Charts: using the system to Visualize data

The Orixa includes capability to display data in a wide variety of graphic "chart" formats. Charts are most commonly displayed in System Dashboards, but can also appear in reports.

Charts come in 2 "flavours" charts based on grid-data, which are explained here, and charts which are linked to data-cubes, which are explained in the data-cube help item.

Note that all Orixa data can also be viewed from other business productivity tools such as Microsoft Excel via Excel's ODBC data management systems. Therefore any staff with knowledge and understanding of using Excel charting can build charts in Excel which draw their data from your Orixa database.

Charts are added to the system by adding a data-record to the "Resources" system-table, and then designing the chart within your App to control how your App displays the record. How to do this is dealt with in a developer help topic Creating Reports.

Link to Developer help topic:

Creating Reports, charts and dashboards
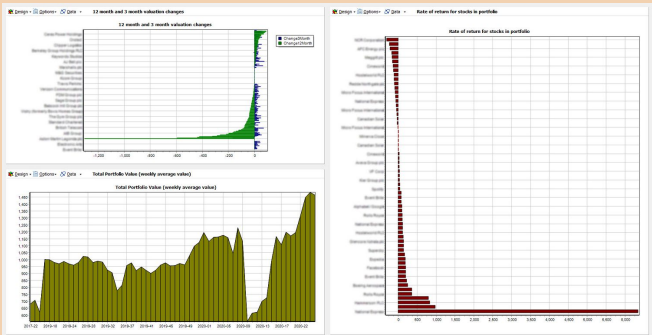
Charts in Dashboards
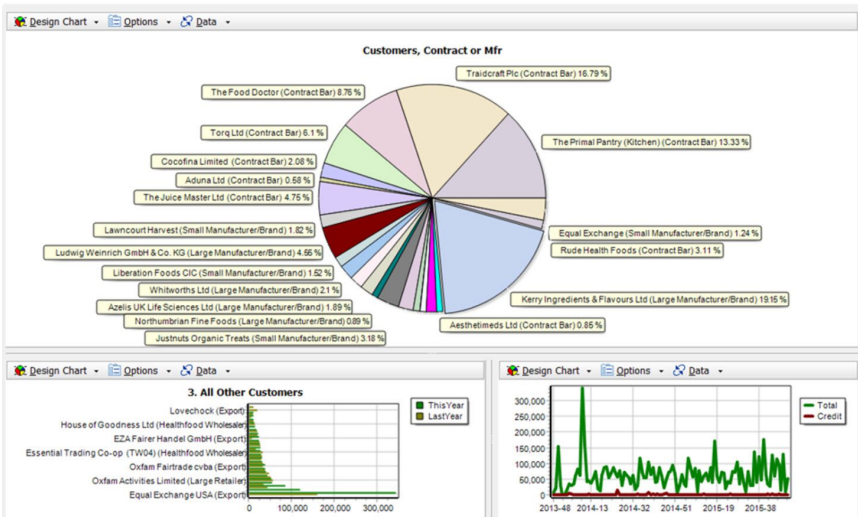
A set of charts displayed in a dashboard in a system

All charts create visualizations using live data from the database of your App. If any user has added data it will automatically be added to the chart giving truly live data-analysis. A wide variety of chart types can be created.

## Examples of types of chart that can be produced in Orixa

All the major charting formats are supported by Orixa, such as vertical and horizontal bar-charts, line and area charts and pie charts. All can be presented in 2D or 3D formats wich customizable colours, labelling and layout.

Charts can be arranged together in Dashboards providing summary data in a selection of different formats within one user-window.

Charts Multibar chart

These styles of charts are excellent for tracking how quantities vary over time.
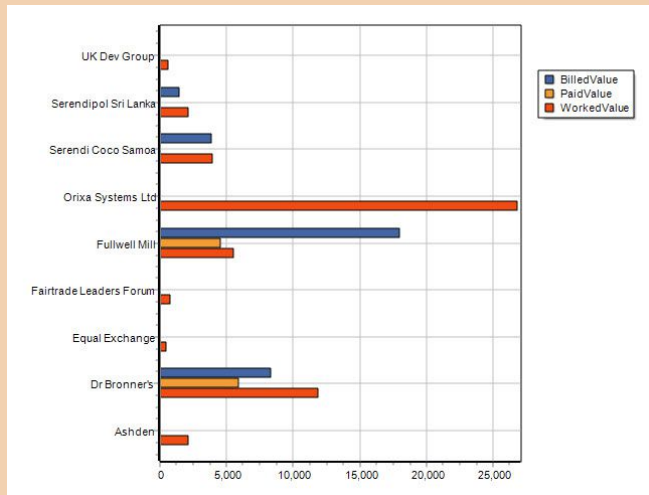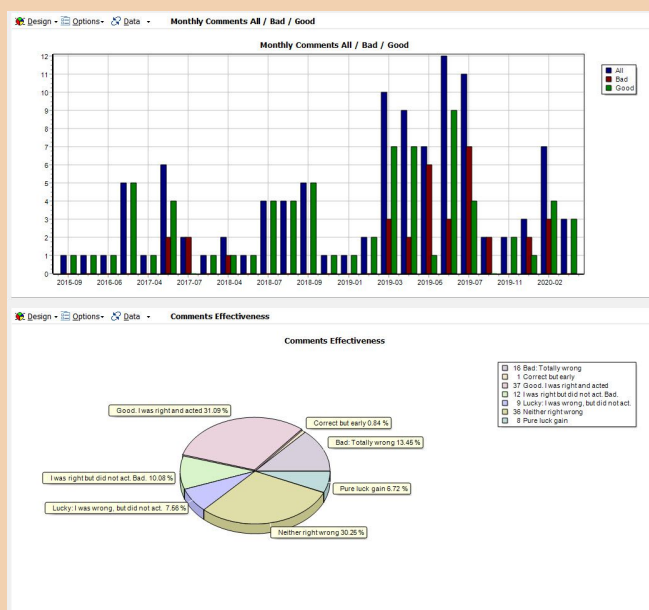

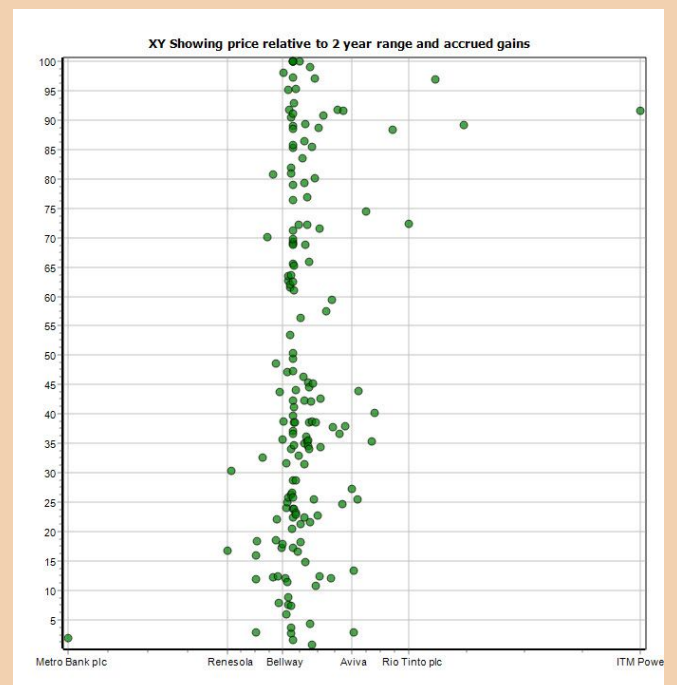**Chart Examples: 3D pie charts and 2D vertical bar charts can be mixed.**

Chart Examples: An XY Scatter chart. This form is extremely useful for data such as the water activity levels of food products.
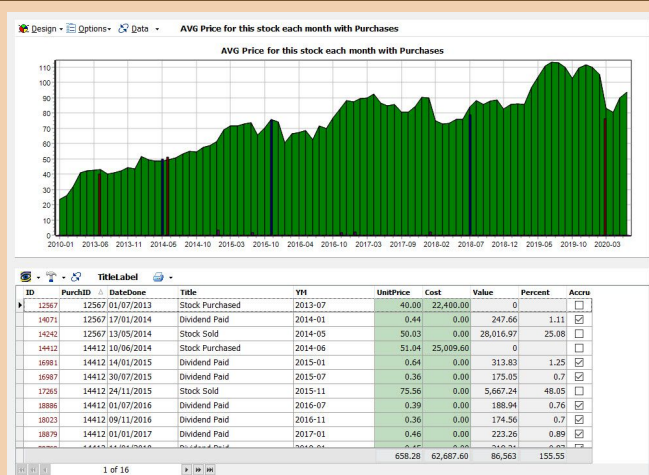

Chart and Grid Example: Dashboards can combine charts with other forms of data-presentation.

All the charts presented in this table are designed within Orixa by users of Orixa Apps, not by specialist programming.

Remember that Orixa data can also be displayed in Excel, via Excel's ODBC data-export capability. Therefore all users with experience of using Excel can access Orixa data there and use it for analysis and review.

Editing and designing Charts

All charts are built from data which is returned from the database. Your System Administrator should write the SQL scripts to do this. Once data has been returned to a dashboard users with adequate security levels are free to edit and update the views shown in the charts.

If a user clicks on "Save" in the "Design Chart" menu then the updated chart will be saved for others to see.
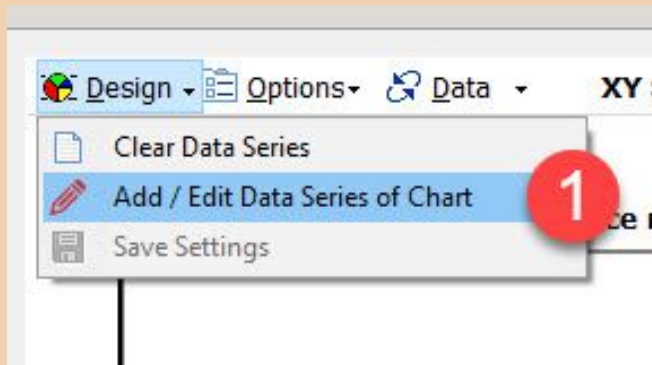

Chart Design menu

The "Design Chart" Button

If you have a new chart which has not yet been set up you need to add "Data series" for the user to view.

This is done from the "Design Chart", "Add / Edit Data...." menu-option (1.)
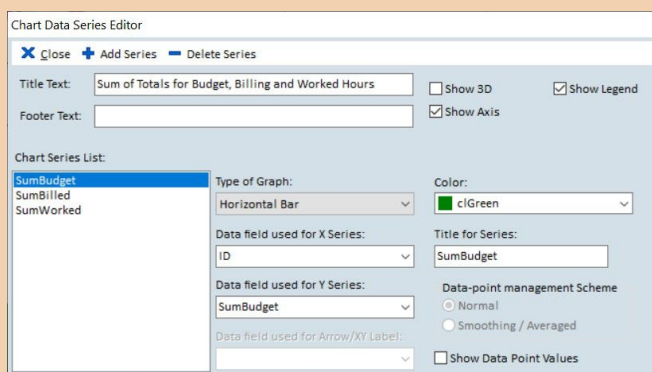

Chart Series Editor

The Chart series designer

Select the Type of Graph, the options for the X and Y series, options for color etc. and click "Update".

After you close you will see how the resulting chart looks.

The easiest way to learn how to use the Chart series designer is to experiment with it.

Chart design has been kept reasonably simple to make it as easy as possible for users to work with it.
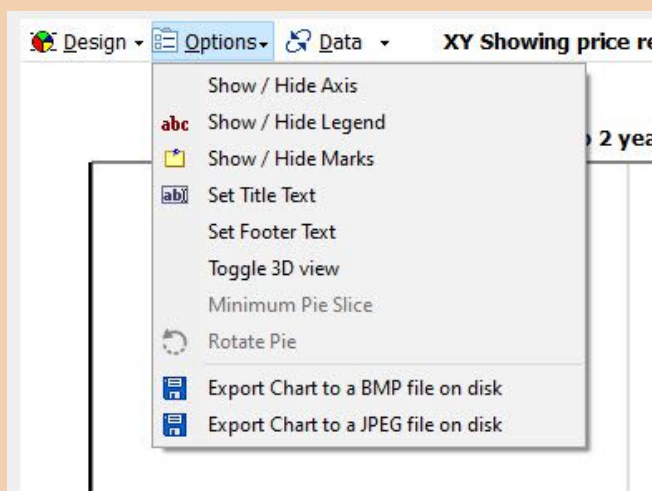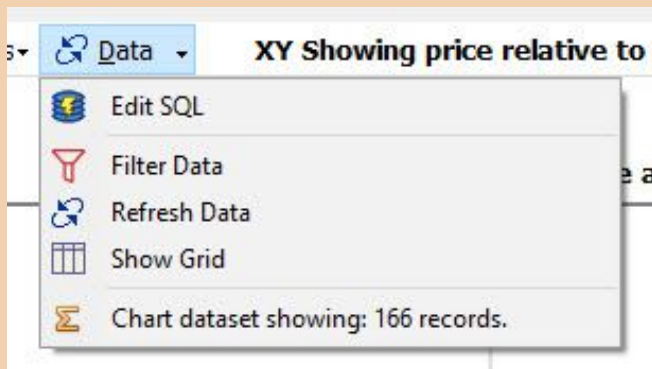

Chart Options Menu

The Options menu

Through this menu various options can be accessed to change the look and layout of a chart.

Most of these options are self-explanitory.

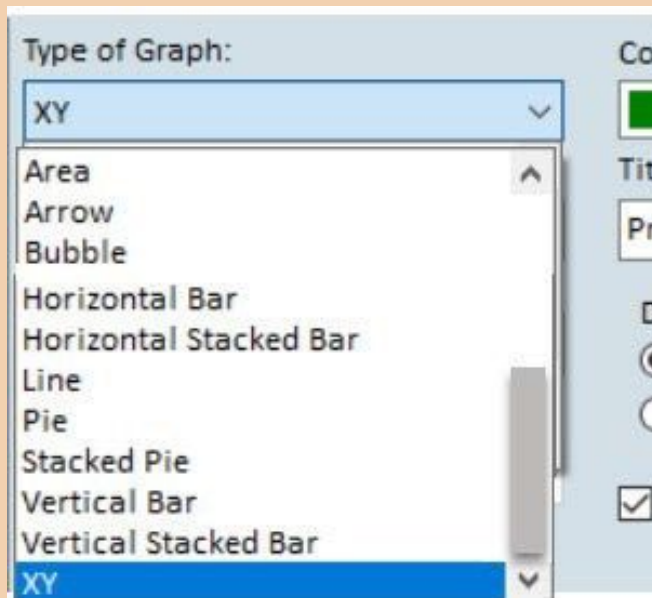Note that this menu also includes options to export any chart as an image file for use outside the system.

The Data Menu

This menu gives access to the underlaying data that is shown in the chart.

It can be Filtered, Shown in a grid, or refreshed.

Note that if a user has adequate security level they can even edit the SQL script which creates the chart.

This allows power-uses to update charts easily, directly within the sytem.

Charts Data Menu

Different Axis Types

Orixa supports a small selection of useful axis types, including more esoteric options such as "Arrow" "Bubble" and "XY" as well as more common options such as Pie and Bar.

Charts Different Axis Types

Note that care needs to be taken in Chart design, to ensure that there is enough screen-space to effectively display a chart. Too little space on-screen may result in a "squashed" chart which does not really show useful data.

There is an art to writing SQL Scripts which return data which is suitable for display in a Chart format.

Actually Editing a Chart-Series
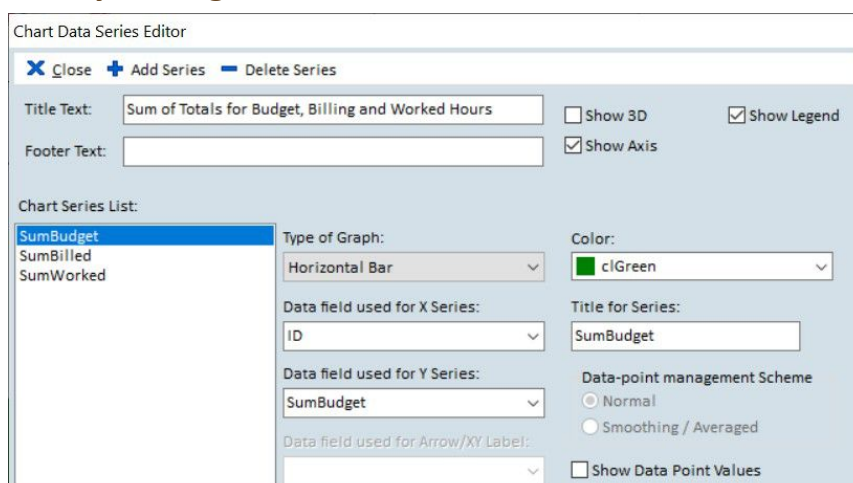
Editing a chart series: Step by step guide.

1. All the "Series" in the chart (the displayed data) are listed in the Chart Series List Box. Click on any series

1. and click "Add or "Delete" to add and remove a series.

2. Select the type of chart series from the drop-down list (note the full list in the "Different Axis Types" table above).

3. Select the data-fields to use for the axis and value, or X and Y value of the chart. Note that the display here varies depending on the type of chart selected.

4. Some chart types require 2 and other require 3 data fields. In the image above only 2 are enabled for data entry, but if the "Arrow" or "Bubble" chart-types are selected all three fields will accept user-data.

5. Select the color of the data-series.

6. Select a title for the series.

7. Data can be displayed "as is" or a 5-point rolling average display mechanism can be used. Use the "Smoothing/Averaged" option if the data contains a high level of fluctuation and you wish to reduce this without mis-representing the data.

8. If the "Show Data Point Values" box is ticked data-points on the chart will have a label added showing the value. This can be very messy on complex chart-types, so it is left un-ticked by default.

9. Chart Settings Panel. Edit the values in these fields to change how the charts basic features display. The values in these fields do not affect the types of chart-series that are displayed, but change the look of the whole chart.

Common Errors when creating charts:

- The data-field selected for the "value" component(s) of a chart-series **must** be numbers. If a text, date or string field is selected an error will occur.

- It is hard to mix certain chart-types, but Orixa will still try to display them if it can. If one chart-series is a pie-chart and a second is an XY chart Orixa will display a very messy chart which does not make sense.

Chart Types to choose for different types of data:

- **Pie charts and Bar charts** to display 5 – 25 records.

- **Horizontal Bar charts** to display 15 – 60 records.

- **Line charts** to display large numbers of data points, up to thousands. If your dataset is returning larger numbers than this it will not improve visually and it will be slow to load, but it will still display. Try to rewrite the SQL for your chart with additional GROUP BY clauses to reduce the size of the dataset.

- **XY Charts** to show the "scatter" of data, for example the spread of the level of productivity of different farmers against the size of their farms. This allows you to see which size of farmer is the most prodictive in an interactive scatter-chart form.

It is rarely useful to display charts that contain many hundreds or thousands of values, as the graphic format of chart representation does not easily convey such large densities of data. If your dataset is returning larger numbers than this it will not improve visually and it will be slow to load, but it will still display. Try to rewrite the SQL for your chart with additional GROUP BY clauses to reduce the size of the dataset.