Core System Overview

Portfolio Genius® is the leading investment management and accounting software solution for assets and liabilities

Portfolio Genius®, our core system, integrates with existing subsystems, processes transactions, collects data, and allows for the flexible distribution of data output in the form of reports and file extracts. You can view data at any stage of processing, from raw data to intermediate calculations to summarized output.

The core system provides:

- Accuracy in accrual, accretion and amortization in conformity with the current Generally Accepted Accounting Principles (GAAP) for concessions on debt, fees, premiums, discounts and accrued interest (calculated using various day count methods). We are in the process of moving towards conformity with the International Financial Reporting Standards (IFRS) which become effective in 2012.
- Accuracy in the maintenance, tracking and projection of the financial terms of fixed-income securities as related to principal and interest payments, coupon rates, rate resets, call dates, MBS and CMO factors, CPRs and PSAs, and maturities. You can base interest rates on a mathematical formula with embedded index, caps, floors, etc.
- Advanced analytics providing total return, projected cashflows, stressing the portfolio, and bond pricing using a matrix.
- Automated back office functions such as: automated data entry, maintenance, business calendar maintenance, principal and interest payment calculations, and reconciliation.

Portfolio Genius® manages and accounts for investments from money market, (overnight and term fed funds, commercial paper, repurchase agreements), to long term as well as the liability side of the balance sheet, such as bullet bonds, medium term, discount and structured notes, callable bonds, advances, amortizing and convertible.

All formulas used within the *core s*ystem's calculations comply with guidelines established by:

- The Securities Industry Association (SIA);
- The Financial Accounting Standards Board's (FASB) published requirements, including FAS 91, FAS 115, FAS 115-2, FAS 133, FAS 155, FAS 157 and FAS 159;
- The Global Investment Performance Standards (GIPS) created by the Chartered Financial Analyst (CFA) Institute, unless instructed otherwise; and
- The Public Securities Association (PSA), published in the Uniform Practices by PSA, when appropriate.

Transaction Processing

The core system's design accommodates investments from money market (overnight and term fed funds, commercial paper, repurchase agreements, etc.), to long-term, including mortgage-backed securities (commercial, fixed-rate and ARM pass-throughs, etc.), floating rate collateral mortgage obligations, PAC structures, home equity loans and lines of credit, and Housing Finance Agency (HFA) Bonds.

Portfolio Genius® accommodates the liability side of the balance sheet as well, including bullet bonds, medium-term notes, discount notes, callable bonds and structured notes. The structured notes cover a large variety of structures, and may include callable step-up notes, inverse floaters, dual-index floaters, range floaters, indexed-amortizing notes (LIBOR- and CMO-based), and equity-indexed floaters.

The core system provides the ability to process purchases, sales, principal redemptions and interest payments. Asset and liability types include, but are not limited to:

- US Treasury Bills, Notes and Bonds
- US Agency Bonds and Discount Notes
- US Agency Structured Notes (with various payment indices, formulas and embedded options)
- Index Amortizing Notes
- Money Market Transactions (such as Fed Funds)
- Commercial Paper
- Mortgage Backed Securities, including pass-throughs, GNMA, FNMA, FHLBC, SBA, private issues, etc.
- Asset Backed Securities
- Collateralized Mortgage Obligations, including CDOs, CLOs
- Housing Finance Agency Bonds (with sinking funds)
- Municipal Securities
- Repurchase and Reverse Repurchase Agreements
- Discount Notes
- Consolidated Obligation Bonds (fixed, floating callable, putable and structured)

Transaction Processing

Transactions are posted such that par values, book values and all associated premiums, discounts and fees are captured and monitored separately to provide the ability to process all portfolio activity on a daily basis.

Reports itemize accrual, amortization/accretion, and adjustment activity at the transaction level, and amortization/accretions are reflected on either a level-yield or straight-line basis. Adjustments and backdated transactions are accommodated by the level-yield or straight-line calculation. Summary general ledger postings flow to the general ledger in an automated fashion.

Historical transaction activity, such as purchases, sales, accruals, fair values, payments and adjustments, is retained within the application for research and activity verification. The application produces average portfolio balances for security types and groups. Similarly, transactions, summary general ledger posting and reporting information are readily available by FAS 115 classification within the portfolio (held-to-maturity, available for sale and trading).

Accounting Methodology

The accounting methods provided by the core system to calculate level yield amortization and accretion complies with the Financial Accounting Standards Board (FASB) as specified in the 1993/1994 Edition of "ORIGINAL PRONOUNCEMENTS: ACCOUNTING STANDARDS as of June 1, 1993, Volume 1, FASB Statements of Standards." You can choose:

- (FAS 91) Amortization Based on Estimated Prepayment Patterns (page 997)
- (FAS 91) Amortization Based on Estimated Prepayment Patterns Adjusted for Change in Estimate (page 998)
- (FAS 91) Application of Paragraph 18 (a) – When the Loan's Prepayment Penalty is Effective throughout the Entire Term (page 999), or
- (FAS 91) Application of Paragraph 18(a) – With No Prepayment Penalty (page 1000)

In its published Opinion No. 89-4, the Emerging Issues Task Force (EITF) recommends:

- Using prospective yield method for income recognition
- Recalculating yield periodically based on historical prepayments and expected cash flows
- Writing down the asset if expected cash flows are less than the carrying value of investment

The core system applies the recommendations to all Collateralized Mortgage Obligations (CMO), even though EITF Opinion 89-4 only recommends this method for “High Risk” CMOs. During the last thirty-six (36) months, prepayment speed of the collateral for CMOs exceeded the contractual speeds used to create the CMOs by a wide margin. This caused most CMOs to behave in the same manner as the “high risk” ones.

The calculations performed by *Portfolio Genius*® follow the Securities Industry Association’s published yield calculations as specified in the “STANDARD SECURITIES CALCULATION METHODS,” Fixed Income Securities Formulas for Price, Yield, and Accrued Interest, Volume 1 Third Edition.

Accounting Methods Providing FASB 91 Level Yield Amortization/Accretion

The core system offers both Retrospective and Prospective Accounting Methods for calculating FASB 91 Level Yield amortization/accretion for Agencies, Municipals, U.S. Treasury Bills and Notes, and Bond Securities (Bullets), Mortgage Backed Securities (MBS), Asset Backed Securities, CMO, and others.

Accounting Methods Provided That Do Not Use Level Yield

Portfolio Genius® also offers accounting methods that **do not use** FASB 91 Level Yield to calculate amortization/accretion:

- Constant Price Method (available for Bullets, CMO, and MBS)
- Factor Method (available for CMO and MBS)
- Trading Method (available for Bullets, CMO, and MBS)
- Straight Line Method (available for Bullets, CMO, and MBS)
- Straight Line to X Date Method (available for Bullets, CMO, and MBS)
- Amortize To Date Method (available for Bullets, CMO, and MBS)
- Amortize To Date With Escrowed to Maturity Date or Prerefunded Date Method (available for Bullets, CMO, and MBS)
- Accelerated Method (available for CMO and MBS)
- Constant Premium/Discount (available for Bullets, Equities, CMO, and MBS)

Accounting for Other-Than-Temporarily-Impaired (OTTI) Securities (FSP FAS 115-2)

Entities must now disclose a security if the fair value is less than its cost basis at the measurement date. GAAP requires the reporting entity to determine if the impairment is temporary since OTTI securities must be recognized entirely in earnings. Making this determination involves several steps and currently includes an assessment of whether the reporting entity has the intent and ability to hold the security for a period of time sufficient to allow for any anticipated recovery in fair value.

Accounting Methodology and
Core System Functionality

The core system applies the guidelines set forth in FSP FAS 115-2 and provides three methods for accounting for asset impairments with respect to debt securities:

- Impairment Method with Manual Payment Control
- Impairment Method with Amortize-To Price Lower Than Par
- Impairment Method with Impairment Balance

Data Transfer Capabilities

Portfolio Genius® allows for the use of ODBC- (Microsoft Excel, Microsoft Access and Crystal Reports) and OLE- compliant tools for efficient data access, report and presentation purposes. The application is compatible with Microsoft Object linking and embedding standards, and is equipped to send objects to or receive data from those applications. The *Portfolio Genius*® database resides in the Microsoft SQL Server 2000 can interface to any central database also structured in Microsoft SQL Server 2000.

Core System Functionality

Internal Modules

Application Security Module provides a logon validation process and works in conjunction with Microsoft Windows XP and Microsoft SQL Server 2000 and 2005 security implementations. The module uses Kerberos authentication protocol through its integration with Windows XP security. In a mixed mode, the module uses Microsoft SQL Server 2000's security implementation, in combination with Windows XP security.

General Ledger Module provides a means to manage the chart of accounts, with no limit to the number of line items for either the balance sheet or the income statement. The module provides the flexibility to make changes to the chart of accounts on an as-needed basis, allows for the creation of sub-portfolios of assets and liabilities, and consolidation of the sub-portfolios to the total level for both point-in-time and average balances (average by month and year).

Pledge/Safekeeping and Collateral Tracking Module provides the functionality to manage the pledging and safekeeping of holdings. Pledge holding to an unlimited number of pledge institutions and safekeeping locations, and track collateral on repurchase agreements and reverse repurchase agreements.

Payment Reconciliation Module provides a means to reconcile the amount of actual cash (principal and interest) received for a holding against anticipated amounts calculated on the holding and CUSIP data. The module posts the data to the general ledger and contains reporting functionality for principal and interest reconciliation.

Report Manager Module supplies tools to manage your reports—apply filters and set date parameters, create batches, roll reports into holding company reporting, create consolidated reports, add custom reports, and more. The Report Manager Module uses Crystal as the report writer.

Regulatory Module supplies tools to support the various reporting requirements of the different regulatory agencies for banks, savings institutions, and credit unions. Detailed information for each regulatory report can be viewed to verify or make edits, thereby enabling the generation of a detailed report to supplement the report which can be saved, retrieved and printed at any given time.

Reporting Capabilities

The core system incorporates Crystal and Microsoft SQL Query reporting tools for data retrieval, allowing for easy report generation and the ability to edit existing reports and create new user-defined reports (with Crystal software). The report writer can access all historical and forecast periods, average balances, or any aggregation thereof for all data used and produced by the system. Reports on daily interest accrual, cash flow reconciliation, general ledger details and realized gains/losses are among the 300+ reports that accompany *Portfolio Genius*.

Interfaces to Third Party Data Vendors

The core system automates the data import/export process with import, export, and bidirectional interfaces to data vendors.

Benefits

- Automated updating of data—eliminating the need for manual data entry
- Accurate fixed income investment data from proven and accepted sources in the industry
- Added speed, accuracy, and efficiency to your investment accounting processing

Bidirectional Data Interfaces simplify access to financial data vendor databases through your desktop PC's Internet connection, distributing data directly into the core system, or importing the information into a Microsoft Excel-based file. These interfaces assist in the reconciliation process by supporting daily updates as required for factors, rates, and market prices, providing the required data to complete CUSIP descriptions, and providing specific CUSIP and position information. Available bidirectional data interfaces:

- Interface to *Bloomberg Data License®*
- CUSIP Builder Interface to *Bloomberg Data License® and Interactive Data (Remote Plus)*
- Interface to *Bloomberg Trading®* (using the *Bloomberg Gateway®*)

Core System Functionality
and Technology Platform

- Interface to *Interactive Data® (Data Feed and Remote Plus*
- Interface to *Yield Book®*
- Interface to *Bank of New York Inform System®*

Data Export Interfaces can download information from the core system to your DDA system, GL system, your A/LM system, or to your data warehouse. TPG offers A/LM interfaces to *Bancware®*, *QRM®*, *Sendero-DMS®*, *Profitstar®*, *Plansmith®, others*. TPG will create a custom file extract to any A/LM system or any other applications in your environment.

Optional Modules

TPG Automation Tool Kit provides a means to set up and schedule certain events to occur automatically at specific times, such as importing and exporting files, running the process, and many more.

Export Builder Module is a unique data export utility that provides the ability to create custom extract files, selecting any number of data fields desired, and exports the information in whichever format your institution uses.

Analytics Module incorporates advanced analytics such as total return, projected cashflows, stressing a portfolio or position, and an internal Pricing Matrix model to price securities.

ePortfolio Module® is an optional Web application for *Portfolio Genius®* that provides the functionality to create portfolios, conduct trade ticket entry for any buy and sell tickets, enter and edit pledge and safekeeping information, view and print reports and graphs of portfolio holdings, and upload and download files to your A/LM system, GL System, or any other extract, regardless of file format. And there are levels of security built into the browser you can set to restrict access rights to certain users and customers.

Technology Platform

TPG's **Client-Server Architecture** contains a client workstation and a server—the business logic is shared. The business and data tiers are both installed on a shared back-end server. Provided below are TPG's recommended hardware and software specifications to deliver the best performance for a database containing up to 6,000 positions.

Hardware/Software Requirements for Client Workstation

- Processor – 2 GHz Pentium 4 processor (or greater)
- Memory – 1 GB RAM (or greater)
- Free Disk Space – 100 MB (or greater)
- CD-ROM Drive - Required
- Network Connection – LAN connection
- Monitor – High color 16-bit capacity, set to 1024x768 pixel resolution
- Software – Microsoft Windows XP, or Windows 2003 (or higher)
- Software – Microsoft .NET Framework 3.5
- Software – Microsoft Data Access Components (MDAC) 2.8

Hardware/Software Requirements for Data/Application Server

- Processor – Dual 3 GHz Intel Xeon processors (or greater)
- Memory – 4 GB RAM
- Free Disk Space – 60 GB or greater (15,000 RPM SCSI Drives), extra for Web reports
- CD-ROM Drive - Required
- Network Connection – LAN connection
- Monitor – Access required
- Software – Microsoft Windows Server 2003 (with latest Service Pack)
- Software – Microsoft SQL Server 2005
- Software – Microsoft IIS 6.0 (for Microsoft SQL 2005)

Please Note: The performance of TPG's systems is enhanced dramatically as the processor speed and RAM of your server(s) are increased.

Recommended Architecture

The diagram displays the recommended architecture for TPG systems: