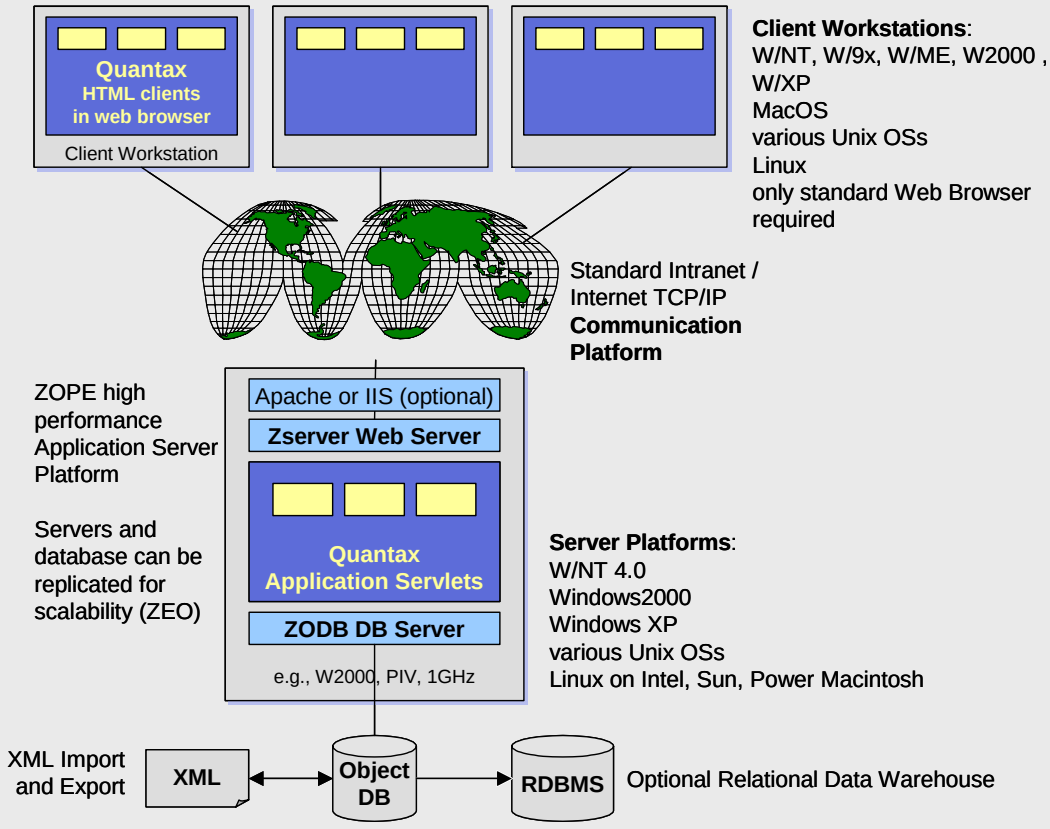
Quantax®

This fact sheet describes the technical aspects of Quantax. It complements the fact sheet on *Quantax Functionality*. A more detailed fact sheet about *Quantax Integration* is also available.

The Quantax Architecture

Quantax is a multi-user, multi-portfolio system, featuring a modern, web-centric architecture. The whole application runs as a set of web servlet components, based on the high performance open-source ZOPE Application Server (www.zope.org). No client side application installation is required, resulting in "zero cost" deployment.



Integration

Quantax supports many common web and integration standards, most notably HTML, XML, XML-RPC, and SQL/ODBC, etc. All interactions are available to other programs through HTTP, XML-RPC, and WebQueries.

This means that reports, but also deal entry, are available from any MS Office™ application, such as Word and Excel.

Interfaces

The standard interface to import and export all data uses XML and is described by a schema conformant to the XML Schema standard.

Exports can be started from the user interface, or automatically upon modification of a transaction or static data object. Exporting of imported objects can be carefully controlled.

Other standard interface provide for export of ASCII files or formatted deal tickets (to a printer or file).

Portals

Any functionality can be embedded in a *web portal* for internal and external clients. Sample portals are supplied with the software, and custom portals can be designed on request. Any suitable tool can be used to design such portals, such as Microsoft FrontPage® or Macromedia Dreamweaver®.

Risk Data Warehouse

Through the SQL interface, any transaction or static data update can be exported to a ODBC-compliant database, either in real-time or batched. The database scheme (SQL 92, SQL Server, Oracle and MS Access) can be generated by the software.

Multi-Entity Support

Quantax supports true and exceptionally powerful multi-entity configurations. Entities are fully access-protected. The configuration defines a set of working contexts. Each context identifies the entities which are accessible for a user when working in the context. The first entity of accessible entities is the context entity where the user has read and write / delete access based on his authorization profile. The other entities are read-only entities, whose objects are visible to the user, but cannot be changed.

This means that in a multi-client con-figuration, reference data can be shared or isolated at will, allowing very flexible Business Service Provisions such as provided by the COMIT partner talkfinance ltd.

Real-time Reporting

All saved reports that are based on a frozen portfolio can be viewed with real-time updates. The report is refreshed whenever the portfolio changes (due to new, changed, or deleted deals) or a rate affecting the portfolio changes.

A report is only computed once for all users viewing it simultaneously in real-time mode. Using a few selected reports in real-time mode is therefore very efficient.

The Quantax Application Environment

ZOPE, Python

The Quantax Application Environment uses ZOPE as its Application Server and Python as the programming language. ZOPE (www.zope.org) is an open source software for efficiently building state of the art distributed web applications, including a very easy to use (fully transparent) object distribution middleware

Python (www.python.org) is highly versatile open source software for object oriented development, integration, and rapid prototyping.

Python is fully object-oriented, flexible, and open for extensions.

ZOPE Database

Quantax uses the object-oriented database provided by ZOPE. It actually maintains 5 separate logical databases for entities such as static data, transactions, prices, etc.

The ZOPE database is optimized for few writes and many reads, and object retrieval by reference rather than search by values. This is very appropriate for trading and risk management systems.

The database is transactioned, and is fully recoverable in case of a failure.

All transaction data can be optionally transferred into a standard relational database (Transaction Warehouse) for long-term storage and reporting.

Security

ZOPE offers state-of-the-art security controls:

- Fine-grained security on object level
- Roles (for usability and manageability)

ZOPE can interface to LDAP, NT Domain Servers, NIS, or generically to anything that provides an API.

An aside about Open Source

Quantax is built on top of platform-neutral open source systems. This is a major factor for investment protection, as the underlying software is not at the mercy of any commercial vendor. ZOPE and Python are backed by very active developer and user communities, and there are commercial companies offering support.

Hardware and Software Requirements

Server

The Quantax Server has been tested on Windows NT and Windows 2000, Linux, and Sun Solaris. Other Unix platforms may be supported on request.

In general, increasing memory and CPU speed will enhance the performance of Quantax. A single fast CPUs is preferable over multiple CPUs, which requires a special installation.

The following table shows minimum sizes, based on the number of active transactions (transactions for which details are available; historic transactions are regularly archived and replaced by aggregated transactions):

Number of active transactions	min CPU speed MHz (Intel, W2000)	Free Memory (MB)	Disk (MB)
<1'000	400	128	200
1'000 – 10'000	1000	512	500
10'000 – 40'000	1'600	1'024	5'000
40'000 – 120'000	fastest available	2'048	10'000

As individual requirements vary, COMIT should be contacted before commissioning any hardware.

Running multiple copies of Quantax on a single server is not recommended.

Client

Quantax runs on most common browsers that support HTML 4.0, CSS2 and JavaScript. It is officially supported on Netscape Communicator 7.0 or later, and Internet Explorer 5.5 or later (recommended).

Software Metrics

The following software metrics show the size of Quantax Professional (as of release 4.2):

Software Component	Count
Packages	9
Modules	239
Classes	366
Methods	1'976
Functions	1'047
Lines of Code	52'400
GUI HTML source pages (DTML)	508
Online Help HTML pages (DTML)	97
Asset types	39
Transaction types	29
Transaction attributes	165
Relational Data Warehouse Tables	99

Benefits for the IT operation

- Zero Client Rollout Cost: Only a standard web browser is required at a client location anywhere on the network.
- Low Operation Cost: The standard Quantax base package is designed to be operated by non-IT-professionals.
- High Flexibility due to rapid Application Development Platform.
- Inherent interoperability with Intranet/Internet. Therefore, low integration effort for remote (WAN) users.
- Snapshot and real time interoperability with office tools and RDBMS.