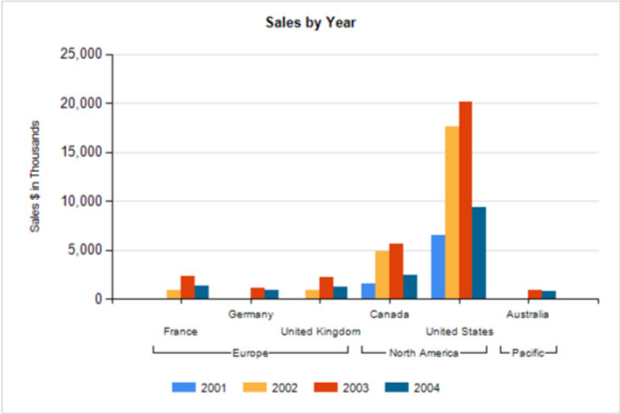
# Data Visualizations

Visualizing data with charts, gauges, and indicators

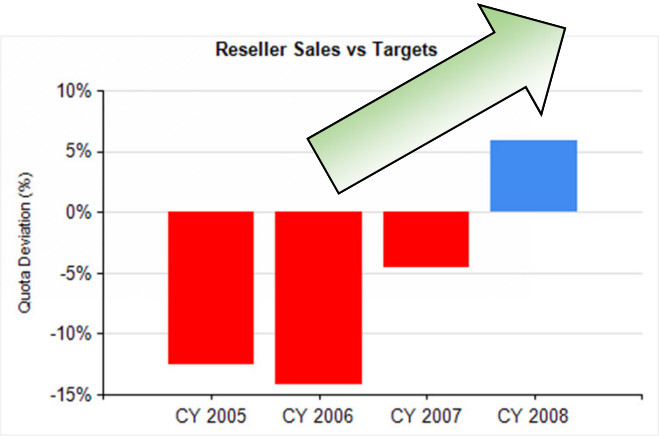
# Overview

- Charts
- Data Bars
- Sparklines
- Gauges
- Indicators

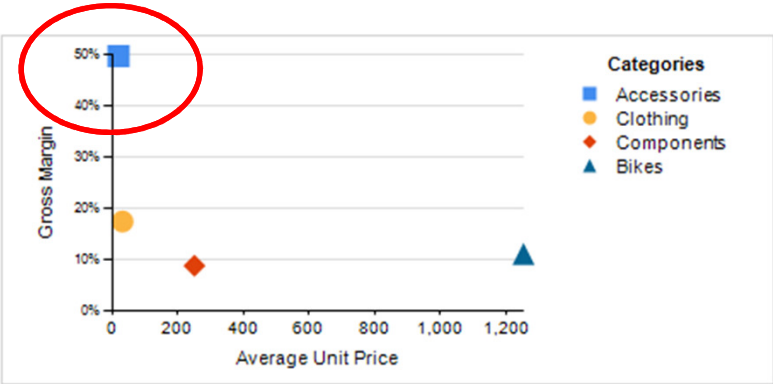
# Charts




Comparisons and patterns

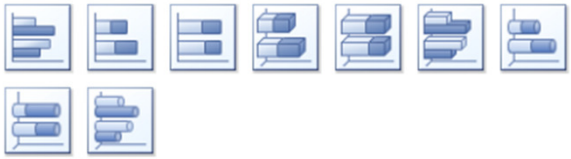



Trends




Outliers

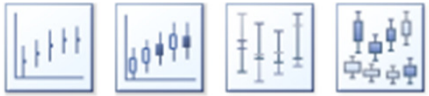
# Charts – Linear Data

| Chart Category | Example |
| --- | --- |
| Column | |
| Line | |
| Bar |  |
| Area | |
| Scatter | |

# Charts – Ratio Data

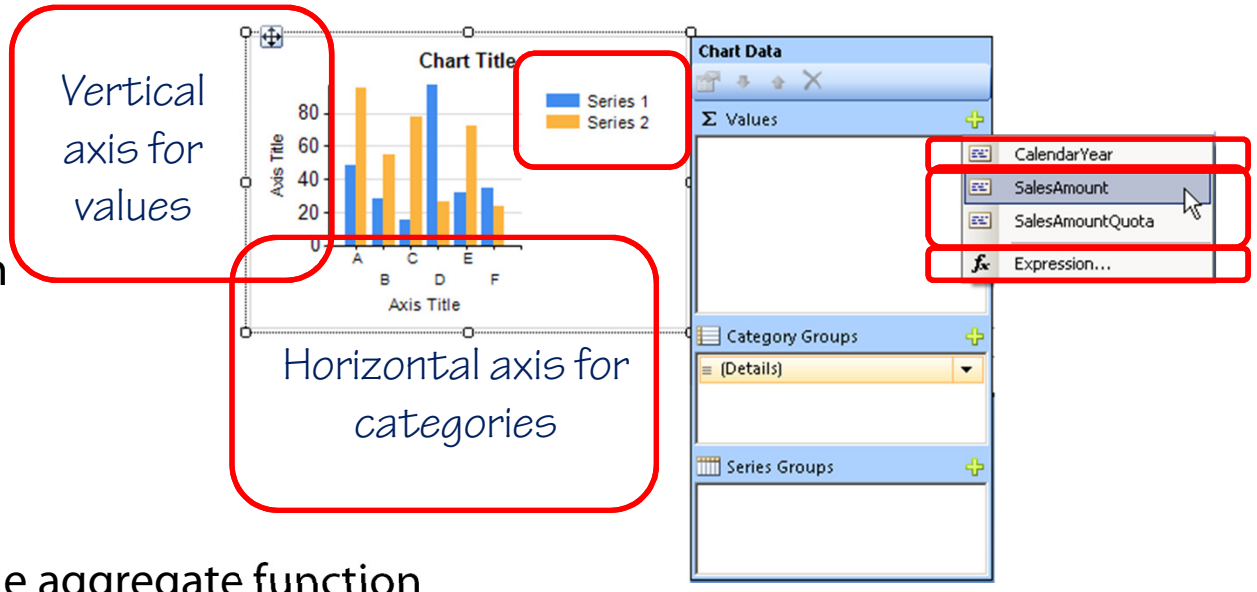
| Chart Category | Example |
| --- | --- |
| Pie and doughnut | |
| Funnel and pyramid | |
| Polar | |
| Scatter | |

# Charts – Multi-Value Data

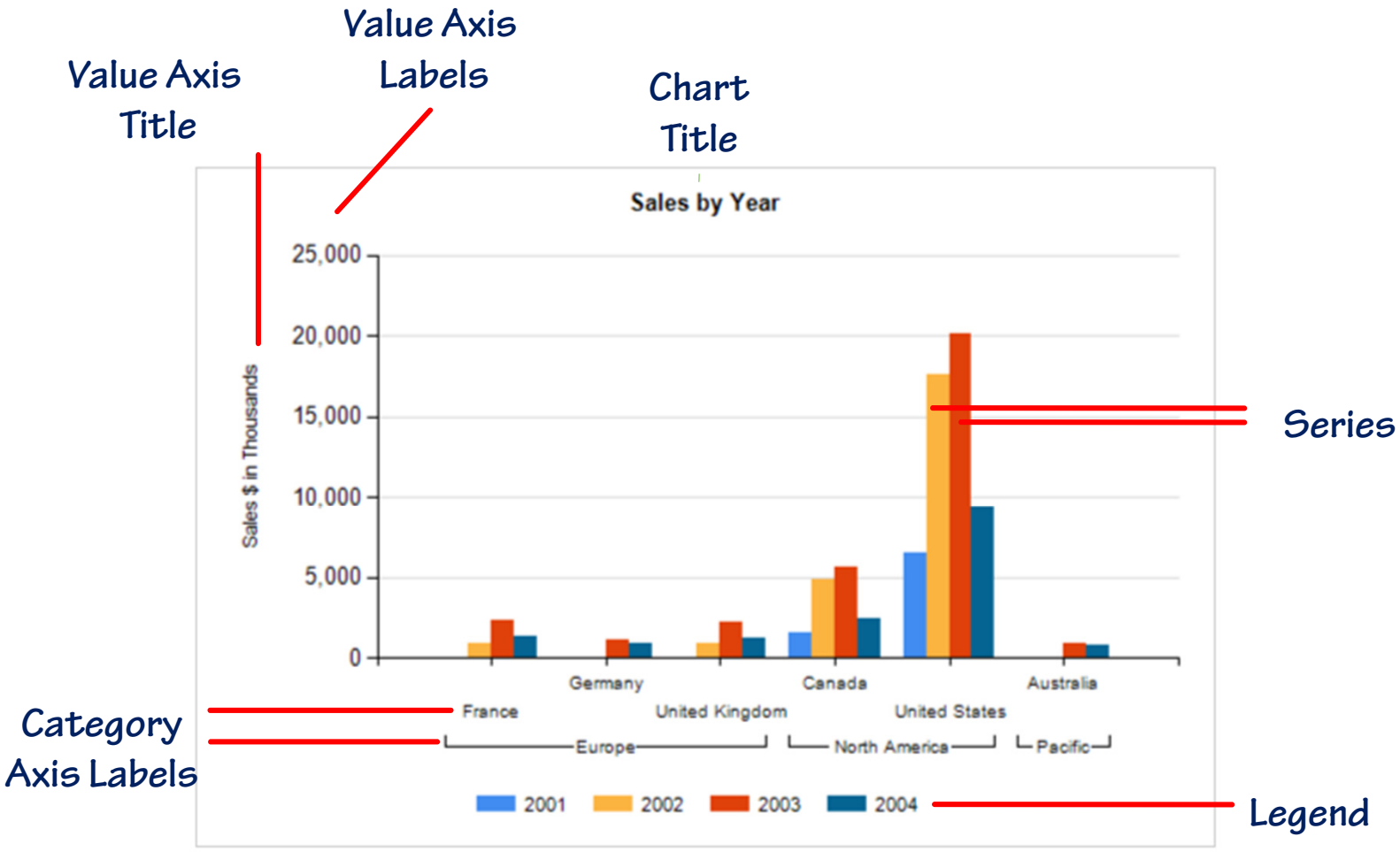
| Chart Category | Example |
| --- | --- |
| Range chart | |
| Stock chart |  |

# Chart Data Pane

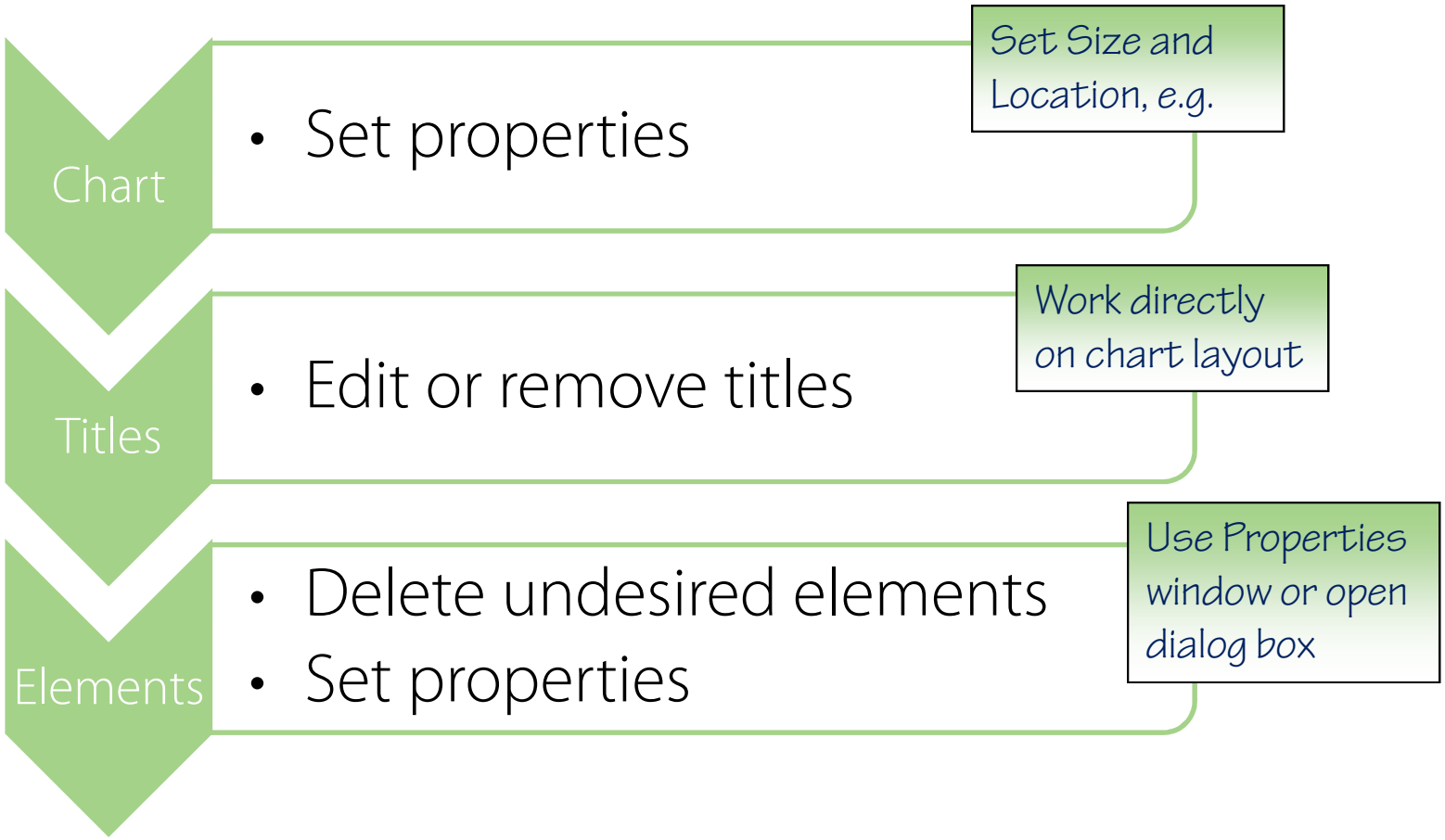
- **Values (Series)**
  - Numeric fields aggregate using SUM function by default
  - Non-numeric fields aggregate using COUNT function
  - Expressions override aggregate function or perform more complex operations
- **Category Groups**
  - Organize labels on horizontal axis
- **Series Groups**
  - Add another level of grouping to chart



# Chart Elements

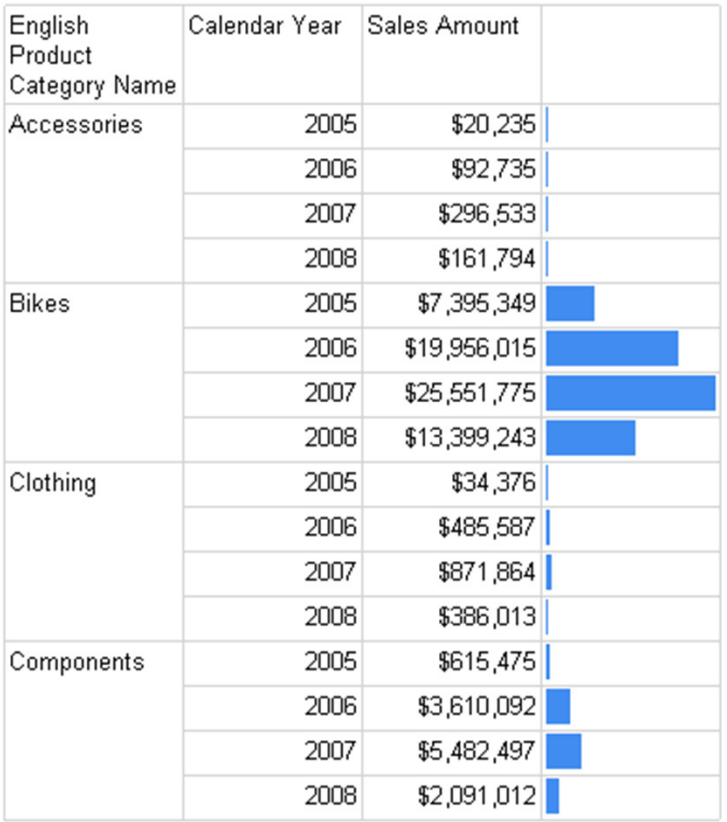


# Chart Element Properties



# Data Bars

- **"Inline" bar or column chart for single data points**
- **Horizontal axis properties**
  - Axis scope
  - Minimum and maximum values
  - Scale options
- **Vertical axis properties usually not relevant**
- **Series properties**
  - Visibility and tooltips
  - Fill
- **Chart properties**
  - Visibility and tooltips
  - Palette
  - Filters



| English Product Category Name | Calendar Year | Sales Amount |
|---|---|---|
| Accessories | 2005 | $20,235 |
| | 2006 | $92,735 |
| | 2007 | $296,533 |
| | 2008 | $161,794 |
| Bikes | 2005 | $7,395,349 |
| | 2006 | $19,956,015 |
| | 2007 | $25,551,775 |
| | 2008 | $13,399,243 |
| Clothing | 2005 | $34,376 |
| | 2006 | $485,587 |
| | 2007 | $871,864 |
| | 2008 | $386,013 |
| Components | 2005 | $615,475 |
| | 2006 | $3,610,092 |
| | 2007 | $5,482,497 |
| | 2008 | $2,091,012 |

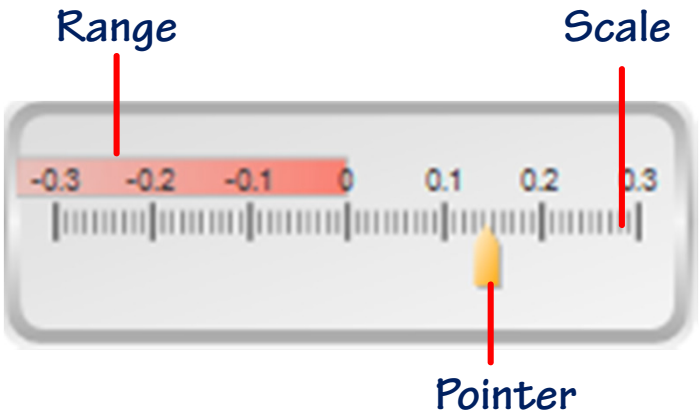
# Sparklines

- **Multiple inline chart types for multiple data points**
  - Column, line, area, shape, and range types
- **Vertical axis properties**
  - Axis scope
  - Minimum and maximum values
  - Scale options
- **Horizontal axis properties**
  - Axis type (category, scalar)
  - Scale direction
- **Set chart properties**
  - Visibility and tooltips
  - Palette, fill, and border options
  - Filters

| | | Sales Amount |
|---|---|---|
| Accessories | 2005 | 20,235 |
| | 2006 | 92,735 |
| | 2007 | 296,533 |
| | 2008 | 161,794 |
| Bikes | 2005 | 7,395,349 |
| | 2006 | 19,956,015 |
| | 2007 | 25,551,775 |
| | 2008 | 13,399,243 |
| Clothing | 2005 | 34,376 |
| | 2006 | 485,587 |
| | 2007 | 871,864 |
| | 2008 | 386,013 |
| Components | 2005 | 615,475 |
| | 2006 | 3,610,092 |
| | 2007 | 5,482,497 |
| | 2008 | 2,091,012 |

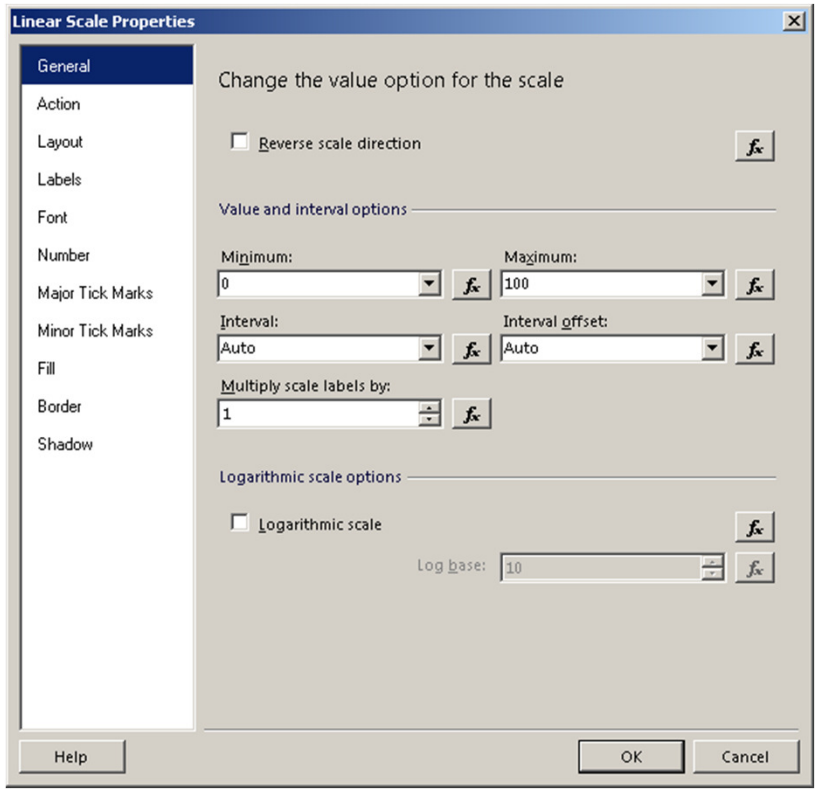
# Gauges

- Display key performance indicators in radial or linear gauges
- Display as single data value on a scale with pointer
- Use ranges to display target or warning zones
- Optionally insert into data region to repeat gauges by group
- Optionally use multiple pointers, ranges, and scales in one gauge



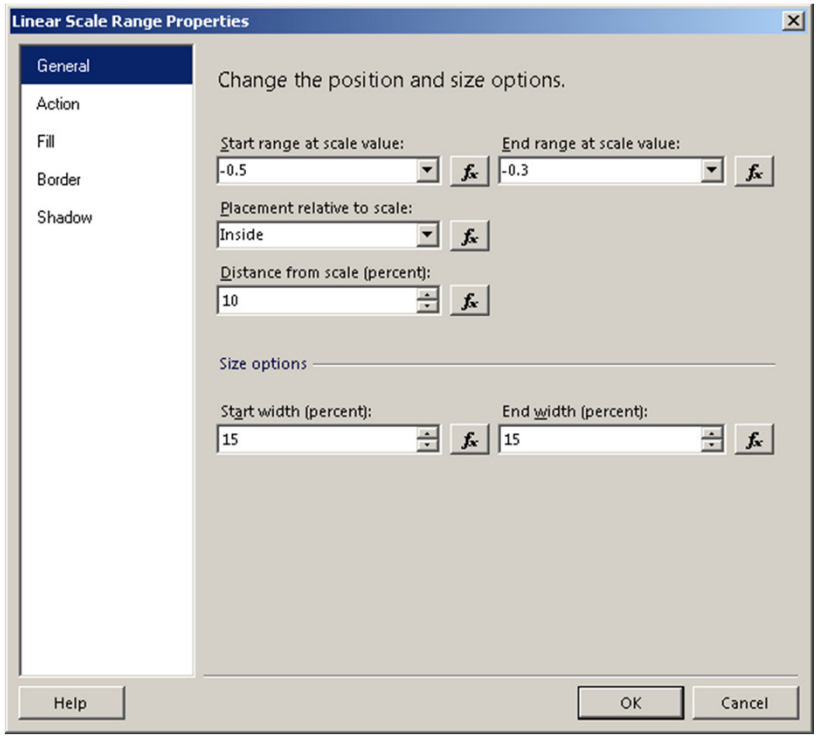
# Gauges – Scale Properties

- **Set scale value options**
- **Set layout options**
  - Position in gauge
  - Margins
  - Scale bar
- **Format labels**
  - Visibility & placement
  - Font & format
- **Configure appearance**
  - Fill, border & shadow
- **Format tick marks**
- **Link to Action**

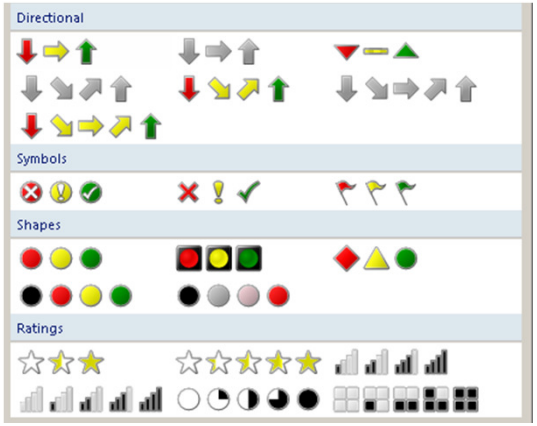


# Gauges – Range Properties

- Specify start and end position of range on scale
- Set placement relative to scale
- Define distance from scale
- Set width of range
- Configure appearance
  - Fill, border & shadow
- Link to Action



# Indicators




| Group | Country | Prev Yr Avg Sales Change | |
|---|---|---|---|
| Europe | France | -2.35 % | ▲ |
| | Germany | 3.28 % | ● |
| | United Kingdom | -0.80 % | ▲ |
| North America | Canada | -10.35 % | ◆ |
| | United States | 2.72 % | ▲ |
| Pacific | Australia | -18.15 % | ◆ |

- Display condition-based icons in a table, matrix, or list
- Optionally use custom images
- Set indicator states using absolute or percentage values
- Link indicators to action

# Summary

- **Charts**
  - Linear data, ratio data, multi-value data
  - Chart data pane or element context menu provide access to properties
- **Data Bars**
  - Inline chart for single data point
- **Sparklines**
  - Inline chart for multiple data points
- **Gauges**
  - Key performance indicators in radial or linear gauge
- **Indicators**
  - Key performance indicators with icon sets

# References

- **Working with Chart Data Regions**
  - http://msdn.microsoft.com/en-us/library/ms155847(v=SQL.100).aspx
- **Sparklines and Data Bars**
  - http://msdn.microsoft.com/en-us/library/ee633676.aspx
- **Working with Gauge Data Regions**
  - http://msdn.microsoft.com/en-us/library/cc281374(v=SQL.100).aspx
- **Indicators**
  - http://msdn.microsoft.com/en-us/library/ee633651.aspx