HiPortfolio™

Solutions Roadmap

October 2014

Roadmap
July 2014

DST Global Solutions Pty Ltd

Contents

Chapter 1: Background

Our product development is guided by our understanding and views on industry trends, regulatory changes and technological innovation informed through interaction with clients, prospects, industry commentators and consultants.

The HiPortfolio roadmap comprises detailed items in the imminent releases that provide our 12-18 month plan. Thereafter, we have items that provide the longer term vision 18-36 months out comprising our view of future needs and subsequent priorities around which we are actively engaging with our clients.

Roadmap items represent programmes of work to ascertain detailed business requirements and assess options to enhance HiPortfolio's capability to service the needs of our clients.

We update our Roadmaps twice yearly and share these with clients through our relationship management processes and also publish the roadmap on the web based Client Centre.

Chapter 2: Roadmap

	Investment Accounting		Operational Efficiency			Regulation	Technology		
	Investment Strategies	**Taxation**	**Corporate Actions**	**Unit Pricing & Reconciliation**	**Data Presentation**	**Regulatory & Reporting**	**Integration & Data Management**	**Platform & Deployment Initiatives**	**Architecture & Framework**
2014 H2	• FI Amortisation • Money Market Fund • Stock Lending / Repos • Syndicated Loans	• TOFA Enhancements • Managed Investment Trusts	• Capital Events Automation • Closed Exchange Processing • Auto Income Amendment • Transaction Integration	• Locking & Snapshots	• User Interface Initiatives • Business Operational Dashboards & Workstations • BI Functional Improvements • Exceptions Management	• Regulatory Reports • IFRS • Dodd Frank, MIFID, FATCA, MITR, Euro	• Enterprise Integration Leveraging Events • DIF Expansion • Database Initiatives with Partner Vendors • External Task Agent • Post Trade Processing	• Linux • Program Isolation • Diagnostic Benchmark Tool • Hosted Deployment • Global Delivery Model & Upgrade Initiatives	• Event Message Broker & Framework • JVM HiPortfolio • Cobol Compiler Migration • Error Framework • HiPortfolio Optimisation
2015 +	• ETF solution • Multi-exchange Rates • Stock Lending / Repos • Syndicated Loans	• Global, Market & Regime support • TOFA Enhancements	• Automation of Investment Accounting for Electives	• Unit Pricing Dashboard • Unit Pricing Workstation • Reconciliation GUI • Reconciliation Workstation • Locking & Snapshots	• User Interface Initiatives • Business Operational Dashboards & Workstations • Reporting Engine • Exceptions Management	• Regulatory Reports • IFRS • Dodd Frank, MIFID, FATCA, MITR, Euro • Global, Market & Regime Support	• Enterprise Integration Leveraging Events • Database Initiatives with Partner Vendors • Post Trade Processing	• Program Isolation • Hosted Deployment • Global Delivery Model & Upgrade Initiatives	• Event Message Broker & Framework • JVM HiPortfolio • External Authentication Framework • Cobol Compiler Migration • Business Function Services & Web Services • Error Framework • HiPortfolio Optimisation

Chapter 3: Committed Items

Version 14.0 (previously referred to as 3.14)

Category	Item	This enhancement will...
Investment Strategies: Fixed Income	**Effective Yield**	Provide the ability to amortise debt instruments using the effective interest method. The effective interest rate (EIR) will be recalculated after new purchases and projected coupon or principal changes. This enhancement will also provide the ability to adjust the amortised cost independently of the yield to enable the reconciliation of both an amortised value and yield for a given position and date.
	Autobatch improvements	Provide the ability to run autobatch and create 'paydown' transactions for FI-19 and FI-20 securities only by adding a new field, *Principal repayments only*, to the **Automatic Transaction Generation** window.
	Schedule Correction Audit	Allow the Pool Factor Import and Standard Audit Report to export to an ASCII file.
	Amortisation Collars	Extend the HiPortfolio functionality for amortisation collars. Currently, amortisation collars can be used in HiPortfolio for portfolios that adhere to the US Generally Accepted Accounting Principles (GAAP). This enhancement will make it possible to apply collars to European and Asian portfolios using the International Financial Reporting Standards (IFRS) for fixed interest security subtypes 19, 20 and 22 (with sinking fund). This extended functionality, will be applied to: • both sub portfolio and propagated portfolio levels, in line with existing functionality. • new sale transactions and existing sale transactions that have been deleted and re-

Category	Item	This enhancement will…
		entered after the implementation of this enhancement.
	Ex period in Business Days	Provide the ability to derive and populate the ex-date of fixed interest coupons correctly when generating interest schedules and interest entitlement transactions. This can be done through manual entry or autobatch, using predefined rules around non-business days and coupon mode. To facilitate this enhancement a new field, *Ex period mode*, will be added to the Calculations frame on the **Main** tab of the **Security Maintenance** window.
	Compliance Check by Clean Value for Fixed Interest	Provide the ability for the Compliance Exception report to value fixed interest instruments using either the market or the capital value.
	Interest Tables	This project expands the interest rate table code from two characters to four in all instances in which it is used in HiPortfolio. In HiPortfolio, interest rate tables can be attached to either money market accounts or variable rate bonds. Currently, the HiPortfolio interest rate table code is only 2 alphanumeric characters. Therefore, only a maximum 62 x 62 = 3,844 (A-Z, a-z and 0 to 9) of tables can be created before the combination of codes are used up. It is very difficult to re-use the interest rate table codes as the life of the bond can be as long as 5 years.
Investment Strategies : Swaps	**Entry on one Leg of Swap**	Introduce a new module, Swap Notional Adjustment (S1), that, when enabled, will provide the ability to cater for notional adjustments for Mark to Market cross currency swaps. It will do this by introducing a new adjustment subtype that allows you to define the amount by which to adjust the face value and cost for one leg of the swap.
	Processing Inflation Linked Swaps	Provide the ability to set up and administer the following swap types in HiPortfolio: • Compounding Accruals Swaps

Category	Item	This enhancement will…
		• Inflation Linked Swaps
	Swap Conversion Tool	Identify any changes required to the Bulk holding conversion (BCHLDUPD) utility and provides the ability to convert an FI-04 Australian indexed security to an FI-21 Swap security.
Market Regulatory	**US Regulatory 2014**	Ensure the quarterly and annual regulatory reports for all US accounts and year end reports for US entities meet the US Regulatory requirements as defined by NAIC.
Corporate Actions	**Capital Events**	Build on existing corporate actions functionality: • provide core capability to interface capital events between XSP and HiPortfolio • deliver a defined set of events as core capability • provide end to end oversight of the process from an STP perspective
	HiPortfolio Asset Class to XSP Product Mapping	Provide: • a new lookup table to map specific HiPortfolio security category subtype combinations to an XSP product type • an update to the XSP security entity to deliver the mapped product type attribute within the XML message for XSP • validations and associated logging of exceptions

	Advanced XSP Integration and Straight-through-processing	• Enable HiPortfolio to consume collective investment scheme data from XSP, which is now able to source this data in global markets, through SWIFT messages.
		• Provide the ability to determine, at any point in the day, the correct eligible positions.
		• Enable the straight through processing of corporate actions announcements from XSP to HiPortfolio, resulting in:
		    • reduced costs through decreased manual intervention
		    • timelier processing of corporate actions
		    • less risk of incorrect corporate action information in HiPortfolio

Category	Item	This enhancement will…
	Closed Market Processing	Provide the ability to run autobatch: • for a single security • for an across fund portfolio • for a defined group of securities, enabling • for different regions to be processed separately

	Automated Income Announcements	Automate the deletion and regeneration of transactions arising out of a change in a dividend announcement. This project introduces:
		• a new module to control deletion and recreation of existing transactions affected
		• a new flag in fund maintenance to identify treatment of affected dividend transactions
		• a new flag in user maintenance to control a user's ability to delete or update existing dividend schedules
		• changes to dividend schedule maintenance to:
		    • support the new module's functionality
		    • viewing a history of all audit records for a dividend schedule entry
		• changes to autobatch functionality to support the update of identified schedule records during processing
		• changes to transaction processing to support:
		    • updating schedule record status
		    • distribution component update functionality for 0S-03 and OS-09 securities
		• updates to various reports, interfaces and DROs

Unit Pricing & Reconciliation	**Exception Checking UPW**	Introduce the ability to track and report exceptions in the unit pricing process. It will include the ability to: • retrieve, display, filter, and report exceptions • conduct a full audit trail of exceptions and track the history of each exception • identify the exceptions that have a significant impact on the overall price movement

Category	Item	This enhancement will...
		• report and export exceptions • include portfolios across all funds in the Workbench and obtain a universal view of the status of the entire pricing operation.
	Unit Pricing Automation	Provide the ability to import ASCII data into UPCSFIL at subportfolio level. The changes made in this enhancement also allow the running of sequential unit pricing programs in HiPortfolio to be fully automated without the need for manual intervention.
Taxation	**TOFA take-on function**	Allow the purchase transaction ID, created by the Bulk Security Conversion function, to be reported using the Tax Report Generator.
	TOFA Units Reconciliation	Allow the reporting of TOFA adjusted units (the latest face value after adjustments and principal payments as at the TOFA generation or unwind date) in the Tax Report Generator.
	TOFA for Ex-interest Purposes	Change the TOFA data generation engine when processing parcels acquired on an ex-interest basis, and change the TOFA calculation engine when deriving the market value for ex-parcel basis.
	TOFA Units versus Tax Parcel	Change the TOFA Data Generation to match TOFA units with the corresponding tax parcels, instead of deriving units.
Operational Control & Automation	**All funds no passwords**	Provide the option to enforce password protection when running Report Generator (RG) reports across all funds. It will do this through the introduction of a new RG module parameter, Bypass fund passwords. This parameter will determine whether the RG report execution job processes all available funds without prompting for a password on password-protected funds.
	Multi-pricing	Provide the ability to define a system wide default pricing hierarchy that will control the price source for holding valuations.
	Post MtM Reset Transaction Journals	Provide the ability to: • Create book value adjustment records for disposal transactions when running incremental mark to market, tax/costing

Category	Item	This enhancement will...
		update or IBVSALE utility • Create GL journals for book value adjustment records made when an incremental MtM updates a book cost • Post book value adjustment records to the Gl using standard GL integration or soft GL integration
	CN Clean Pricing	Provide the ability to value a convertible note correctly by using the clean price and then adding the accrued interest amount up to the valuation date.
	Costing Unwind Multiple Input	Provide the ability to unwind costing for multiple securities across multiple fund, security and portfolio combinations.
	GL Timestamps	Provide the ability to specify a start and end time when executing a General Ledger report.
	Journal Import Account Creation	Provide the ability to automatically create missing accounts in a GL fileset from the root account defined in the master fileset, when a batch of journals is imported using the Import batch journals function.
	API Tagged Parameters	Make several processes CC-API aware.
	Console Completed Jobs	Provide the ability to report console job start and end times with higher precision, allowing for more accurate job duration benchmarking.
	Pervasive Quiesce	Provide the ability to take a consistent logical backup of the HiPortfolio database without forcing all users to exit the system.

	Business Intelligence Framework Upgrade	Provide additional functionality to the following areas through the introduction of upgraded components, bring HiPortfolio in line with current Anova capabilities:
		• Tables and graphs
		• User designed visualisation components
		    • Ability upload
		    • Ability to add to customised dashboards

	External Task Agent	Provide the ability to run HiPortfolio API aware programs and RG reports externally from the HiPortfolio system.

Category	Item	This enhancement will…
	Events Infrastructure	Build the framework that will enable a message broker service, so that when an event happens in HiPortfolio a message can be sent. Messages can vary in type from Email, RSS feeds, SMS messages and operation dashboards.
Platform & Deployment Initiatives	**Certifications**	Certify: • Windows 8 • C-tree

New Modules in version 14.0

The release of HiPortfolio/3 version 14.0 introduces the following new modules:

Book Value Adjustment (BV)

Introduced by enhancement: D06682-A:

This module allows you to create book value adjustment (BV) records for disposal transactions when running an incremental mark to market (MTM), Tax/Costing update or the IBVSALE utility. Book value adjustment records can be posted to general ledger using Soft GL (SG) or General Ledger Integration (GI).

UK EI Amortisation Method (EM)

Introduced by enhancement: D06542-A

This module is used to achieve compliance with amortisation requirements as outlined in the International Financial Reporting Standards (IFRS), as interpreted in the Investment Management Associations (IMA) Statement of Recommended Practice (SORP) for the Financial Statements for Authorised Funds, issued in 2010.

This module supports the following amortisation requirements:

- Use the effective interest method to calculate the effective interest rate. For portfolios with holding level amortisation, this method is used at a holding level, instead of a weighted-average method from the portfolio’s transactions.
- Recalculate the effective interest rate when there are new purchases (if holding level amortisation applies) and coupon rate changes.
- Maintain the effective interest rate and adjust the amortised cost when a fund manager changes their views on the likely call date.
- Maintain the effective interest rate and adjust the amortised cost when there is an impairment. Post the changes in the amortised cost to the General Ledger as a movement between:
  - a capital and a revenue account
  - two capital accounts (this is required for AG8 changes).

This module does not have any parameters.

Compounding Accruals Swaps (S2)

Introduced by enhancement: D06360-A:

This module allows you to:

- specify a swap security coupon as compounding
- specify an initial rate for a compounding swap
- specify a payment lag for a compounding swap
- create and maintain a compounding schedule for an FI-21 swap security

External Task Agent (TA)

Introduced by enhancement: D06571-A:

This new module allows clients to run HiPortfolio API aware programs and Report Generator (RG) reports externally to HiPortfolio (ie, without directly accessing HiPortfolio) and without the need to add a task to the CCAPI Slave Queue.

Inflation Linked Swaps (S3)

Introduced by enhancement: D06360-A:

This enhancement introduces the Inflation Linked Swaps (S3) module to HiPortfolio. This module allows you to specify:

- a swap leg as inflation linked
- an initial rate for an inflation linked swap
- a lag time for an inflation linked swap

Pervasive Quiesce (PQ)

Introduced by enhancement: D06906-A: Pervasive Quiesce

This module gives access to a new command-line tool, hiport_pquiesce.exe, which makes use of the Backup Agent provided by Pervasive to provide functionality similar to C-tree Quiesce.

Post Dividend Changes (PC)

Introduced by enhancement: D06638-A:

This new module allows you to reprocess dividend entitlements affected by a change in a dividend schedule.

Security Filters (SF)

Introduced by enhancement: D06690-A:

This enhancement introduces the new Security Filters (SF) module. This module allows you to access:

- the new Security Filter menu function
- the new option to run the autobatch process for a security filter or security filter group.

Swap Notional Adjustment (S1)

Introduced by enhancement: D06554-A

This module is used to create adjustment transactions that increase or decrease the notional face value of one leg of a swap. These transactions also generate a cash flow. This module does not have any parameters.

Compounding Swap Accruals (S2)

Introduced by enhancement: D06360-A

The Compounding Accruals Swap (S2) module allows you to:

- specify a swap security coupon as compounding
- specify an initial rate for a compounding swap
- specify a payment lag for a compounding swap
- create and maintain a compounding schedule for an FI-21 swap security.

When active, you will have access to the following new windows:

- access the new **Swaps Compounding Schedule List** window
- access the new **Swaps Compounding Schedule Maintenance** window
- access the new **Swaps Compounding Schedule History** window
- access the new **Swaps Compounding Schedule History Maintenance** window HiPortfolio.

Inflation Linked Swaps (S3)

Introduced by enhancement: D06360-A

The Inflation Linked Swaps (S3) module allows you to specify:

- a swap leg as inflation linked
- an initial rate for an inflation linked swap
- a lag time for an inflation linked swap.

CA Integration XSP Capital (X2)

Introduced by enhancement; D06839-A

This module controls the integration through the XSP.CORPORATEACTIONS entity for the integration of capital events into the Capital Events (CE) module inside HiPortfolio. This module is administered externally and does not have any module parameters.

Chapter 4: Immediate Priorities for 2014

Investment Strategies

Extension of Fixed Income Amortisation

This project will introduce a new method of calculating amortisation, which is in line with the Investment Management Association's (IMA) Statement of Recommended Practice (SORP) and Financial Statements for Authorised Funds.

The effective yield method uses an effective interest rate (EIR) to allocate interest income in such a way as to achieve a constant rate on the carrying amount. The EIR inherent in a financial instrument is the rate that exactly discounts the estimated cash flows associated with the financial instrument through the expected life of the instrument or, where appropriate, a shorter period to the net carrying amount at initial recognition.

- For a debt security bought above par, the premium will be amortised to the assumed maturity date. The actual effect of this is a posting that reduces interest income and book cost over each accounting period until maturity or sale.
- For a debt security bought below par, the discount will be accreted to the assumed maturity date by way of a posting that increases interest income and book cost over each accounting period until maturity or sale.

Money Market Fund

Money Market Fund (MMF) is a common mutual fund type in the domestic China market. With the bilateral openness for insurance companies in China, insurance asset management companies are allowed to launch mutual fund products under permission. So, there is a challenge for HiPortfolio to deal with the mutual fund business in a more sound way. MMF valuation compared to regular mutual funds requires the following calculations on a daily basis:

a. Shadow pricing, which can be calculated in HiPortfolio using the Unit Pricing cost sheet, based on the assumption that the price interfaced to HiPortfolio is the price already calculated and ready for shadow pricing

b. Portfolio duration

c. Daily return per 10000 shares

d. Annualised seven day return

e. Daily unit price normalised to 1, which is calculated through the Unit Pricing cost sheet with postings to the General Ledger also triggered by Unit Pricing.

This project will concentrate on building a robust platform in HiPortfolio for processing MMF, focusing on the calculations for b) Portfolio duration, c) Daily return per 10000 shares and d) annualised seven day return.

Repos

A repo (also referred to as a repurchase agreement) is an agreement for the sale and then re-purchase of a financial asset at a future date, with the contract involving a component of a charge called repo interest/yield. A repo for one party is a reverse repo for the opposite party.

Enhancements to how these events are recorded in HiPortfolio and improvements to processing and reporting capabilities around these events are being considered. Changes to this area would ensure clients can be more efficiently achieve transparency in reporting, as well as correct tax and accounting treatment.

Stock Lending

Stock lending is becoming increasingly popular in both the Chinese and Thai markets. DST is working with clients in these countries to look at way to manage the stock lending process in line with their market requirements.

Syndicated Loans

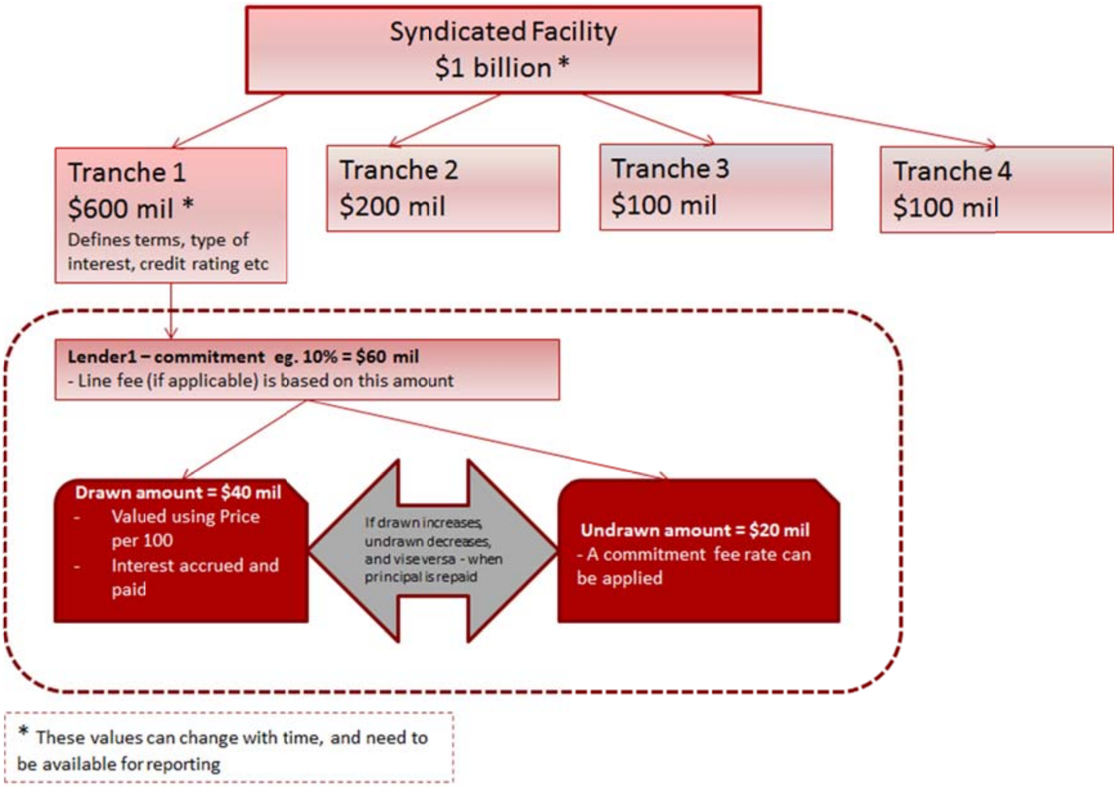
A syndicated loan is a type of credit offered by a group of lenders (called a syndicate) who work together to provide funds for a single borrower. The borrower could be a corporation, a large project, or sovereignty (ie, a government). The loan may involve fixed amounts and terms, or a credit line (revolving loan facility), or it could be one or many of each of these types under a single credit facility. If a borrower requires a large or sophisticated facility of different types of loans, a syndicated loan simplifies the process for the borrower as a single agreement covers the whole group of banks and types of loans.

For the lenders, the benefit of syndicated lending is to spread the risk of a borrower default across multiple lenders or investors. Syndicated loans have also gained popularity as an investment vehicle in the current post GFC1 environment where the bond market has gone flat.

At the start-up of the facility, each lender agrees to a commitment amount that is based on a percentage of the total agreed facility amount (the facility can also be broken down into tranches – as described below). With time, the total amount of the facility/tranche can change. This will often vary the commitment percentage but not the commitment amount. It is also possible to vary the commitment percentage with time

1 Global Financial Crisis

The following diagram illustrates the structure of a syndicated loan facility.



This roadmap item covers the analysis on the ability to process syndicated loans from the lender side within core HiPortfolio functionality that extends to:

- Maintenance
- Pricing
- Transaction processing
- Valuation and reporting
- Accounting
- Tax

Taxation

Taxation of Financial Arrangements (TOFA)

Projects are underway to ensure that instruments such as ABS/MBS and swaps are handled correctly under the TOFA compounding accrual method. For example:

- when a swap is forward starting
- when an ABS or MBS is traded in a blackout period

DST is also continuing to monitor on-going revisions of the TOFA (Tax Laws Amendment (2013 Measures No 1) Bill: Taxation of Financial Arrangements (Stages 3 and 4 Part 1) and Federal Budget changes 2013), and accessing the potential impact on the client base as these changes are released.

Managed Investment Trusts (MITs) – new tax regime in Australia

There are a number of proposed changes to the way MITs are treated from a tax perspective, which may have potential to impact HiPortfolio. The Australian Treasury has been in consultation with industry associations including ACSA and FSC in order to address:

- the issues with definitions of trust types and statuses
- options and regulations for unders and overs reporting
- impact on investors and trustees where tax attribute reporting does not meet required thresholds.

The current commencement date for this new legislation is 1 July 2014. Specific details of the regime are yet to be announced by the Treasury, and as the Exposure Draft details are released DST will continue working with industry associations and the client base to analyse the impacts and access any necessary changes to HiPortfolio.

UK CGT Alignment

Every investment and wealth management operation must have a tax solution capable of calculating capital gains tax (CGT) quickly and accurately across increasingly diverse and complex investment portfolios. The systems and processes involved must support liability CGT calculations for private and corporate clients, at both portfolio and group levels.

DST's OCGT solution calculates gain and loss for the purposes of CGT, according to the taxation rules applicable in the United Kingdom defined by the Inland Revenue and is a discrete system that can be implemented by any organisation, irrespective of the Trade Processing System that is used.

The solution is a rules-based, global tax calculation engine which has been delivering an integrated, dynamic capital gains and income tax calculation and reporting solution for over 16 years.

It combines optimised and/or multi-threaded processes for fast processing and provides customisation to tailor to any implementation.

The ability to allow a flexible installation provides database security through optional UNC support, and OCGT can work in conjunction with any asset management system and is fully compatible with HiPortfolio and includes interface functionality.

Corporate Actions

Capital Events Automation

Expanding on the Income automation introduced in HiPortfolio version 3.13, this project will introduce new mapping routes through HiPortfolio to the DIF to enable the automated processing of capital events directly using the Capital Events (CE) module.

Closed Exchange Processing

This project is focused on introducing improvements to the Autobatch function through more advanced selection criteria, which will allow better control over jobs to be processed.

Automatic Income Amendment Processing

Some securities, such as Japanese shares declare dividends on an estimated basis. This means that key data items such as dividend rates and settlement dates may change between the ex-date and the settlement date. Actual dividend rates are only advised close to the settlement date. Revisions can occur several times between the ex-date and the pay date. New functionality being considered includes:

- the ability to record changes against dividend schedules
- the ability to automatically generate deletions and regenerations of entitlements, either:
  - fully, or
  - for difference
- the ability to show historical changes to dividend schedules
- the ability to provide an STP solution as part of the overall Corporate Actions proposed solution

HiPortfolio Asset Class XSP Mapping

XSP use the ‘product type’ definition to workflow announcements which require different pieces of information. So for example, on fixed income they will have an interest announcement workflow process which is triggered.

The XSP product type configuration and workflow is configured per client in XSP and varies with each implementation, which could change over time although only occasionally. This project will provide the ability to link a HiPortfolio category and sub type value to an XSP product type value.

XSP Transaction ID Entity

This project provides the ability to determine, at any point in the day, correct eligible position keeping and reconciliation between XSP and the HiPortfolio Corporate Actions solution.

Dividend Announcement on Collectives

In HiPortfolio, the capture of dividend announcements for Collective Investments (Unit Trusts or OS03s in HiPortfolio) allow for additional fields, not available for standard ordinary shares (OS00s), to be captured as part of an announcement. These additional fields are components of the dividend rate and are used for tax, cost apportionment and GL posting purposes. The components associated with a unit trust instrument are: Equalisation rate and Interest coupon rate.

Currently, users can interface unit trust income events from XSP to HiPortfolio without the components for OS03s mentions. This represents not only an operational risk, but also an overhead to manually edit announcement records to capture the data required.

This project will enable HiPortfolio to consume collective investment scheme data from XSP, which is now able to source this data in global markets, through SWIFT messages.

Corporate Actions Production Ready

This enhancement introduces:

- interfacing of Brazilian dividends through the XSP.INCOME entity
- validation of payout currencies from an XSP announcement to the security currency within HiPortfolio
- modifies existing validation within the XSP.INCOME entity to allow announcements with unknown payouts, multiple payout types, blank amounts or unknown payout types to be successfully interfaced
- the correct population of dividend values using gross and net amounts
- users to specify the frequency of message polling
- the extraction of positions and accounts by portfolio grouping codes
- the correct settled position and zero holding positions to be sent to XSP
- the correct population of a security record to XSP

Unit Pricing & Reconciliations

New Operation Dashboards

The introduction of the HiPortfolio Web UI enables the provision of flexible and configurable user interfaces for a variety of business functions. This project will explore and validate options to display UPW exceptions, through a tailored Web UI. A wider programme of exceptions management will also be explored, including direct integration with HiPortfolio's Reconciliation capability. Leveraging the proposed Events framework, these new dashboards would be driven by direct notifications published as events from across the HiPortfolio system.

Data Locking & Snapshots

This project will explore options that enable HiPortfolio to be the single source of truth for all investment accounting data, whereby positions and reference data can be reproduced at a specific point-in-time for unitised and non-unitised portfolios. Locked data could be used for processes such as unit pricing, reporting and reconciliation.

Data Presentation

User Interface Initiatives

Investigating ways to leverage the Smart Client infrastructure within HiPortfolio's Web UI, and exploring options to provide functionally rich user interfaces to replace existing HiPortfolio screens.

Business Operational Dashboards and Workstations

Building on the Smart Client infrastructure within HiPortfolio's Web UI, this project will provide a centralised view of operational checkpoints for key HiPortfolio business processes.

There are two main aspects to the operational dashboard:

- the ability to display, for a range of processes, a process' status based on defined criteria, and underlying information
- the ability to generate notifications/alerts based on defined criteria, ie, manage by exceptions

Additionally, the ability to capture and analyse trends in meeting operational milestones will assist clients in actively managing operational workflows and triggering continuous improvement.

Business Intelligence Improvements

- Improving the Business Intelligence capability will take advantage of the latest Smart Client technology (browser based thin client GUI) to provide users with the ability to present HiPortfolio data in user-defined, highly customisable dashboards. Some of the aspects of this capability are:
- flexibility on data selection criteria
- ability to bring various data items together in a single view
- ability to tailor the level of data displayed
- ability to filter, sort, drill down and drill through the data
- ability to present data using rich visual tools
- ability to access quick/real-time data
- ability to manage access to specific data for specific users

Advanced Reporting (including leveraging Anova)

DST's Anova product allows the aggregation of data from multiple sources with advanced and flexible reporting capabilities. DST will explore options to leverage this capability, either directly within HiPortfolio or through a fully integrated HiPortfolio-Anova offering.

Market Regulatory

US regulatory reporting

All insurance companies undertaking business in the United States are required to file financial reports. The reporting regulations are defined by the National Association for Insurance Commissioners (NAIC). DST will continue to track regulatory changes as they vary from year to year and align HiPortfolio capability with the most up to date guidelines issued by NAIC.

IFRS Phase 1

IFRS Phase 1 Classification and Measurement of Financial Assets

Under IFRS 9 the following two measurement categories for instruments are permitted:

- Fair Value
- Amortised Cost

Previously under IAS39 instruments there were four categories of measurement:

- Financial assets at FV through P&L
- Held to maturity (HTM)
- Available for sale (AFS)
- Loans and receivables

Enhancement is required to bring HiPortfolio into line with the new terminology and categorisation used in IFRS9 and to assist clients to move from compliance with IAS39 to compliance with IFRS9.

There are two further main phases of IFRS9 that will not be covered by this project:

- Phase 2 – Impairment
- Phase 3 – Hedge Accounting

Continue to Track Dodd Frank, MITR, FATCA, MIFID with Impact Assessments

DST is committed to continually monitor developments in the Global Regulatory space. As regulations move through consultation to approval, DST will engage with clients to establish impacts and client specific requirements to enable solutions to be defined and delivered.

FATCA Compliance

The provision commonly known as the Foreign Account Tax Compliance Act (FATCA) became law in March 2010. The FATCA requires clients to collect and record specific personal information about their investors to help identify US indicia.

FATCA was designed primarily to combat offshore tax evasion by US taxpayers with foreign accounts and offshore assets.

HiTrust has been enhanced to introduce a new FATCA module that provides the following functionality:

- Several new fields and functionality to identify US indicia to assist with reporting and FATCA compliance.
- The ability to capture and identify an investor as a US person, resident alien, recalcitrant account holder etc.
- Algorithms to validate US Global Intermediary Identification Number (GIIN) and US Taxpayer Identification Number (TIN).
- Flexibility to expand FATCA functionality to position for potential similar future provisions by other countries.

Integration & Data Management

Enterprise and Data Integration Framework Extensions Building on Current Capabilities

The HiPortfolio Data Integration Framework (DIF) makes use of an existing application template that forms part of DST's broader product integration strategy. The HiPortfolio DIF can potentially be leveraged to solve wider integration challenges specific to client demand. This project will continually assess client integration requirements and explore opportunities to enhance the DIF capability to meet needs.

Pervasive Quiesce Backup

Pervasive offers a backup solution called the Backup Agent. This places the database in a "quiesced' state, allowing a valid backup to be taken without having to disconnect all clients. This project will introduce a new command-line tool, the Pervasive Quiesce tool, to make use of this backup agent, which will provide functionality similar to C-tree Quiesce. This new tool will ensure that HiPortfolio is at a "SAFE" point before activating the backup agent.

Database Initiatives with partner vendors

Improved database security

Traditionally, HiPortfolio connects to a database without any rigid authentication to the database. This makes implementation and management of the HiPortfolio database easier. However, this may cause concern to those organisations that need to meet security requirements.

This item is primarily aimed at the improvement of capturing database access at a specific HiPortfolio user level.

Improved database monitoring

Introduction of database monitoring tools will give operations staff a clearer view of how the HiPortfolio system is performing. Improved monitoring will help capture potential issues before they become problems.

Database Partitioning

Partitioning could allow many benefits ranging from potential performance improvements to more flexible management of the database storage.

Continued performance improvements

A number of improvements are being planned to improve the performance of HiPortfolio processes. Some of these initiatives include:

- investigating a change to make access of database records more efficient by allowing multiple records to be retrieved in a single request
- improving efficiencies of specific processes, such as costing updates.

Platform and Deployment

Linux

Continuing the strategy to lower the cost of ownership for HiPortfolio clients, DST is committed to the provision of further deployment options.

Program Isolation

Providing the ability to install patches to HiPortfolio with minimal impact to existing operations, in order to reduce the amount of retesting required during implementation.

Diagnostic Benchmark Tool

This item would provide a tool to enable diagnostic and benchmarking tests to be performed in a client's environment. The output of this tool would allow for easy comparison of impacts that an environmental change might have on the system.

Hosted Deployment

DST is exploring options that would allow HiPortfolio to be deployed on a hosted environment. This could help reduce client's cost of deployment by being able to use hosted services.

Global Delivery Model and Upgrade Initiatives

DST is investigating ways to provide improved delivery options including Client Centre download, program traceability and efficient incremental releases.

Architecture and Framework

Event Message Broker & Framework

Automation will allow for process efficiencies and improvements within the HiPortfolio ecosystem. The roadmap items in this section concentrate on flexibility that will help reduce total cost of ownership while at the same time adding extra functionality.

Events

In the HiPortfolio environment an 'Event' is defined simply as 'something that has happened'. It could be that a process has started or that some issue has occurred.

A HiPortfolio event is a small message for notification to other components within the ecosystem. DST is exploring the technical framework needed to support event message capture and distribution. This capability will open many further use-case opportunities from Unit Pricing workflow management to a fully integrated exceptions management framework.

Business events

Business events concentrate on notifications that refer to a business process. It may be that the process has started late or is overdue. With these events other components (like the proposed DST dashboards) can track the events to help monitor the flow of the business processes.

Technical events

Technical events are all events that are not business events. An example may be a warning status from the database or an indication that the amount of free disk space has reached a threshold. Technical events can also be published to dashboard components to help operations staff monitor the state of HiPortfolio.

Business services

The Business service item is intended to expose the existing business functionality in HiPortfolio across an industry standard interface. A business service is sent to HiPortfolio to request HiPortfolio perform some type of business function.

The business services in this item are intended to be loosely coupled service requests that help make them technology independent.

JVM HiPortfolio

DST is exploring options for releasing HiPortfolio within a Java Virtual Machine (JVM). Launching HiPortfolio within a JVM offers options to leverage industry standard tools and easily integrate with various technologies.

JVM is a common environment in most enterprise businesses and people with skill sets for managing and configuring JVM environments are usually easy to find.

Migration to a JVM will help give HiPortfolio a level of future-proofing.

External Authentication Framework

Often referred to as LDAP the external authentication model is a way for centralising management of user authentication.

Note: LDAP is not an external authentication model. It is a protocol and is one method of implementing an External Authentication Model.

External Task Agent

The External Task Agent (ETA) will extend the existing Slave API to allow any slave aware task to be triggered to run synchronously or asynchronously remotely.

The ETA provides access to a loosely coupled interface that allows external systems to trigger and execute HiPortfolio functionality. The ETA can be thought of as a prelude to services.

Business Function Services & Web Services

Expanding on the ETA, services are designed to open further business operations to external control, both in the local environment and via web services.

Unlike the ETA these services are the individual business functions that make up a specific slave task. This will allow for a variety of opportunities to enable flexible integration into an enterprise environment.

Chapter 5: Roadmap Forward Focus (version 15.0, 2015 and Beyond)

Investment Strategies

Multi-exchange Rate Coverage

Building on the Multi-pricing concept and capability within HiPortfolio, this project will explore options to support multiple foreign exchange rates from different sources for client reporting and accounting needs. The project would add a new module to allow users to define exchange rate sources at portfolio level.

Support ETF Investing

With the growing trend towards Exchange Traded Funds (ETFs), DST will continually assess options to service more of this capability within HiPortfolio as well as opportunities to leverage HiPortfolio's sister products Anova and HiTrust.

Taxation

Support for Market Specific Tax Regime Changes

DST is committed to understanding and responding to market specific tax regime changes as proposals are issued and guidelines are agreed. DST is an active member of the Australian Custodial Services Association (ACSA) Corporate Actions Working Group in Australia.

Market Regulatory

DST is committed to understanding and responding to regulatory change as proposals are issued and regulatory guidelines are agreed. Employing a dedicated team engaged with Global regulatory forums, DST is well placed to support client needs through regulatory change.

IFRS Phase 2

IFRS Phase 2: Amortised Cost and Impairment of Financial Assets & Hedge Accounting

DST will continue to track the phase 2 proposals and assess solution options for validation with impacted clients.

Corporate Actions

Automation of Investment Accounting for Electives

Part of corporate action development roadmap.

Given the manual overhead and inherent risks associated with the management of electives, DST will explore options to introduce a level of automation to the investment accounting of electives.

DST is an active member of the Australian Custodial Services Association (ACSA) Corporate Actions Working Group in Australia.

Unit Pricing & Reconciliations

Workbench Overlay to Improve User Operational Experience

This project will explore options to leverage the SmartClient capability within HiPortfolio's Web UI allowing rich, flexible visuals and enhanced capabilities to compliment Unit Pricing and Reconciliation tools within HiPortfolio.

Unit Pricing Roadmap

The Unit Pricing roadmap contains candidates that are intended to enhance the overall efficiency of the unit pricing routines. The vision is to enhance the ability to calculate and manage the unit pricing process and covers a number of unit pricing processing stages

Reporting

Advanced Reporting (including leveraging Anova)

DST's Anova product allows the aggregation of data from multiple sources with advanced and flexible reporting capabilities. DST will explore options to leverage this capability, either directly within HiPortfolio or through a fully integrated HiPortfolio-Anova offering.

Exceptions Management

Building on exception visualisation through HiPortfolio's Web UI, this project will explore enhanced capabilities to not only view but also manage exceptions for key functional processes.

This project may include:

- the ability to take remedial actions to resolve exceptions
- the ability to maintain auditable information of exceptions and resolutions
- the ability to manage stale and unchanged prices.

Post Trade Processing

Buy-side firms and Asset Servicers are looking to automate and reduce operational risk around Electronic Trade Confirmation (ETC) and Electronic Trade Settlement (ETS). This is being achieved by automating the linkages to market infrastructure and in some cases connecting to matching platforms and the SWIFT network for the first time. Post Trade Processing covers the part of the investment lifecycle from the point of the order being executed through to settlement, For this process to operate efficiently requires integration between front and back office, and also the management of information submitted to external utilities for matching and settlement.

DST is looking to address the market challenges associated with post trade processing and the move to a T+2 settlement cycle. With an integrated HiPortfolio solution, DST will provide our clients ETC/ETS and broader SWIFT messaging capabilities

Appendix A: Delivered Roadmap Items

Version 13.0 Delivered (previously referred to as 3.13)

Category	Item	This enhancement will…
Investment Strategies	**FI Instrument:** **Indexed Annuity**	Enables the use of one security (that uses the economic cost valuation method) for multiple purchases
	Bonds traded in lots	Provides an option to maintain the lot size for standard fixed rate bonds FI-00, and have the lot size recognised throughout the system
	First Coupon of a Swap	Provides the ability to automatically derive and populate the coupon rate in the interest schedule, for the first coupon period of a swap's floating leg, using the predefined rules around non-business days, days to fixing and the interest margin.

	Instrument:
	MBS/ABS/US TIPS
		• Provides the ability to report on the profit and loss for MBS/ABS from principal repayments. This value is:
		  • calculated using the tax cost (not the accounting cost)
		  • reported for non-TOFA parcels separately
		• Enables MBS and ABS subtypes (FI-19 and FI-20 respectively) to handle the ex-interest period
		• Enables the ABS/MBS/US TIPS Security Conversion to facilitate security setup workarounds converting into built-for-purpose instrument types
		• Enables bulk security code change
		• Enables direct menu access to the interest margin rate maintenance

Category	Item	This enhancement will…
	Negative interest rates and yields	Provides the ability to record, maintain and report: • negative interest rates on money market deposits, redemptions, renegotiations and interest receipts • negative yields on bond issues • negative coupon rates
	Transaction Processing **Inter-portfolio transfers - average costing**	Enhances the Bulk Portfolio Transfer (BT) module for sub-portfolios with the following conditions: • when the parcel basis is Matching costing and the costing method is Average cost in Portfolio Maintenance • when the portfolio is part of a propagating structure whereby it is linked to a propagated portfolio with many sub-portfolios
Market Regulatory	**US Regulations 2012 Annual Changes**	• Enhances the US Regulatory Reporting (RI) module to meet NAIC's regulatory changes requirement (including Statements of Statutory Accounting (SSAP) No.100 - Fair Value Measurements) • Enhances the client's Automated Valuation Service (AVS) interface file format changes
Corporate Action	**Corporate Action**	• Provides Income CA API and associated components • Develops Complex Corporate Actions API • Enhances income import – including Unit trust items and changes to recognise a unique event identifier • Provides the ability to import capital event announcements (change, add and delete) • Provides components in the integration layer to support the integration of the capital event announcements • Maps XML formats to IDX formats for HiPortfolio import • Provides an interface for data from HiPortfolio to the Source Data System and Management Control component covering security and portfolio changes, and holdings by portfolio by location code

Category	Item	This enhancement will…
Integration & Data Management	**Data Interface Framework (DIF) Phase 1**	Creates the DIF as a component of HiPortfolio. This HiPortfolio DIF application is used primarily for data transformation from one format to another.
Reporting	**Business Intelligence (BI)**	Enhances this module, which allows the construction of highly personalised presentations of HiPortfolio data through the use of subject specific visualisation components that can be dragged onto reporting dashboards
Technology Initiatives	**C-tree**	Upgrades to C-tree Server 10
General Ledger	**Cost of Cash Recalculation**	Enhances the Money Market (MM) module to automate the recalculation of the cost of cash on money market transactions
	INGLFACE on an Incremental Basis	Enhances the INGLFACE function providing: • the option to extract only new records to a text file when running the program more than once on the same day • the ability to purge posted GLH records as well as posted GL records
	GL API Aware	Enhances the GL batch journal import program to be slave and API aware, providing the ability to import and update GL transactions to the HiPortfolio GL automatically.
Tax	**Tax Tables and Dividend types**	Provides the ability to report tax details applied to two or more dividend entitlements for the same security/portfolio ex-date combination
	Trade, Announcement and Report Timing for ABS/MBS and Tax Processing	For asset and mortgage based securities, when there are cross-settlement transactions: • ensures that TOFA re-estimations only reduce the amortised cost, when necessary • ensures that the tax/costing update and TOFA only allocates the principal repayment amount to parcels that are eligible for the principal repayment (to be aligned with investment transaction processing).

Category	Item	This enhancement will…
	TOFA	Enhances TOFA functionality for forward start swaps, so that: • TOFA cash flow projections projected before the swap start date exclude coupons • An extra TOFA re-estimation is processed one day before the swap start date, to bring the coupons into the cash flow projection When there is a re-estimation on the same day as the valuation date, the re-estimation is suppressed, ensuring project cash flows are based on the valuation date, rather than the day after.