management co-constructed with Amundi business and Asset Servicers.

What's New in ALTO* Investment?

A

Front Office

“Empowering all investment business lines with cutting edge technologies”



Emmanuel ASFAR, *Head of ALTO* Investment Product*

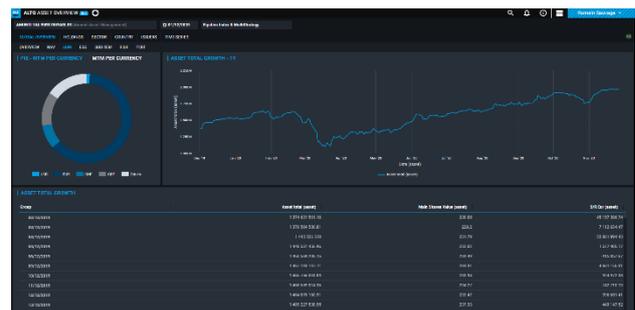
“In 2020, the platform performed in the face of challenging circumstances. This robust constitution rests on the hard work of our experts, operating production centres and backup sites, which ensured service continuity. Meanwhile ALTO* Investment has been improved with new added value functionalities and technologies for most of investment strategies covering

the full asset management value chain. On the front office level, we improved the portfolio manager journey with advanced programming capabilities in **ALTO* Portfolio Design**. On the ESG side, our new Asset Overview module delivers a digital experience, partially driven by a compilation of external provider data and Amundi research; it also includes guidance for compliance with leading market ESG labels, such as Febelfin.”

360° view of your assets with ALTO* Dashboard

ALTO* Dashboard clearly consolidates all assets delegated to external third parties in a single platform covering everything from management oversight to expert analysis. The solution includes daily integration of asset holdings for a wide range of asset classes, even the most complex OTC instruments. It also helps secure data governance processes, making it possible to integrate and enhance quality controls across a variety of datasets. The solution's features are designed to provide each client with a 360° view of assets within a single platform and to oversee compliance, risk and performance analytics.

Recently, **ALTO* Dashboard** was deployed for a US client as a digital solution for ESG reporting to control funds' eligibility for the Febelfin label in terms of quality standards by checking each fund against requirements set by the Belgian trade body for financial services companies.



*ALTO: Amundi Leading Technologies & Operations

What's New in ALTO* Investment?

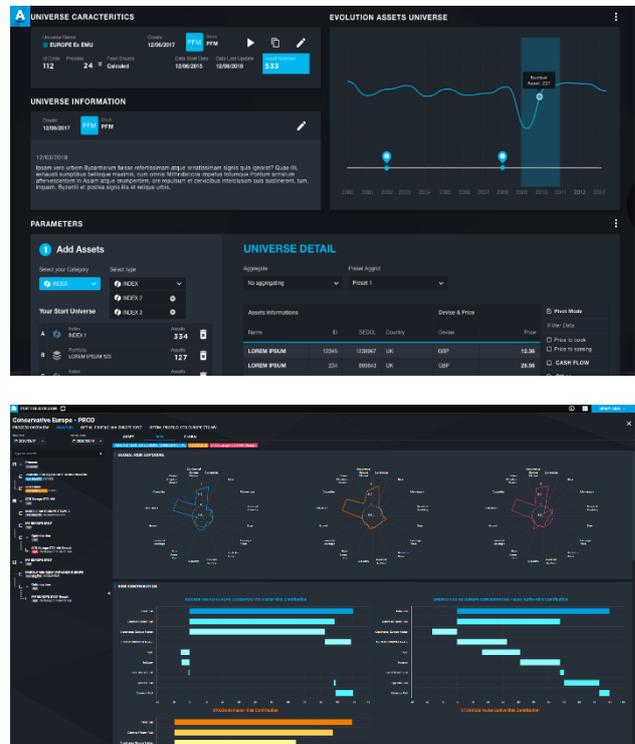
Integrating Portfolio Design, Construction and Optimisation

ALTO* Portfolio Design is a dedicated portfolio construction module designed to help portfolio managers to easily and accurately build optimised portfolios, analyse fundamental characteristics and view how each one compares with a model or a benchmark.

The module contains a wide range of functionalities with advanced coding capabilities. The solution is an open architecture tool, readily adaptable to new optimisation methodologies such as equal-risk-contribution, Black-Litterman, factor investing and more. Highly flexible and can be configured for various portfolio construction strategies, ALTO* Portfolio Design is a full-suite portfolio construction platform and covers the value chain from construction to portfolio rebalancing and trade programming:

- Simple investment universe definition with access to a large security market data;
- Dynamic exclusion management using custom criteria;
- Advanced screening capabilities based on built-in or custom indicators;
- Integration of various optimisation engines and risk models;
- Customizable optimisation constraints, including ESG criteria and analytics.

ALTO* Portfolio Design is scalable to address the specific requirements of all investment strategies (e.g. insurance portfolio management and specialised fixed income). For example, the module will soon be improved to manage the asset allocation for multi-asset portfolios and manage optimisation based on accounting indicators. To satisfy client requests to incorporate their own optimisation engine into ALTO* Portfolio Design, we can also open the tool to connect to any external risk engine in “plug-and-play” mode.



Bond index tracking steps into the future

Thierry Roncalli, Head of Quantitative Research

Amundi recently published the firm's methodological approach for bond index tracking, based on genetic algorithms.

Whereas equity portfolio optimisation is relatively straightforward, bond portfolio optimisation poses mathematical challenges and can prove a nightmare for fund managers. There are three main reasons for this. First, the investment universe of a bond portfolio is larger than that of an equity portfolio. For instance, a global aggregate universe generally consists of more than 25,000 bonds. Second, bond trading involves buying or selling multiples of a minimum transaction unit (e.g. €100,000), meaning that bond portfolio optimisation cannot be defined in terms of continuous quantities or percentage weighting. Third, liquidity constraints and market-making axes are essential when rebalancing a bond portfolio.

Since April 2019, Amundi has been developing a bond optimisation solution for the ETF and fund index management teams, and the result has delivered stable results for the last six months. For this tool, the choice was made to use a genetic algorithm, which is a metaheuristic search algorithm inspired by the process of natural selection and biological evolution to solve NP-hard combinatorial optimisation problems. Beyond the exotic nature of genetic algorithms (crossover, mutation, chromosome selection, knapsack problem, grey encoding, self-adaptive population, etc.), the issue was how arrive at an industrial solution that would be compatible with parallel processing. As always in such situations, the devil is in the details.

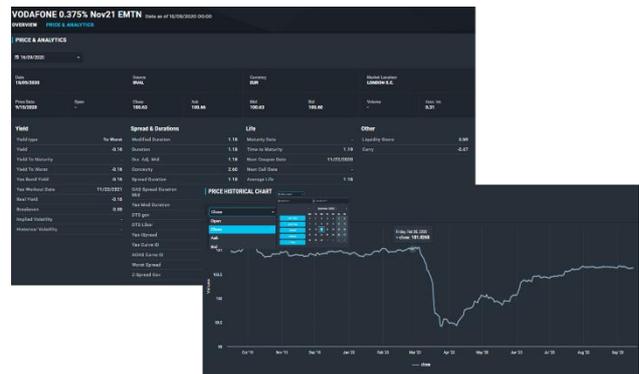
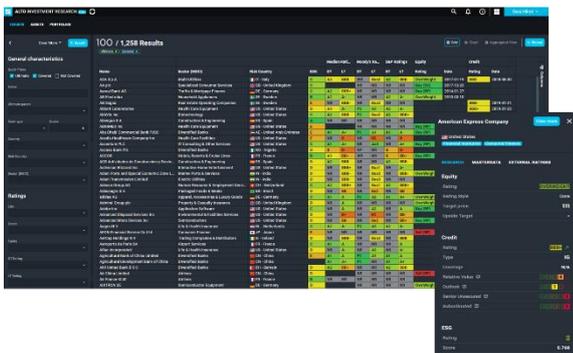
It took Amundi over a year to calibrate the genetic algorithm parameters. Now, however, we have a stable industrial solution that can solve discrete multi-objective optimisation problems (duration-times-spread fitting, modified duration matching, sector neutrality, transaction cost minimisation, market making liquidity axes, etc.) and handle most fund management constraints, notably ESG and climate risk criteria. Benchmark rebalancing, in-kind basket, subscription/redemption and ETF trading management are now included in the solution.

This bond portfolio optimizer is implemented in Amundi ALTO* Investment platform since January 2020. This achievement shows Amundi's commitment to innovation and demonstrates our ability to harness new technological environments driven by a digitalisation of the economy and the artificial intelligence revolution. For those interested, Amundi Quantitative Research has published a series of papers on the application of Artificial Intelligence and advanced optimisation algorithms to investment strategies. These can be found online at the Amundi Research Centre: <https://research-center.amundi.com/>

What's New in ALTO* Investment?

Powering Investment Research

ALTO* Investment Research provides a single and direct entry point for full access to transparent and comprehensive information: financial and extra-financial analytics (equity, credit & ESG), market data (issuers, securities...) and more. Last September, we released a major new upgrade of the tool, delivering a range of additional functionalities and an enhanced user experience. Users enjoy advanced search engine capabilities and enriched issuer and security pages that provide comprehensive ratings information, including ESG. ALTO* Investment Research is fully integrated with ALTO* Investment and open to external connectivity with data and research providers.



What's New in ALTO* Investment?

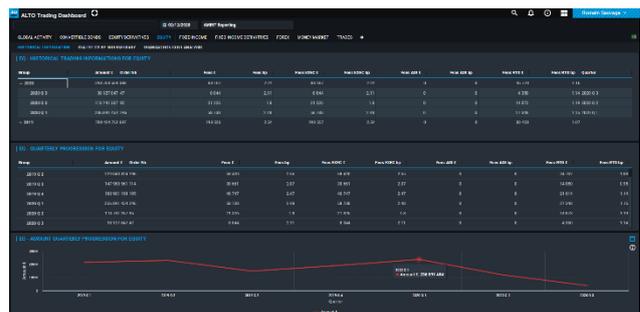
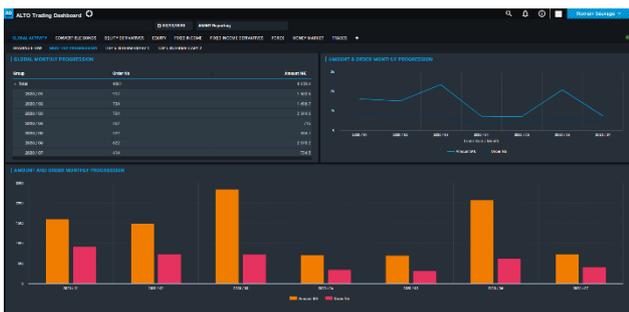


Dealing

“Empowering traders with a state-of-the-art Execution Management System to ensure best execution”

Enhancing Dealing Platform

ALTO* Dashboard is a digital web reporting tool for trading activity data across all asset classes. Co-designed jointly with our clients, this self-serve solution offers easy and autonomous access to extensive trading data and analytics (quantity, price, counterparty name, fees, benchmark best execution, etc.). With ALTO* dashboards, users can now easily create their operational and regulatory reports, in real time, no less!



Markit for OTC

ALTO* Trading is now enhanced with the Counterparty Manager platform Markit's solutions Onboarding Accelerator and Request For Amendment. **Onboarding Accelerator** enables automated and configurable end-to-end onboarding built within counterparty manager and provides a real-time view of the complete onboarding process. It integrates KYC, Tax, Credit and Legal in a single workflow tool, increasing efficiency and transparency. **Request For Amendment** makes it possible to generate and store amendments to a Master agreement contract with an electronic signature.

Additional functionalities have also been delivered, with a new position roller tool for repo and futures instruments, to enhance operational efficiency and comply with certain requirements. We have also extended our Auto Order Routing perimeter to Equity ETFs.

What's New in ALTO* Investment?



Middle Office

“Industrialising operations with automation of manual tasks and new crowdsourcing tools”

Cash Management: Optimise and Secure your Treasury Process

The **ALTO* Cash Management** module has been redesigned to support an assortment of cash investment policies. Portfolio Managers can now easily delegate cash management to other teams and define all constraints and rules for cash investments. Not only that, we have harmonised and optimised cash investment processes to provide the extreme flexibility and customisation needed to meet almost any client requirement. ALTO* Cash Management is now includes new dashboards with various cash ratios and analytics, and also offers a comprehensive overview of cash investments by vehicle and contributor, to control and secure the cash management activity.



Reporting

Integrating and Enhancing Reporting Capabilities

ALTO* Client Reporting is directly linked with both the investment platform and ALTO* Performance modules through APIs, allowing more frequent and efficient updates of performance factsheets. A new export functionality is also available, permitting export of the factsheet as an Excel document or pdf. Booklets combining several manual reports uploaded in ALTO* Client Reporting can be exported as well. ALTO* Reporting is a secure and automated module for factsheet production with great flexibility and many options for customisation.

What's New in ALTO* Investment?



Risk, Compliance & Regulation

“Ensuring broad coverage of investment guidelines and regulations with highly accurate analytics”

ESMA Liquidity Risk Solution

ESMA's new guidelines for liquidity stress testing of investment funds introduce a number of important requirements that apply to both AIFs and UCITS. This has become a key challenge for our clients. We designed ALTO* Liquidity to embed LST guidelines and help our clients comply with ESMA requirements. This module can provide users with liquidity data and indicators on equities and bonds through an ad hoc module, APIs or flat files. This large dataset is based primarily on Amundi' Intermediation liquidity models, enriched using external market data.

- Stress testing fund assets. Currently available for equities and bonds. Scope is being extended to ETFs, Mutual Funds, listed derivatives and OTCs;
- Stress testing simulation: fund liabilities;
- Combined asset and liability LST using several liquidation methodologies;
- Different liquidity cost methodologies can be run with full documentation and data.



In addition, liquidity indicators are fully integrated with ALTO* Investment and can be used in calculations as key risk factors. Liquidity reports aggregating LST across funds are also available.

In our quest to further enhance ALTO* Liquidity with state-of-the-art features, we work hand in hand with the Amundi research and development team on an ongoing basis.

Learn more about the latest LST research performed by our specialists in the area of “Liquidity stress testing in asset management” at:

<https://research-center.amundi.com/page/Publications/Working-Paper/2021/Liquidity-Stress-Testing-in-Asset-Management?search=true>

What's New in ALTO* Investment?



Data & Research

ESG Technology for Sustainable Investing

ESG challenges are a major topic for the Asset Management industry and Amundi is determined to be a major player in the shift to a more sustainable future. To enable and facilitate integration of ESG criteria, the ALTO* Investment platform has been enhanced to take into account new business requirements and ambitions. To this end, we have developed the ALTO* ESG platform to provide increased capabilities, offering our clients the data models and tools to manage ESG risks and opportunities and supporting them as they implement their ESG strategies:

- ALTO* Investment automatically integrates, processes and standardises ESG data from several leading providers;
- Using the ESG module, users can access ESG data and scores computed by Amundi for all available issuers (subject to data licensing);
- ALTO* Investment is now fully integrated with our ESG modules: ESG data can be used for portfolio construction and are available in analysis and reporting tools, allowing comprehensive monitoring of portfolio ESG profile.

What's coming next?



Front Office

“Empowering all investment business lines with cutting-edge technologies”

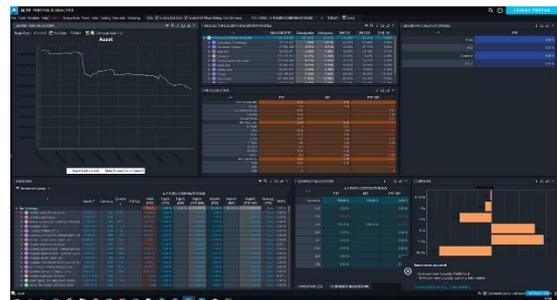
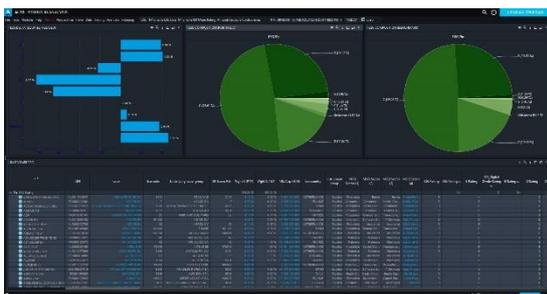
Advanced Portfolio Analysis

ALTO* Portfolio Analysis allows fund managers to explore and analyse portfolios according to any criteria or factor that influences investment returns. It shows risk and exposures and provides intraday views across multiple portfolios. Fund managers use ALTO* Portfolio Analysis sophisticated portfolio modeling capabilities to raise orders for what-if analysis or execution in Portfolio.

ALTO* Portfolio Analysis is improved continuously to meet all investment strategies expectations and offer added value to all clients, the module will be enhanced in the following months with new features and upgrades:

- NAV calculation and control: new views will give portfolio managers more insight into NAV details for full transparency on variations of NAV constituents: market impact, fees, cash, hedging costs, etc. This will complement and reinforce checks against third party statements conducted by middle office teams;
- Post-trade allocation: using ALTO* Portfolio Analysis, fund managers will be able to manage portfolio post-trade allocations, where permitted by the investment policy;
- Improvements real-time portfolio holdings price refresh, including analytics recalculation;
- Expect enhancements in our position roller tool for futures, FX and other instruments;
- Order transmission process is being enriched with new order types;
- Additional views with new market data and analytics.

To offer our clients greater flexibility, we also upgraded the ALTO* Investment platform to support additional pricing policies, which will be based on a wide range of Market Data sources and assignable at portfolio level.



*ALTO: Amundi Leading Technologies & Operations

What's coming next?

Insurance multi-accounting: IFRS9, French GAAP

As part of our continued efforts to extend ALTO* Insurance platform capabilities, and to complement local GAAPs coverage, we will be upgrading our tools to support IFRS9 standards. **ALTO* Investment** will offer advanced front-office capabilities and sophisticated connectivity to external accounting systems, providing our clients with a comprehensive solution for managing their insurance portfolios. In 2021, the ALTO* Insurance platform will address IFRS9 requirements:

- Accounting standards: IFRS9 valuations and analytics. Reconciliations with accounting data;
- Asset classification: SPPI Tests and business model support;
- Impairment of assets and expected credit loss calculations and/or integrations;
- Upgrade of accounting analytics, book yields, book values with calculation details;
- Advanced P&L calculation and analysis with multiple aggregations and breakdowns;
- Investment compliance rules based on accounting valuations (issuer limits, ratings, etc.).

COO & CIO Management Cockpits

New ALTO* Dashboard widgets and functionalities will be delivered to provide Management Cockpit views for CIOs (Chief Investment Officer) and COOs (Chief Operation Officer). The module will offer CIOs a bird's eye view of information to monitor key investment data, such as exposure to various risk factors, performance, compliance analytics, cash flow and any aggregated analytics. Web-based and easily configurable, it facilitates analysis at the level of asset management, investment business line or portfolio group level.

ALTO* Dashboard will also offer a high-level overview of business operations. The COO Cockpit will include flexible dashboards capable of displaying a broad range of KPIs for middle office, reporting and data management activities. This solution will help team leads, operations managers and COOs monitor daily processes and will foster quality operations control.

What is coming next?

A

Dealing

“Empowering traders with a state-of-the-art Execution Management System to ensure the best execution”

Dealing Platform Enhancement

The ALTO* Trading platform enables real-time, transparent and efficient order transmission between portfolio managers and traders with broad connectivity to markets. Fully integrated with order-booking modules, data and trade analytics, to offer valuable decision support for traders. ALTO* Trading simplifies complex order and execution management with a feature-packed and uniquely customisable blotter to easily process any execution strategy and facilitate tracking. This year, we will reinforcing our ALTO* Trading platform with new features and upgrades, mainly:

- **Market impact:** A new set of data and indicators will be available directly in ALTO* Trading to help dealers analyse market impact in real time before executions to prevent market abuse;
- **Execution strategy:** Additional execution strategies will be available for portfolio managers and dealers on the ALTO* Investment platform;
- **FIX connectivity with external trading desk:** Implementation of order routing API using FIX protocol and compatible with ALTO* Investment, to transmit orders to external trading venues;
- Reinforcing order transmission with new rules and order types.



What's coming next?

A

Middle Office

“Industrialising operations with automation of manual tasks and new crowdsourcing tools”

Reinforcing Trade Processing and Settlement

The ALTO* Post Trade module is currently reinforcing processes for cash and securities settlement in order to comply with the latest CSDR regulations:

- Late matching prevention;
- Late settlement prevention;
- Cash penalties management;
- BuyIn Mechanism;

This development will improve the quality of all settlement flows and monitoring of the reconciliation process, enhancing STP rates. Clients will also benefit from better handling of late settlements.

ALTO* Ticketing: Enhancing User Support Experience

ALTO* Ticketing is an in-app portal designed to enhance the support experience for members of the ALTO* Investment community. It allows ALTO* users to easily submit inquiries or raise questions to the right expert, monitor the progress of outstanding tickets and request updates:

- A new enquiry management tool will be accessible directly from ALTO* applications toolbar or using a direct link;
- Easy inquiry creation with auto-fill from ALTO* views. This will make any data issue simple to report. A library of email templates will also be available to facilitate communication with our support teams;
- Ticket monitoring using “My Tickets,” with access to team tickets. Conversations linking to an existing ticket;
- Comprehensive and interactive dashboard to request an update, view related instrument/portfolio information, or perform custom recurrent actions.



What's coming next?



Reporting

Next Generation Open Platform

Using the next generation of ALTO* Client reporting, users will be able to manage the entire reporting production lifecycle, from template design to final validation. The open platform will provide new APIs to connect with several external data providers and will offer distribution in a variety of formats. We will also continue to enhance the reporting engine with new features to satisfy our clients' requirements.



Risk, Compliance & Regulation

“Ensuring broad coverage of investment guidelines and regulations with highly accurate analytics”

ESMA Liquidity Risk Solution: Compliance Integration

ALTO* Liquidity capabilities are being extended to deliver a comprehensive solution for complying with ESMA requirements and help clients leverage liquidity data to enhance their investment process:

- Liquidity post-trade and pre-trade integration for investment compliance guideline monitoring;
- Pre-trade liquidity monitoring using front-office modules for portfolio managers;
- Extension of instruments for which analysis is available to ETFs, Mutual Funds, Listed Derivatives and OTCs.

What's coming next?

Investment Compliance Solution Enhancement

ALTO* Investment Compliance will be improved with new functionalities regarding rules coding and calculation, incidents management and client reporting. Enhancements regarding the **rules coding** combined with ALTO* Portfolio Analysis module will consist of:

- A high flexibility in compliance rules definition leveraging ALTO* Portfolio Analysis features (views, filters, functions, splitters, etc.);
- Revamped constraints definition screen;
- An ability to code rules and test/simulate them in real-time on portfolios.

Further enhancements plan a triggering and orchestration of compliance calculations for **rules calculation** with ALTO* Constraints Server module.

The new capabilities to be released for **incidents management** through the ALTO* Investment Compliance module will incorporate:

- Constraints groups management and a dynamic assignation of constraints to portfolios;
- Bulk modifications of breaches;
- Enhancements on breach details: attachments, comments;
- Comprehensive details of ratios calculations now captured and accessible to Risk Controllers via a new screen;
- Multi-site breach management with Chinese wall capability;
- Categorisation of active versus passives breaches with an asset-class based advanced algorithm;
- Detection & reporting on missing data during rule calculation.

Finally, **client reporting** new functionalities combined with ALTO* Reporting will include:

- Client compliance reports in Word, Excel & PDF format with optimised performances;
- Compliance reports scheduling and triggering.

What's coming next in ALTO*?



Data & Research

Tailor your ESG strategy

In 2021, ALTO* ESG will offer a wide range of new capacities to empower our teams with new flexible tools and satisfy our clients' requirements:

- Using the ESG module, users will be able to access ESG data and scores computed using their own methodology, with dedicated filters and data sourcing (subject to data licensing);
- ALTO* Dashboard will offer more views to provide a global and advanced ESG overview for all portfolios;
- Clients will be able to implement a dedicated portfolio ESG rating model;
- Several climate risk models will be implemented and integrated into the ALTO* Investment platform.

Transforming your Data Storage

ALTO* Dataware is a hybrid and intelligent data storage solution designed to manage the entire investment data lifecycle. Data can be stored using document (JSON and OPEN AML), structured or unstructured formats.

ALTO* Dataware offers comprehensive tools to monitor and drive the storage strategy, which gives better transparency and more flexibility to adjust data storage rules and processes. It also provides a set of APIs to manage all types of storage requests or build simple and collaborative applications.

The solution, built on a robust and scalable open architecture supporting encryption data storage and platform agnostic, includes a document optimization engine allowing efficient and optimal data storage.

Lab Initiatives

ALTO* Backtesting

Amundi is working on a standalone platform, ALTO* Backtesting, to enable custom backtesting for portfolio managers. This tool aims to integrate backtesting strategies without being the golden source of data, but rather storing scenarios and lightening computation loads thanks to a distributed platform. Any user should be able to:

- Define their own backtesting scenario;
- Input their own data or plug in an external tool like ALTO* Portfolio Design;
- Customise a high-level backtest timeline: start and end dates, scales, calendars, crisis periods;
- Control data quality and implement automatic corrections;
- Plug in external R or Python backtesting engines;
- Receive both aggregated and an across-time scenario analysis to collect the most relevant insights.

This end-to-end integration of the backtesting process in a generic and fast system can be used by clients to enhance their investment decisions or reinforce their control management.

Mailbot

In keeping with our commitment to improving the client servicing requests' processing tool, the Mailbot will onboard statistical learning systems dedicated to a certain number of tasks. Namely:

- Identify the most appropriate operator to process the request;
- Identify and suggest the client name to the user;
- Assess satisfaction;
- Suggest similar requests, and link new requests to previous ones.

Feasibility studies have already been carried out. They show that machine learning models trained on 1-year historical depth (about 50,000 emails) make it possible to significantly improve predictive precision (around 95%). Consequently this tool should make it possible to meaningfully accelerate request processing speed. This AI layer is part of Amundi's continuous improvement of our cutting-edge technologies.

Lab Initiatives

Quant Center in Dublin

Amundi Technology is working on a Quant Center in Dublin, based on JupyterLab. JupyterLab is a web-based interactive development environment for notebooks, code, and data. JupyterLab is flexible.

Clients can configure and arrange the user interface to support a wide range of workflows in data science, scientific computing, and machine learning. However, the main benefit is a change of mindset. Instead of fighting user-code, Amundi Technology encourages participation with turn-key infrastructure:



- A safe and stable playground for end-users
- Easy access to clean data
- First-class integration with the ALTO* platform
- State-of-the-art pre-configured statistical, financial & machine-learning libraries

About ALTO* Investment and Amundi Technology

ALTO* Investment

ALTO* Investment is Amundi's Portfolio Management System (PMS) covering the entire Asset Management value chain and providing a 360° portfolio view for all asset classes. ALTO* offers a cross-asset and integrated front-to-back solution, covering the entire investment management life cycle, including position keeping, portfolio analysis and simulation, order booking and execution, compliance, performance and reporting. Its comprehensive functional flexibility is adaptable to all types of investors: Asset managers, Insurance companies, Pension Funds, Family Office. ALTO* fully integrated solutions provide a 360° view of all information required to analyse, manage, control portfolios. It covers all asset classes and facilitates portfolios managers decision-making in real-time.



Amundi Technology

Amundi Technology offers innovative technology and operational services to support clients reshaping their operating model. The solutions proposed aim to meet the needs of all savings and asset management actors: asset managers, asset owners, distributors, wealth managers and asset servicers. The technology platforms provide clients with adaptive solutions enabling them to focus on their core business.

- **ALTO* Investment**, a powerful modular platform covering the entire Asset Management value chain, with services for Dealing, Middle Office and Data Management;
- **ALTO* Wealth & Distribution**, a modular core-to-digital platform for Discretionary Portfolio Management and Advisory solutions;
- **ALTO* Employee Savings & Retirement platform**;
- **Specialised solutions** with a wide range of technology and services solutions capitalising on Amundi's experience and know-how.

Amundi | Technology

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ALTO*
Investment



ALTO* Wealth &
Distribution

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*ALTO: Amundi Leading Technologies & Operations

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