MPI Stylus 11.6 Release Notes

New features for prior versions may be found appended to the bottom of this document.

Last Updated: 3/11/21

GENERAL

<u>64-Bit Windows Compatibility</u>**:** A 64-Bit version of the application is now available for users operating in a Windows 64-bit environment.

<u>Add to study</u>: The Portfolio Editor now features a checkbox that allows you to add the new portfolio you have created to the active study upon saving the portfolio. (Note that if no study is currently open, this option will not appear.)

<u>Donut Charts</u>: Donut charts have been added as a chart visualization option, and may be used in any scenario where a pie chart option is available.

<u>Graphical User Interface (GUI) Facelift</u>: A new set of skins/buttons/graphical adjustments was applied to the software to modernize and streamline its appearance.

<u>MPT Statistics Block</u>: A number of new calculations were added to this analytic block, including: Arithmetic Average Return; Up Market and Down Market Average Returns; Arithmetic Capture Ratio; and Up Market and Down Market Capture Ratios.

<u>'New' Button Redesign</u>: The 'New' ribbon button has been redesigned and reconfigured. Pressing the button will now open the Portfolio Editor; options exist on the side of the button to scroll to other options, such as creating a new Series.

<u>Open Study Display Order</u>: Users with multiple open studies may now rearrange the order in which these studies are listed/displayed, either through drag-and-drop or the use of a right-click position adjustment menu.

<u>Mouse Scroll Wheel</u>: The scroll wheel on a user's mouse can now be used to 'scroll up' or 'scroll down' the Design Tree without the currently selected Design Tree node, view, report, etc., changing.

<u>Page Controls</u>: Page controls allowing you to type in a page number, or advance/retreat one page, are instituted in the place of prior 'First', 'Last', 'Next', and 'Prev' buttons.

<u>Style Outline Highlight</u>: When a user hovers the mouse over a Style Map on the Design Tree, its component indices will highlight in blue text to help distinguish them from other indices present in the Style Outline node.

<u>Study Recovery</u>: Improvements were made to the Study Recovery interface, including the ability to:

- Sort the list of files by the available column headers (i.e. study name or date)
    - These sort preferences will be maintained if the user has the 'Learn and remember' feature active
- Ability to delete files from the list

<u>Zoom Controls</u>: Zoom controls for Reports were redesigned to allow users to type in a percentage directly in the toolbar, as well as to zoom in or zoom out.

ALLOCATOR

Average Annual Cash Flow: Average Annual Cash Flow options were added to the Simulations analytic.

Risk Parity: Risk parity has been added to Allocator to provide our users with significant new advanced risk capabilities. The User Guide summarizes how to make the most of features, but the following are key additions:

- Risk-Based Weights checkbox in Asset Blends, which enables Risk Parity functionality by allowing users to balance portfolios by risk instead of by asset allocation.
  - Users can have an equally weighted portfolio or specify their own weights.
- Ability to specify different types of risk for allocation (i.e., Standard deviation, downside risk, CVaR)
- Leverage capability against any asset that users can add to their Assets node.
  - Leveraging can be by a fixed percentage or a target risk percentage.
- Ability to use and view Risk Parity portfolios anywhere in Allocator that supports Asset Blends portfolios.

CONFIGURATOR

Default Manager and Index DBs: Adjustments have been made to give users more control over the default Manager and Index DBs that appear in studies. Previously, the application would base this default on the database listed first in your respective list of databases in Configurator. Here are the new settings:

- The system now defaults to a 'Learn and remember' approach, in which the user's most recent preference for the control is maintained. This is done at both a Design Tree node level (i.e. the user may have different preferences for the default DB in each) and for each module.
- Users may also choose to specify 'Use first database in Configurator list' to maintain the previous behavior of the application.
- Users may also decide to hardcode a specific database as their default instead.

Set busy timeout (in sec): This Workspace feature allows the user to specify a timeout mark (in seconds) after which unprocessed requests to the server during busy periods will time out.

AUTOMATION

ASSETBLENDSADD: This statement is enhanced to support elements related to Allocator's risk parity functionality. Users may now specify a risk measure type to use for asset blends that will be defined by their risk-based weights.

REPORTPAGESMOVE: Allows the user to move a page to a different position within a report.

SETCONFIG: Changes configuration settings and applies only those settings to the running instance of Stylus Pro.

SETCORRECTIONDB: Allows the user to add or remove (enable/disable) a correction DB to a series DB.

STUDYOPTION: This script statement has been enhanced to allow you to make changes to Prospector's multi-model options via automation, including disabling the template.

MACROS

@REPORTPAGECOUNT: Returns the number of pages in a specified report.

@REPORTPAGENAME: Returns the page name of a report.

@REPORTPAGESTATUS: Returns a '1' if the report page is checked in the Design Tree (active) and a '0' if it is unchecked (hidden).

Cash Flow Macros: A number of macros have been added to allow users to dynamically pull information about cash flows.

- **@CF:** This macro allows users to bring information in from specific cash flows in the 0-count system (i.e. the first cash flow is 0, the second one is 1, and so on.)
    - o **@CASHFLOW:** This is an alternate version of the macro above.
- **@CF1:** This macro allows users to bring information in from specific cash flows in the 1-based count system (i.e. the first cash flow is 1, the second is 2, and so on.)
    - o **@CASHFLOW1:** This is an alternate version of the macro above.

MPI Stylus 11.5 Release Notes

GENERAL

Chart/Table Designer Updates

- Text has replaced the symbols in the aggregation settings section
- The lower section of the designer has been reorganized with the Regime analysis section moving to the bottom of the designer

REPORTING UPDATES

New Charting Types

Stylus 11.5 introduces new charting options found within Attributes Editor including:

1. Radar Chart – Visualizes performance by making conclusions about strengths and weaknesses and displaying multiple variables relative to the center point.
2. Step Chart – Displays rapid changes that are occurring at random intervals within the data set.

Additional MPT Statistics

Stylus 11.5 introduces additional statistics found within the MPT Statistics Block:

1. Alpha T-Stat - A measure that provides evidence for determining the significance between a difference in Alpha population means.
2. Alpha P-Value - Provides users a method for measuring the strength of sample evidence in hypothesis testing.
3. Alpha Standard Error - The standard error calculates the amount by which Alpha's sample mean fluctuates.
4. Beta T-Stat - A measure that provides evidence for determining the significance between a difference in Beta population means.
5. Beta P-Value - Provides users a method for measuring the strength of sample evidence in hypothesis testing.
6. Beta Standard Error - The standard error calculates the amount by which Beta's sample mean fluctuates.

Other Reporting Updates

1. X Number of Drawdowns – Stylus can now calculate multiple drawdown returns over a single time period, including the duration and recovery of the drawdown.
2. Rich Text in Tables - Stylus now offers the ability to incorporate rich text, such as HTML tags for hyperlinks, in tables.

ADVANCED RISK UPDATES

Scenario Enhancements

Stylus 11.5 improves upon the scenarios and regimes features:

1. Scenario Calculation Transparency – Stylus now provides additional transparency into the calculations used in scenario analysis. This includes additional labeling and new analytics block that detail the calculations.
2. Scenario Disclosures – Stylus has added disclosure notes that provide more background on the scenario analysis which can be seamlessly pulled into a study from the Gallery.
3. Direct Manager Shocks – Stylus now gives you the flexibility to directly shock a manager when using scenarios or regimes. When using this option, Stylus regresses the manager directly against the shocked index and calculates the impact accordingly.
4. Multivariate Shocks – Stylus now allows you to create scenarios that shock multiple indices at the same time. For example, you can create a scenario that includes the following shocks: S&P Down 20%, VIX going to 30 and Yield Curve steepens by 50bps.
5. Index Shock Flexibility – Stylus now allows you to specify and override which factor indices are impacted when a scenario is run.
6. Modify the shock type – Stylus allows you to change the shock type when creating regimes to include percent changes.

Regime Models and Historical Stress Test Enhancements

1. User Interface Changes – The location for selecting Stress Tests and Regimes from the Chart/Table designer has been moved. They can now be selected from under the Date Frequency dropdown menu.
2. Regime Review – Users can now see the impact of all indices when reviewing a regime in the Workspace
3. Add Control for Regime Order – A new column has been added to the Workspace screen for creating regimes so users can specify the order of each sub-regime under a single grouping. This impacts where the regimes appear in the dropdown list and their order in charts and tables.
4. Improved labeling – Users are now able to include a label that provides more background on a regime or stress test, including the number of time periods involved in the test.
5. Improved band/background options – Users can now leverage a Gallery icon to shade the background of specified time periods when selecting historical stress tests.
6. Backfill based on betas – Stylus now allows you to run a stress test or regime mode using a manager's current exposures or average exposures over a specified time period. Previously you could only run the analysis using a fund's actual historical returns.

7. <u>Remove Restriction on Regime Selection</u> – Users can now select regimes across different regime groupings and see them on a single chart. Previously you could only include multiple regimes if they were part of the same regime grouping.

Proxy Enhancements

1. <u>Proxy to Override Months</u> - Stylus now allows you to use a proxy to overwrite specific returns of a manager with a proxy. This feature can also be used to forward fill returns for a fund that is no longer active (in addition to being able to backfill returns).
2. <u>Proxy Screen UI</u> - Updates were also made to the Proxy screen to make the overall process easier. A review screen was added to show all proxied funds in one place. In addition, proxied funds now appear underlined in the Design tree.
3. <u>Additional Proxy Options</u> – Stylus now allows you to specify a benchmark, as well as a peer group or style weighting to serve as a proxy for extending a manager return series.

ALLOCATOR

Glide path functionality

1. Specification of time-dependent weights for asset blends on either an absolute (calendar) schedule or a relative interval.
2. Simulations that reference these changing future weights.
3. Options to change the referenced estimate source over time.

PROSPECTOR

1. <u>Extending proxies to Prospector</u> - Proxy capabilities have been extended to Prospector. Prior to this release, they were only available in the Stylus module. The input node for Prospector is the same as for Stylus and is a sub-node under the Parameters node.
2. <u>Lagged Correlation Function</u> - Stylus 11.5 introduces new functions to Prospector that allow users to calculate correlation and covariance between two return series and adjust these series with optional lag parameters.
3. <u>Layered Universes</u> - Stylus 11.5 introduces enhancements to Prospector including the ability to score funds in a layered manner in the same database. This addresses the issue of ranking changes due to the peer group size increasing over the course of the month as more managers report their returns. One will be able to update the peer group repeatedly and layer new funds onto the original universe without changing the original ranks.
4. <u>Primary & secondary benchmark</u> - Stylus 11.5 allows users to assign a primary and secondary benchmark for each fund in prospector
5. <u>Surveillance: Send to Stylus with model</u> - When sending a manager from Prospector to Stylus, Stylus 11.5 now allows the Stylus parameters, Style outline, benchmark and peer groups to get overwritten with prospector's settings.

PORTFOLIO RISK TEMPLATE (BETA)

Stylus 11.5 introduces new functionality in support of portfolio aggregation templates, allowing risk assessment and analytical transparency at multiple hierarchy levels for fund of fund portfolios. Portfolio risk templates support contribution to risk and performance at sleeve levels such as asset class, region, and style. Stress tests and scenarios are included to demonstrate portfolio behavior under historical and simulated market conditions.

MPI Stylus 11.4 Release Notes

New features for 11.0 and 11.1, 11.2 and 11.3 may be found in the prior Release Notes, appended to the bottom of this document.
Last Updated: 07/17/2018

INSTALLATION

Due to changes in Windows 10 security settings, some users may have previously experienced errors when performing data updates using Stylus Updater. In order to fix this issue and update existing installation to version 11.4 the following command needs to be run by non-admin user account:

takeown /R /F C:\Stylus (replace C:\Stylus with actual stylus home directory; takeown.exe is part of windows)

Alternatively, a user with an admin account can change the ownership of the C:\Stylus directory to the actual user's account.

INSTALL UPDATE TO STYLUS WORKSPACE

Please run **stylusworkspace_database.msi** after finishing installation of Stylus software. This will update the content required to support new features introduced in this release.

NEW RISK ANALYSIS FEATURES

Regime Analysis & Historical Stress Tests – Stylus Version 11.4 introduces new ways of analyzing manager performance under different market environments and historical context.

Scenario Analysis - Stylus Version 11.4 introduces functionality to perform scenario analysis. This feature allows user to analyze manager's potential exposure to various market and economic shocks.

For more information about new risk analysis features please consult AdvancedRiskAnalysis.pdf

PROXIES

Proxies - Users can now extend manager returns using either an automated proxy rule or individual proxy assignment. See ProxyHandling.pdf .

MPI Stylus 11.3 Release Notes

New features for 11.0 and 11.1 and 11.2 may be found in the prior Release Notes, appended to the bottom of this document.
Last Updated: 8/18/2017

GENERAL

Centimeter: The centimeter is now available as a unit of measurement for page margin report design in the European version of Stylus.

Change Point Detection: Change Point Detection is a new way to indicate whether or not the squared residuals present a change in the mean over the time period of the regression that has been added. This can help identify periods for which the manager has shifted away or closer to the systematic return. It can also help refine the analysis by using factors or parameters that do not result in (many) mean changes (change points).

Confidence Intervals Trigger: The user now has the choice of specifying whether confidence intervals for betas will be calculated using Monte Carlo or an analytical approximation. This allows users to favor computing performance vs. accuracy.

Font Selection: Language was changed in Configurator "Fonts" tab to make it more clear what each option changed in the application.

Fractional Area/Cell Margins: Charts in Stylus now support the functionality to allow fractions for margins as a percentage of the page, enabling a user to specify the exact position of the chart with respect to the page margin. This will enhance the appearance of a report and offer better control over positioning charts within Stylus reports.

OLS Unconstrained T-Stats: Stylus now calculates t-statistics and their corresponding p-values for alpha and betas coefficients in the case of Sharpe regression. These can be a useful addition to a set of statistics that determine how good the outcome of a regression is.

Percent Option Added for Chart Size and Placement: Enhancements to the Stylus Dynamic Script allow users to now manage the size and position of the charts within the report page, being extremely accurate with aligning two or more charts.

Performance Enhancement: Previously, certain actions within Stylus's reporting studio would trigger the recreation of the entire report. This would cause performance issues when the reports being recreated were large. This has been adjusted so that actions such as adding or deleting charts/tables/pages, etc., only cause Stylus to recreate the specific item being changed and not the entire report.

Send Current Study to MPI: Send Current Study to MPI Support has been expanded for Integrator. This feature now automatically attaches any Stylus, Prospector or Allocator studies that are loaded in as part of the Integrator study the user wants to send to MPI Support.

<u>Serial Correlation</u>: Sharpe ratio and variance related analytics within the MPT statistics block can now be adjusted based on the amount of serial correlation found in the manager series. This will result in more accurate projections across long horizons. The adjustment is also effective for up/down markets.

<u>Temporary File Names</u>: Stylus now uses a random naming convention for temporary files which was restricted in size in the past.

STYLUS

<u>ARCH</u>: Stylus now offers the ability to examine the presence of heteroscedasticity in a time series. This statistic shows whether the variance of a series depends on previous lags, meaning whether or not it is predictable. Together with serial correlation, displayed via the Durbin-Watson statistic, they can help determine whether a time series is i.i.d. (identically independently distributed) or not. This is particularly useful in style analysis where a good analysis typically coincides with residuals being i.i.d. It can also be used to analyze the volatility patterns of indices or managers to determine how stable its properties are over time, or cross-sectionally across other indices or managers. The statistic can be found in the "performance statistics" block with the name "Mc-Leod Li p-value". A high p-value indicates lack of heteroscedasticity. For cumulative, to-date, and window aggregations, what gets displayed at each point in time is the p-value corresponding to the first 10 lags of the series calculated at each point in time.

<u>Color & Symbol Offsets</u>: New functionality has been added to the Color & Symbol Tab of the Stylus module that provides a way for a user to add custom color without having to add it to the color palette explicitly. This feature supports the syntax for indicating offsets based on the RGB or HLS color description.

<u>Confidence Interval Aggregations</u>: In the Asset Loadings block, if Total is selected, Stylus will now display the confidence intervals as the average across the values of each time point. In practice, such values will be close to each other. Obtaining the average across the time range provides an approximate estimate of the statistic that can be used in statistical inference.

<u>Custom Block Cancellation</u>: Users can now use the Escape button to cancel custom block computations, which can be quite lengthy.

<u>Duplicate Rules</u>: Duplicating rules in both ATF and the Color & Symbol tab has been enabled allowing users easier functionality to utilize previously configured entries as a starting point for additional ones needed. In addition to this, copy/paste functionality has been enhanced for the Color & Symbol tab.

<u>Disable Custom Labels</u>: A new option to hide the custom labels was created to make it easier to see the dates used in a table or chart, without having to remove the text that was manually entered.

<u>Dynamic Scripts in Views</u>: Dynamic Scripting functionality has been added to views. Users can now control the dates and other aggregations using dynamic scripts and macros as previously available in Reports only. Obvious scripts such as Visible and ShowOnWrappedPages will not be applicable.

<u>FSG for Fields</u>: Stylus now has the ability to Filter/Sort/Group Fields in Charts or Tables. This functionality greatly enhances your reporting capabilities by allowing users to apply filters on column/field output, group that data and then sort it. This functionality can be implemented using dynamic scripts or through the FSG Field button at the top of the Chart/Table Designer.

<u>Initial Investment Decimal Values</u>: Previously, an initial investment value (Parameters -> Advanced ->

Initial Investment Value) could not be entered with any decimal places because Stylus would round those values to the nearest whole number. Currently, users can included values with decimals and populate charts/tables showing those decimals.

Overlapping Dynamic Benchmark: The overlapping feature has been extended to dynamic style benchmarks to allow users the ability to output each period's time varying weights into an excel file.

Manager Duplicates: A manager only displays once in each table/chart due to new enhanced macros that determine if a fund added to a study is a duplicate. This can be determined based on the name or ID of the fund.

Peer Group Underlying Assets Currency Conversion: Changes have been implemented in the output window. Mixed Currency is now displayed when the peer universe of managers have different currencies.

PREPROCESSMACRO: A new parameter, called preprocessmacro[], may be passed as input to the @Mng{}, @TableValue{}, and @TableInfo{} macros. This allows for greater flexibility in dynamic lists within Stylus Pro. This new macro may use this information as desired, and it eliminates the need for complicated while-loops within the @expr{} macro, which were previously required to reference a large list of managers.

Sequential Series Adjustment: Series adjustment has been enhanced so that multiple sequential adjustments are now possible. A second control now appears below the first to allow for the second adjustment, and they will be applied in the obvious order.

ShowOnWrappedPages for Tables: SHOWONWRAPPEDPAGESWITH dynamic script will now work with Tables. The appended table should fit in one page.

Skip NA and 0: A new option has been added to the pre-process segment of the Stylus module that allows a user to hide chart space when the analytic calculates to a 0 or NA. This allows the user to create a neat and relevant chart report by only showing relevant time periods.

Sort / Group peer Cloud: New in 11.3 is the ability to distinguish one or multiple peer groups in either a scatter chart or style map by grouping them by some characteristic and coloring them different colors. For instance, you can show a Large Value, Large Growth, and Large Blend peer group in a single risk return chart and color each of the peer groups a separate color.

Super & Sub Scripts: New functionality has been added to the charts and tables of Stylus modules that will now allow users to use symbols to denote trademarks, copyrights, registered and also support currency symbols.

T-Stats & P-Values: Stylus now offers the ability to calculate t-stats and p-values and has expanded the calculation of confidence intervals on the factor exposures and alpha produced via regression. These are now available for both Sharpe and DSA, with or without constraints, using either Monte Carlo or Analytical techniques. In order for the calculations to take place, users have to enable the Confidence Interval calculation in the Confidence tab of the advanced parameter section, found in the Designer tTree.

Transpose Portfolio Block: Transpose portfolio block layout allows the user to use manager Filter/Sort/Group functionality on underlying portfolio assets, as well as align the Portfolio Analysis block with other analytic blocks (Performance, Database, etc.). This greatly increases portfolio reporting capabilities and expands the number of analytics and combination tables at the user's disposal.

Unused Check Boxes in Attributes Editor: Previously, two options that did not apply in Stylus appeared in Attributed Editor (scale and connect) within the Style tab for Peer Groups. Since they were not applicable, they have been removed.

PROSPECTOR

Percentile Calculation in Prospector: New functionality has been added to Prospector that provides calculation of percentiles (5,25,50,75) in a Prospector study. For example, this function could be used to calculate the median performance percentile for a given manager without having the user to export the manager to a Stylus study for analysis.

Prospector Clustering: Prospector will now produce a log with the tree, cluster members, centers and similarity matrix. This will provide more insight on how the clusters are formed as well as additional results that might prove useful for the analysis.

Prospector Reporting: Prospector is now enabled with reporting capability. This greatly enhances the tool by allowing you to create reports that include your research elements. For example, you can extract a report of all funds in a screening system with all their underlying information. You can also add the charts and visuals in the report. The reporting functionality is similar to that of Stylus module.

Summary Stats for Prospector: A new composition block has been added to the Prospector module that will provide the ability for a user to add another layer of analysis to statistics calculated through other analytic blocks. Various functions have been added in order to make calculations based on Peer Group, such as Min, Max, Distr and NormInv.

ALLOCATOR

Frontier Date Range: The @iffrn{} macro can now be used in the date range portion of the Parameters node in Allocator to calculate estimates for different frontiers over different time periods. This functionality eliminates the need to input individual macros for every component of the Estimates node as a workaround to manually create the different time periods.

Prevent Negative Wealth in Allocator: Within Allocator, simulated wealth paths including cash flows were previously allowed to reach negative levels, if large negative cash flows were applied. There had been no control to restrict minimum levels to $0 to treat the simulated portfolio as obsolete/closed. Within 11.3, a new option has been added to control how the cash flows are applied in the event of reaching a negative wealth value for a given wealth path.

Run-time Warning: When Monte Carlo confidence intervals are selected, a warning will now be displayed to indicate that they might result in considerable run time.

ADMINISTRATIVE FILES

User Authentication: MPI Stylus Pro 11.3 now comes with individualized licensing for various data packages that clients subscribe to. Based on user emails, clients can specify which users would like access to each data package.

MACROS

@ChartInfo Expanded for 'Spread': Previously, glide paths (created with Object Editor) would not work when the Spread option was enabled for the chart. A new feature has been added to the @ChartInfo{} macro, so this now works appropriately by allowing moving glide path objects to be displayed.

@COLORADDRGB & @COLORADDHLS: New @COLORADDRGB and @COLORADDHLS macros have also been added to provide users with more flexibility to adjust colors in tables. Also, the @COLORTO macro has been extended with options to enhance hue, luminance, and saturation of colors.

@PARAM{DATE_MIN} & @PARAM{DATE_MAX}: Provides more flexibility for specifying first and last dates in date ranges.

@SELF{UNVSTAT}: The @Self{} macro now works for unvstats in chart attributes and pre-process section of chart/table designer. This is useful in the Text tab of Chart Attributes and immensely useful in the pre-process section of Chart Designer as users can now show statistics from several different universes without grouping them all into one big universe.

VaR added to @Param{}: More parameters were added to the @param{} macro to be able to retrieve information on the VaR settings that are being used within the study.

UPDATER

Color Status: THE MPI Updater Status column is now given a non-white color per type, making it easier to distinguish the UTD status.

USER LEVEL INTERFACE

Performance Update: A new command has been implemented that optimizes the performance (runtime) of Plan Level report run, primarily in cases where managers have the same peer groups but different benchmarks/style maps. Some level of performance improvement is also seen when managers have different peer groups and different benchmarks/style maps. This option has been made default in 11.3, and a UI control has been added for it in Configurator.

ADVANCED DATABASES

Find Column: In 11.3 you can now search across Dictionary column names similar to how you can search across database header fields. Simply click on the small Text Box icon in the rightmost column name, and click "Find Column..."

DYNAMIC STYLE ANALYSIS

Breakpoints Disabled For Benchmarks: Previously, if a breakpoint was detected for the fund it would also implement this for the benchmark even if this was not applicable. This functionality has been removed.

DSA Confidence Intervals Efficiency Expanded: Previously, running Monte Carlo simulations with DSA, Optimal Smoothness, and a very high precision on Daily data would cause the Monte Carlo simulation calculations to fail. DSA would, however, successfully run for Weekly/Monthly data or a larger Precision

step size. This has been adjusted so that the results run for the most amount of calculations possible in a given data set.

FACTOR SEARCH

Factor Search Continues if PR2 is Negative: Previously, the index selection algorithm inside factor search would stop navigating down the tree if the top model was found with a negative PR2. The top model was not considered as a potential solution coming out of factor search, and it was up to forward selection or residual correlation to provide a model. This was despite the fact that lower levels of the tree might have resulted in a positive PR2. To make it consistent with index selection and to achieve a more optimal final solution, the algorithm now picks the top model regardless of its PR2 and continues down the tree.

Factor Search Log Enhanced: Prior to Style Pro 11.3, the Factor Search log did not output the entire cluster tree. As a result, the user could not reconcile the initial factors picked in the UI against the tree. 11.3 now demonstrates the entire tree, making it easy for a user to understand the flow. The log now contains the entire cluster tree.

HIGH FREQUENCY

Daily Analysis: Previously, studies set to Daily frequency were restricted from extending prior to 12/25/1985. Now, the user may manually adjust the timeline restriction within Configurator, allowing for Daily studies to extend back up to 12/25/1920

SCRIPTING

EXPORTDB Extended for Prospector: EXPORTDB now works with exporting the output of a Prospector study.

EXPORTSTUDYINFOJSON & IMPORTSTUDYINFOJSON: EXPORTSTUDYINFOJSON will allow users to export specified sections within a study, such as Style Outline or Views, into a .JSON file. IMPORTSTUDYINFOJSON will allow users to import a .JSON file into a study to use the settings.

ONBEFORECREATEREPORT & ONAFTERCREATEREPORT: New procedures were added in Automation that enable users to run other various scripting actions directly before a report is generated, during the generation of the report, or directly after. These procedures recognize the ExportReport script and allow users to enter additional scripting steps before, during, or after the export is done.

ONBEFORECREATEVIEW: In Stylus Pro 11.3, it is possible to create and initialize a procedure that is automatically called when the user clicks on each view under the Views node of the Design Tree and switches between the Views tabs.

SETCHARTDESIGN Script Enhanced: Using the SETCHARTDESIGN script statement, users can now enable more options in the Chart/Table Designer, such as setting the Secondary Y-Axis.

Stylus Pro
Release Notes

MPI Stylus 11.2 Release Notes

New features for 11.0 and 11.1 may be found in the prior Release Notes, appended to the bottom of this document.
Last Updated: 6/22/2015

GENERAL

Galleries: You can now hide the Galleries sidebar in the Stylus reporting studio by dragging the bar to the side until hidden (you may also double-click it) and then save your study. The bar should remain hidden until you drag it back out and save it again.

Force "as of date": This feature has been enabled as an option for all MPI-supplied databases (not 3rd-party databases). Through this feature, the user may access historical databases, peer sets and Dictionaries files for MPI installed databases, based upon their own options to maintain such information (this feature must be turned on in Configurator for each database you wish to use it for).

History tab: A new tab, History, has been added to give you the flexibility to store any data in either a Dictionary file or a SQL/Access database to be called into the study at a later point. The feature will allow you to take data from an assigned table within your study and export it to one of the above mentioned files so that later, a history of that field can be shown. For more information, please see the associated Sample Study.

Send Current Study to MPI Support: This feature has been enhanced to also include a study's .fnd and .mng files as attachments to the e-mail.

Series Edit: Users may now use this feature to copy manager returns to the clipboard without having to create a performance table of all returns. This is supported for the Managers, Benchmark and Style Outline nodes.

Use Common Range for General and Style Analysis: This option creates a second timeline for use in the Parameters node, without reference to Style Outline factors. This is helpful because it allows you to run simpl
e statistics over longer time horizons without being limited by the more recent horizons of style indices.

Series Adjustment: A new capability to adjust series using operation "User Macro" is now supported. This can be used for customizing the returns, such as adjusting for "Management Fees", but allows users to use macros to assign different fees based on user-defined criteria.

STYLUS

Custom analytic block: We have created a Custom block in Stylus that is visible to all users, but only may be used/edited by Advanced Analytics users. For more information, please see that section of this README file.

Summary Statistics analytic block: We have added a new analytic block to the Stylus module that provides a powerful second layer of analysis to time series statistics calculated through other analytic blocks. For example, the block could be used to calculate the average of rolling standard deviations for a given manager. For more information, please see the Sample Study.

Created Linked Indicator: Traditionally, Indicators in Prospector were controlled exclusively from the Design Tree, and allowed the user to create certain filtered subsets of the data that were then visible by a different color code for the dots in their scatter charts. The problem with this was that, due to the nature of Indicators, there was no way to do filtering 'within' the Indicator, to see how its output would visually change based on a tweak to the Indicator value. As an example, an Indicator of Performance > 5 could only be adjusted on the Design Tree, and you would have to go back and forth between the Design Tree and the Output tab to see the result of value changes. To help users get the best from both Indicators and Filters (which do allow on-the-fly adjustments in the visual output space), we have created the Linked Indicators option, which will allow the user to link an Indicator to a filter, for viewing the results of value manipulation in their output.

Multiple Views: Prospector is now enabled with multiple View tabs, in addition to the tabs for each Source and the standard Output view. This greatly enhances the tool by allowing you to create far more Prospector charts/tables than was previously allowed. For example, you could create a sample "Performance" view with its own Filters and Indicators, which would not affect a separate "Risk" view.

MACROS
- New properties for existing macros (see macroref.PDF for complete details):
  - DESIGNPARAM – This macro has been extended. A new filter capability has been added to charts/tables that guarantees that when multiple managers are selected, the user can control the content of Views that invoke Manager Numbers. For example, a view named Mng0 would show results only for manager 0, etc.
  - STY_INCEPTIONDATE – This property allows the user to get the total return since the inception date, which may be useful for monthly (or non-daily) returns because the conventional total return since inception would not include the partial period data prior to the first month's return. For those seeking to use only the first monthly return, the option of STY_BEGINS remains available.
  - TABLEINFO/TABLEVALUE – It is possible to use @SELF macro characteristics in conjunction with user defined macros.
  - TABLEVALUE - It is now possible to use statistics, plotted on X and Y axes, for filtering/sorting/grouping of managers selected into a scatter chart.
  - FIELD INFORMATION – Macros (such as TABLEINFO, TABLEVALUE, BODYCELL, SELF, ROW, & COL) are now extended to allow field information to be referenced, in addition

to referencing information about Managers.

ADVANCED ANALYTICS

<u>Custom analytic block</u>: We have introduced a Custom block into Stylus. Similarly to the one in Prospector, it can be used to implement custom formulas, conditional statements, loops, import external/internal series, perform vector concatenation and manipulation, etc.

ADMINISTRATIVE FILES

<u>-LIC parameter</u>: A new command line parameter (-LIC) has been added to allow users to redefine the location of the license file. This feature is not applicable to most users of MPI Stylus Pro.

<u>Stylus.ini</u>: We have optimized the reading of the Stylus.ini file on startup. Previously, during startup, the INI file was opened and scanned several times; now it is opened once and loaded into memory, and all further operations are performed in memory, enhancing startup.

MPI Stylus 11.1 Release Notes

New features for 11.0 may be found in the 11.0 Release Notes, appended to the bottom of this document.
Last Updated: 6/30/2014

GENERAL

<u>Adjust Portfolio</u>: Please see 'Portfolio Editor' in this section for more information.

<u>Cell Titles</u>: We have added two new features related to Cell Titles for Charts, both of which may be found via Attributes Editor-> Text-> Cell Title.

- The ability to control whether Cell Titles are on the top or bottom of charts; and
- The ability to adjust distance of Cell Titles from their actual charts.

<u>Chart/Table Designer</u>: The 'push pin' feature has been added to the Chart/Table Designer. When the 'Option Interval' is selected, a push pin will appear to the right of the last date. When this is in the 'pushed in' state, the pin will force the date to the common end period.

<u>Common End</u>: New settings for this feature have been added, and are available on both a study level and a chart/table level. Now, users may run reports from any time period up to the Common End of a date. This can be especially helpful in the case that managers have been updated ahead-of-schedule, or when managers with old data need to be displayed in a report.

<u>Design Tree Navigation</u>: Users may now use their keyboards to navigate the Design Tree by holding

down the 'Ctrl' key and using their Up and Down arrow keys.

<u>Force standard color palette to be used with template</u>: When this feature is set to '1', a standard color palette is forced upon the study. This can be helpful when a group of users may have a variety of custom palettes, and the user wishes to ensure uniform output. Note that this feature defers to the 'Use Study Color Palette' feature, if it is being used.

<u>K-Ratio</u>: This new analytic has been added to the Performance Statistics block, and measures a Manager's magnitude of wealth growth against the consistency of wealth generation over time.

<u>License error messages</u>: Traditionally, there was a single error message related to both missing and expired licenses "License expired." This has been adjusted to separate messages:

- License expired
- License not found

<u>Min/Max analytic block</u>:

- We have updated the Min/Max analytic block to accommodate multiple new return variation types for use in Min/Max block analytics. Included in these new variations are:
  - Benchmark, Style, Excess, Excess (Risk Free), Excess (MAR), Selection, Timing, Excess(g), Alpha, Excess Selection, Benchmark Selection and Error
- Please see 'Pain Statistics' in this section for more information on significant additional new enhancements to this block.

<u>Modified Sharpe Ratio</u>: This new analytic has been added to the MPT Statistics analytic block, and allows users to calculate a Sharpe Ratio using the Cornish-Fisher VaR as the denominator in place of standard deviation. It is available for both 95% and 99% VaR.

<u>MPT Statistics analytic block</u>: Please see 'Modified Sharpe Ratio' in this section for more information.

<u>'Pain' Statistics</u>: We have added to the Min/Max analytic block two new statistics that will be familiar to users of so-called 'Pain' statistics:

- Underwater Index, which measures the mean drawdown of a Manager for a given period. (Drawdown is the level of cumulative losses experienced).
- Underwater Ratio, a risk-return measure that compares Manager performance to the Manager's Underwater Index. This demonstrates how well the Manager has performed in relation to the Drawdown levels they have experienced over a given period.

<u>Performance Statistics analytic block</u>: Please see 'K Ratio' in this section for more information.

<u>Portfolio Analysis analytic block</u>:

- We have added two new fields to this block:
  - Marginal Risk
  - 90% VaR/Marginal VaR/CVaR
- We have added a number of Contribution statistics on this block, all of which may be used in the forms of Marginal, Current, Average, Scaled Current and Scaled Average:
  - Benchmark Correlation, which may be done versus any element of the Benchmarks node
  - Downside Risk
  - Sharpe Ratio
  - Tracking Error versus any element of the Benchmarks node

<u>Portfolio Editor</u>: Several adjustments have been made to this feature set:

- Users may now use 'Adjust Portfolio' to make changes to Portfolio returns in a similar manner to the Adjust Series option. This may be found by clicking on the name of the Portfolio in the Design Tree, and then checking 'Adjust Portfolio' in the data pane. As with Series, adjusted Portfolios will appear in italics on the Design Tree to provide a visual cue to users. The following options will be enabled in the drop-down:
  - Convert to Currency – Enables the user to convert the portfolio information into another currency
  - Allows the user to perform an operation against another return series, including other Portfolios, by using the drop-down to select the information.
- Users may now use Semi-annual as an option for rebalancing for 'Advanced' portfolios. This option will rebalance twice annually, after the June and December returns post. (It is calendar-year based).
- In the Portfolio Editor, users were only presented with pre-defined columns in the 'Select Assets' area. We have now added the ability to use customized options here. Please note that these extra columns are cosmetic and for user convenience only in the Portfolio Editor – they will not appear in or affect user Views or Reports. These columns can be added in two ways:
  - Locally (columns specific to a single portfolio) – These columns are defined by using the 'Extra Columns' button to the right of the Asset list table.
  - Globally (columns used in all portfolios) – These columns are defined in Configurator-> User Interface, via an Extra Columns feature
  - In both cases, there are two features to note:
    - "Label" used for the extra column can be edited and redefined (by default, it is identical to the Database Header title); and
    - The "extra columns" values are retrieved from the asset database header; if the database header has no field, then the value in the extra column for such an asset will be blank.
- An 'Edit' button is available for the 'Use extra columns for assets in Portfolio Editor' setting in Configurator to allow for additional user options.
- Missing values will result in a highlighted (red) header, which may be clicked on in order to review the date(s) of the missing value(s).
- The header now includes information on the currency of portfolio assets.

<u>Pre-process</u>: The pre-process feature, visible in the Chart/Table Designer, allows for the user to make a wide number of adjustments to the resulting 'data' of one or more chart analytic blocks (within a single chart). While the possibilities of this feature are fairly wide, one such option would be the ability to replace N/A values with zeroes, resulting in empty spaces where no data is available in a chart. It may also be used in tables, though many users will find Advanced Table Formatting to be a more efficient way to accomplish such changes.

<u>Review Links</u>: The pop-up 'Review Links' form has been extended to add two additional elements:

- The 'Force Ungroup' and 'Never Ungroup' options for PowerPoint export can be reviewed and changed
- The form will also show all Stationary Objects and Dynamic Scripts available in the report.

<u>Save Outline as Set</u>: Please see 'Style Outline' in this section.

Sections: When charts/tables use multiple Sections, their order may now be changed by the use of right/left arrows that have been added to the interface. Drag-and-drop may also continue to be used.

Show Printers: This feature has been added to the 'Tools' menu and the user menu bar. In cases where a default printer has not been set, the Report Preview pane will generate an error message indicating the need to set such a printer (previously, an exception error was generated).

Style Contribution analytic block: This new analytic block extends factor attribution to Risk, Tracking Error and Sharpe Ratio. Each statistic may be broken down into Marginal and Component varieties, assessing the effect of small modifications to factor exposure or of entire removal.

Style Maps: Users may now save hierarchical Style Maps.

Style Outline: Users may now right-click on their Style Outline to 'Save Outline as Set'. This outline may then be used as a set throughout the application, and retrieved through the Sets database.

Template Properties: This is the new name for the feature formerly called 'ULI/WEB Properties'.

ULI/WEB Properties: This feature has been renamed 'Template Properties.'

Underwater Index: Please see 'Pain' Statistics, in this section.

Underwater Ratio: Please see 'Pain' Statistics, in this section.

Use Study Color Palette: This new feature allows users to define a study-specific color palette. This palette may be generated from scratch, or the user can copy/paste in the standard (default) palette and make adjustments. When enabled, this function takes precedence over the 'Force standard color template palette to be used with template' setting in the Study/Template properties.

- To enable this feature, click the checkbox in the 'Use study color palette' section of the 'Color & Symbol' tab.

STYLUS

Dictionaries analytic block:

- Multiple Dictionaries blocks may now be selected into a single multi-section table.
- Multiple Distribution blocks, with Dictionaries fields selected in their dropdown, may be selected in the Table Designer.

Distribution Blocks: We have added the ability to combine Distribution blocks in a manner similar to Combination chart creation, allowing for multiple distributions to be visible on a single chart.

- Due to this change, users may also now transform Distribution bar charts into line charts.
- Note that now, multiple Distribution blocks with Dictionaries fields in their dropdowns may be selected in the Table Designer.

ALLOCATOR

Asset Liability Modeling: Allocator now allows for the addition of liability proxies to the portfolio optimization process, focusing objectives on surplus return and standard deviation. Funding ratios and liability flows can be simulated using probabilistic assumptions or Monte Carlo paths, and cash flows can now be assigned to either the asset or liability portion of the portfolio. For complete information, please see our sample study on the 11.1 page of our website. That said, several changes will be visible to the user:

- Liabilities node added to the Design Tree
- Mean-Surplus added as a Model Type in the Parameters node

Design Tree: We have added drag-and-drop reorder capabilities for items in the Style Outline and Assets nodes.

Liabilities node: A new node, 'Liabilities', has been added to the Design Tree. For more information, please see 'Asset Liability Modeling' in this section.

Mean-Surplus Model Type: This new model type has been introduced to allow for Asset Liability modeling. For more information, please see 'Asset Liability Modeling' in this section.

Parameters node: We have added a new model type. For more information, please see 'Asset Liability Modeling' in this section.

Summary Tab: The Summary Tab screen for Allocator will now show two additional elements:

- Inflation series being used in the study
- Risk-free series being used in the study

INTEGRATOR

Dynamic Report Scripting: New scripts were added in Integrator:

- LINKSTUDYDBID – Databased ID for the study where the linked chart/table/memo is defined.
- LINKSTUDYFILEID – Filename for the study where the chart/table/memo is defined.

CONFIGURATOR

Auto launch PDF preview after export: This option has been moved to the PDF tab (from the General tab)

ULI Tab: ULI options and default settings have been condensed into a formal 'ULI' tab for ease of access.

MACROS

Note that for complete information on macros and their parameters, users are advised to consult the macroref.pdf document in their Stylus/docs folders.

Enhanced Macros:

- @DIALOG macro has been extended with three new options:
  - SHOWCANCEL, which may show the 'Cancel' button. In this case, a macro returns the "[Cancel]" text when clicked.
  - TITLE[text], which may use the specified text for a dialog title
  - INFO[text], which shows the info icon and uses the specified text for an info 'hint'.
- @IND macro has been extended to support the following options.
  - PARENTDBID
  - PARENTFILEID
  - PARENTLABEL
- @STYLUSINFO, with two new parameters:
  - MEMORYFREEGLOBALHEAP
  - MEMORYCOUNTFDIOBJECTS

-

New Macros: The following macros have been added to the system.

- @DBRECORDCOUNT – Returns the number of records in a database.

SCRIPTING

Note that for complete information on script statements and their parameters, users are advised to consult the autoref.pdf document in their Stylus/docs folders.

Enhanced Script Statements:

- EXPORTREPORT has been enhanced with two new options for PowerPoint:
    - PPTCUSTOMSLIDE
    - PPTUNGROUPALL
- SETCHARTATTRIBUTES has been extended to report stationary objects.

New Script Statements:

- EXPORTDB, which exports a returns database in a requested format
- EXPORTPORTFOLIOFROMTABLE, which creates a portfolio from table data
- SETCHARTDESIGN, which sets the design for a chart/table in Views and Reports
- XPSTOPDF

USER LEVEL INTERFACE

List of report pages available for manual selection: This new property has been added to allow users to check/uncheck report pages mentioned in the report list. The page names to be excluded must be listed explicitly (otherwise all report pages are subject to user selection).

MPI UPDATER

Continued downloading/installation when one file fails: In the past, a single file failing to download/install would cause MPI Updater to stop its full process. Now, we have adjusted Updater to move on to the next file so that a single file failure does not interrupt the process when multiple files have been called for download and installation.

New options in Updater 3.2.2: We have added new options using frequency and end-date:

- Synchronous update
- Update quarterly

Stylus Pro
Release Notes

MPI Stylus Pro 11.0 Release Notes
Last Updated: 11/02/2013

GENERAL

Advanced Graphics: New graphics engine capabilities allow the user to create richer visuals.

- A new transparency option allows for objects in the background to show through graphics objects. Transparency is defined as a percentage, with 0% being full transparent and 100% complete opaque. Chart objects and labels can both be made transparent.
- Anti-aliasing was added to smooth out jagged lines and visual distortions that are typical in older graphics.
- A smooth line option was introduced to produce more visually appealing curved lines through a set of data points. Previously, line charts could only produce straight lines between data points.
- Color gradients have been added to allow for gradient fill patterns in graphic objects. As is standard in other graphics software, users can define the colors and direction of the transition.

Exporting to Adobe PDF has been extended to include these new graphic extensions. The previous export engine remains in the application for backwards compatibility, as each engine can produce small formatting differences. Users have the ability to choose between the two approaches themselves or allow Stylus Pro to determine the appropriate engine based on the output produced.

Advanced Table Formatting: Improvements were made to the advanced table formatting controls to allow for greater control over table format.

- Additional flexibility has been added to handle 'N/A' and other variants more gracefully, treating them as zero or allowing the user to define a replacement value.

Bubble Charts: Bubble charts are an extension of existing charts that allows one to vary the size of the symbols through an additional attribute. This is particularly useful in scatter plots but may also be applied to style maps and data pulled from external sources. A secondary attribute, defining the bubble size, may be added when a "Bubble Dimension" is checked in the analysis block. The bubble sizes may be scaled directly or inversely to the value of the attribute selected.

Colors & Symbols: The advanced graphics features added to this release, transparency and gradients can be defined for study-level colors defined in the "Color & Symbol" tab of study attributes. These were added to the "Extra" column.

Chart Attributes: A number of additions and enhancements were made to the Chart Attributes editor to allow for improved fine tuning when creating charts.

- In bar charts, Stylus by default places a group mask (a colored bar) beneath a set of bars to identify the entry in the Legend the bars refer to. Users may now replace this group mask with the text label for the group as it appears in the Legend, or using other custom text for each group.
- Axis label formats can be defined more flexibly through embedded macros in the "Num Fmt" field. You can reference the value of the axis label and perform operations, such as scaling. See the @SELF macro for new parameters that can be used to reference information about the label values.
- Axis labels may be angled in 1° increments between 90° and -90°.
- Bar and pie chart labels can be made multi-line by inserting vertical bars ('|') into the format.
- Legend text may be wrapped using vertical bars in the designer.
- A number of new "Layout" attributes have been added to micro-adjust charts, for items such as the axis tick size, legend symbol size and axis label spacing. The complete set of new attributes is defined in the User Guide.
- An information warning is generated when attributes the user sets in the "Style" and "General" tabs in Chart Attributes have been defined in the study-level "Color & Symbol" properties. Study-level properties override chart-level properties; this informational icon aims to help users in these situations understand why their chart-level settings may not change the chart design.

Data Browsing: Default column widths in database browsing tables (such as Managers) can be restored through a right-click menu entry.

Design Propagation: Users may now copy the attributes from one chart, table or memo and paste them into another. A new menu in the upper right corner of the attribute editors contains copy and paste commands. All defined attributes are applied when pasting.

Drop-down Controls: Selectors that allow for manually entered user input, such as those containing macros, have been enhanced to remember the user history of typing. This reduces the need to retype commonly used macros throughout a study.

Galleries: Additions were made to the Gallery to put new and existing features at easier reach.

- A number of advanced styles, introduced in 11.0, were added to a new subgroup "Advanced Style" in the Themes and Formats tab.
- In the Filter/Sort/Group tab, new filters for "Portfolios only" and "Underlying Assets" were added to aid in the design of portfolio-level reports.
- For use in views, a new "Labels" tab under "Chart Objects" allows for the convenient creation of labels for different charts based on newer dynamic objects features.
- For use in views, a new "Date Intervals" tab under "Chart Objects" provides different options for easily creating dynamic date interval overlays on any chart view with a date axis.

Grouped Charts: Charts may now be grouped on a number of custom components. This feature was added to permit flexible reporting when multiple benchmarks (see feature under Stylus) are included, but will also allow for grouping of analytics by asset in portfolios, by manager category defined in a property, and more. This requires extensive use of macros, notably enhancements

to the @SELF macro described

Notes Editor: A scratchpad has been added to all chart, table and memo designers to allow for study designers to store notes, reminders or other useful text. These notes are saved with the study and are helpful when used to explain report design decisions. The notes editor can be accessed through the designer toolbars.

Rich Memo Designer: Usability improvements were made to the rich memo editor.

- Spell check functionality was added, with native support for English, Spanish, Italian, German, French and Dutch.
- Color selectors in the designer now match those in other parts of the application. Previously users could not see the match colors used in other parts of the application by their numbers.
- Memo text may be clipped to fit the bounding box via a new "Clip to Size" button in the designer. Without this option, text will overflow the bounding box, potentially overlapping with other chart objects.

Script Editor: New toolbar controls have been added to comment or uncomment a highlighted section of script. Previously, each line needed to be commented individually.

Slideshows: Given the ubiquitous nature of Microsoft PowerPoint and similar presentation software and the high quality of the graphics we produce for them, we have eliminated the legacy Slideshow functionality from the application's File menu.

Symbol Palette: The palette of symbols has been extended to a much larger set for situations where the number of managers exceeded the old limit. In addition, advanced users may define their own symbols using a vector-based illustration package.

Table Formatting: Enhancements have been made to provide additional flexibility in how tables are designed in reports.

- Header orientation can be adjusted in 90° increments in the Advanced Table Formatting editor, allowing for vertical headers that allow for narrower columns. Longer header text may also be stacked using dynamic scripts.

STYLUS

Conditional Value-at-Risk (CVaR): Subscribers to the Advanced Analytics package can now report on CVaR to better understand fat-tail risk. This analytic, introduced in the Allocator module in version 10.0, has been added to the VaR analytic block.

Manager-specific Benchmarks: The latest release permits one to define benchmarks individually by manager. Two new manager-level properties (MPI_BMKPRIMARY and MPI_BMKSECONDARY) were added. Using these properties the user can select manager benchmarks manually, via lookup in a dictionary or database, or through the one specified in the vendor database. The benchmark selector in each view allows for the selection of these properties; a view in this case will compute all benchmark-specific statistics (such as excess performance) relative to each

manager's benchmark. Previously, the same benchmark needed to be used for all managers. Note that this new feature does not allow for analysis of managers against different style outlines or peer groups per manager.

Multiple Benchmarks: Tables and charts have been enhanced to allow statistics to be computed for more than one benchmark. The benchmark selector in the Chart or Table Designer allows for multiple selections. The chart or table will create fields that have each benchmark selected appended to the analytic field name. Grouping functionality can be incorporated to create a number of new types of charts, or tables that previously needed to be stitched together.

Multiple Peer Groups: Within a single study, Stylus now permits the analysis of all managers in the study against more than one peer group. Each chart or table allows the selection of a single peer group, which applies to all managers in that view. Different views may use unique peer groups. It is important to note that this feature is not the peer-group equivalent of either the manager-specific benchmark or multiple benchmark features described above. The design tree for peer groups was enhanced to allow default peer groups to be defined; all peer groups in all legacy studies are marked as default for backwards compatibility.

Portfolio Analysis: A new option "Portfolio Secondary Group Only" was added to the Portfolio Analysis block to allow for reporting at this group level.

Portfolio VaR Contributions: The Portfolio Analysis block was enhanced to include value-at-risk (VaR), marginal value-at-risk and conditional value-at-risk (CVaR) contributions from assets in the portfolio. All VaR contributions are computed at the group level as well. All VaR analytics are available at 95% and 99% confidence levels.

Portfolio Standalone Values: Within the Portfolio Analysis block, users may view all available analytics in "standalone" mode. This permits one to compare a value (such as VaR) of a holding as it contributes to the portfolio's VaR to the asset's VaR in isolation.

PROSPECTOR

Indicators: Greater control over the colors and symbols used in indicators has been added to Prospector.

- Specific symbols and colors can be defined for an indicator. Previously the software selected those automatically.
- Indicators in Prospector are now available for use in tables.
- Indicators that use common attributes will use the same color and symbol across charts and tables. Previously each chart or table had their own sequence of indicator colors and symbols that might not match.

Clear Analytics: When generating Prospector results using automation on the same template, users may now reset the analytics so that they do not carry over. See the ANALYTICSCLEAR statement in Automation below.

ALLOCATOR

Estimates in Excel: Capital market assumptions may now be defined in a Microsoft Excel workbook, linked into an Allocator study and used for optimization and reporting. The Estimates node in the design tree now allows for the addition of new sources of estimates. Estimates may also be exported to Excel, providing the user with an example of the file format required.

Copy/Paste Estimates: Estimates data (returns, standard deviation, and correlations) may now be copied from Allocator into the clipboard for use in other applications. Similarly, return and yield data can be modified by pasting in data from the clipboard. These features are available in a menu in the upper right corner of the estimates table.

Exponential Decay: The computation of the covariance matrix used in Allocator can now be adjusted to give greater weight to more recent observations. The exponential decay factor or half-life (in months) may be defined in the Advanced Parameters section.

Transaction Costs: Advanced Allocator users are now able to define transaction costs for each asset as a percentage of return, define a sensitivity to t-costs, and utilize t-cost estimates to constrain the optimization or as part of the objective. A new T-cost entry in the Groups node under Parameters and is activated when an asset blend (starting allocation) is included. Objectives adjusted for transaction costs are available for use in analysis and reporting.

Asset Series: To allow for the integration of capital market estimates defined via Excel, users may create assets that have missing or invalid return streams. Previously, assets used in a study were required to have a return series associated with them.

CONFIGURATOR

PDF Tab: A new tab has been added which contains settings related to the configuration of PDF exports.

ULI Paths: The default locations for jobs, queues and reports utilized or produced by the User Level Interface (ULI) may now be defined in Configurator.

Overlap: In accordance with the end of our agreement with Overlap, the settings tab in Configurator has been removed.

MACROS

Complete macro information may be found in the macroref.pdf document.

@CHARTINFO: This macro was enhanced to include a number of new parameters related to new charting features in this release.

- DATENUM, DATENUM1 – Provides the index of a date value on an axis; useful for highlighting date sub-ranges with objects on charts.
- DEFAULT_BUBBLE – Name of the charts bubble dimension (defining the size of the bubble)
- BUBBLE() – The bubble dimension value of a data point in a chart.
- L() – Used to retrieve the labels for data points; defined similarly to the X() parameter used to retrieve data points.
- DBID(), FILEID() – Useful in Prospector scatter charts, return the database id or series id of a data point.
- SYMRADIUS() – The radius of a chart symbol in absolute chart units, for advanced positioning of dynamic objects near chart points.
- COMP(), FLD() – Provides access to the names of components and fields selected in a chart or table.
  @DATESERIES: New macro, similar to @DateMng, which allows one to retrieve series for style indices and benchmarks

@DESIGNPARAM: This macro, which accesses chart and table design parameters, has been extended with support scripting around the section and field information.

- SECTIONCOUNT - Number of sections in the chart or table
- FIELDCOUNT, SECTIONOPT – The number of fields or the name of the option selected for a given section
- FIELD – The name of a field in a section, indexed by section and field number

@DSL: New macro, similar to @DML, extended for style index or benchmark series

@EXTRACTTEXT: A new macro that allows one to extract portions of text structured in standard mpi Stylus Pro formats. For example, one can easily use this to extract the database id or file id from a reference to a database series.

@MNG: The macro to retrieve properties about managers has been extended to include new "formats" for retrieving series adjustment information (ADJUSTED, ADJUSTMENT_TYPE, ADJUSTMENT_VALUE)

@MODSTR: A new macro providing means of performing common string manipulations. Options include removing special symbols from file names, removing leading zeros from numbers, replacing blanks for "NaN" with zero, eliminating end of line characters and masking backslash chars.

@MPI_CompName: Introduced to allow for customized grouping of analytics by benchmark, asset, category or other components.

@SELF: The @SELF macro has been enhanced with additional parameters.

- DEFAULT_BUBBLE – Name of the charts bubble dimension (defining the size of the bubble)
- BUBBLE() – The bubble dimension value of a data point in a chart.
- L() – Used to retrieve the labels for data points; defined similarly to the X() parameter used to retrieve data points.
- DBID(), FILEID() – Useful in Prospector scatter charts, return the database id or series id of a data point.
- CELLNUM, CELLNUM1 – To identify the index of a cell (when "Show by" is used); useful for replacing a single date label in a cell with a component label.
- SYMRADIUS() – The radius of a chart symbol in absolute chart units, for advanced positioning of dynamic objects near chart points.
- COUNT, LABELCOUNT – The total number of labels (axis labels, bar chart bars, etc.) in a chart.
- VAL, VALUE – New option to retrieve the values on numerical chart labels.
- NUM, NUM1, LABELNUM, LABELNUM1 – 1-based or 0-based index of a chart label.
-
- MNGTITLE – A series manager label as it appears in a chart
- MNTTYPE – The manager type (manager, index, benchmark ,etc.) of a series in a chart or table
- MNGLABEL, MNGDBID, MNGBASEDBID, MNGFILEID, MNGBEGINS, MNGENDS, MNGMISSING, MNGFREQ, MNGTREEGROUP, MNGLOCKED, MNG – The corresponding attributes of a manager in a chart or series.
- DATELABEL – The date label of a series point.
- INSTANCE, INSTANCE0 – Used to identify the index of an instance of a multi-instance object.
- INSTANCECOUNT, INSTANCELEVEL, OBJECTNAME -

  StrToYYYYMMDD: Extended the script language (StylusExpress) with this common function to convert date strings in multiple common formats to a numeric, 8 digit date

  @STYLUSINFO: Extended this macro to provide more access to Stylus Pro's operating environment.
- HOMEDIR, STYLUSDIR, TEMPLATEDIR, STUDYDIR, MYDOCDIR, APPDATADIR – each of these returns the relevant directory in the file system that Stylus references
- MASKBACKSLASH – A new format allowing the directory strings returned to be used in automation statements
- MEMORYUSED, MEMORYALLOCATED – These provide information about the memory usage of Stylus Pro, useful when diagnosing performance issues.

  @WRAPTEXT: This new macro was introduced to provide several options for modifying text such that it is wrapped in chart text.

AUTOMATION
Complete automation/script information may be found in the autoref.pdf document.

ANALYTICSCLEAR: Remove some or all of the analytics from the Composition section of a Prospector study; useful when running Prospector using automation.

CLONEBEGIN: Added new options for controlling cloned studies
- KeepActive – After the script to create the cloned study is complete, keep the clone study as active
- DBID, FILEID – Used to assign a database and file ID to the cloned study indicating where it will be saved

COLORSYMBOLADD: This command was extended to define the new transparency and gradient properties described in the advanced graphics above.

EXPORTREPORT:
- Included a new option to control the inclusion of advanced graphics (such as gradients) in exports.
- Added a number of new options that control the choice of PDF export engine used. Stylus Pro 11.0 includes a more robust PDF export engine that can handle the new advanced graphics features. However, the engine used in 10.0 and earlier remains available for those concerned about backwards compatibility.

PEERSADD: Extended this command with option (NonDefault) for marking new peers as not part of the default set of peers. This supports the new multiple peer groups functionality described above.

REPORTPAGESENABLE, REPORTPAGESSAVESTATE, REPORTPAGESRESTORESTATE: These new commands were added to permit manipulation of which pages are included in a report through automation.

UPDATER

Packaging: mpi Updater 3.1 is packaged alongside mpi Stylus Pro 11.0 due to dependencies of shared libraries. This insures that Updater remains functional when Stylus is upgraded to 11.0 for users who run their data updates on the same machine that they run Stylus.