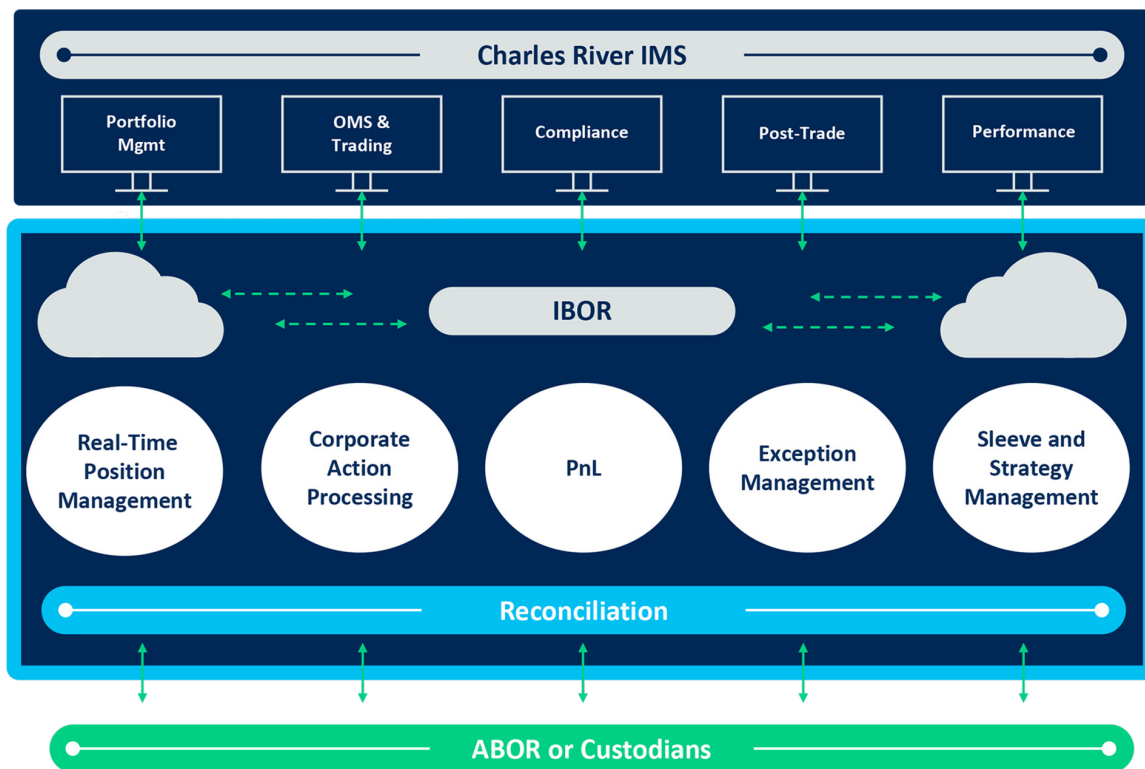


# Investment Book of Record

## Cash & Position Management

Charles River's Investment Book of Record (IBOR) provides traders and portfolio managers with an accurate, real-time, and consolidated view of positions, exposures and cash. Built specifically for the front office, Charles River's IBOR provides an investment-centric view of positions. This helps reduce trade errors and time spent manually reconciling position data. As an integral component of the Charles River Investment Management Solution (Charles River IMS), IBOR is designed to provide consistent management of position data on a single platform.

### Integrated Position Management to Support your Front Office



The IBOR solution feeds the Charles River IMS with beginning-of-day positions and can distribute position-keeping data to other systems, including those for performance and risk. By eliminating dependency on daily feeds from back-office systems for investment operations and consolidating multiple sources of position-related data onto one platform, we believe clients can eliminate position errors, streamline operations, and reduce costs.



### Key Capabilities

- Accurate and timely positions
- Accurate cash balances with intraday updates
- Historical positions and tax lots
- Sleeve management support for Unified Managed Accounts (UMAs)
- Strategy management support
- Support multiple trading regions, 24 hour-a-day operations
- Support multiple accounting systems
- Minimizes start of day data arrival processes
- Transaction reconciliation
- Historical positions and lots
- Backdated corrections with replay
- Voluntary corporate actions



## Position Management

Charles River's IBOR solution provides accurate trade-date and settlement-date positions for a specified point in time, based on transactions and adjustments.

### Transaction Management

Positions are managed by transactions that record all position changes, based on trade and settlement dates. Transactions are automatically generated for trades, as well as regularly-scheduled cash flow and security lifecycle events.

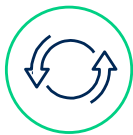
Portfolio managers can import any transactions generated and maintained outside of Charles River IMS, such as bank or custodial FX transactions. Managers also have the flexibility to edit, cancel, and re-book transactions or resolve exceptions. For changes occurring on previous days, the system allows for backdating transactions, automatically updating any subsequent position records. To help ensure better internal controls, "four eye" authorization can be used before transactions are posted. Approvers can also be assigned based on transaction attributes.



## Corporate Actions

Charles River's IBOR can automatically handle mandatory and voluntary corporate actions as an overnight process, as well as directly from the interface. The basic workflow includes: importing/entering corporate action data; calculating entitlements; processing corporate actions; and generating and posting resulting transactions. The flexible corporate action engine offers undo/redo capability and allows manual intervention anytime during the process. Managers can also update open orders and the security master with impacts from corporate actions.

In addition to processing mandatory corporate actions, the system can also manage voluntary corporate actions based on elected position changes. Managers can backdate corporate actions and properly update any subsequent position records.



## Reconciliation

The IBOR Solution helps ensure accurate reconciliation of positions against accounting systems, custodians and fund administrators. The system is highly automated, making it easy to build flexible, manager-defined matching rules for exception-based workflows. Resolution maximizes productivity by reconciling both position and tax lot levels against multiple data sources. Managers can also determine the scope of each reconciliation — running across all positions, or a set of positions, at specified times, to prepare for next-day trading in different regions.

The system identifies any positions that are missing, or outside of manager-defined tolerances. Only exceptions need to be managed, since Charles River IMS automatically adjusts positions matched to manager-defined rules.

Portfolio managers can reconcile exceptions by either modifying positions maintained in Charles River IMS or rejecting the external positions. Accepting external positions automatically creates adjustment transactions that modify positions and records. Managers can tag these adjustments with a customized list of reason codes as well as remarks and undo any reconciled record to bring back previous results.

### Position Update

Replaces the daily batch import of external positions, and can be run nightly or intraday. Trading positions can be updated in segments by account, exchange lists, or investment classes. Designed to create efficiencies for firms that operate 24/7 by helping reduce the time required for position update processing.

### Historical Positions

Retrieves historical positions, including valuation, based on any as-of date for reporting and performance analysis. Managers can store historical positions in the database as daily, monthly or quarterly snapshots and export for holdings reports. Historical positions can also be retrieved for backdated changes.

### Valuation

Calculates valuation for each position based on the latest pricing data available in Charles River IMS. While position valuation generally runs end-of-day, it can also be run/re-run intra-day. For OTC derivatives, fair value is based on internal Charles River IMS analytics, or imported by the manager.

### Cash Flows

Calculates cash flow events on a nightly basis, generating and posting appropriate transactions with Charles River IMS. If preferred, cash flow events can be imported.

### Security Lifecycle

Handles maturity and expiration of securities, including bond maturity, option expiry and currency forward settlement, and end-of-day processing. As appropriate, the system closes out positions and creates cash transactions.

# Charles River Development, A State Street Company

Investment, wealth and alternative managers, asset owners and insurers in 30 countries rely on Charles River IMS to manage USD \$46 Trillion in assets. Together with State Street's middle and back office services, Charles River's cloud-deployed front office technology forms the foundation of State Street Alpha<sup>SM</sup>. Charles River helps automate and simplify the investment process across asset classes, from portfolio management and risk analytics through trading and post-trade settlement, with integrated compliance and managed data throughout. Charles River's partner ecosystem enables clients to access the data, analytics, application and liquidity providers that support their product and asset class mix. We serve clients globally with more than 1,200 employees in 11 regional offices. (Statistics as of Q2 2022)

Learn more at [crd.com/ibor](https://crd.com/ibor)

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