



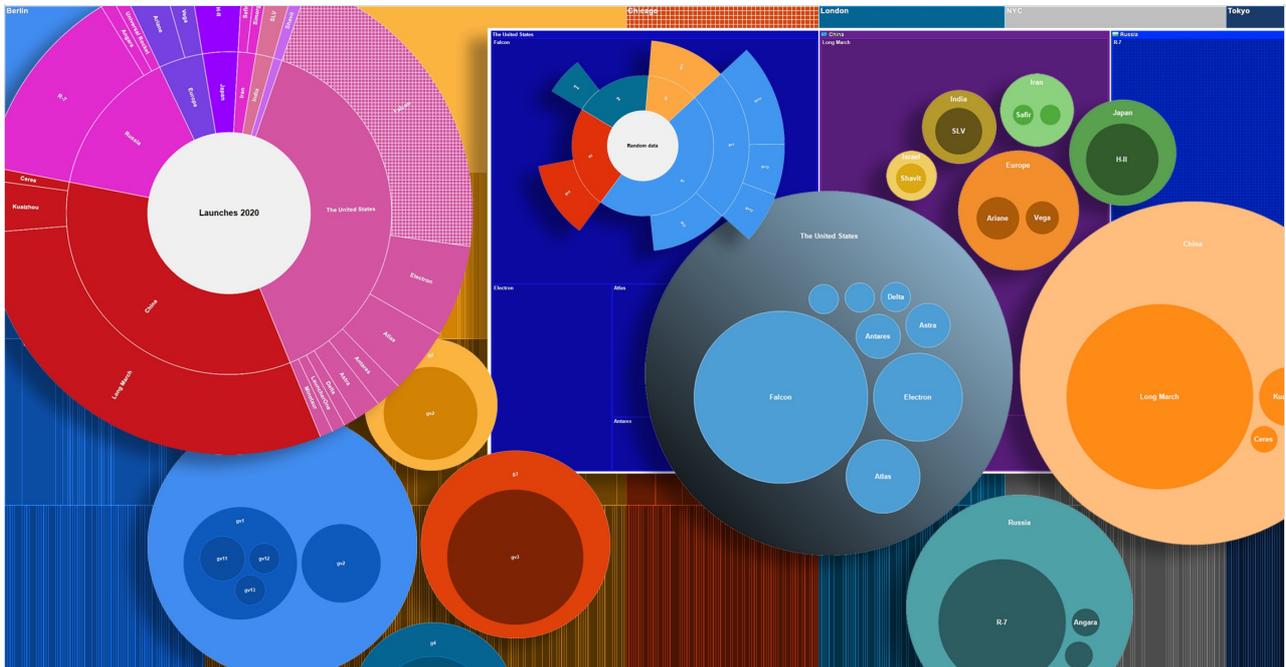
# **FastReport Business Graphics Programmer Manual**

Version 2022.1

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# General Information

FastReport Business Graphics is a library for data visualization and analysis.



FastReport Business Graphics includes the following charts:

- [TreeMap](#);
- [Bubble](#);
- [Sunburst](#);
- [Icicle](#);
- [Gantt Chart](#).

At the moment, working with WinForms and .NET Framework 4.x applications is supported.

[Installing into Visual Studio Toolbox](#)

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# Installing into Visual Studio Toolbox

To install the `FastReport Business Graphics` components into Visual Studio Toolbox manually, do the following:

- delete the `FastReport Business Graphics` category from the Toolbox if it is there;
- create a new category (to do this, right-click the Toolbox and select "Add Tab" item) or select the existing category into which you would like to add the FastReport components;
- right-click on the selected category and select "Choose Items...";
- in the window that opens, click the "Browse..." button and select the FastReport.BG.dll file (located in the "C:\Program Files\FastReports\FastReport.BG" folder);
- close the window with the OK button.

After that, you will see the following visual `FastReport Business Graphics` components in the category you had selected:

- Treemap;
- Bubble;
- Sunburst;
- Icicle;
- BreadCrumbs;
- GanttChart.

# Compiling the source code

A source code of the FastReport.BG.dll library is shipped with **FastReport Business Graphics** Professional edition. You may include it in your application. Let us demonstrate how to do this:

- open your project in Visual Studio;
- open Solution Explorer window and right-click on the "Solution" item;
- choose the "Add/Existing Project..." item;
- add the "FastReport.BG.csproj" file (it is located in the "C:\Program Files\FastReports\FastReport.BG\Source" folder);

Turn off assembly signing for **FastReport Business Graphics** project. To do this:

- right-click the "FastReport.BG" project;
- choose the "Properties" item;
- switch to the "Signing" tab and uncheck the "Sign the assembly" checkbox.

# Deployment

You may disseminate the following files along with your application:

- FastReport.BG.dll - the main `FastReport Business Graphics` library;
- FastReport.BG.xml - comments to classes, properties and methods used in `FastReport Business Graphics`.  
This file is used by the script editor and in the hint panels (when selecting a function in the "Data" window or any property in the "Properties" window). There is no obligation to distribute this file.

# Integrating **FastReport Business Graphics** into **FastReport .NET**

It is possible to connect and use FastReport.BG charts in [FastReport .NET](#). To do this, you should first [build the FastReport Business Graphics library](#).

After that, you need to add the reference to the assembled library to the FastReportBG Object plugin. The source code of the plugin can be found in the FastReport .NET distribution in the `Extras\Objects\FastReportBGObjects` folder.

After the plugin has been built, add it to FastReport .NET. [This can be done in the FastReport .NET designer](#).

After installing the plugin, restart the designer.

# FastReport Business Graphics charts

This chapter describes the available [FastReport Business Graphics](#) charts, classes and principles of working with them:

[Hierarchical data sources](#)

[Creating a new chart](#)

[Sunburst chart](#)

[TreeMap chart](#)

[Bubble chart](#)

[Icicle chart](#)

[Gantt chart](#)

[Data sources for the Gantt chart](#)

[BreadCrumbs](#)

[Editing charts](#)

[Export to various graphical formats](#)

# Hierarchical data sources

There are two classes in the `FastReport Business Graphics` standard set that provide data representation for hierarchical charts.

## HierarchicalRecordsSource

This class allows specifying data manually. To do this, fill the `Records` collection with `HierarchicalRecord` elements, each with `Text` and `Value` fields to define the text and value of the record, and the `Children` collection in which child records are placed.

Thus, the `Children` and `Parent` fields (filled automatically) build a hierarchical relationship between records.

In the following example, we create an instance of `HierarchicalRecordsSource` and add to it the `Bakery products` record, which in turn contains three child records: `Ciabatta`, `Bread` and `Croissant`.

```
HierarchicalRecordsSource recordsSource = new HierarchicalRecordsSource();

// Creating a "Bakery products" record. The constructor for creating a record may not take a value if it
// is a record containing child nodes
HierarchicalRecord r = new HierarchicalRecord("Bakery products");

// Creating child records. Text and value are passed to the constructor
r.Children.Add(new HierarchicalRecord("Ciabatta", 3));
r.Children.Add(new HierarchicalRecord("Bread", 5));
r.Children.Add(new HierarchicalRecord("Croissant", 1));

// Adding a parent record to the list of source records
recordsSource.Records.Add(r);
```

Some charts, such as `Sunburst`, can display a root element. To set the parameters of the root element, the `Root` property must be filled in.

```
recordsSource.Root.Text = "Root element";
```

## HierarchicalListSource

This class allows building a hierarchical structure based on tabular sources (`System.Data.DataSet`, `System.Array`) using the standard `DataBinding` procedure.

To build a hierarchy, set the `LevelTextMembers` collection with field names in nesting order.

For example:

```
listSource.LevelTextMembers.Add("Country");
listSource.LevelTextMembers.Add("City");
```

The `ValueMember` field specifies the field that will be used to define the record value.

Suppose you have a `DataTable` with the `Country` and `City` fields setting the hierarchy and the `Population` field

setting the value. To load the data from `DataTable` , we need the following code:

```
listSource = new HierarchicalListSource();
listSource.BeginInit();
listSource.DataSource = dataTable;
listSource.LevelTextMembers.Add("Country");
listSource.LevelTextMembers.Add("City");
listSource.ValueMember = "Population";
listSource.EndInit();
```

Note that we use the `BeginInit()` and `EndInit()` calls to disable events triggering during property setup.

# Creating a chart

To create a chart from a program, use the following code:

```
// Create a TreeMap chart
TreeMap treeMap = new TreeMap();
```

Then connect a data source to the chart. There are various data sources for hierarchical charts and you can read about them in the chapter ["Hierarchical Data Sources"] (HierarchicalDataSource.md).

Let us create the data source, fill in the information, and connect the data source:

```
HierarchicalRecordsSource treeMapRecordsSource = new HierarchicalRecordsSource();
// Start of initialization - allows to disable the call of source change events
treeMapRecordsSource.BeginInit();
// Creating a "Bakery products" record. The constructor for creating a record may not take a value if it
is a record containing child nodes
HierarchicalRecord r = new HierarchicalRecord("Bakery products");
// Creating child records. The text and value are passed to the constructor
r.Children.Add(new HierarchicalRecord("Ciabatta", 3));
r.Children.Add(new HierarchicalRecord("Bread", 5));
r.Children.Add(new HierarchicalRecord("Croissant", 1));

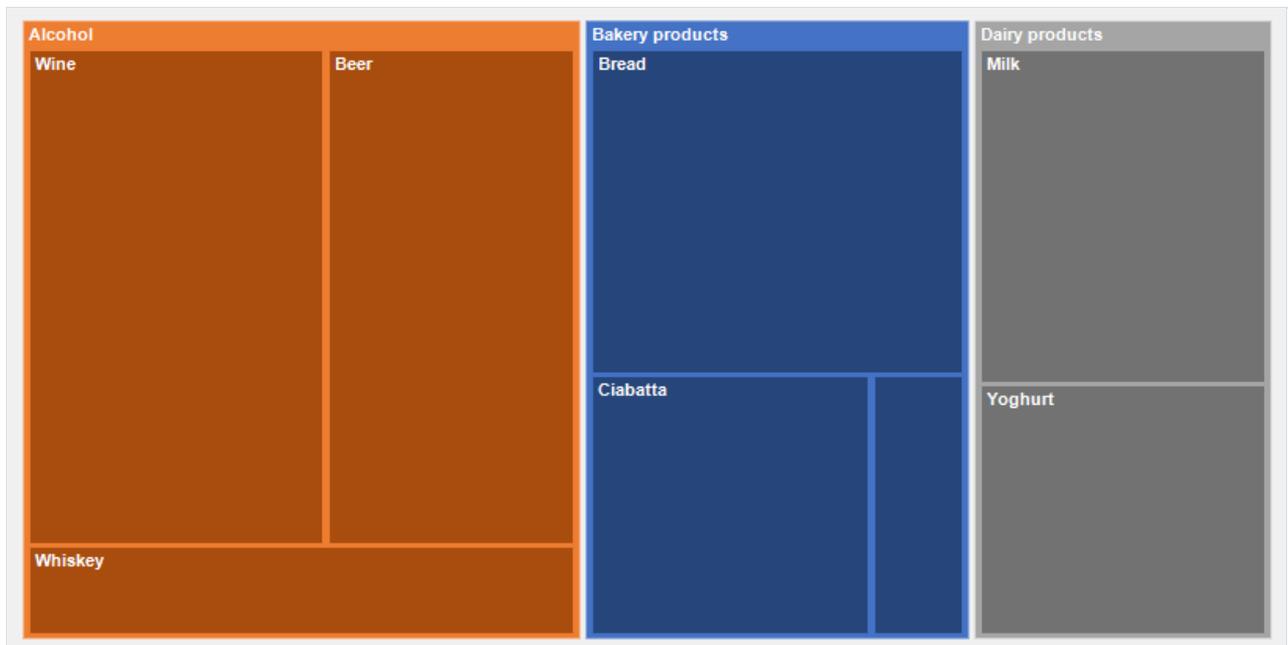
// Adding a parent record to the list of source records
treeMapRecordsSource.Records.Add(r);

// Similarly, create other records
r = new HierarchicalRecord("Alcohol");
r.Children.Add(new HierarchicalRecord("Wine", 6));
r.Children.Add(new HierarchicalRecord("Whiskey", 2));
r.Children.Add(new HierarchicalRecord("Beer", 5));
treeMapRecordsSource.Records.Add(r);

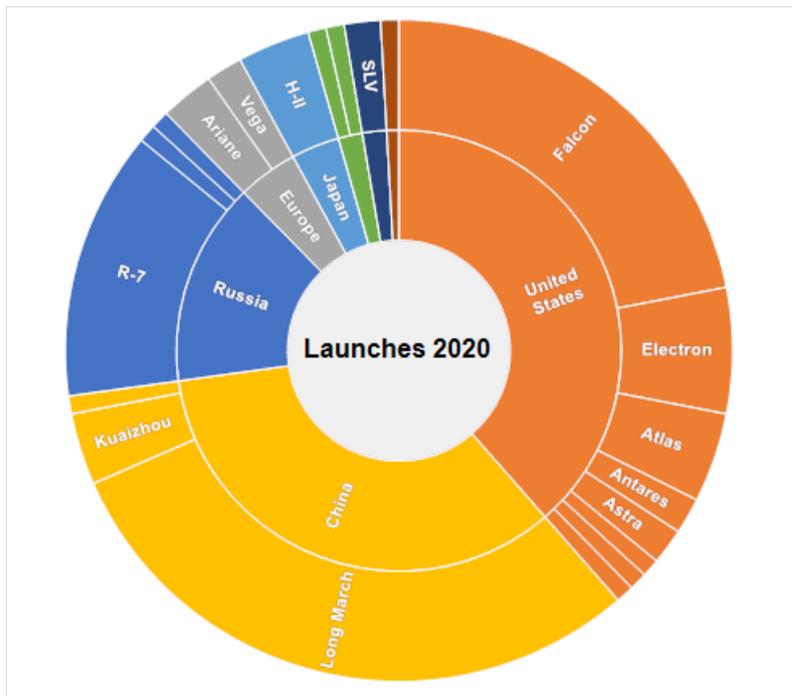
r = new HierarchicalRecord("Dairy products");
r.Children.Add(new HierarchicalRecord("Yoghurt", 3));
r.Children.Add(new HierarchicalRecord("Milk", 4));
treeMapRecordsSource.Records.Add(r);

// End of the source initialization
treeMapRecordsSource.EndInit();
// Connecting to the data source of the list chart
treeMap.DataSource = treeMapRecordsSource;
```

After you connect the data source, the chart will look like this:



# Sunburst chart



## Description

This is a sun-like chart with branching rays. The circle in the center is the root node, and the rays that move outward are the child elements. Each value in the chart occupies an area with the boundaries defined by the starting angle and the scanning angle. The larger the value which should be displayed on the chart, the larger the scanning angle.

## Applications

The chart is suitable for analyzing each level of the hierarchy.

## Starting angle

The starting angle is the property determining from which angle the building of the Sunburst chart will start. The initial value is `-90`, i.e. the building starts from the top central point. To change the angle, it is necessary to use the `StartAngle`` property.

```
sunburst.StartAngle = 35;
```

## Text direction

In the Sunburst chart, the text direction can be changed. To do this, change the `TextDireccion` property of the Sunburst object. There are 2 types of text direction:

1. Radial - in this mode, the text will be directed as rays from the center;
2. Tangential - in this mode, the text will be displayed circle-wise inside the chart.

```
Sunburst sunburst = new Sunburst();

// Radial text display mode for the Sunburst chart
sunburst.TextDirection = TextDirection.Radial;

// Tangential text display mode for the Sunburst chart
sunburst.TextDirection = TextDirection.Tangetial;
```

# Treemap chart



## Description

A TreeMap chart is a mode of visualizing hierarchical data in the form of rectangles with areas proportional to the values of the displayed records. Inside the rectangles of parent records, rectangles of child records are nested.

## Applications

A tree chart is suitable for simultaneous comparison of several hierarchies.

## Display mode

The TreeMap chart display mode can be changed. There are two standard display modes:

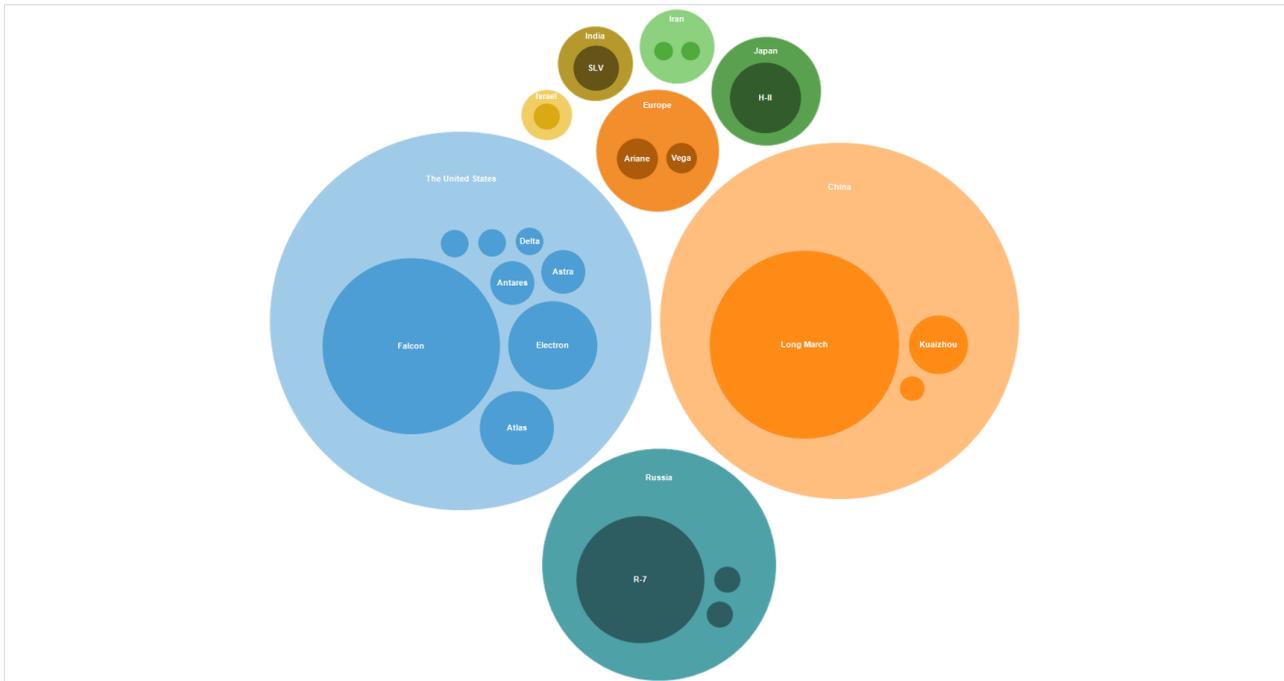
1. `BestAspectRatio` (default) - in this mode, the area builder will make the rectangles aspect ratio as close to 1 as possible.
2. `UseMinAspect` - in this mode, the area builder considers the available width and height and chooses the minimal length (width or height) for each rectangle.

To change the display mode, use the `LayoutMode` property:

```
// The TreeMap chart display mode with the best aspect ratio
treeMap.LayoutMode = TreeMapLayoutMode.BestAspectRatio;
// The display mode in which the hierarchical records will use the smallest aspect ratio
treeMap.LayoutMode = TreeMapLayoutMode.UseMinAspect;
```

In addition, if necessary, you can create your own area builder class and connect it to the component by overriding the `GetLayoutBuilder` event.

# Bubble Chart



## Description

A **Bubble** chart is a way of visualizing hierarchical data in the form of circles whose area is proportional to the value of the displayed record. Inside the circles of parent records the circles of child records can be nested. The arrangement of the circles is formed using packing program based on Grotker algorithm, modified for better display of hierarchical data [^1]. The principle of the Bubble is largely similar to the [TreeMap chart](#).

Object captions are displayed in the center of the circle if there are no children or if their display is turned off. If the circle has child circles in the hierarchy, they are drawn with an offset downwards, and the text description is placed in the free space above these circles. If the caption cannot be displayed due to the small size of the free space in the object, the caption is not displayed. It is always possible to display the caption when hovering the mouse cursor in the tooltip. Values of very small values in relation to the parent object are not displayed in the chart.

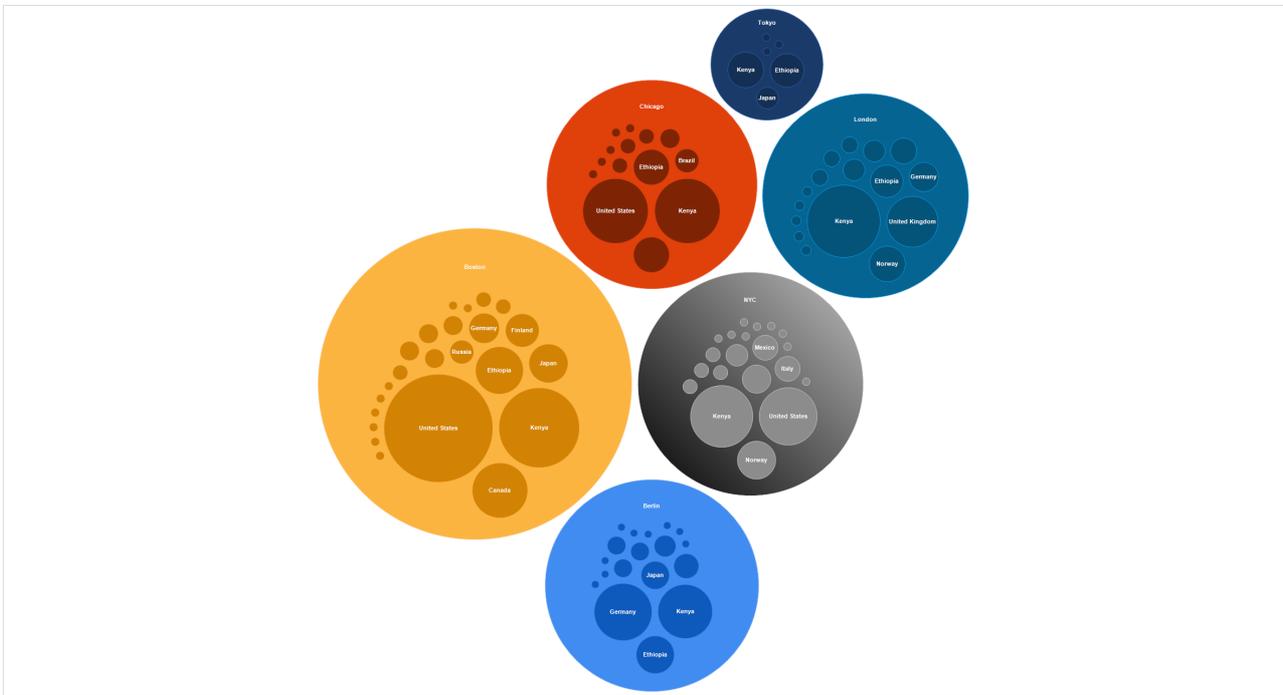
The layout of the circles in the chart is formed completely automatically and depends on the values of the data source records. The size of the chart depends on the size of the rectangular area of the object. The circles are arranged around the center of the chart.

The data source for the **Bubble** chart is "[HierarchicalDataSource](#)".

Note that although the areas of the circles illustrate the values at the same level of the hierarchy, the area of the circle containing the display of nested values is not the same as the sum of the areas of those values - it is just an illustration of the grouping to display a nested hierarchy.

Switching to the visualization of one of the elements of the hierarchy is possible by double-clicking on the selected object. You can return to the previous hierarchy level by double-clicking on the circle illustrating the **current** hierarchy level or by using the navigation object "[Breadcrumb](#)".

## Using



A tree chart is suitable for comparing several hierarchies simultaneously, as well as for a visual comparison of values at the same level of the hierarchy.

When preparing the data source, you should pay **special attention** to the fact that the number of values at one hierarchy level should not be too large. Otherwise, the perception of the constructed chart can be difficult. You should also apply a preliminary grouping of small values in order to combine them into one value (for example: "Others"). When setting the maximum displayed depth property `MaxDepth`, it is also worth limiting to one or two levels to improve the perception of the chart.

By default, the values from the data source are interpreted as the area of the circle. The larger the value, the larger the area of the circle and vice versa. In some cases it can be useful to directly match the value from the data source to the diameter of the circle, for example when comparing the geometric sizes of objects (e.g., the sizes of planets). To enable this visualization mode, you must use the `ValueViewType` property. By default, this property contains a value of `ValueViewType.Square`, and it can be toggled to `ValueViewType.Absolute` to display absolute values from the data source.

The appearance of the chart can be customized from the program code or by using the integrated [Style editor](#).

## Example

Below is an example of creating a hierarchical data source directly in the application code and saving a `Bubble` diagram to a file.

```

using (Bubble bubble = new Bubble())
{
    bubble.Width = 1024;
    bubble.Height = 1024;
    bubble.Palette.PaletteType = PaletteType.EarthTones;

    using (HierarchicalRecordsSource source = new HierarchicalRecordsSource())
    {
        source.BeginInit();
        HierarchicalRecord r = new HierarchicalRecord("Great Britain");
        r.Children.Add(new HierarchicalRecord("Bitter", 3));
        r.Children.Add(new HierarchicalRecord("Brown", 4));
        r.Children.Add(new HierarchicalRecord("Scottish", 3));
        source.Records.Add(r);
        r = new HierarchicalRecord("Ireland");
        r.Children.Add(new HierarchicalRecord("Irish Beer", 6));
        source.Records.Add(r);
        r = new HierarchicalRecord("North America");
        r.Children.Add(new HierarchicalRecord("Standard", 16));
        r.Children.Add(new HierarchicalRecord("Pale", 8));
        r.Children.Add(new HierarchicalRecord("Amber", 6));
        source.Records.Add(r);
        r = new HierarchicalRecord("Belgium");
        r.Children.Add(new HierarchicalRecord("Ale", 4));
        r.Children.Add(new HierarchicalRecord("Strong", 7));
        source.Records.Add(r);
        r = new HierarchicalRecord("Czech Republic");
        r.Children.Add(new HierarchicalRecord("Czech Lager", 8));
        source.Records.Add(r);
        r = new HierarchicalRecord("France");
        r.Children.Add(new HierarchicalRecord("Ale", 6));
        source.Records.Add(r);
        r = new HierarchicalRecord("Germany");
        r.Children.Add(new HierarchicalRecord("Wheat Beer", 12));
        source.Records.Add(r);
        r = new HierarchicalRecord("Europe");
        r.Children.Add(new HierarchicalRecord("Malty", 3));
        r.Children.Add(new HierarchicalRecord("Bitter", 6));
        r.Children.Add(new HierarchicalRecord("Dark", 4));
        source.Records.Add(r);
        r = new HierarchicalRecord("Other");
        r.Children.Add(new HierarchicalRecord("Lager", 13));
        r.Children.Add(new HierarchicalRecord("Commonwealth", 19));
        source.Records.Add(r);
        source.EndInit();

        bubble.DataSource = source;

        using (ImageExport export = new ImageExport())
        {
            export.ImageFormat = ImageExportFormat.Png;
            export.Export(bubble);
        }
    }
}

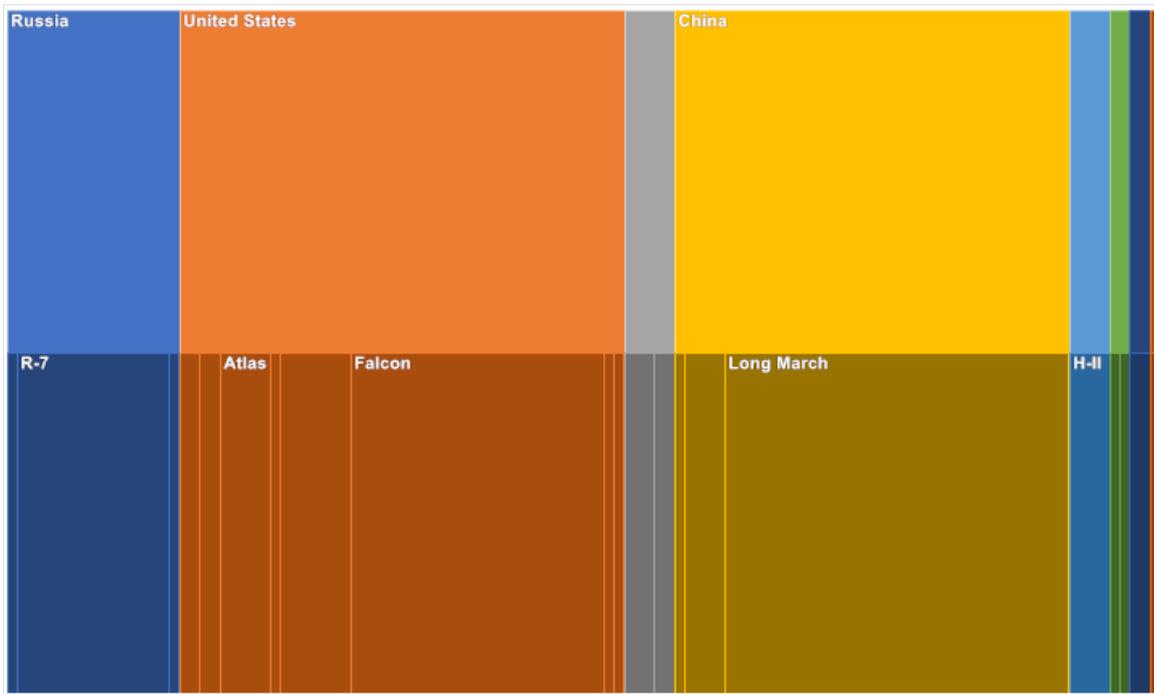
```

The result of the code can be seen in the following picture:



[^1]: Wang et al. Visualization of large hierarchical data by circle packing. In Proceedings of the SIGCHI conference on Human Factors in computing systems, pages 517-520, Montréal, Québec, Canada, 2006: ACM Press.

# Icicle chart



## Description

The Icicle chart represents data based on the hierarchical clustering method. The Icicle chart is easier to read, showing which hierarchy the objects belong to and which objects are child ones. The large rectangle at the top of the chart represents the root node, whose width depends on the sum of the child nodes. The child nodes are placed below the parent nodes. The chart can also have several drawing directions: downwards, upwards, leftwards, and rightwards.

## Applications

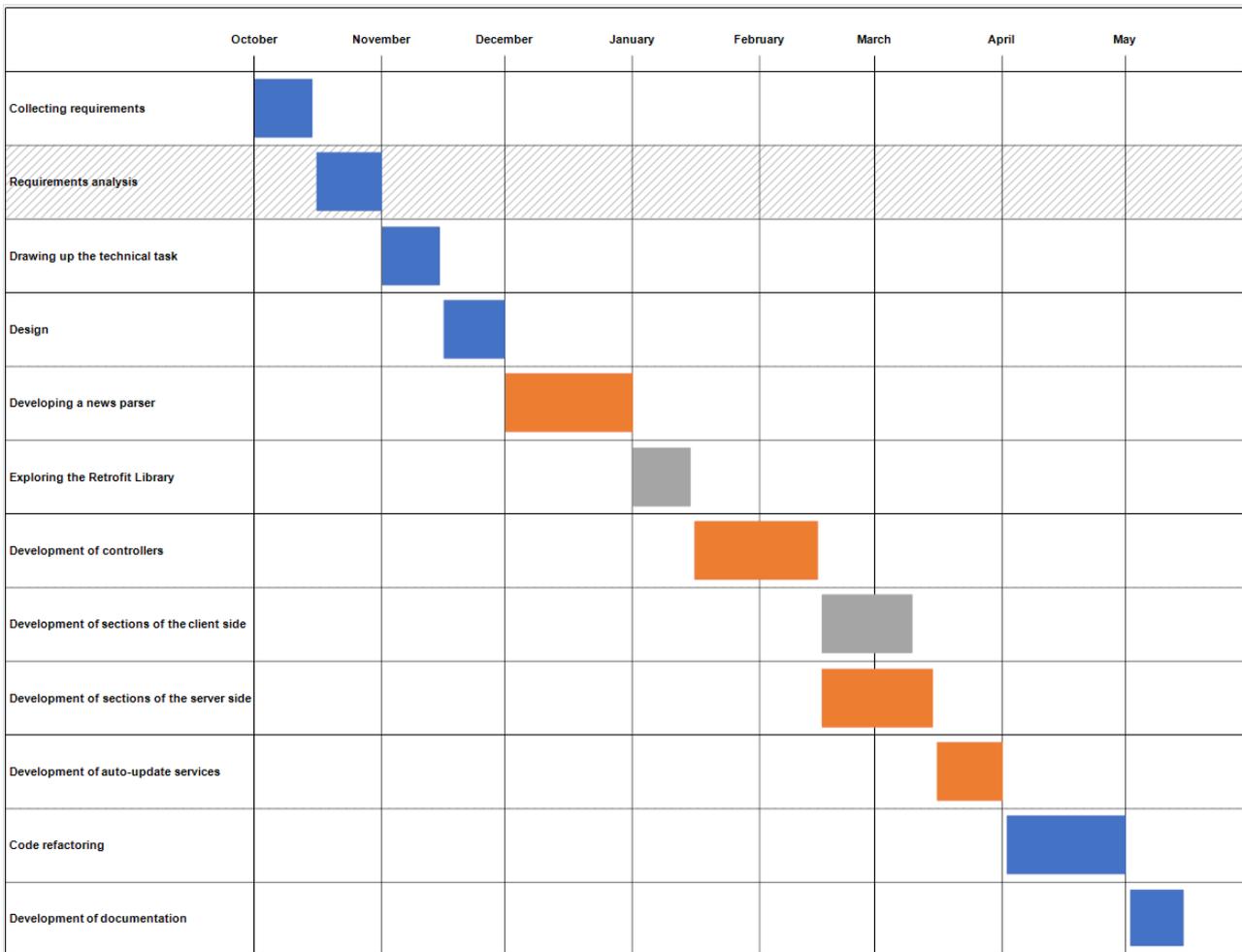
An icicle chart is a good way to visualize hierarchical data. Its advantage is an easily seen hierarchy, its size, and the level at which it is located. It is also great for examining data relationships.

## Change of direction

In the Icicle chart, you can change the direction of the chart itself (originally set to Down). To do this, use the `Direction` property:

```
Icicle icicle = new Icicle();  
icicle.Direction = IcicleDirection.Right;
```

# GanttChart



## Description

A Gantt chart illustrates a work plan/schedule for a project. It consists of two parts: the left part has a list of tasks, and the right part has a timeline with bars that depict the work. The colors for the intervals are allocated according to the resources from the palette.

## Application

The Gantt chart makes it possible to solve one of the main tasks of business process planning and show the staff what to work on, what resources to apply in the process and at what speed to perform certain tasks. Using a Gantt chart greatly simplifies the management of small-scale projects.

## Maximum width of the left side

The `MaxLeftPartWidth` property is used to specify the maximum width that the left part of the task names can have. The initial value is `500`. To change the angle you need to refer to the `MaxLeftPartWidth` property.

```
gantt.MaxLeftPartWidth = 150;
```

## Text at intervals

This property enables or disables the rendering of the task name along with the interval. The initial value is `false`. To change it you need to refer to the `TextOnIntervals` property.

```
gantt.TextOnIntervals = true;
```

## Text position

If the `TextOnIntervals` property is true, you can change the position of the text relative to the interval. There are 2 standard display modes:

1. `Left` (default) - the text will be drawn to the left of the interval.
2. `Center` - the text will be drawn in the middle of the interval.

To change the display mode it is necessary to refer to the property `TextPosition`.

```
//The mode in which the text will be drawn to the left of the interval
gantt.TextPosition = TextPosition.Left;
//The mode in which the text will be drawn in the middle of the interval
gantt.TextPosition = TextPosition.Center;
```

Also note that the text will be drawn only if there is room for it.

## Chart distance

The chart can have several scaling distances. To do this, you must change the `Distance` property. The standard value is `Month`. Each of them is suitable for a certain total duration of all tasks. There are 3 types of distance:

1. `Annual` - the header will have years in the upper division and months in the lower division;
2. `Monthly` - the header in the upper division will be months, and the lower division will be days;
3. `By day` - the header in the upper division will include days, and the header in the lower division will include hours.

```
// Annual display mode for the Gantt chart
chart.Distance = Distance.Year;
// Monthly display mode for the Gantt chart
chart.Distance = Distance.Month;
// Display mode by day for the Gantt chart
chart.Distance = Distance.Day;
```

## Number of divisions in the header date

For some header types (such as `Distance.Month` and `Distance.Day`) you can change the number of divisions at the bottom. For Monthly display mode, this is the number of days into which the month will be divided, and for Day display mode, this is the number of time intervals into which the day will be divided. The standard value is `12`. To change the number of divisions, refer to the `SegmentationInHeader` property.

```
gantt.SegmentationInHeader = 15;
```

This property has no effect on the year view.

## String Template

In each of the display modes, there is a part in the header in which the date is displayed according to a certain pattern. In the year display mode it is the lower part, which is responsible for months, and in the month and day display modes it is the upper part, which is responsible for months and days respectively. The format in which such dates will be displayed can be changed by the `Pattern` property. The initial value is `MMMM`. The complete list can be found at [here](#).

```
// The date 1.1.2021 will be displayed as "January 1"  
chart.Format = "MMMM d";
```

## Heading

You can change the position of the header in the chart, or not display it at all. To change the position you need to refer to the `HeaderPosition` property. The standard value is `HeaderPosition.Top`. There are 3 standard modes of header position:

1. `Top` (default) - the header will be located at the top of the chart.
2. `Bottom` - the header will be located at the bottom of the chart. Also the top and bottom parts of the header will be swapped.
3. `None` - the header will not be displayed.

```
// The header will be at the top  
chart.HeaderPosition = HeaderPosition.Top;  
// The header will be at the bottom  
chart.HeaderPosition = HeaderPosition.Bottom;  
// The header will not be displayed  
chart.HeaderPosition = HeaderPosition.None;
```

## Header height

The default value of `DefaultHeaderHeight` is `true`. In this case, the header height is equal to two heights of one record. The height of one record, in turn, depends on the height of the chart. To disable this behavior set the `DefaultHeaderHeight` property to `false`. After that, you can set a fixed header height with the property `HeaderHeight`.

```
// The height of the header will be 70  
chart.DefaultHeaderHeight = false;  
chart.HeaderHeight = 70;  
// The header height will be calculated according to the standard algorithm  
chart.DefaultHeaderHeight = false;
```

## Display the top date in the header

The chart has the ability not to display the top line of the header. The `ShowTopDateInHeader` property is responsible for this. The default value is `true`. To not show the top line you have to set this property to `false`. In this case the height of the remaining top division will be equal to the whole height of the header.

```
ganttt.ShowTopDateInHeader = false;
```

## Bottom date view in the header

For the bottom date, you can change the position of the date display relative to its section. This is done with the `BottomDateView` property. There are 2 types of display:

1. `Cell` (default) - the date will be located between its section line and the next, being located as if in a cell.
2. `Center` - the date will be displayed in the middle of its section line.

```
// The date will be positioned between its own and the next line of the section
chart.BottomDateView = BottomDateView.Cell;
// The date will be in the middle of its section line
chart.BottomDateView = BottomDateView.Center;
```

## The grid

By default, the chart draws a grid, the number of horizontal bars depends on the number of tasks, and vertical bars on the number of divisions at the bottom of the header. To turn off the drawing of horizontal bars, move the property `DrawHorizontalGrid` to the `false` position, and to turn off the vertical bars, move the property `DrawVerticalGrid` to the `false` position. By default, these properties are set to `false`. The value of these properties has no effect on the drawing of dividing bars between the left part of the chart, the header and the central area - they will be drawn anyway.

```
// Horizontal dividing lines will not be drawn
chart.DrawHorizontalGrid = false;
// Vertical dividing lines will not be drawn
chart.DrawVerticalGrid = false;
```

## Creating a chart

To create a diagram from a program, you must use the following code:

```
GanttChart chart = new GanttChart();
```

Then you must connect the data source to the chart. By default, the chart has an empty data source. You can use both csv or xml file loading methods as a data source in it, or you can create your own list. You can read more about them in the chapter [Data Sources for Gantt Chart](#).

Consider creating your own list. Let's create our list and fill it with information:

```

//Create a new list
List<GanttRecord> myData = new List<GanttRecord>();

//Add items to the list
myData.Add(new GanttRecord()
{
    Text = "Wake up",
    StartDate = new DateTime(day: 1, month: 5, year: 2021, hour: 10, minute: 0, second: 0),
    EndDate = new DateTime(day: 1, month: 5, year: 2021, hour: 10, minute: 10, second: 0)
});
myData.Add(new GanttRecord()
{
    Text = "Take a shower",
    StartDate = new DateTime(day: 1, month: 5, year: 2021, hour: 10, minute: 10, second: 0),
    EndDate = new DateTime(day: 1, month: 5, year: 2021, hour: 10, minute: 30, second: 0)
});
myData.Add(new GanttRecord()
{
    Text = "Breakfast",
    StartDate = new DateTime(day: 1, month: 5, year: 2021, hour: 10, minute: 30, second: 0),
    EndDate = new DateTime(day: 1, month: 5, year: 2021, hour: 11, minute: 00, second: 0)
});
myData.Add(new GanttRecord()
{
    Text = "Go to the grocery store",
    StartDate = new DateTime(day: 1, month: 5, year: 2021, hour: 11, minute: 0, second: 0),
    EndDate = new DateTime(day: 1, month: 5, year: 2021, hour: 12, minute: 30, second: 0)
});
myData.Add(new GanttRecord()
{
    Text = "Cooking for the party",
    StartDate = new DateTime(day: 1, month: 5, year: 2021, hour: 12, minute: 30, second: 0),
    EndDate = new DateTime(day: 1, month: 5, year: 2021, hour: 14, minute: 00, second: 0)
});
myData.Add(new GanttRecord()
{
    Text = "Get the house ready for the party",
    StartDate = new DateTime(day: 1, month: 5, year: 2021, hour: 14, minute: 00, second: 0),
    EndDate = new DateTime(day: 1, month: 5, year: 2021, hour: 15, minute: 40, second: 0)
});
myData.Add(new GanttRecord()
{
    Text = "Set the table",
    StartDate = new DateTime(day: 1, month: 5, year: 2021, hour: 15, minute: 40, second: 0),
    EndDate = new DateTime(day: 1, month: 5, year: 2021, hour: 15, minute: 50, second: 0)
});
myData.Add(new GanttRecord()
{
    Text = "To meet guests",
    StartDate = new DateTime(day: 1, month: 5, year: 2021, hour: 15, minute: 50, second: 0),
    EndDate = new DateTime(day: 1, month: 5, year: 2021, hour: 16, minute: 00, second: 0)
});
myData.Add(new GanttRecord()
{
    Text = "Celebrate a birthday",
    StartDate = new DateTime(day: 1, month: 5, year: 2021, hour: 16, minute: 00, second: 0),
    EndDate = new DateTime(day: 1, month: 5, year: 2021, hour: 23, minute: 59, second: 0)
});

// Connect your list as a data source for the chart
chart.DataSource.DataSource = myData;
// If the data is connected in this way, you don't need to specify Name, StartDate, EndDate and Resource
Member.

```

Since these are tasks for the day, it is necessary to change some properties of the chart for the best perception:

```
chart.Distance = Distance.Day;
chart.DrawHorizontalGrid = false;
chart.DrawVerticalGrid = false;
chart.SegmentationInHeader = 16;
chart.TextOnIntervals = true;
chart.TextPosition = TextPosition.Left;
chart.BottomDateView = BottomDateView.Center;
chart.ShowTopDateInHeader = false;
chart.DefaultHeaderHeight = false;
chart.HeaderHeight = 60;
chart.MaxLeftPartWidth = 100;
```

# Data sources for the Gantt chart

The `GanttDataSource` class exists to connect the chart to the data source. By default, it is already contained in the chart, but does not have any data in it.

## GanttDataSource

The class allows to build a hierarchical structure based on table sources ( `System.Data.DataSet` , `System.Array` ) using standard mechanism `DataBinding` , load existing data set from XML or CSV files, as well as set data manually.

To load data from files there are methods `ReadXmlDta` and `ReadCsvData` .

```
GanttDataSource source = new GanttDataSource();

// Loads dataset from xml file
source.ReadXmlData(path_to_xml_file);
```

After (or before) loading the data, you need to specify which fields will be used to define the values.

Suppose you have an Xml file whose node has the following form:

```
<record text="Release" StartDate="3/30/2021" EndDate="3/31/2021" Resource="SomeResourceName"/>
```

To load the data from this xml we need the following code:

```
source.NameMember = "text";
source.StartDateMember = "StartDate";
source.EndDateMember = "EndDate";
source.ResourceMember = "text";
```

It is not necessary to use `ResourceMember` . If it is not specified, all records will have an index of `0` and will use the first color in the palette when rendering.

It's also possible to use a simple list as data. To do this, fill the `records` collection with `GanttRecord` elements, each with fields `Text` , `StartDate` , `EndDate` and `Index` to define the text, start date, end date and index of the record.

In the following example we create an instance of `GanttDataSource` and set it as the data source.

```
GanttDataSource source = new GanttDataSource();

// Creating a new list
List<GanttRecords> records = new List<GanttRecords>();

// Filling the list with items
records.Add(new GanttRecord()
{
    Text="Task1",
    StartDate = new DateTime(day: 1, month: 1, year: 2021),
    EndDate = new DateTime(day: 10, month: 1, year: 2021),
    Index = 0
});
records.Add(new GanttRecord()
{
    Text="Task2",
    StartDate = new DateTime(day: 10, month: 1, year: 2021),
    EndDate = new DateTime(day: 20, month: 1, year: 2021),
    Index = 1
});
records.Add(new GanttRecord()
{
    Text="Task3",
    StartDate = new DateTime(day: 20, month: 1, year: 2021),
    EndDate = new DateTime(day: 31, month: 1, year: 2021),
    Index = 2
});

// Set the list as the data source
source.DataSource = records;
```

Note that this method does not need to specify which fields will be used to define values.

# BreadCrumbs

The BreadCrumbs component allows displaying the current nesting state of a hierarchical chart, as well as to navigate between the nesting levels.

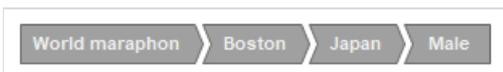
To connect the component to the chart, set the `DrillDownView` property.

For example, put the chart on the form



Then put the `BreadCrumbs` component on the form.

In the `DrillDownView` property of the `BreadCrumbs` component, specify the previously created chart.

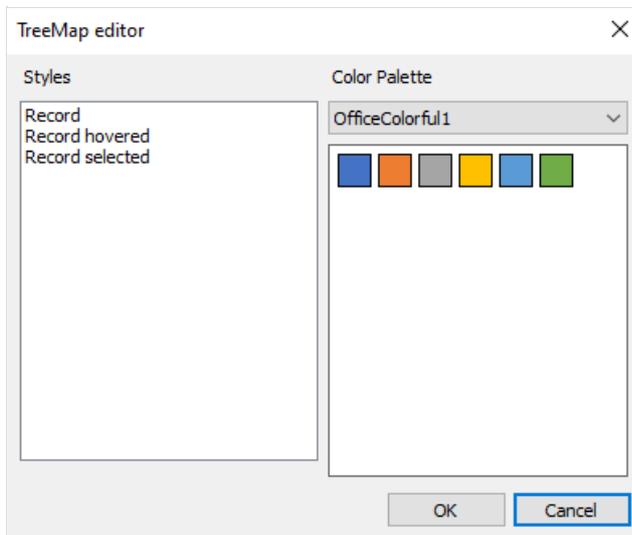


To create a component from the program, use the following code:

```
// Creating a BreadCrumbs object
BreadCrumbs breadCrumbs = new BreadCrumbs();
// Connecting to the chart
breadCrumbs.DrillDownView = treeMap;
```

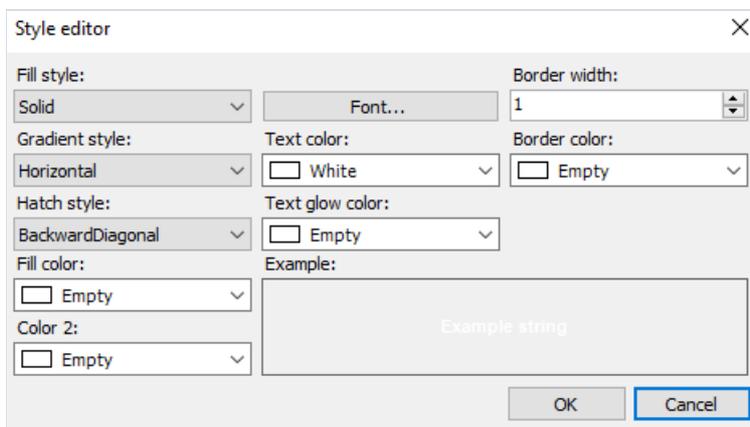
# Editing charts

In the style editor, one can choose a color palette to set the color of the chart nodes.



The chart editor also allows setting the style:

- of a node;
- of the node on which the cursor is pointing;
- of the currently selected node.



## Maximum depth

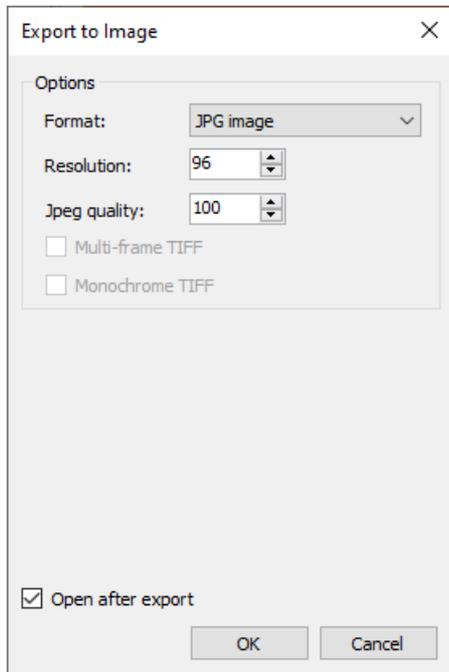
The maximum depth is the chart property responsible for the number of hierarchy levels currently displayed. Changing the depth is available for any hierarchical charts. If the value is zero, the number of displayed levels is not limited. To change the depth value from the code, use the MaxDepth property:

```
sunburst.MaxDepth = 2;
```

# Export to various graphical formats

Currently, FastReport Business Graphics supports exporting to the following graphical formats: **BMP**, **PNG**, **JPEG**, **TIFF**, **GIF**, **EMF**.

## Export settings dialog box



## Export window options

- Format - select the format of the image to be saved;
- Resolution - the resolution of the resulting image; 96 is the standard screen resolution;
- Jpeg quality - the quality of the Jpeg file (when selecting this format in the Format field) in percent; the higher the number, the higher the quality of the file and the lower its compression;
- Multi-frame TIFF - if export generates multiple images, then selecting the TIFF format will generate a single multi-page file;
- Monochrome TIFF - black-and-white image when the TIFF format is selected;
- Open after export - If this checkbox is selected, the file will be opened after saving.

## An example of export from the code to a graphical format

```
FastReport.BG.Export.Image.ImageExport export = new FastReport.BG.Export.Image.ImageExport();
export.Export(chart); // export any HierarchicalChartBase
```

# Localization

`FastReport Business Graphics` can be localized to any language. The distribution includes translation files in the `Localization` folder.

## Switching localization from the code

You can switch localization from the code as follows:

```
FastReport.BG.Utils.Res.LoadLocale("Russian.fc1");
```

An overloaded method is also available to load a locale file from `Stream`.

You can switch to the English locale using the following code:

```
FastReport.BG.Utils.Res.LoadEnglishLocale();
```

## Translating resources to another language

In the Professional edition, you can use the base resource file in the English language

```
FastReport.BG\Resources\en.xml
```

If you do not have a subscription to the Professional edition, you can request this file by sending an email to [support@fast-report.com](mailto:support@fast-report.com).

The result of the translation of this file should be saved in a file with a name relevant to the target language. You also need to change the extension to `*.fc1`.

The translated file should be sent to [support@fast-report.com](mailto:support@fast-report.com).

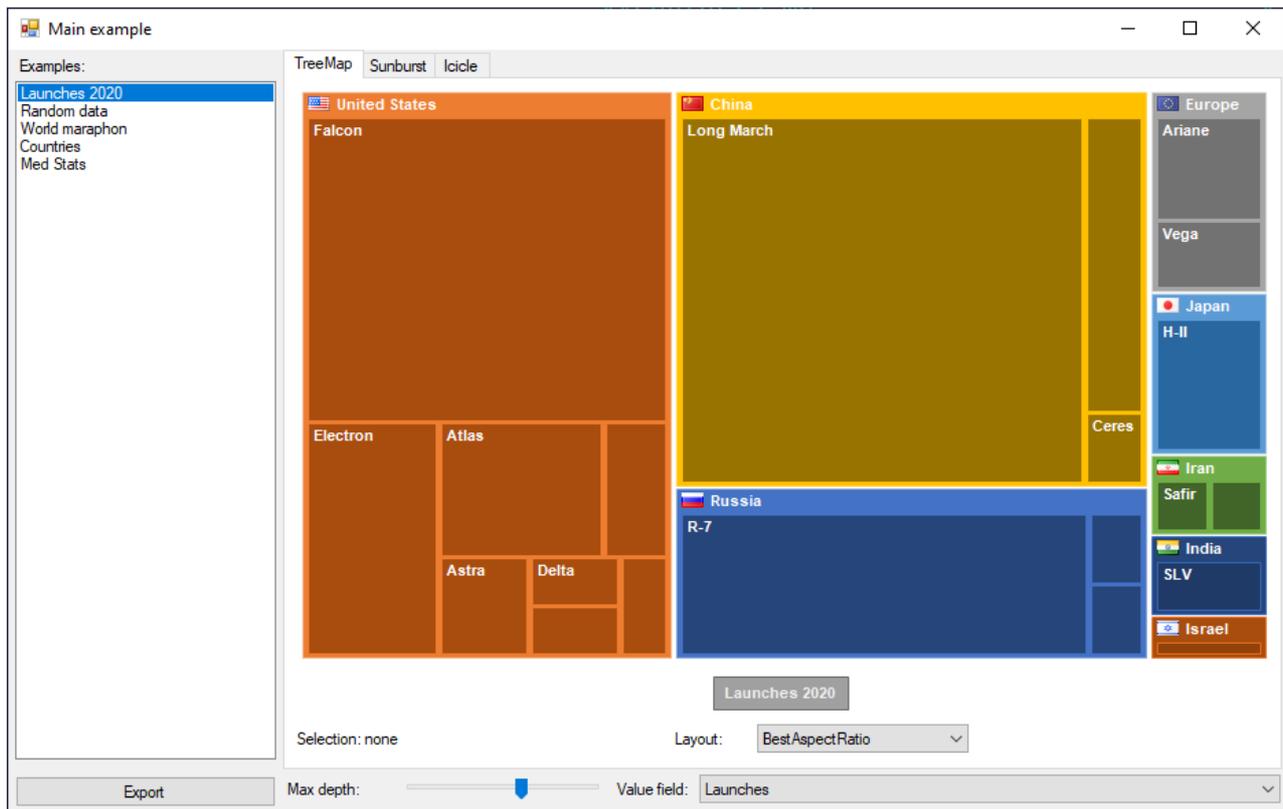
# Demo examples

## Example of using charts with various data sources

The example project can be found in the distribution in the `\Demos\C#\MainDemo` folder.

Open the csproj file in Visual Studio, build and run the project.

After startup, the demo program window will open.



In the left part of the window, you can select the demo data source.

In the right part of the window, you can select tabs with various diagrams. At the bottom of the tabs, there are display settings.

In the bottom left corner, there is a button to export the chart to various graphical formats.

# Minimal system requirements

The minimal system requirements for installing and using [FastReport Business Graphics](#) are:

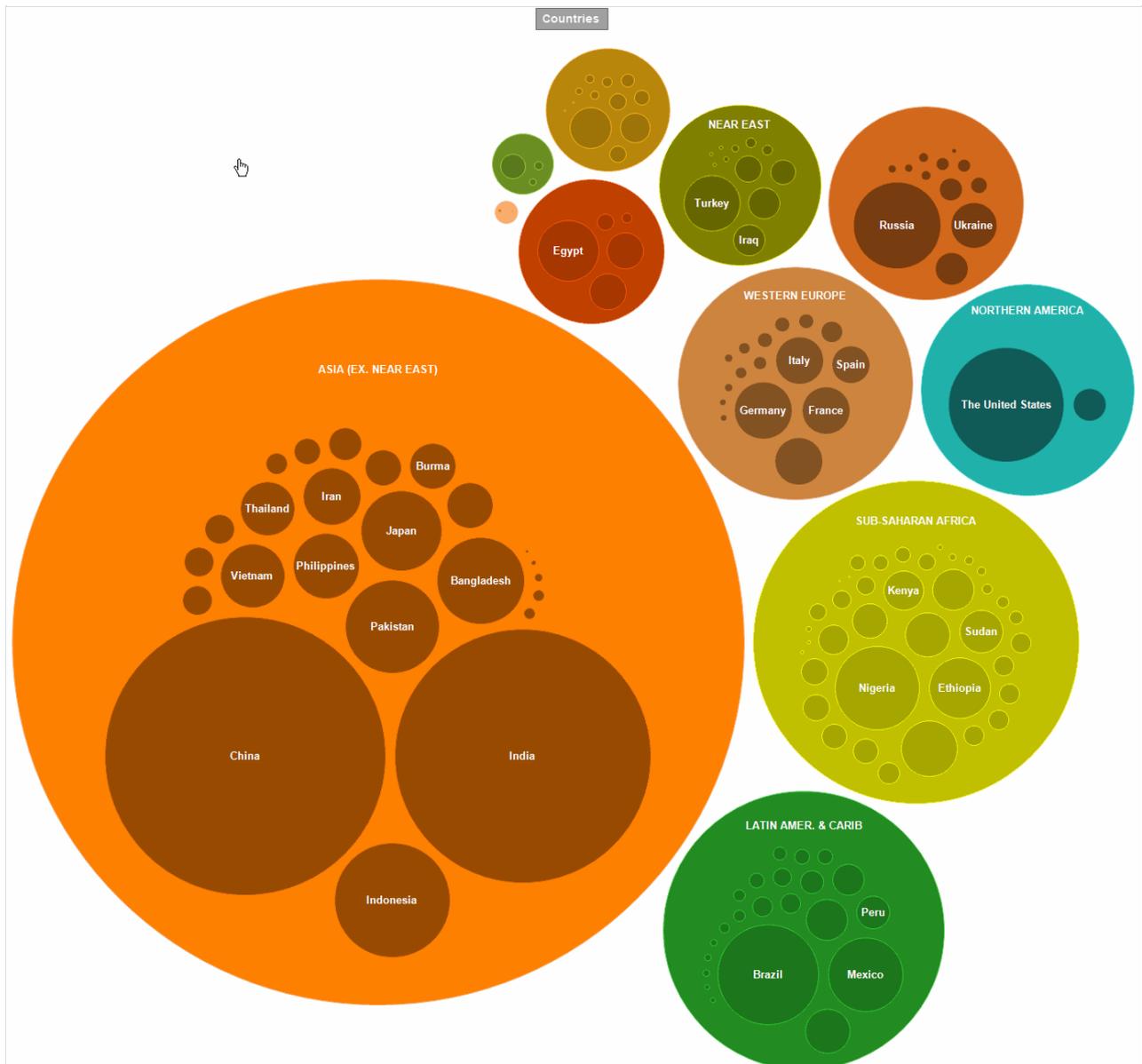
- Operating system MS Windows 7-10, Windows Server 2012-2019;
- CPU: 1 GHz;
- RAM: 512 MB;
- You also need the installed [.NET Framework version 4.0 or higher](#).

# Release Notes

Version 2022.1

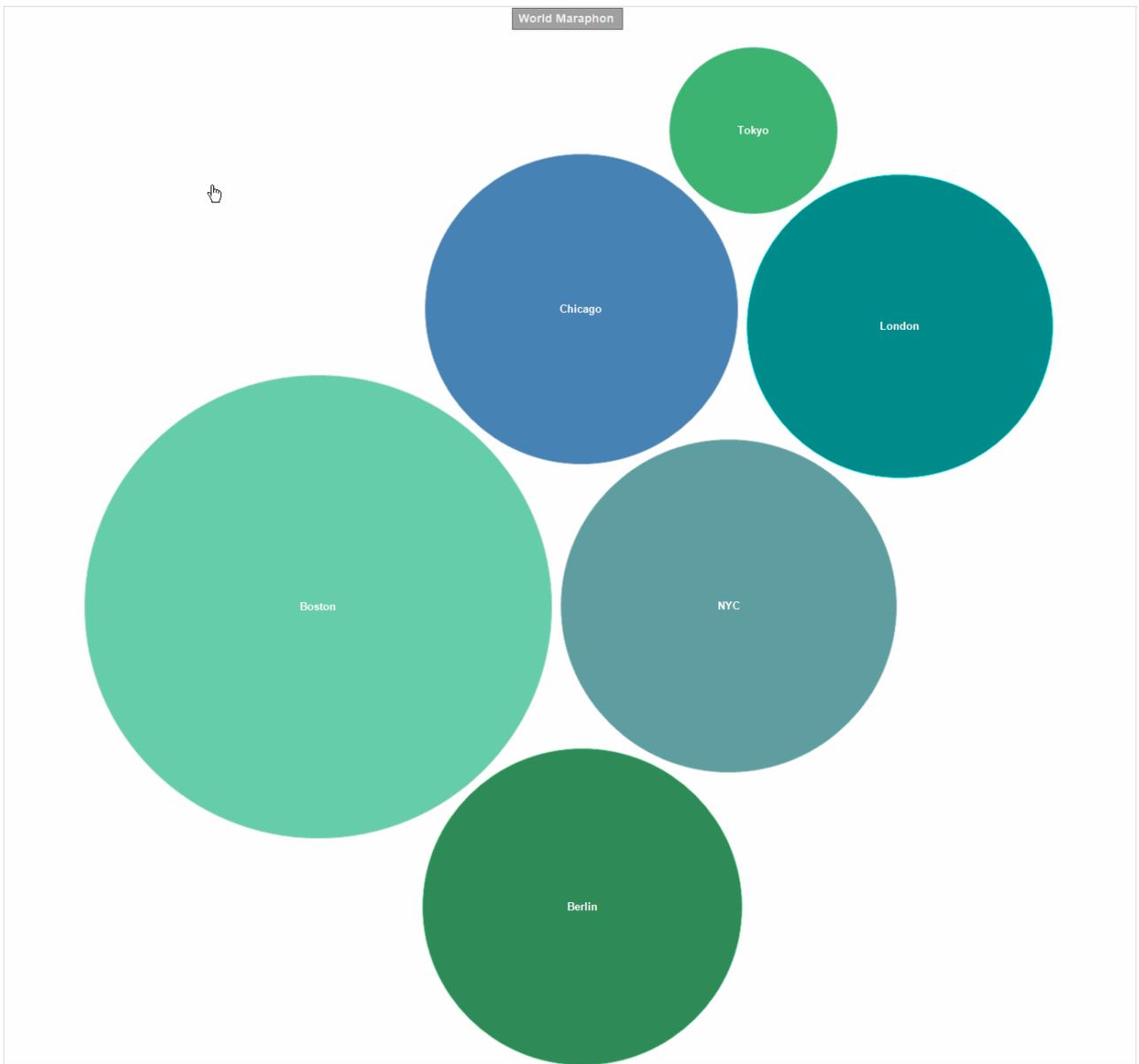
# FastReport Business Graphics .NET 2022.1

The new version of the FastReport Business Graphics library has the ability to build interactive [Bubble Charts](#).

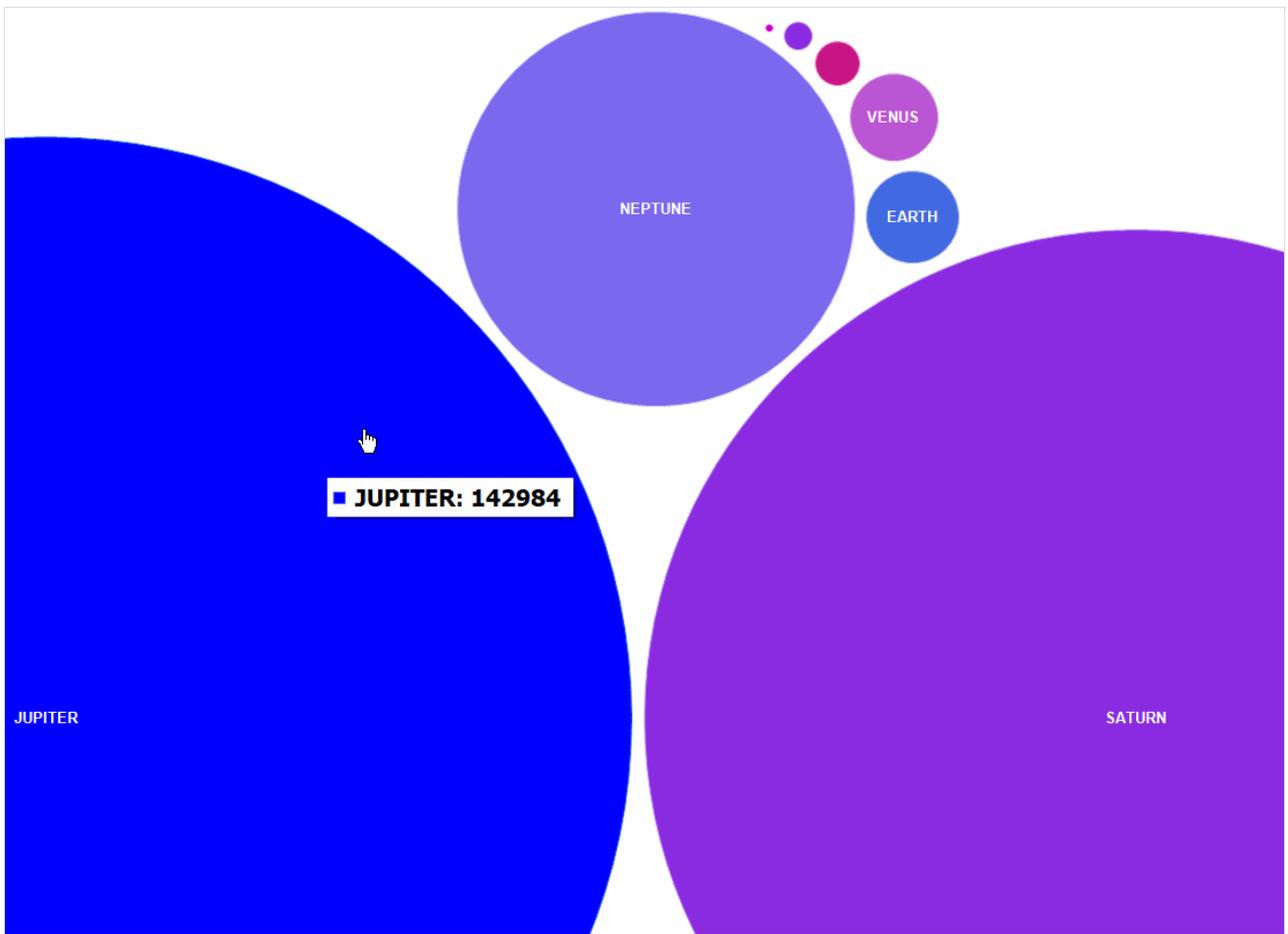


The **Bubble** chart helps to visualize hierarchical data as circles that have the area proportional to the value of the displayed record. Inside the circles of parent records, the circles of child records can be nested. The arrangement of the circles is formed using a packing algorithm based on the Grotker algorithm, modified for better display of hierarchical data. The general principle of the chart is largely similar to the [TreeMap](#) chart.

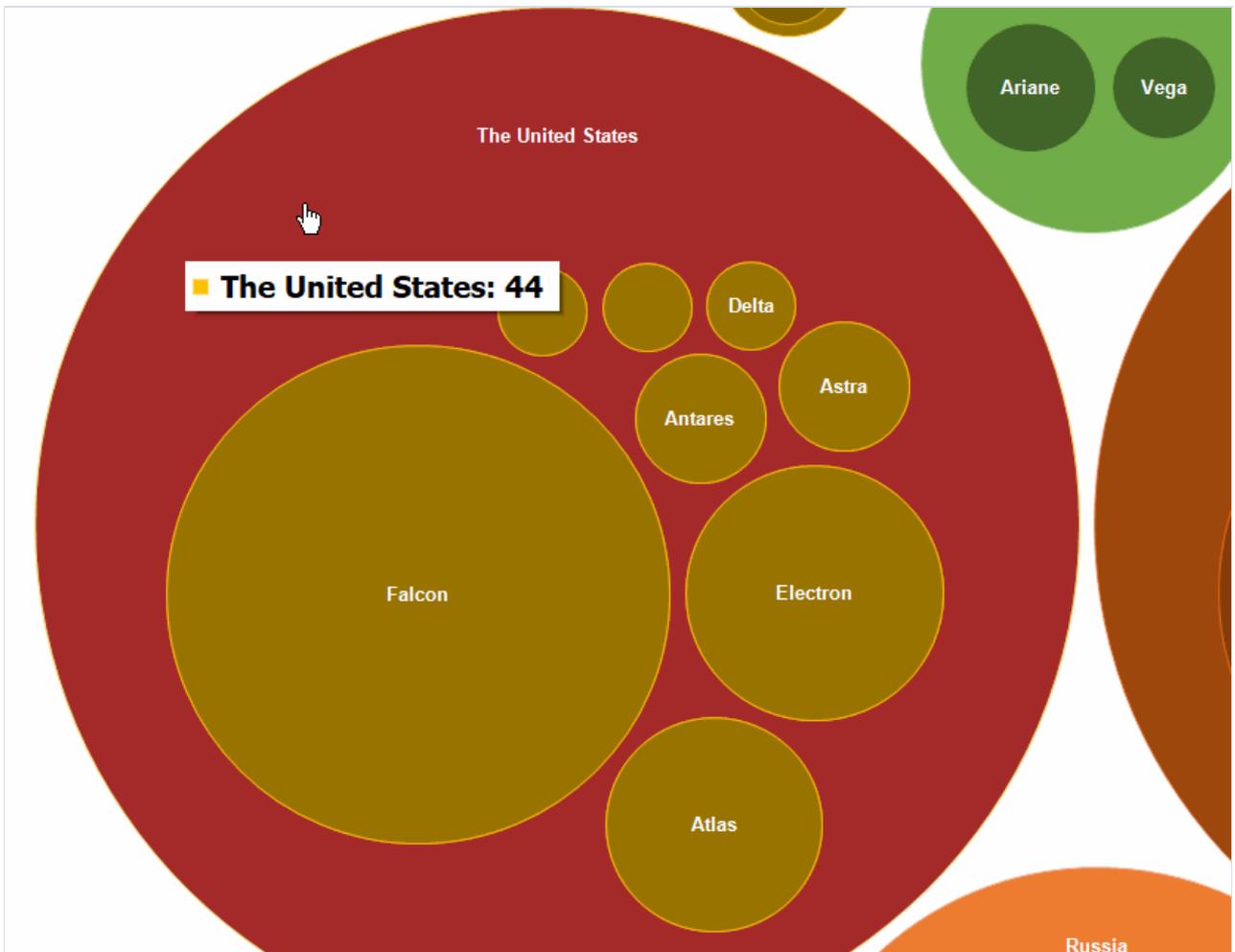
The depth of visualization of hierarchical data can be easily adjusted.



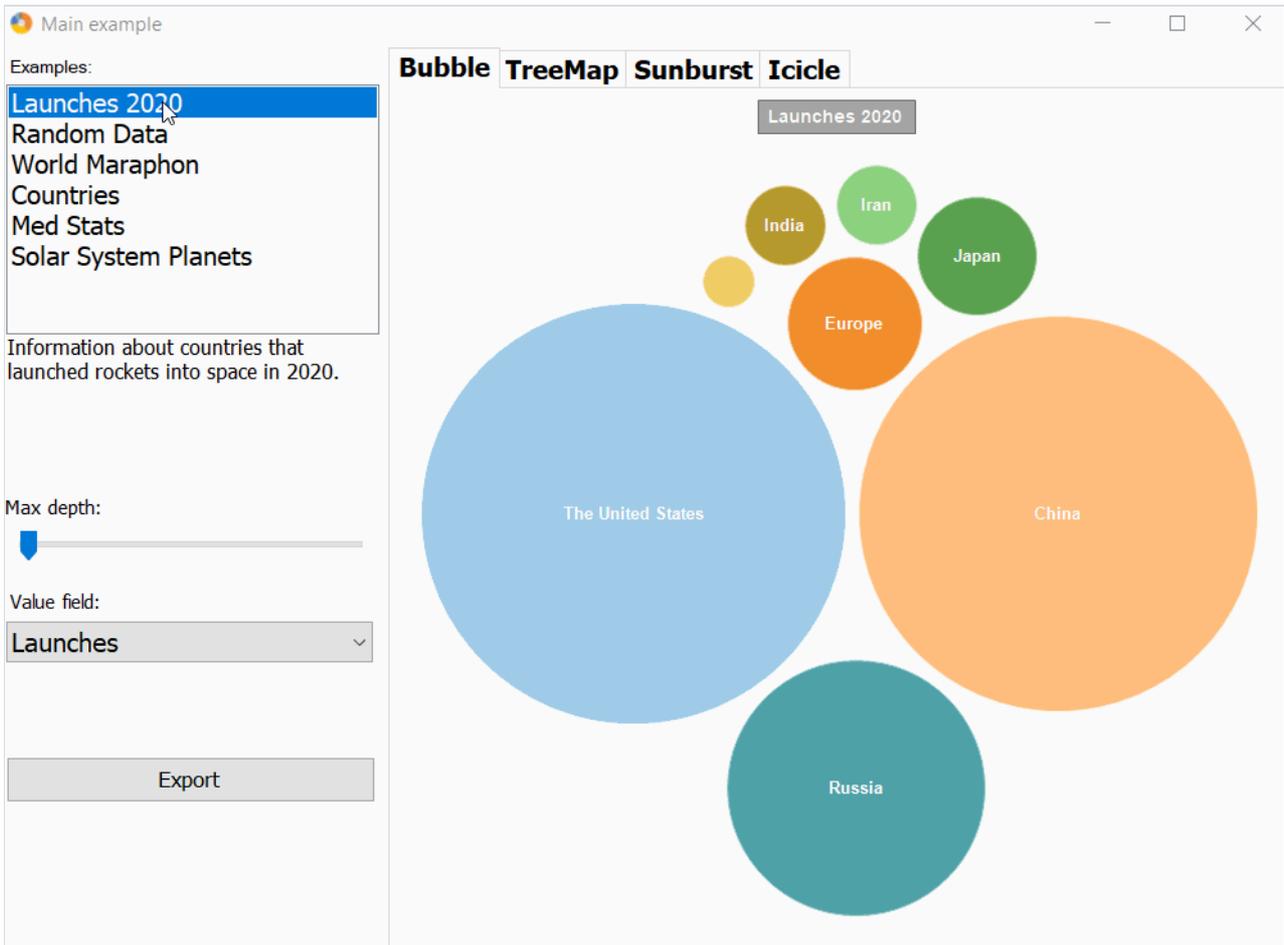
The appearance of the chart can be changed both from the code and directly in the chart style editor.



The library also contains predefined color palettes that can be used to form the desired color design for charts.



In addition, we have improved the demo application - it became more graphic and convenient.



The bugs were also fixed and the product documentation was updated.

Full list of changes:

- + added Bubble chart;
- bugfixes;
- \* improved MainDemo (interface, new dataset with Planets);
- \* updated documentation.

# Contacts and technical support

You can always ask questions about using the product by [email](#), or by using [the form on the website](#).

We also welcome your suggestions on how to improve our product.