eThority Enterprise 4.0

Software Release Notes

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1 Security

1.1 User Maintenance

The User Maintenance screen has a new layout and some additional functionality.

1.1.1 Exceptions

User Maintenance now allows for the user to be granted or denied access to data based on content. This is found under the Exceptions option of the Main User Profile.

To apply an excepetion to a user, perform the following steps:

1. Select a user from the Users panel on the left and click **Edit**.

2. Click **Exceptions** and then click **Add** for the Add a Content-based Exception dialog.

3. A date range may be defined by selecting a **Start** and **End Date** or check the **Open Ended** option to grant or deny the information indefinitely.

4. Click the **Deny** radio button to restrict access or the **Grant** radio button to allow additional access to data.

5. Select the Data Request containing the pertinent data to be granted or denied. Only Data Requests that have been configured to allow CBAC (Content Based Access Code) will be displayed here.

6. Click **Next** to select the appropriate CBAC Root Databook.

7. Select the **Next** again to choose the values to be granted or denied by clicking the checkbox in the first column.

8. Click Finish

1.2 Role Maintenance

Role maintenance has been updated with additional rights.

1.2.1 Data Request

- **Manual Import** - Allows a user to select the Tools / Run Import Now menu option
- **Run Data Request Utilities** - Allows a user to select any of the other options from the Tools menu.

1.2.2 DataBook

- **Lock/Unlock DataBook Shaping Elements** - Allows a user to lock/unlock filters, groups, and/or apply sorts. With this right the user can right click on an existing shaping row, and choose 'Lock'. This will lock the filter/group/sort and keep it from being removed or changed. See *Section 4.3.4 Locking of Filter, Sort and Group* for more information on Lock/Unlock.
- **Edit SQL Fields** - Allows a user to create/edit a SQL Field in a DataBook. (Add is accomplished by selecting the menu option 'SQL Fields', while Edit is accessed by right-clicking an existing SQL Field column header and choosing 'Edit'). **SQL Field** is the new name for what used to be Calculated Field.
- **Edit PowerFields –** allows the user to create/edit custom fields in a DataBook. See *Section 9 DataBook – PowerFields* for more information on PowerFields.

1.2.3 Organization

- **Organization Restructure** – allows the user to drag and drop organizational nodes to different areas of the tree.

1.2.4 User

- **Grant Security** – allows the user to apply Exceptions based on data content. See section *1.1 User Maintenance* for more information on Exceptions.
- **Impersonate a User** – allows the user to login as another user to be able to see exactly what they have access to after granting rights. **This is a high level right.**

1.3 Organizational Key Group Maintenance

Organizational Key Groups are used to define how data is linked to an Organizational node. When an Org Key Group is created, it will appear on the Organization Maintenance screen to be assigned a value.

1.3.1 Managing Organizational Key Groups

Organizational Key Groups are accessed from the Configure – Security – Data Architecture menu.

To add an Org Key group, perform the following steps:

1. Click the **Add** button.
2. In the **Name** field, enter the Org Key Group name.
3. Enter a description in the **Description** field.
4. Click the **Add** button.
5. Click in the **Name** column to add the first Org Key name.
6. Click in the **Description** column to enter a description of the Org Key.
7. Click **Save** to save your changes.

Org Key Groups can be edited and deleted using the corresponding buttons.

1.3.2 Assign values to Org Key Groups

Org Key Groups appear as columns to the right of an Org Node in the Organization Maintenance screen.

Entering a value at the intersection of the Org Key Group and Org Node tells the application how to identify data owned by that node.

2 Data Architecture

2.1 Data Conduits

- Data Conduits can now be saved before it is tested or valididated. A message box is provided to prompt the user if they wish to save without testing the data conduit first.

2.2 Master DataBooks

The Master DataBook has been replaced by the Root DataBook – see *Section 3 Root DataBooks*.

2.3 Library Maintenance

Library Maintenance now enables the application of Data Locks on a library or topic level. When a Data Lock is applied, the user must be assigned that data lock in User Maintenance in order to have access to the DataBooks within that library or topic.

1. Create a Data Lock under Configure/Security/Data Lock Maintenance.

2. Go to Configure/Data Architecture/Library Maintenance

3. Click **Edit**.

4. Click to select the Library or Topic.

5. Click the box next to the appropriate **Library Data Lock**.

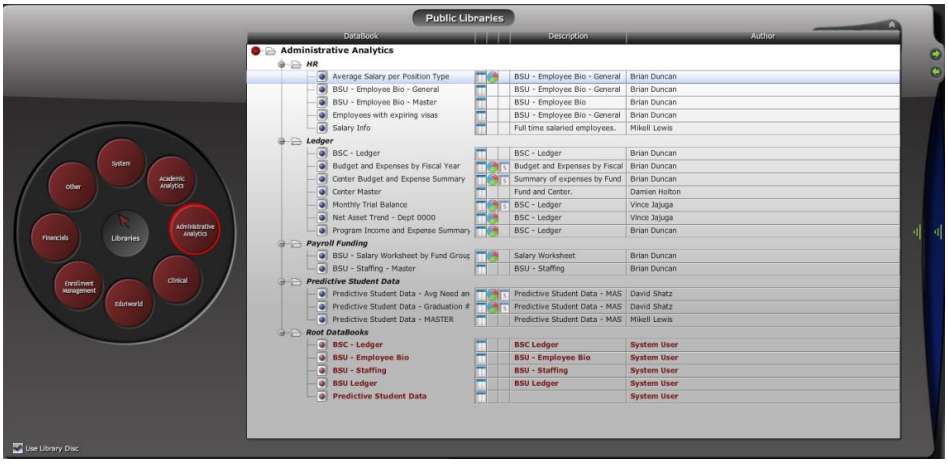
6. Select the **Save** button to keep your changes.

3 Root DataBooks

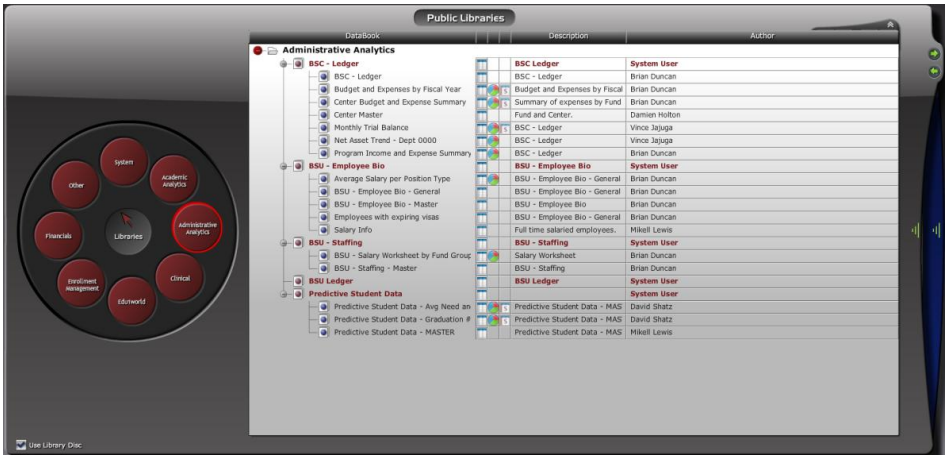
Master DataBooks have been replaced with **Root DataBooks**. The Root DataBooks are displayed in bold, red text under the Public Libraries desktop.

3.1 Root DataBook Display

- **Topic View** – right click in the eThority desktop to select **Show Topic View**. This organizes databooks beneath library nodes, the last folder in the list is called, “Root” and contains all the Root DataBooks that have a default location in the current Library OR that have a DataBook that is derived from it in this folder. If a DataBook is moved to or saved to a different Library the Root DataBook will appear in that Library as well as in the default library

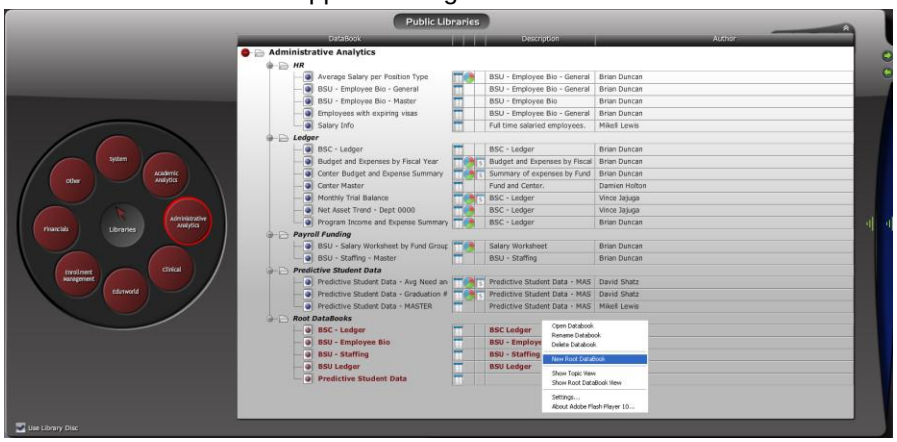


- **Root DataBook View** - right click in the eThority desktop to select **Root DataBook View**. This changes the DataBook tree to show all DataBooks underneath the Root DataBooks from which they were derived.



3.2 Creating a Root DataBook

1. Right click in the eThority desktop and select **New Root DataBook View.** Only users with **Add Root Databooks** application rights have access to this context menu selection**.**



The new Root DataBook dialog box is displayed.

2. Enter the Root DataBook name in the **Name** field.

3. Enter a brief description of the Root DataBook in the **Description** field.

4. Click the ellipsis button next to the **Primary Data Request** field to select from the list of available data requests.

5. Click the **Add** button to select **Other Related Data Requests,** if applicable.

6. Select the default library for this Root DataBook from the **Home Library** drop down. If a DataBook is moved to or saved to a different Library the Root DataBook will appear in that Library as well as in the default library.

7. Click **OK** to open the Root DataBook. The Root DataBook displays all the possible rows and columns of the primary Data Request and any selected Related Data Requests. At this point, the user may:

    a. Select the fields for the Root DataBook using the **Field Selector** found under the **View** option of the DataBook menu. The columns selected here will be presented to the user as the base of information from which to derive all other DataBooks. See *Section 4.6 Field Selector* for more information.

    b. Create default Filters that will be applied to every derived DataBook, if applicable. These filters will not appear in the Filter Panel of the derived DataBook. This allows the user to pre-filter DataBooks without showing the filter in the Filter panel.

    c. Add Powerfields to the Root DataBook, if applicable. These Powerfields will appear in the **Available Fields** column of the Field Selector dialog on all derived DataBooks. See *Section 4 DataBooks* for more information on filtering and Powerfields.

8. Click **File** and **Save** to save the Root DataBook. Click **Edit Root DataBook Config** to open the New Root DataBook dialog again.

Root DataBooks may be edited and deleted by right-clicking on the Root DataBook and selecting the appropriate option. As with Master DataBooks, any changes made to a Root DataBook immediately impacts all derived DataBooks.

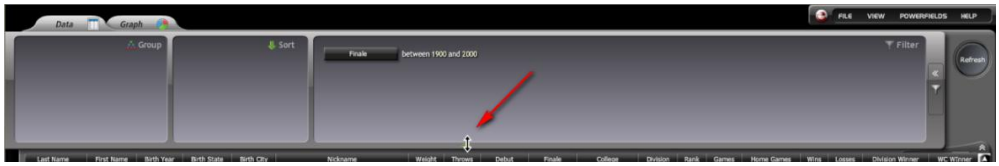
4 DataBooks – Global Changes

Changes have been made to almost every aspect of the DataBook from the overall appearance to improved functionality in existing tools, such as grouping and filtering, along with the addition of brand new functionality like PowerFields and Control Values.

4.1 Overall Appearance & Functionality

- Zoom is now a slider that adjusts the font of the DataBook with more variations in size. The Zoom size will be saved with the DataBook.

- By clicking and dragging the green slide, the size of the Data Shaping panel may be adjusted.



- The Shaping Panel is available on all tabs of the DataBook. Click on the blue arrow to hide/show the shaping panel.

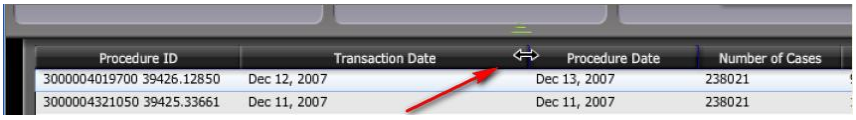
- The View Menu option allows the user to show or hide the tab options of the DataBook. The databook tab is always displayed.

- Horizontal column headers are now frozen on the DataBook and will remain visible as the user scrolls down the page.

- Horizontal column headers and vertical column categories are frozen on SuperPivot.

- Columns may be relocated in the DataBook by dragging and dropping the column header.

- Columns can now be resized directly in the DataBook. Place the mouse pointer between two columns to activate the resize pointer, hold down the left mouse button and drag to resize.



- The default page size is now 1000 rows, changed from 400. The user may now increase the grid size to include up to 20,000 rows per page. See *Section 4.5 User Preferences.*

- The Expand and Collapse function buttons have moved to the upper right, below the Refresh button. This control automatically expands when the mouse pointer is moved to the double up arrow.

- The calculated field builder Add Custom Fields is now called SQL Fields and can be found under the PowerFields menu. The appearance has changed but the functionality remains the same.

4.2 File Menu Options

4.2.1 Save and Save As

The following new options are available when selecting Save or Save As

- **Department –** when saving, the user can now define which area of the organizational structure should have access to this DataBook. Only those organizational nodes to which the user has rights will be available for selection.

- **Lock DataBook** – when saving, a user with the **Edit System DataBooks** right can lock the DataBook so that only another user with the same right can **Save** over it. Any user with **Create Databook** rights can **Save As** to create a new DataBook from the original.

- **Library Location –** when saving the Databook, the user can now select the Library wheel and topic under which the DataBook should appear.

- **Ask for Control Values –** if control values have been configured, checking this box will open a pop up dialog requesting those values when opening the DataBook.

4.2.2 Export

Additional format options have been added to the export utility.

- **Microsoft Excel (XLS)** – this is the same as the current export and provides formatting with Excel.

- **Microsoft Excel 2003 – Simple (XLS)** – exports without any group or formatting of the data except for column headers and correct data type specification.

4.2.3 Save as Image

This is a new option that saves the currently displayed portion of the Data, Graph, eValuate, or SuperPivot tabs directly to an image file.

4.2.4 Root DataBook

Clicking this option displays information regarding the Root DataBook from which the current DataBook is derived. Only users with **View Root Databooks** rights will see this menu option.

4.2.5 Configuration XML

Clicking this option displays the XML that generated the DataBook. This menu option is only available to System Administrators since this is a troubleshooting tool.

4.3 User Preferences

User Preferences, found under the **View** option on the DataBook menu, provides the user with the ability to apply some defaults to the current DataBook.

- **Show Grand Total** – displays a grand total of any calculated field. Check the box if a grand total is desired.

- **Extend Last Column to Full Page Width** – when the DataBook columns do not extend the entire width of the screen, the user can choose to have the last field of the DataBook

retain the size of the field or click the box to enlarge the last column to the remaining width of the page.

- **Show Empty Columns in "Summary" Mode** – when un-checked, only the columns containing data from Column Header Functions or that are defined as "Always Show" will be displayed when there is a Group defined as Summary.

- **Allow Filters to be Subgrouped** – this allows for advanced grouping of filters on this DataBook. See *4.3.3 Advanced Filtering* for more information.

- **Filters are Restrictive** – when this box is checked each consecutive filter is restricted by the pre-existing filters.

- **Page Size** – the user may define the number of rows up to 20,000 on a single DataBook page.

4.4 Field Selector

Field Selector, found under the View menu of the DataBook, has been updated with a new look and new functionality.

- All available fields are displayed on the left. Column names shown in green text have already been added to DataBook and are displayed on the right in the **Current DataBook Fields** panel.

- Click the **Column Name** or **Data Request** column header to sort.

- Double click *or* highlight and click **Add Field** to add a single column to the DataBook. Click **Add All** to add all columns at once.

- Columns in the **Current DataBook Fields** panel are displayed in the order in which they will be seen in the DataBook. Drag and drop columns within this panel to change the order.

- Double click *or* highlight and click **Remove Field** to remove a single column from the DataBook. Click **Remove All** to remove all columns at once. These fields will remain available in the Available Fields panel and may be reselected at any time. Note: Columns currently used in a Filter/Group/Sort or Powerfields cannot be removed from the databook and will instead become 'hidden'.

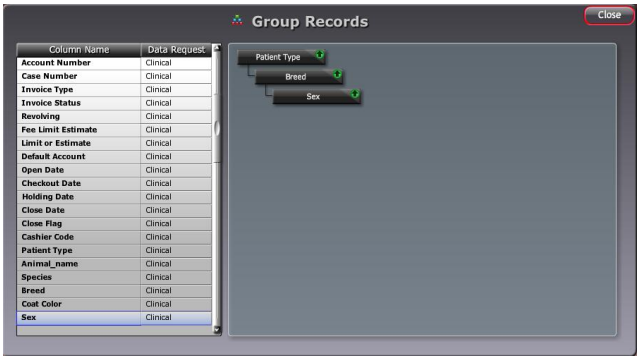
- Calculated fields are displayed with a yellow highlight, tag fields are displayed with a green highlight and Control Values are highlighted in red.

- Clicking the **Hide** checkbox allows the field to be included in the DataBook for filtering or PowerFields calculations but hides the field from view on the DataBook itself.

4.5 Grouping and Sorting

- The user may continue to group and sort columns by dragging and dropping the column header into the panel or the user can now click on the **Group** or **Sort** icon to open the **Group /Sort Records** dialog box.

- Drag and drop or double click a column name to add to the group panel. Drag and drop groups to rearrange or remove. Click **Close** to return to DataBook.



- The user can now reorder the Groups/Sorts directly in the panel by with drag and drop.

4.6 Filtering

4.6.1 Value Selection

- When the user drags the column header to the Filter panel or clicks the Filter icon and selects a column, the new **Filter Builder** dialog box is displayed. For columns defined as list a multi-select option is displayed. The user may click the **Enter Value** button to enter a specific value.

- For numeric values the Filter Builder offers an additional filter option. The **Select Operator** and **Column** dropdowns allow the user to compare the value of this field with a value in another column.

- For date values the Filter Builder offers an additional filter option. The **Date Part Equals** option allows the user to filter on data from a specific date element.

- The user can now drag and drop a data cell from the grid directly into the Filter Panel to auto-create filter criteria without opening the dialog box.

- The user can drag and drop a cell from the grid directly into the Filter Panel to auto-create an appropriate filter. The user is also able to drag and drop a group row into the Filter panel to automatically create a Group Filter, depending on how many levels are contained in the group row.

4.6.2 Boolean (and/or) Filtering

The user now has the ability to apply the logical operation of AND/OR to their filter selection. Select two columns on which to filter. The logical operator dropdown will appear between the two fields. Select **AND** to require both options to be true. Select **OR** to require either option to be true.

4.6.3 Advanced Grouping

The user may also apply some advanced Boolean grouping to the filtering. To enable Advanced Grouping, select **Allow Filters to be Subgrouped** in User Preferences. See *Section 4.5 User Preferences*

To create filter groups, click and drag one filter option on top of another.

When a group is created the **NOT** option is available.

These filter criteria can now be sub-grouped by bringing another field into the filter panel.

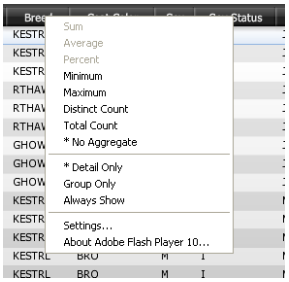
4.7 Locking Filters, Sorts, and Groups

With the appropriate rights the user may now lock/unlock any option in the shaping panel. See *Section 1.2.2 Lock/Unlock DataBook Shaping Elements* for information on new Roles for lock/unlock.

To apply a lock, right click on the appropriate Group, Sort or Filter and click Lock. A padlock icon is displayed. Only a user with the right to Unlock may now remove the selected option from the Shaping Panel.

5 DataBooks – Data Tab

Column Header functions are accessed by right-clicking on a column header.

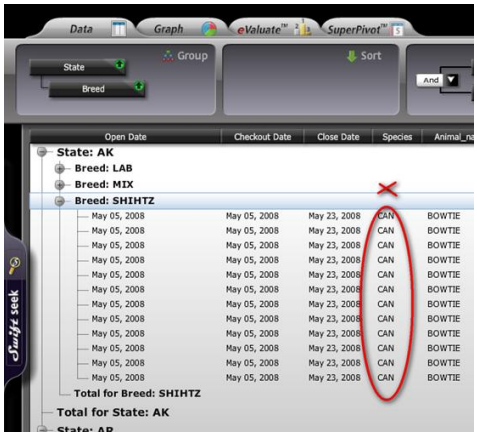


The following column header functions are now available:

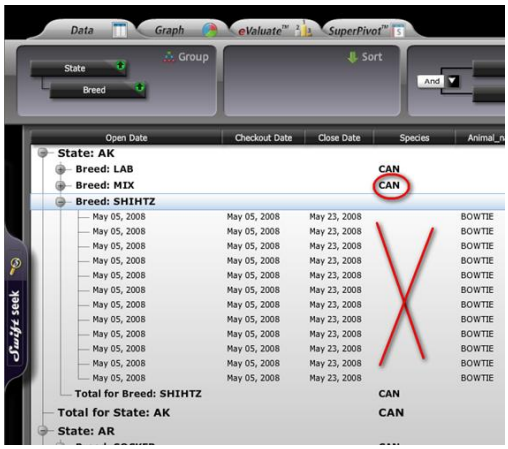
- **Distinct Count** – a new function to display the total number of occurrences for each unique value in a column.

- **No Aggregate** – clears any function selected under a column header.

- **Detail Only** – a new display option to show only column data at the detail level and not on the group level.



- **Group Only** – a new display option that only shows the column values at the group level.

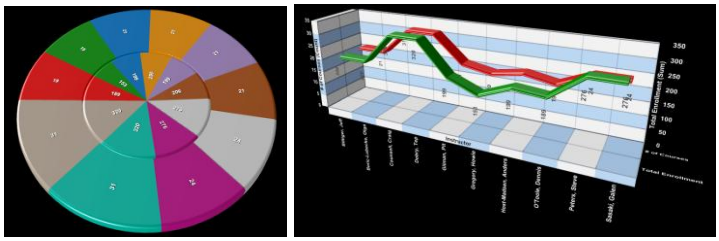


Group Only can be useful when there is a calculated function on a numeric field. In the example below, the average salary by position is calculated using the **Average** function and then the **Group Only** option is applied. The average salary for the group is displayed without the actual salary data of each director being shown.

- **Always Show** – a new display option that shows the column at the group level and the detail level. If multiple values exist in the grouping, **<Multi>** will be displayed.

6 DataBooks – Graph

- Mousing-over a portion of the graph provides more detail about the aggregated data.
- The user may double click any element of the graph to create a new Databook containing the data that makes up that element.
- There is a new SuperPivot bar graph.
- The new ability to **Save as Image** is especially useful for copying the graph to other presentations. See *8.3 Save as Image* for more information.
- **Sort Values** – the user can now choose to sort the graph elements in **Ascending**, **Descending**, or **No Sort** (use the existing sort order).
- **Only Show Top** – by clicking this check box and entering a number of groups, the user can specify how many of the DataBook groups to include in the graph.
- **Include "Other" Group** – by default the graph will include an **Other** group that represents all groups not included in the Only Show Top number. The user can choose to exclude this group. Since this may skew the actual numbers represented in the DataBook, the following note is displayed in the footer of the graph:
    - Note: This graph only represents the [X] largest groups of the data.
- **2nd Value to Compare** – allows the user to graph two series of numbers on a single graph when there are two or more aggregated columns in the Databook. The second series on a pie graph is represented by an interior circle as shown below.



7 DataBooks – SuperPivot

- The user may double click any element of the SuperPivot to create a new Databook containing the data that makes up that element.

- The user can now change the axis of the pivot by clicking the **Swap** button.

- The column header of the SuperPivot now displays the aggregate type.

- If the SuperPivot contains more than 200 total columns, the result will be truncated to 200 columns and a message will be displayed to inform the user. In the previous version the SuperPivot would not display.

8 DataBooks – eValuate

eValuate allows the user to compare one row or group of data against another. In order to perform an eValuate function; there must be at least one numerical value in the data set.

- To eValuate a single row in a DataBook, click on the row and then select the eValuate tab. The row will be evaluated against the entire filtered set within the Databook.

- The user can now eValuate on Group rows. There must be a least one aggregated column in the DataBook. Each aggregate column will be eValuated.

- If there are multiple levels of grouping in a DataBook, clicking on a sub-group will evaluate all subgroups within that subgroup's parent group.

9 PowerFields

PowerFields is a new menu option on the Databook toolbar. PowerFields help the user create calculated expressions and perform data substitutions. There is new functionality to track benchmarks and to create control values that can be applied to either the filters or a calculated field.

9.1 eXpressions

An expression is a formula applied to your data under conditions dictated by the user and displayed in a new column. An expression column is indicated in the DataBook by a yellow highlight.

9.1.1 Creating a New eXpression

1. Click the PowerFields menu option on the DataBook toolbar and select **eXpressions**.

2. Click on the **Add** button in the top left corner of the screen.

3. Enter a **Field Name** for this expression. This will be the text displayed as the column header. The Field Name must be unique.

4. Click the **Data Type** drop-down to select how the data in the Expression field will be displayed. The data types include the following:

    - **Currency -** displays numerical data with two digits after the decimal, and will round to the nearest two digits if more exist. (ex: 1.73)
    - **Date -** displays data in a date format. (mm/dd/yyyy)
    - **Decimal -** displays numerical data with all available digits displayed after the decimal point. (ex: 1.734628937)
    - **Freeform -** displays data exactly as it has been entered. Data is treated as non-numerical. (Ex: 5x7w5p)
    - **Integer -** displays numerical data as a whole number. If digits exist beyond the decimal point, they will be rounded to the next whole number. (ex: 1.743 becomes 2 in integer format)
    - **Percent -** displays numerical data in a percentage format. (ex: .74 becomes 74% in percentage format)
    - **Year -** displays four digit numerical data as a year.
    - **Yes/No -** displays data in a yes or no format-- 0's become no and 1's become yes in this format.

5. Click the **Edit** button in the **Use this Expression** panel. The Expression Builder dialog is displayed. A formula can be created using both DataBook field values and custom entered values.

6. Add DataBook values to the expression in any of the following ways:

    a. Double click the **Column Name** from the list on the left.

    b. Highlight the **Column Name** and click the **Add** button.

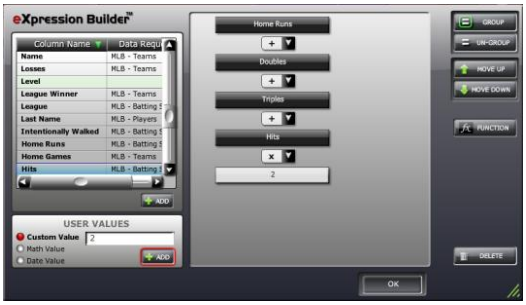
    c. Drag and drop the **Column Name** into the expression panel to the right.

7. User Values: Enter specific values using any of the following three options and then click **Add**.

   a. **Custom Value** – Enter the value, either numeric or text

   b. **Math Value** – select **Pi** or **e** from the dropdown menu.

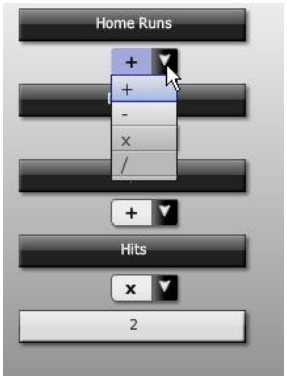
   c. **Date** – select **Current Date** or **Specific Date**. Selecting **Specific Date** will prompt the user to select the date from a calendar or manually enter a date.



9.1.2 Basic Arithmetic and Concatenation

DataBook fields and/or User Values serve as the building blocks for the formula that make up an expression. After adding the fields or values, the user moves to the right panel to begin shaping the formula. Additional values can be added as needed.

To add, subtract, divide or multiply the values of the expression, click the dropdown menu between the two items.



9.1.3 Date Functions

To add date functions to individual values in the expression, click the value to highlight and then click the **Function** button on the right. The functions available are determined by the data type of the selected value.

Date functions are available for data elements defined as a date and include:

- **None** - selecting this option will remove any function previously placed on the data element or allow the user to exit the function menu without applying a function.

- **Get Day (Number)** - pulls the day out of a full date entry. (ex: 6/28/2010 or June 28, 2010 would return "28"). Data Type must be set to: Number.

- **Get Month (Number)** - pulls the month out of a full date entry. (ex: 6/28/2010 or June 28, 2010 would return "6"). Data Type must be set to: Number.

- **Get Year: 2 Digit (Number)** - pulls the year out of a full date entry as a two digit number. (ex: 6/28/2010 or June 28, 2010 would return "10"). Data Type must be set to: Year.

- **Get Year: 4 Digit (Number) -** pulls the year out of a full date entry as a four digit number. (ex: 6/28/2010 or June 28, 2010 would return "2010"). Data Type must be set to: Year.

- **Convert to String ('01/01/09')** - converts data into mm/dd/yy format and removes date functionality so that the data will be treated as a string. (ex: June 28, 2010 or 6/28/2010 becomes "06/28/10"). Data Type must be set to: Freeform.

- **Convert to String ('01/01/2009') -** converts data into a mm/dd/yyyy format and removes date functionality so that the data will be treated as a string. (ex: June 28, 2010 or 6/28/10 become "06/28/2010"). Data Type must be set to: Freeform.

- **Convert to String ('Jan 1, 2009') -** converts data into a "month date, year" format and removes date functionality so that the data will be treated as a string. (ex: 6/28/10 or 6/28/2010 become "June 28, 2010"). Data Type must be set to: Freeform.

- **Convert to String ('01/01/2009 21:30:25.100') -** converts data into a mm/dd/yyyy time format and removes date functionality so that the data will be treated as a string. (ex: 01/01/09 21:30:25:100 becomes "01/01/2009 21:30:25.100"). Data Type must be set to: Freeform.

- **Convert to String ('21:30:25.100') –** displays just the time information from the data and removes date functionality so that the data will be treated as a string. (ex: 01/01/09 21:30:25:100 becomes "21:30:25.100"). Data Type must be set to: Freeform.

- **Adjust (x) Days -** enter the number of days to add or subtract from the current date. (ex: "Adjust +3 Days" applied to 6/28/2010 would return "7/1/2010." "Adjust -3 Days" applied to 6/28/2010 would return "6/25/2010.")

- **Adjust (x) Months -** enter the number of months to add or subtract from the current month. (ex: "Adjust +3 Months" applied to 6/28/2010 would return "9/28/2010." "Adjust -3 Months" applied to 6/28/2010 would return "3/28/2010.")

- **Adjust (x) Years -** enter the number of years to add or subtract from the current year. (ex: "Adjust +3 Years" applied to 6/28/2010 would return "6/28/2013." "Adjust -3 Years" applied to 6/28/2010 would return "6/28/2007.")

- **Last Day of Month -** will change data in this column to show the last day of the month. (ex: 6/28/2010 would return "6/30/2010")

- **Last Day of Quarter -** will change data in this column to show the last day of the quarter. (ex: 10/24/2010 would return "12/31/2010").

- **Last Day of Year -** will change data in this column to show the last day of the year. (ex: 6/28/2010 would return "12/31/2010").

- **Day (x) of the Month -** will change data in this column to show the desired day of the month. (ex: "Day 15 of the Month" would convert 6/28/2010 and 10/24/2010 to 6/15/2010 and 10/15/2010.)

- **Day (x) of the Quarter -** will change the data in this column to show the desired day of the quarter. (ex: "Day 1 of the Quarter" would convert 6/28/2010 to "4/1/2010")

- **Day (x) of the Year -** will change the data in this column to show the desired day of the year. (ex: "Day 15 of the Year" would convert 6/28/2010 to "1/15/2010.")

9.1.4 String Functions

To add string functions to individual values in the expression, click the value to highlight and then click the **Function** button on the right. The functions available are determined by the data type of the selected value.

String functions are available for data elements that include any non-numeric value or numbers that have no numeric significance. **String** data type functions include:

- **None** - selecting this option will remove any function previously placed on the data element or allow the user to exit the function menu without applying a function.

- **Upper Case (ABC)** - this option will convert any text in the field to all capital letters. (ex: John Smith becomes "JOHN SMITH").

- **Lower Case (abc)** - this option will convert any text in the field to all lower case letters. (ex: John Smith becomes "john smith").

- **Proper Case (Abc)** - this option will convert the first letter of any word into a capital letter and make the remaining letters lower case. (ex: johN SMITH becomes "John Smith")

- **Trim Spaces** - this option removes all spaces between words or characters. (ex: John Smith becomes JohnSmith)

- **First (x) Characters** - this option displays only the first "x" characters in that entry. (ex: The "First 3 Characters" in a column with phone numbers would take 843-556-5565 and return "843").

- **Last (x) Characters** - this option displays only the last "x" characters in that entry. (ex: The "Last 7 Characters" in a column with Customer ID information would take 0001374829 and return "1374829").

- **Middle (y) Characters Start at Position (x)** - this option starts "x" characters into the entry and returns "y" number of characters. (ex: The "Middle 3 Characters Start at Position 5" in a column with phone numbers would take 843-556-5565 and return "556").

- **Start at Position (x)** - this option would return all of the characters following "position x." (ex: "Start at Position 4" in a column with Customer ID information would take 0001374829 and return "1374829").

- **Convert to Number**: - this would take numerical data previously categorized as "freeform" or "string" data and convert it to a number, allowing it to be used for numerical calculations.

- **Convert to Date** - this would take "date" data previously categorized as "freeform" or "string" data and convert it to a number, allowing it to be used for date functions.

9.1.5 Mathematical Functions

To add mathematical functions to individual values in the expression, click the value to highlight and then click the **Function** button on the right. The functions available are determined by the data type of the selected value.

Math functions are available for data elements defined as integer, decimal, percentage or currency. They are numeric values.

- **None** - selecting this option will remove any function previously placed on the data element or allow the user to exit the function menu without applying a function.
- **Square Root** - applies a square root to data in this field. (ex: the square root of 36 is 6).
- **Square to Power X** - applies an exponential value to the value in this field. (ex: "Square to Power 4" would take the number "2" to the fourth power, equaling "16").
- **Round** - this option will round the data in this field to the nearest whole number. (ex: "2.75" would round up to "3" and "2.2" would round down to "2").
- **Round Up** - this option will round the data in this field UP to the next whole number. (ex: both "2.75" and "2.2" would round up to "3").
- **Round Down** - this option will round the data in this field DOWN to the next whole number. (ex: both "2.75" and "2.2" would round down to "2").
- **Absolute Value** - this option measures how far numerical data entries are from zero, thereby eliminating negative numbers. (ex: both "3" and "-3" have an absolute value of "3")
- **Sine -** this option finds the sine of the data in this field.
- **Cosine** - this option finds the cosine of the data in this field.
- **Tangent** - this option finds the tangent of the data in this field.
- **Arc Sine** - this option finds the arc sine of the data in this field.
- **Arc Cosine** - this option finds the arc cosine of the data in this field.
- **Arc Tangent** - this option finds the arc tangent of the data in this field.
- **Natural Log** - this option applies a natural logarithm to the data in this field.

- **Convert to String** - this option converts "numerical" data to "string" data so that string functions can be applied.

9.1.6 Grouping the eXpression

The **Group** functionality allows the user to apply parentheses to an expression. To group actions in the eXpression, click on all elements to be included within the parentheses and then click the **Group** button on the right.

Expressions read from top to bottom in the same way that a math equation would read from left to right.
Expressions follow the order of operations. In this way, any formula inside of a set of parentheses or group will be performed first. If there is more than one group, the calculation in the innermost set will be performed first. This followed by any exponential functions, then multiplication and division, then addition and subtraction-from top to bottom.

9.1.7 Changing the Order of Operations

- To change the placement of the elements in the expression, click the element to highlight then click the **Move Up** or **Move Down** buttons on the right.

- To remove a grouping, click the group to highlight and then click the Un-Group button.

- To remove an element from the expression, click the element to highlight then click the **Delete** button.

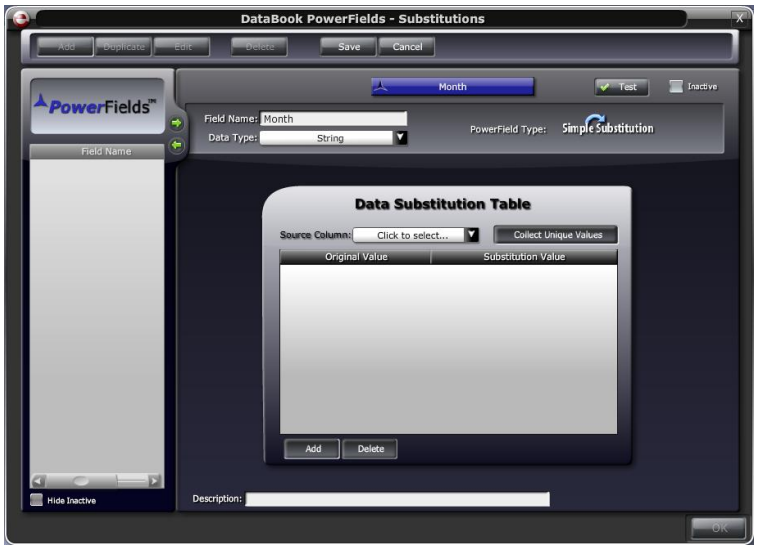
9.1.8 Adding Conditions to the eXpression

From the Expressions main dialog screen, click the **Edit** button under **For these Records** next to the appropriate expression.

The user can use the Filter functionality to specify the data the eXpression should be applied to.

9.2 Substitutions

The Substitutions functionality allows the user to create a new column based on an existing column with simple substitution.



9.2.1 Adding a New Substitution

1. Click the PowerFields menu option of the DataBook toolbar and select **Substitution**.

2. Click on the **Add** button in the top left corner of the screen.

3. Enter a **Field Name** for this expression. This will be the text displayed as the column header.

4. Click the **Data Type** drop-down to select how the data in the Expression field will be displayed. The data types include the following:

   - **Currency -** displays numerical data with two digits after the decimal, and will round to the nearest two digits if more exist. (ex: 1.73)

   - **Date -** displays data in a date format. (mm/dd/yyyy)

   - **Decimal -** displays numerical data with all available digits displayed after the decimal point. (ex: 1.734628937)

   - **Freeform -** displays data exactly as it has been entered. Data is treated as non-numerical. (Ex: 5x7w5p)

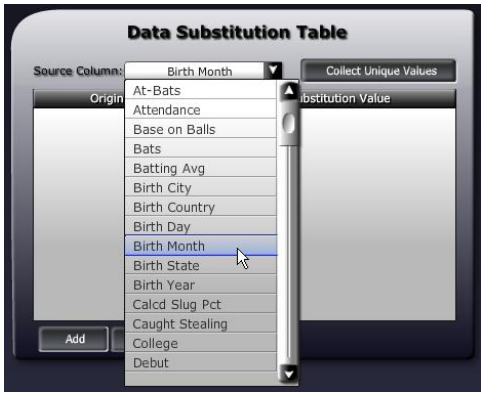
- **Integer -** displays numerical data as a whole number. If digits exist beyond the decimal point, they will be rounded to the next whole number. (ex: 1.743 becomes 2 in integer format)

- **Percent -** displays numerical data in a percentage format. (ex: .74 becomes 74% in percentage format)

- **Year -** displays four digit numerical data as a year.

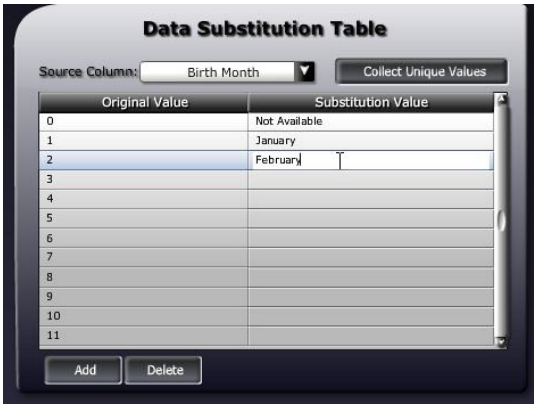
- **Yes/No -** displays data in a yes or no format-- 0's become no and 1's become yes in this format.

5. Click the **Source Column** dropdown to select from a list of all possible columns in the DataBook. Select a column on which to base the substitution.

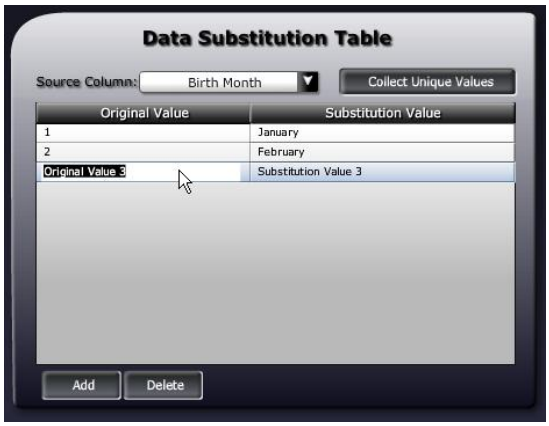


6. Click **Add** to manually add each original value and substitution or click the **Collect Unique Values** button to fill the **Original Value** field with a distinct list of values from the column. For performance purposes, collect unique values will only return the first 500 unique values.

- Using the **Collect Unique Values**, simply fill in the values for which you wish to substitute. Blank substitution values will retain the Original Value in the substitution PowerField output.



- Invalid entries will not be retained in the Substitution Value column. (ex: if the column Data Type is integer, typing the string “Five” will not be saved.)
- Without using the **Collect Unique Values**, the user must enter each original value to be substituted along with each substitution value.



7. When the Data Substitution Table is complete, click the **Test** button to ensure that all substitutions are valid.

8. Click the **Save** button at the top of the screen to save substitution table.

9. Click **OK** to close the Substitutions dialog and return to the DataBook.

10. Click **Refresh** on the DataBook. The new PowerField will be displayed as the right most columns and will be highlighted yellow. This column may be treated as any other DataBook column.

9.3 Control Values

Control Values allow the user to create end-user defined parameter value(s) for a DataBook filter or eXpression. This permits the Databook creator to build complex filters or expressions that may be locked, except for the Control values the end-user is prompted for when opening the DataBook.

9.3.1 Configuring Control Values

1. Click the PowerFields menu option of the DataBook toolbar and select **Configure Control Values**.

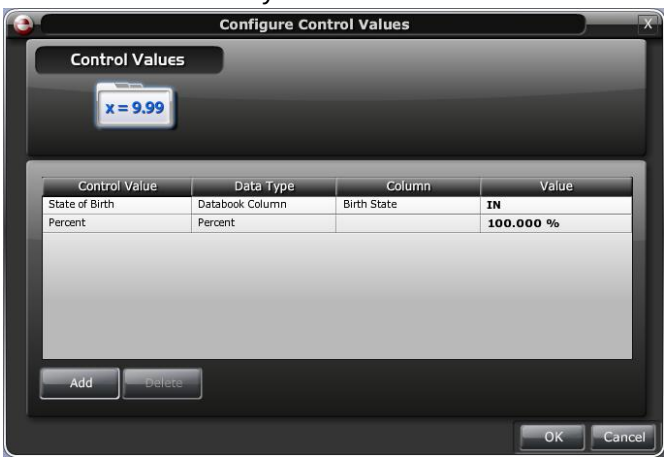
2. Click the **Add** button to enter the first row and first Control Value. Click directly into each row cell to enter the appropriate values. Click **Add** again to add subsequent Control Values.

   - **Control Value** - type the prompt to be presented to the end-user on entering the DataBook.

   - **Data Type** – click the field to open the dropdown. Select the data type appropriate to the end-user response.

- **Column** - if data type is **DataBook Column**, select the appropriate DataBook column. The values from the column selected here will be presented to the end-user for selection. If any other data type is selected this field will remain blank.

- **Value** – enter a default control value. The end-user may edit this value on entry to the DataBook. If this value is a **DataBook Column** data type, the field will contain an ellipses button. Click the button to select a value from a list of the column values. Otherwise enter a value directly into the field.

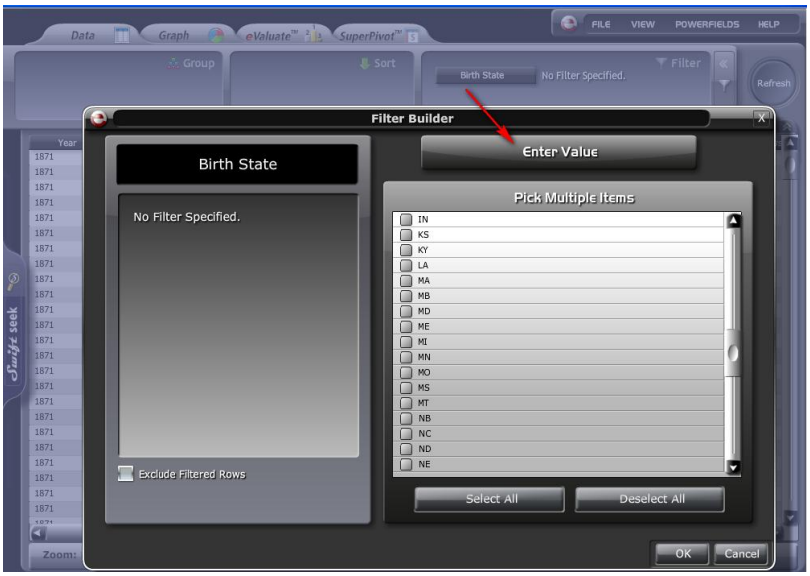


3. Click **OK** to save and close and return to the DataBook. Click **Refresh**.

9.3.2 Using Control Values in Filters

1. Drag the column used in the Control Value to the filter panel.

2. Click the **Enter Value** button on the Filter Builder.



3. Click the **Operator** dropdown and a select the appropriate operator for the filter and then select the **Control Value** field from the **Column** dropdown. All control values will be highlighted in red.

4. Click **OK.**

5. Control Values will only be prompted for if the Databook “Save” properties has a checkbox next to “Ask for Control Values. If this is checked, when the DataBook is next opened, a **Control Values** prompt is displayed.

9.3.3 Using Control Values in Expressions

When creating an expression, the Control Values are displayed as a DataBook value in the Column Name options and may be added to the expression. The value of this field is determined by the end-user when opening the DataBook.

9.3.4 Editing the Control Value from within the DataBook

The end-user may change the value of the Control Value by clicking on the PowerFields menu option and selecting **Enter Control Values**. This option is only available when there are Control Values configured. The end-user would generally NOT have rights to the Configure Control Values option and consequently would never see this menu option.