

StepStream® Financial Integration Hub

A platform for networking within the financial sector

Summary: Increased demands on communication within the finance industry are resulting in an ever-increasing interconnectedness. Linking systems via classic point-to-point connections leads to complex system environments, which are difficult to maintain.

A solution to this problem is Application Integration (AI) with a software that decouples systems by acting as a hub. In this way the number of interfaces and the overall complexity is reduced. In addition, data flows can be monitored which contributes to better quality assurance. Ideally, an AI-System should provide not only technical features, but also business functionality to reduce implementation times and uncover errors in operational environments.

StepStream Financial Integration Hub (FIH) fulfils both the technical and business requirements of such an AI-System. The format definitions and functional building blocks provided, offer concrete business uses for the user. As StepStream FIH was created especially for use within the finance industry, it especially supports the data transfer of financial products and information. StepStream FIH is therefore particularly suited to institutional investors such as banks, insurers or the finance departments of industrial and trade organisations.

StepStream FIH furthermore provides transparency in modelling and presentation of data, monitoring of processes and error tracing, including assistance in error correction. As a result of its platform independence, StepStream FIH easily blends in with existing infrastructures, features high availability and adapts to increasing requirements.

Point of Departure

In a globalized world, increasing communication requirements together with the need for shorter reaction time, lead to an ever-increasing interconnectedness. This development has led to a confusing multitude of differing formats, concepts and concept definitions.

The vision of an all-encompassing, standardized software to bridge this diversity of formats and concepts may never come true: On the one hand, various areas of business within a single industry sector must handle different tasks, while on the other hand there is also the need for communication to clients, suppliers, sub-contractors and government organisations outside that industry sector.

This, in addition to constantly changing legal requirements results in a variety of systems and system connections, which are developing at different rates or are being replaced by new systems.

The finance sector particularly is increasingly affected by this trend, for example, by the topic "special purpose entity consolidation".

StepStream FIH – Approach

With an increasing number of systems involved, the traditional method of point-to-point connections induces a high interconnection complexity. The number of connections can significantly be reduced by introducing a central distributor (hub).

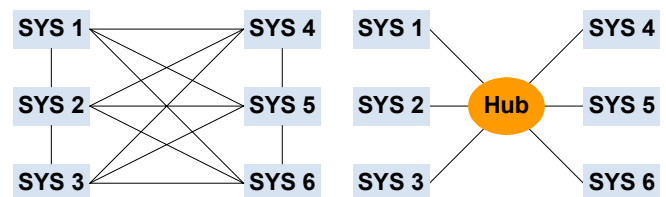


Fig. 1: System coupling and System decoupling

Besides technical decoupling it is important to delegate business tasks to the hub to achieve a certain degree of business decoupling. Thus, the hub should handle common business data transformations and enforce communication standards. StepStream FIH is an AI-Software, that allows the efficient coupling and decoupling of systems in the described way. The following four features stand out:

- Business Functionality
- Transparency
- Ease of Integration
- Modularity

Business Functionality

In contrast to other AI-Systems StepStream FIH already contains business functionality that is specifically tailored to the requirements of the finance sector. Users can apply or extend the available format descriptions and mapping rules for financial products such as prices, standing data, transactions, etc.

Business functionality in StepStream FIH is implemented by the following characteristics:

- Business system dependent and independent formats (neutral format)
- Business and technical transformations rules
- Defined error and correction processes

StepStream FIH is thus particularly suited to connect the typical systems of institutional investors such as banks, insurance and investment companies, or the treasury departments of trade and industry firms:

- Inventory systems
- Market data supply systems
- Analysis tools
- Data warehouses

Transparency

Transparency within data processing lessens the workload in operations and allows to improve the often fluctuating quality of data. Characteristics:

Comprehensibility of data via:

- The use of legible formats (XML)
- A Business Repository incl. a neutral format
- Extensive preservation of source and target representations through translation (mapping) to the neutral format

Monitoring of the processing progress and status by means of comprehensive technical and business specific logging:

- Active – notification on errors
- Passive – protocol and data analysis

Traceability and Reproducibility of data and transports by means of systematic:

- Archiving of business data
- Reprocessing of incorrect data after necessary corrections

Ease of Integration

The ease of integration ensures its operability within heterogeneous system environments and allows the use of existing business infrastructure and personnel. The support of various environments as well as a large degree of flexibility is achieved through:

- Platform-independent implementation
- The use of common open standards

- Avoiding close integration with systems in favour of message-passing
- The use of message queuing systems for buffered message transmission.

Modularity

The modular architecture based on independent components offers substantial advantages over monolithic approaches:

- Easy maintenance by using only the necessary components
- High availability of the entire system even when parts thereof fail due to maintenance or external influence
- Good scalability
- Extensibility – incorporating new components without influencing the entire system

StepStream FIH – Architecture

StepStream FIH consists of multiple independent processes that are largely configurable. This, in conjunction with the multithreaded process architecture, guarantees optimal load distribution on Multiprocessor servers. Additionally, StepStream FIH can be almost linearly scaled over multiple servers by duplicating or distributing components that may induce bottlenecks.

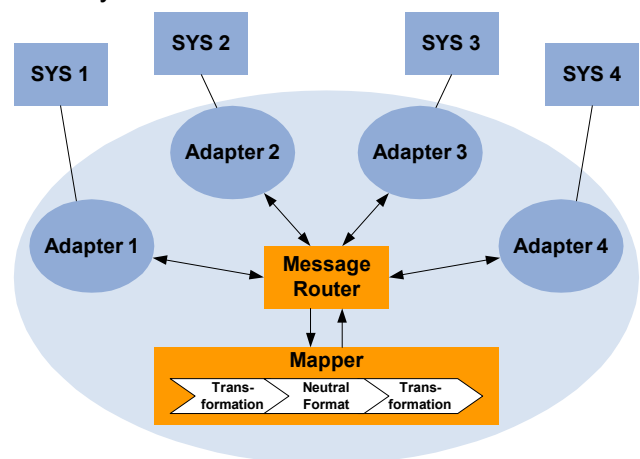


Fig. 2: Independent processes

All StepStream components are implemented in Pure Java and are thus able to operate on a wide variety of systems (Unix, Windows).

Data is transported as XML-messages, making it easily readable to users and software.

Inter-component communication is usually done via JMS, although other techniques are available. Existing message queuing systems provide technical transaction security. Thus, even the failure of a component would not be critical, since the data is buffered by the underlying queuing system and remains there until the component is available again.

StepStream works asynchronously¹ and consists of numerous technical and business components. The desired transports are achieved by combining them in the required manner. Typical messaging modes: Produce-Consume, Request-Reply
Components can be monitored from a technical and business viewpoint (e.g. SNMP, email).

Server

The server is responsible for handling the data transports at runtime. It provides mechanisms for controlling, monitoring and analysis.

- Router – transports data from source to target
- Mapper – converts to/from neutral format
- Archiver – archives messages (data)
- LogServer – records the status and errors
- Planner – ensures the data delivery sequence
- Scheduler – initiates timed transports
- Redoer – supports error handling

Technical Connectivity

Technical adapters connect technically to external data sources or do technical data conversions.

- Protocols: FTP, SMTP, POP3, IMAP, HTML
- APIs: JMS², JDBC, Filesystem, SAP JCO
- Formats: XML, CSV, flatfile, special formats

Technical Adapters are often combined with each other to achieve a special purpose, e.g.:

- JMS → flatfile → XML
- XML → CSV → FTP

Business Connectivity

Business Adapters implement together with the data structures and mapping rules in StepStream FIH's Business Repository the business logic.

They usually work on top or in conjunction with Technical Adapters and maintain a system-similar representation of the business data as far as possible. Examples:

- SAP CFM
- Reuters RDS, Bloomberg DL
- KALCON, Barra
- Special solutions for DWH's, reporting systems and Excel

Business Repository

In addition to the neutral format, the repository contains the system-similar source and target formats, as well as information about structure and value mapping.

¹ Synchronous communications can be simulated by means of acknowledgements in the adapter.

² JMS allows communication via common message-queuing systems (e.g. IBM MQSeries®).

StepStream FIH – Case Study

StepStream FIH offers solutions for the financial industry which link diverse financial systems.

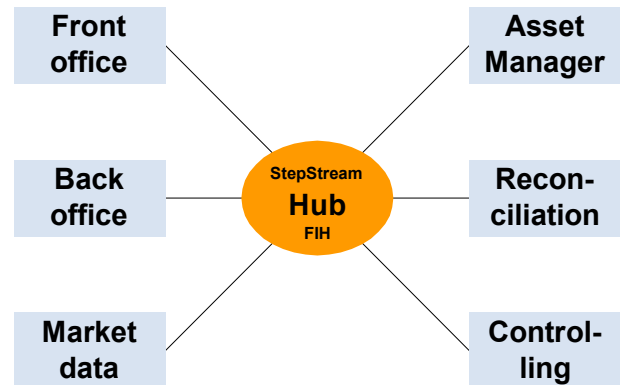


Fig. 3: StepStream FIH

These solutions are used by various institutional investors. The transported data includes:

- Transactions (buys, sells, gains, corporate actions, balance-sheet related, etc.)
- Standing data (security master, issuers, counterparties, ratings, dividends, interest terms, diverse conditions, etc.)
- Market data (prices, FX, yields, indexes, etc.)
- Holdings (for reconciliation)

StepStream enables our customers to automate existing processes or open up a variety of new applications including STP, reconciliation, IFRS-/US-GAAP-accounting (so-called "Look-through" accounting), etc.

Check our website for more information or contact us.

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