FLEXLINE - Flexible Columns in Control Grids

In a previous example, the grid was completely defined as part of the layout definition: the sequence of columns was internally defined by defining the controls that are part of an STR row.

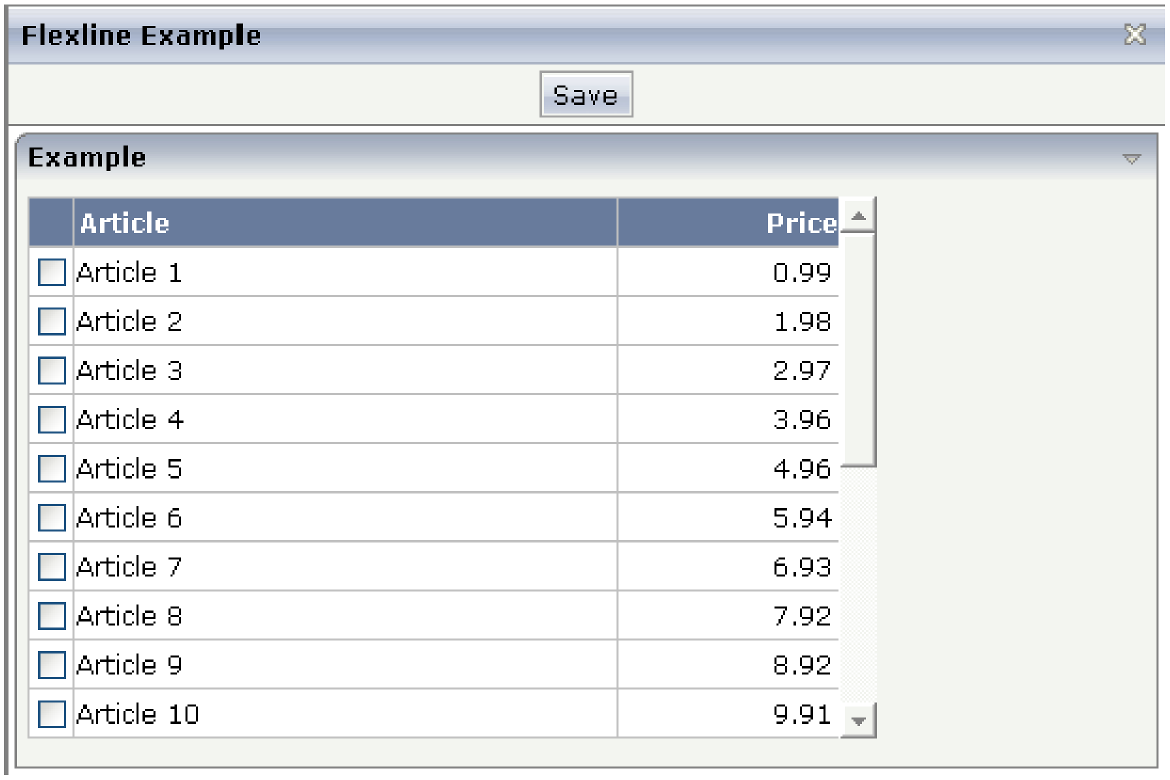
The FLEXLINE control offers the option to define the columns of a grid dynamically at runtime. That is: the application decides at runtime which column controls to use with which properties. Consequently, you can build a control grid with some system configuration in mind, in which the layout of control grids is customized.

This chapter covers the following topics:

- Example
- FLEXLINE Properties
- Increasing the Performance

Example

Have a look at the following example:



	Article	Price
☐	Article 1	0.99
☐	Article 2	1.98
☐	Article 3	2.97
☐	Article 4	3.96
☐	Article 5	4.96
☐	Article 6	5.94
☐	Article 7	6.93
☐	Article 8	7.92
☐	Article 9	8.92
☐	Article 10	9.91

The grid looks like a normal ROWTABLEAREA2 grid, but it is built in a more dynamic way.

The XML layout definition is:

```
<page model="flexline_01Adapter">
    <titlebar name="Flexline Example">
    </titlebar>
    <header withdistance="false">
        <button name="Save">
        </button>
    </header>
    <pagebody>
        <rowarea name="Example">
            <vdist height="5">
            </vdist>
            <rowtablearea2 griddataprop="lines" rowcount="10" width="395" withborder="true">
                <tr>
                    <label name=" " asheadline="true">
                    </label>
                    <flexline infoprop="headline">
                    </flexline>
                </tr>
                <repeat>
                    <str valueprop="selected">
                        <checkbox valueprop="selected" flush="screen" width="30">
                        </checkbox>
                        <flexline infoprop="/rowline">
                        </flexline>
                        <hdist width="100%">
                        </hdist>
                    </str>
                </repeat>
            </rowtablearea2>
            <vdist height="10">
            </vdist>
        </rowarea>
        <vdist height="5">
        </vdist>
    </pagebody>
    <statusbar withdistance="false">
    </statusbar>
</page>
```

You see that there are two FLEXLINE control definitions inside the ROWTABLEAREA2 definition:

- One definition represents the headline of the grid.
- The other definition is part of each row’s content.

Each definition points to a property that passes the configuration at runtime. Within the second definition, you may see something which is new for you: the VALUEPROP references to a property `/rowline`. The "/" character at the beginning indicates that this property is always picked from the adapter - and not from the object representing the row item.

This is the Java code on the server side:

```
// This class is a generated one.

import java.math.BigDecimal;

import com.softwareag.cis.file.CSVManager;
import com.softwareag.cis.server.Adapter;
import com.softwareag.cis.server.util.FLEXLINEInfo;
import com.softwareag.cis.server.util.GRIDCollection;

public class flexline_01Adapter
    extends Adapter
{
    // class >LinesItem<
    public class LinesItem
    {
        // property >selected<
        boolean m_selected;
        public boolean getSelected() { return m_selected; }
        public void setSelected(boolean value) { m_selected = value; }

        String m_article;
        BigDecimal m_price;

        public void remove()
        {
            m_lines.remove(this);
        }

        public String getArticle() { return m_article; }
        public void setArticle(String article) { m_article = article; }
        public BigDecimal getPrice() { return m_price; }
        public void setPrice(BigDecimal price)
        {
            m_price = price.setScale(2,BigDecimal.ROUND_UP);
        }
    }

    // property >headline<
    FLEXLINEInfo m_headline = new FLEXLINEInfo();
    public FLEXLINEInfo getHeadline() { return m_headline; }

    // property >rowline<
    FLEXLINEInfo m_rowline = new FLEXLINEInfo();
    public FLEXLINEInfo getRowline() { return m_rowline; }

    // property >lines<
    GRIDCollection m_lines = new GRIDCollection();
    public GRIDCollection getLines() { return m_lines; }

    /** initialisation - called when creating this instance*/
    public void init()
    {
        // configure controls in headline
        m_headline.addLabel(this,CSVManager.encodeString(new String[]
        {
                "name","Article",
                "width","250",
                "asheadline","true"
        }));
        m_headline.addLabel(this,CSVManager.encodeString(new String[]
        {
                "name","Price",
                "width","100",
                "textalign","right",
                "asheadline","true"
        }));
        // configure controls in row
        m_rowline.addField(this,CSVManager.encodeString(new String[]
        {
                "valueprop","article",
                "width","250",
                "flush","server",
                "noborder","true",
                "transparentbackground","true"
        }));
        m_rowline.addField(this,CSVManager.encodeString(new String[]
        {
                "valueprop","price",
                "width","100",
                "textalign","right",
                "noborder","true",
                "transparentbackground","true"
        }));
        // create lines
        for (int i=1; i<=20; i++)
        {
            LinesItem li = new LinesItem();
            li.setArticle("Article " + i);
            li.setPrice(new BigDecimal(i*0.99));
            m_lines.add(li);
        }
    }
}
```

For each FLEXLINE control, there is a `FLEXLINEInfo` property. The properties are initialized during the `init()` phase of the adapter. Of course, you can also change the `FLEXLINEInfo` configuration later: there is a corresponding `clear()` method for doing so.

Inside the `FLEXLINEInfo` class, there is a Java interface with which you can add:

- labels
- check boxes
- buttons
- combo boxes

There is a method for each object. As part of the method, you always pass the owner (i.e. the current model) and the configuration of the control.

The configuration is passed as a comma separated string that is built using the `CSVManager` class. You could also directly write the CSV string (`valueprop;price;width;100;noborder;true`) but then have to be careful to replace every "real" semicolon character with "\;". You can use and combine any properties that are available for the controls. This means there is no difference in managing controls that you flexibly add and controls that are defined in a fixed way inside a layout definition.

All the other processing around the FLEXLINE management is the same as you know it from layouts that are defined in a fixed way.

Note:
Application Designer now provides a FLEXGRID control. While FLEXLINE still is supported (and necessary), FLEXGRID offers a simpler API to build dynamically controlled control grids. Basically, FLEXGRID is a combination of ROWTABLEAREA2, FLEXLINE and GRIDCOLHEADER. See the description of the FLEXGRID control.

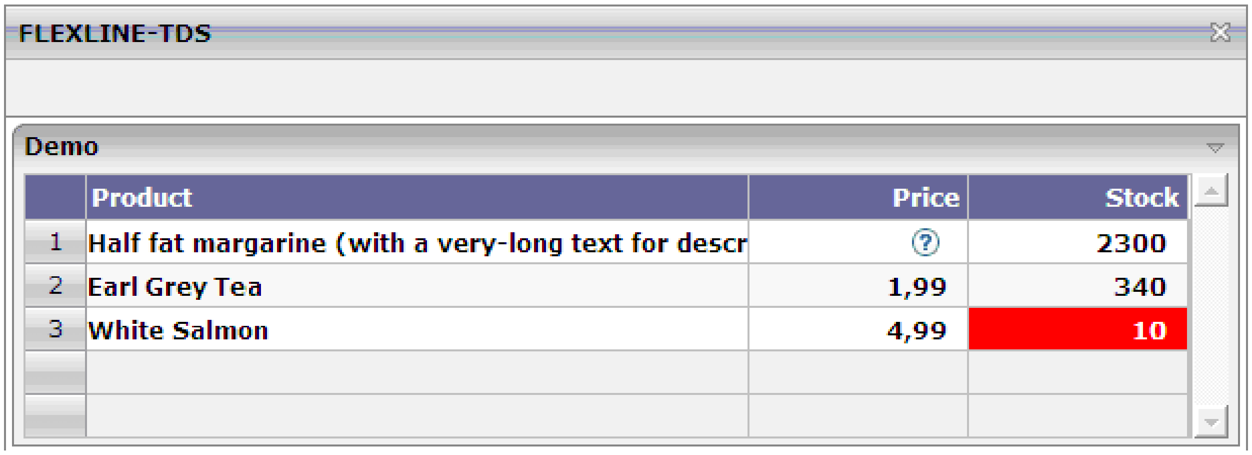
FLEXLINE Properties

Basic			
infoprop	Name of the adapter property that provides the server side information for this control. The adapter property must be of type "FLEXLINEInfo". Inside the property the sequence of controls is defined.	Obligatory	
withborder	Flag that indicates if a border is drawn between the controls that are rendered inside the FLEXLINE control. Default is "false", i.e. no border is drawn.	Optional	true false
comment	Comment without any effect on rendering and behaviour. The comment is shown in the layout editor's tree view.	Optional	

Increasing the Performance

In the above example, the grid was filled by adding FIELD controls into a FLEXLINE control. In larger grids with a high number of columns and rows, you may consider displaying your data within plain `<TD>` elements. Thus, the grid becomes more lightweight and the performance increases significantly. You can output images and use your own cell style. Direct cell input, however, is not possible.

In the following example, the grid looks like a ROWTABLEAREA2 grid, but it is built in a more dynamic way.



	Product	Price	Stock
1	Half fat margarine (with a very-long text for descr	?	2300
2	Earl Grey Tea	1,99	340
3	White Salmon	4,99	10

The XML layout definition is:

```
<page model="FlexlineTDSAdapter">
    <titlebar name="FLEXLINE-TDS">
    </titlebar>
    <header withdistance="false">
    </header>
    <pagebody>
        <rowarea name="Demo">
            <rowtablearea2 griddataprop="lines" rowcount="5" width="100%" firstrowcolwidths="true">
                <tr>
                    <label name=" " width="30" asheadline="true">
                    </label>
                    <label name="Product" width="60%" asheadline="true">
                    </label>
                    <label name="Price&amp;amp;nbsp;" width="20%" asheadline="true" textalign="right">
                    </label>
                    <label name="Stock&amp;amp;nbsp;" width="20%" asheadline="true" textalign="right">
                    </label>
                </tr>
                <repeat>
                    <str valueprop="selected" withalterbackground="true">
                        <selector valueprop="selected">
                        </selector>
                        <flexline infoprop="/contentFL">
                        </flexline>
                    </str>
                </repeat>
            </rowtablearea2>
        </rowarea>
    </pagebody>
    <statusbar withdistance="false">
    </statusbar>
</page>
```

You see that there is one FLEXLINE control definition inside the ROWTABLEAREA2 definition. This definition points to a property that passes the configuration at runtime. Within the definition, the `infoprop` references to a property "/contentFL". The slash (/) at the beginning indicates that this property is always picked from the adapter (it is not picked up from the object representing the row item).

This is the Java code on the server side:

```
// This class is a generated one.

import java.util.*;
import com.softwareag.cis.server.*;
import com.softwareag.cis.server.util.*;
import com.softwareag.cis.util.*;

public class FlexlineTDSAdapter extends Adapter
{
  // class >LinesItem<
  public class LinesItem
  {
    // property >selected<
    boolean m_selected;

    public boolean getSelected()
    {
      return m_selected;
    }

    public void setSelected(boolean value)
    {
      m_selected = value;
    }

    // property >tdsValue<
    String m_tdsValue;

    public String getTdsValue()
    {
      return m_tdsValue;
    }

    // property >tdsColors<
    String m_tdsColor;

    public String getTdsColor()
    {
      return m_tdsColor;
    }

    // property >tdsBGColors<
    String m_tdsBGColor;

    public String getTdsBGColor()
    {
      return m_tdsBGColor;
    }

    // property >tdsAlign<
    String m_tdsAlign;

    public String getTdsAlign()
    {
      return m_tdsAlign;
    }

    // property >imageURL<
    String m_imageURL;

    public String getImageURL()
    {
      return m_imageURL;
    }
  }

  // property >contentFL<
  FLEXLINEInfo m_contentFL = new FLEXLINEInfo();

  public FLEXLINEInfo getContentFL()
  {
    return m_contentFL;
  }

  // property >lines<
  GRIDCollection m_lines = new GRIDCollection();

  public GRIDCollection getLines()
  {
    return m_lines;
  }

  /** initialization - called when creating this instance */
  public void init()
  {
    m_contentFL.addTds(this,
           "colcount;5;" +
           "valueprop;tdsValue;" +
           "fgcolorprop;tdsColor;" +
           "bgcolorprop;tdsBGColor;" +
           "alignprop;tdsAlign;" +
           "imageprop;imageURL;" +
           "font-weight;bold");

    LinesItem item = new LinesItem();
    item.m_tdsValue = "Half fat margarine (with a very-long text for description);0,99;2300";
    item.m_tdsColor = "#000000;#000000;#000000";
    item.m_tdsBGColor = ";;";
    item.m_imageURL = ";../HTMLBasedGUI/images/helpiconblue.gif;";
    item.m_tdsAlign = "left;right;right";
    m_lines.add(item);

    item = new LinesItem();
    item.m_tdsValue = "Earl Grey Tea;1,99;340";
    item.m_tdsColor = "#000000;#000000;#000000";
    item.m_tdsBGColor = ";;";
    item.m_imageURL = ";;";
    item.m_tdsAlign = "left;right;right";
    m_lines.add(item);

    item = new LinesItem();
    item.m_tdsValue = "White Salmon;4,99;10";
    item.m_tdsColor = "#000000;#000000;#FFFFFF";
    item.m_tdsBGColor = ";;#FF0000";
    item.m_imageURL = ";;";
    item.m_tdsAlign = "left;right;right";
    m_lines.add(item);

  }
}
```

For each FLEXLINE control, there is a `FLEXLINEInfo` property. The properties are initialized during the `init()` phase of the adapter. You can also change the `FLEXLINEInfo` configuration later: there is a corresponding `clear()` method for doing so.

Inside the `FLEXLINEInfo` class, there is a Java interface with which you can add the following:

```
addTds(Adapter owner, String properties);
```

Semicolons are used to separate the values in the property list. The properties may contain the following values:

colcount

The number of columns that have to be provided for the contents.

valueprop

The property name of the row item class that returns a list of column values which are separated by semicolons.

fgcolorprop

The property name of the row item class that returns a list of foreground color values which are separated by semicolons.

bgcolorprop

The property name of the row item class that returns a list of background color values which are separated by semicolons.

alignprop

The property name of the row item class that returns a list of cell alignment values which are separated by semicolons. Possible values: left, center, right.

imageprop

The property name of the row item class that returns a list of image URLs which are separated by semicolons. A single TD contains either text (see `valueprop`) or an image. If you provide an image URL and text for same cell, the text is suppressed.

font-weight

The weight of the font.

A width is not passed. It is assumed that the width is defined by the environment (for example, by a ROWTABLEAREA2 control where the columns have a fixed size).

Note:
It is currently only possible to add exactly one `Tds` control to one FLEXLINE control.