



Smarten

Advanced Data Discovery

Powered by ElegantJ BI

Responsive Design Concept

Business Intelligence & Advanced Data Discovery

Document Information	
Document ID	Smarten-Responsive-Design-Concept
Document Version	Version 4.0
Product Version	Version 4.5 and above
Date	20-January-2018
Recipient	NA
Author	EMTPL

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1 Introduction

Smarten is designed with an adaptive and responsive user interface that renders the UI elements based on the resolution of the target device.

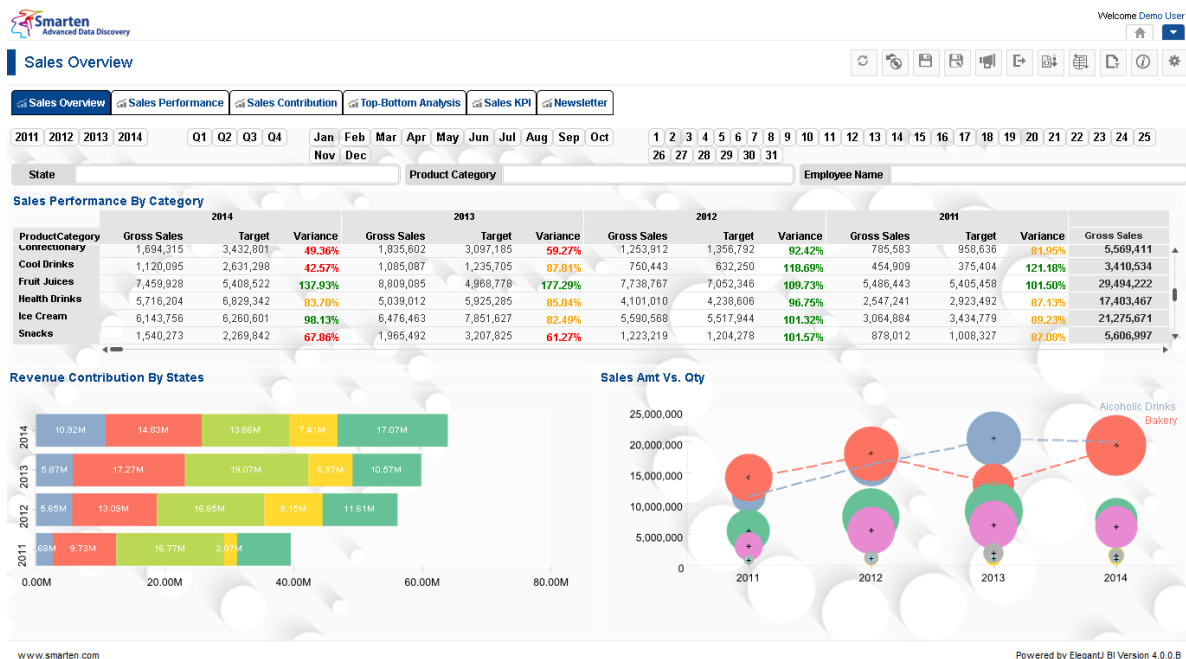
The following three resolutions are taken into consideration:

- Desktop view—screen width of 980 px and above
- Tablet portrait view—screen width between 671px and 979px
- Smartphone view—screen width of 670 px and below

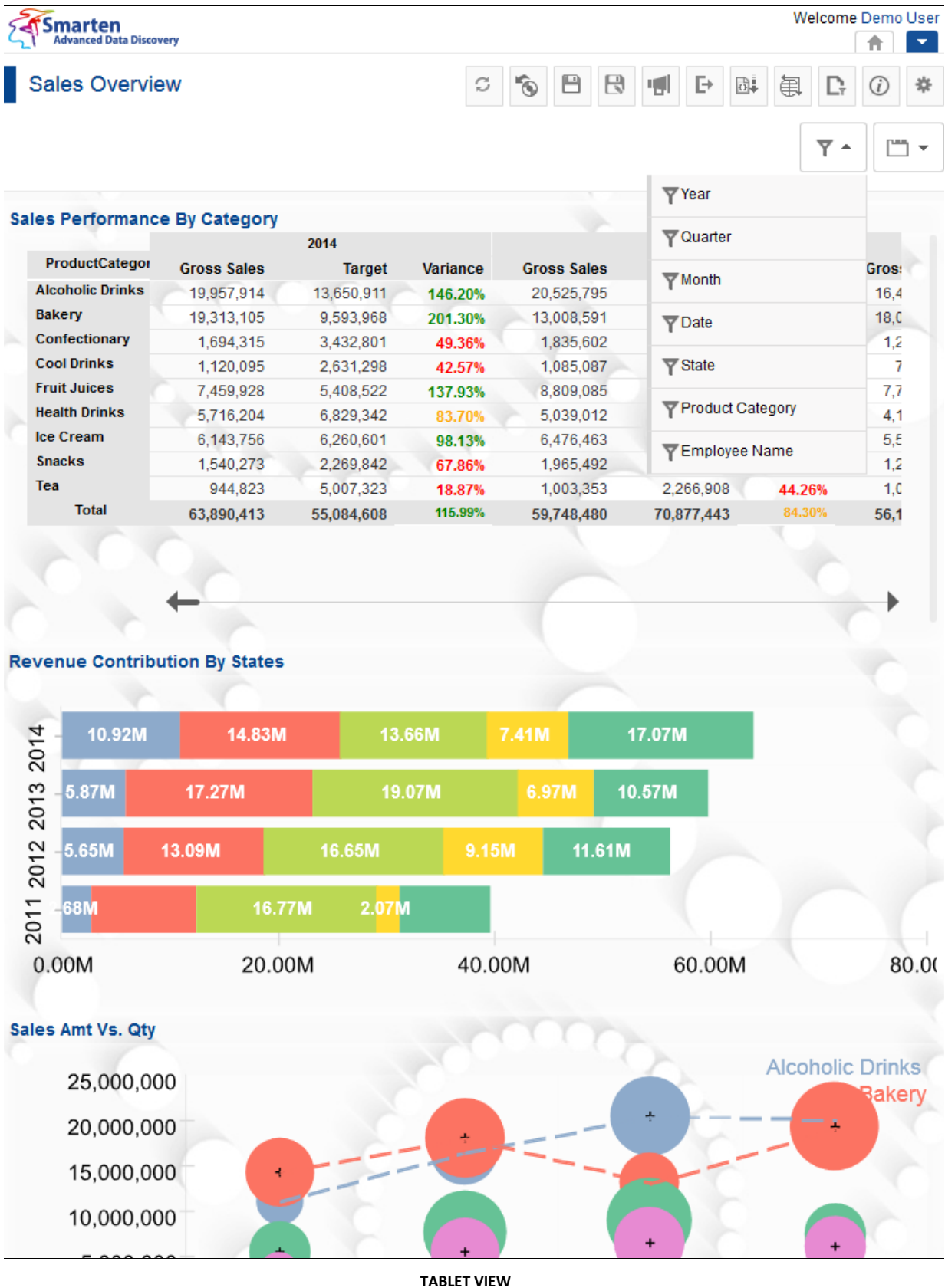
You do not need to design different dashboards or BI objects for different devices. **“Design once, Use anywhere”** concept in its true sense.

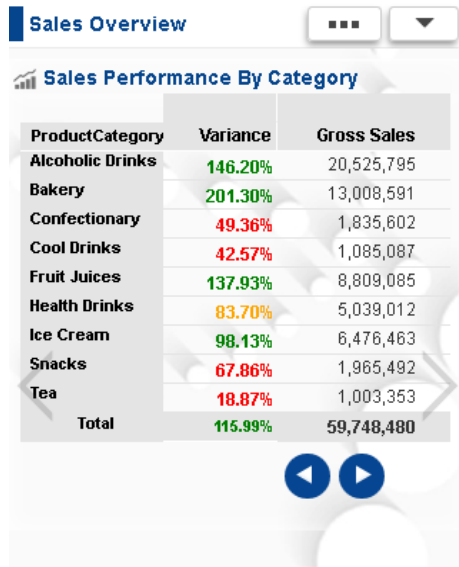
It offers a unique user experience with a 100% browser-based interface on any device, any resolution—Desktop, Laptop, Tablet, and Smartphone.

The following images explain rendering of same dashboard in different devices based on resolution of the target device.

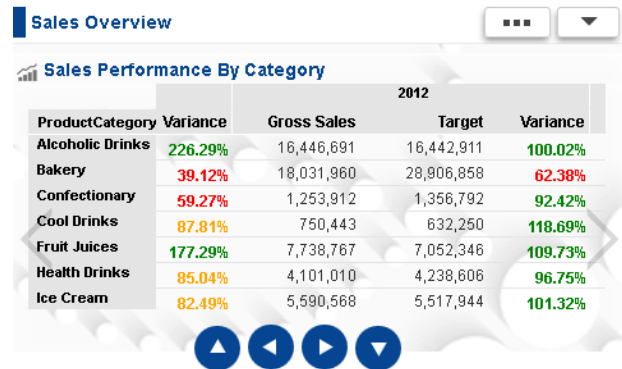


DESKTOP VIEW

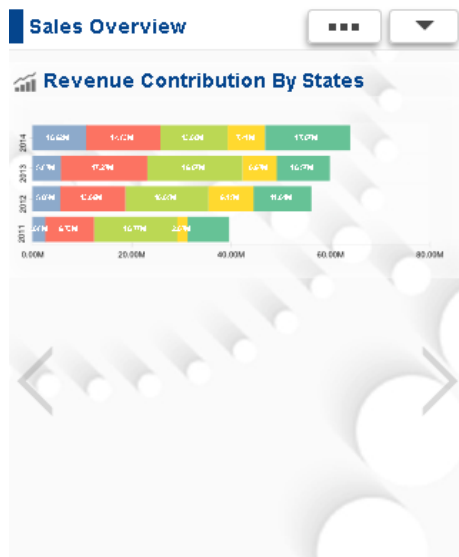




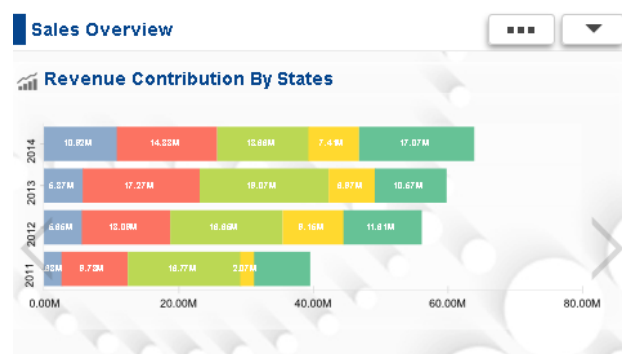
SMARTPHONE VIEW (PORTRAIT)



SMARTPHONE VIEW (LANDSCAPE)



SMARTPHONE VIEW (PORTRAIT)



SMARTPHONE VIEW (LANDSCAPE)

Sales Overview

Sales Performance By Category

ProductCategory	Variance	Gross Sales	2011
Alcoholic Drinks	10.02%	11,180,229	12,71
Bakery	12.38%	14,270,106	17,51
Confectionary	12.42%	785,583	91
Cool Drinks	18.69%	454,909	31
Fruit Juices	19.73%	5,486,443	5,41
Health Drinks	16.75%	2,547,241	2,91
Ice Cream	11.32%	3,064,884	3,41
Snacks	11.57%	878,012	1,01
Tea	11.84%	830,187	1,61
Total	81.95%	39,497,594	46,11

SMARTPHONE VIEW (PORTRAIT)

Sales Overview

Sales Performance By Category

ProductCategory	Variance	Gross Sales	Total	Variance
Alcoholic Drinks	87.35%	68,110,629	51,963,351	131.07%
Bakery	81.28%	64,623,762	89,310,855	72.36%
Confectionary	81.95%	5,569,411	8,845,414	62.96%
Cool Drinks	121.18%	3,410,534	4,874,656	69.96%
Fruit Juices	101.50%	29,494,222	22,835,104	129.16%
Health Drinks	87.13%	17,403,467	19,916,724	87.38%
Ice Cream	89.23%	21,275,671	23,064,951	92.24%

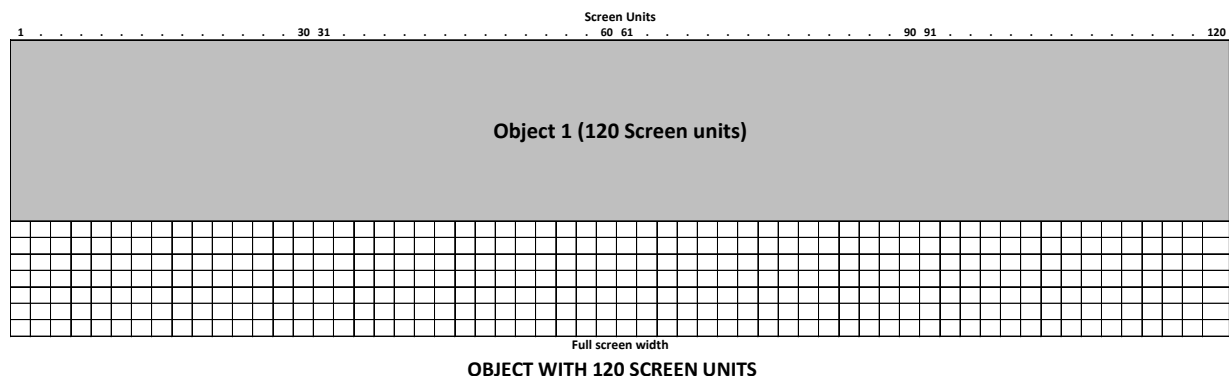
SMARTPHONE VIEW (LANDSCAPE)

2 Responsive Design based on Grid

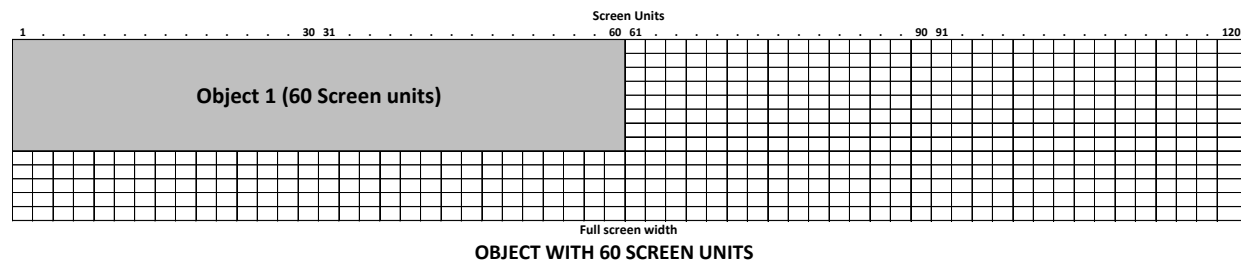
The Smarten responsive user interface is developed based on a 120-column grid system. The whole screen width is divided into 120 columns (also called screen units), and the pixel size of each screen unit will be based on the resolution of the target screen. This mechanism will provide relative sizing and positioning of the object on the Smarten page container.

Below are some examples to understand the relationship between % width and screen units:

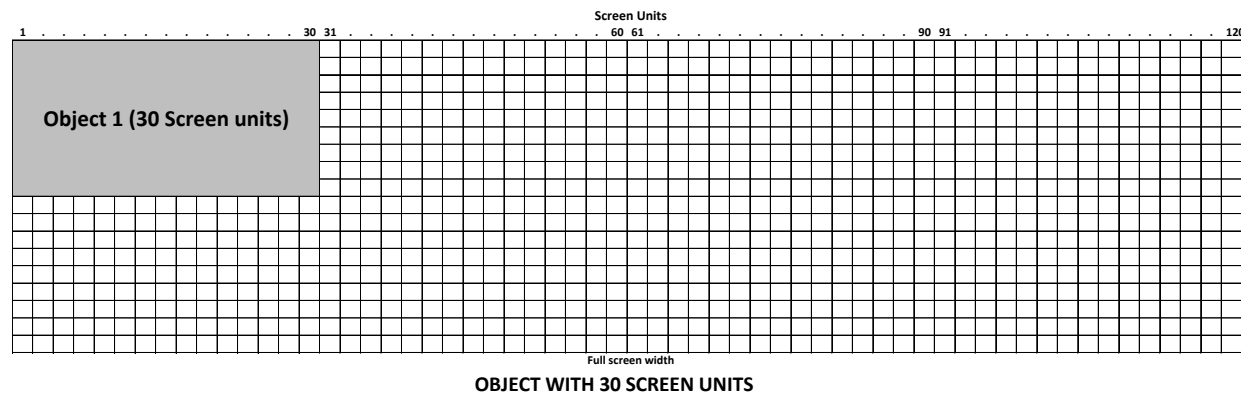
- 100% width = 120 screen units



2. 50% width = 60 screen units



3. 25% width = 30 screen units



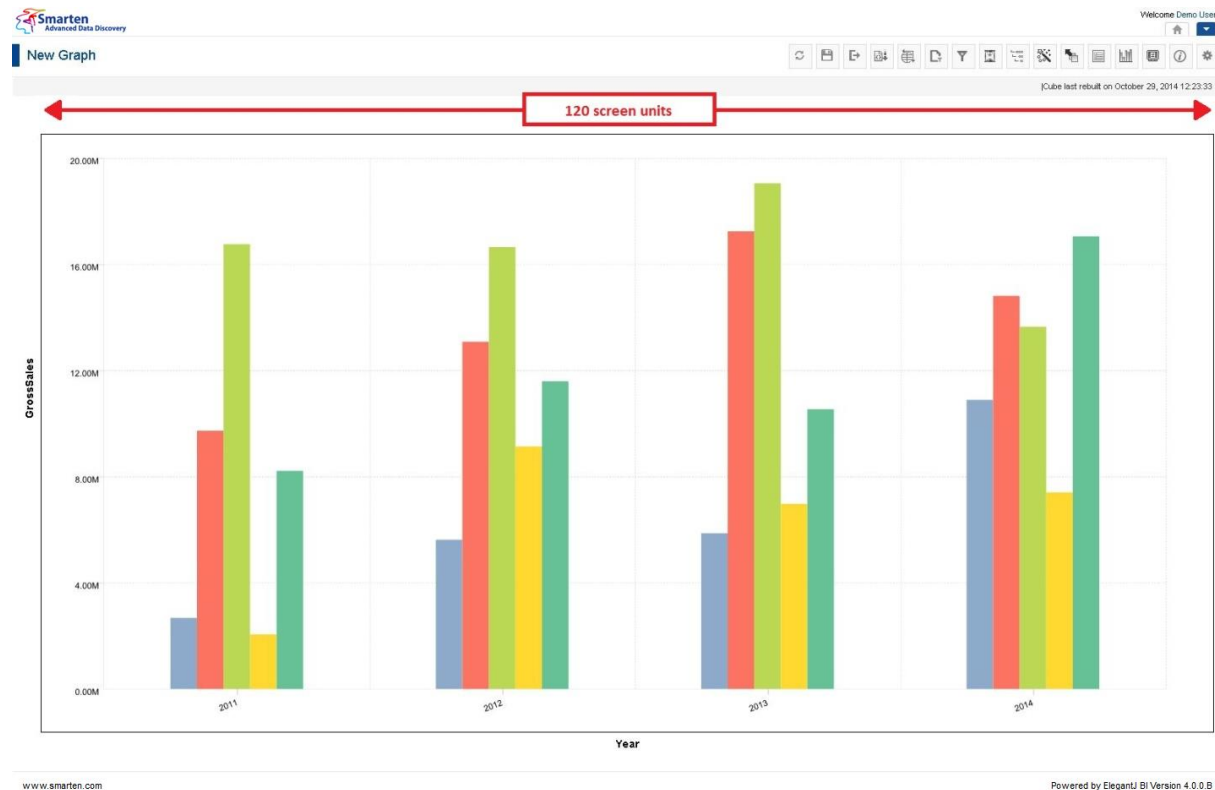
3 Screen Unit size (in pixels) based on resolution

The pixel size of each screen unit will be based on the resolution of the target screen, which will provide high-quality image and object rendering within the Smarten container.

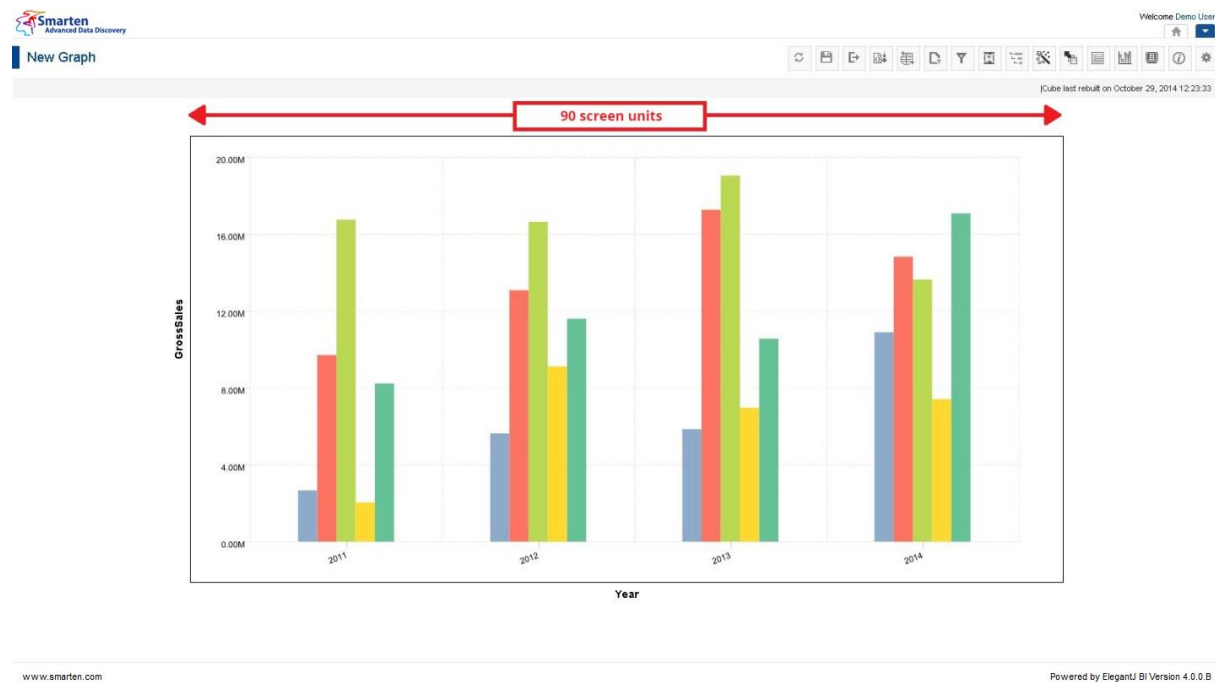
Screen Resolution (width x height in pixels)	Pixels per screen unit (width / 120)
960 x 800	8 (960/120)
1200 x 800	10 (1200/120)
1320 x 900	11 (1320/120)
1680 x 1024	14 (1680 / 120)

4 Screen Units based Object rendering

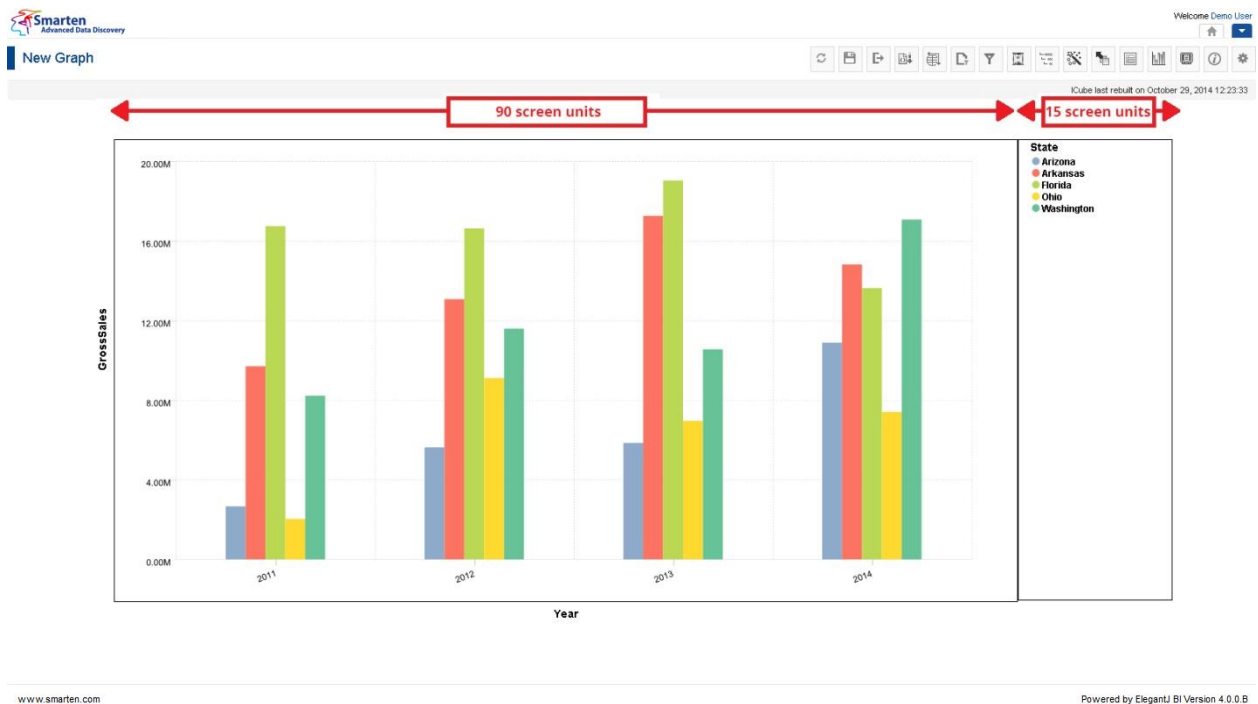
Graphs, KPI, and dashboard objects are rendered based on screen units defined by the user, with “center” alignment.



GRAPH WITH 120 X 60 SCREEN UNITS



GRAPH WITH 90 X 60 SCREEN UNITS



GRAPH (90 X 60 SCREEN UNITS) WITH LEGEND (15 X 60 SCREEN UNITS)

Analysis and reports are grid-based layouts, and full-screen resolution width (e.g., 120 screen units) is allocated by the system. Analysis is displayed with “left” alignment, and reports are displayed with “center” alignment.

Sales Analysis

120 screen units

	2011	2012	2013	2014	SUMMARY
PRODUCT CATEGORY	GROSSSALES	GROSSSALES	GROSSSALES	GROSSSALES	GROSSSALES
ALCOHOLIC DRINKS	11,180,229	16,446,691	20,525,795	19,957,914	68,110,629
BAKERY	14,270,106	18,031,960	13,008,591	19,313,105	64,623,762
CONFECTIONARY	785,583	1,253,912	1,835,602	1,694,315	5,569,411
COOL DRINKS	454,909	750,443	1,085,087	1,120,095	3,410,534
FRUIT JUICES	5,406,443	7,738,767	8,809,085	7,459,928	29,404,222
HEALTH DRINKS	2,547,241	4,101,010	5,039,012	5,716,204	17,403,467
ICE CREAM	3,064,884	5,590,568	6,476,463	6,143,756	21,275,671
SNACKS	878,012	1,223,219	1,965,492	1,540,273	5,606,997
TEA	830,187	1,005,284	1,003,353	944,823	3,783,646
SUMMARY	39,497,594	56,141,853	59,748,480	63,890,413	219,278,340

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ANALYSIS DISPLAYED WITH “LEFT” ALIGNMENT

Smarten Advanced Data Discovery

Welcome Demo User

New Report

Page 1 of 146

120 screen units

Cube last rebuilt on October 29, 2014 12:23:33

Month	State	City	ProductCategory	ProductName	SalesQty	SalesPrice	GrossSales
Jun	Arizona	Phoenix	Alcoholic Drinks	Wine	156.0	289.21	45116.759999999995
Jun	Washington	Seattle	Alcoholic Drinks	Beer	237.0	321.91	76292.670000000001
Jun	Arkansas	Springdale	Cool Drinks	Cola	123.0	64.05	7878.15
Jun	Arkansas	Conway	Bakery	Cookies	195.0	352.56	68749.2
Jun	Arkansas	Conway	Bakery	Cake	364.0	135.59	49354.76
Jun	Washington	Redmond	Ice Cream	Vanilla	152.0	122.09	18557.68
Jun	Washington	Redmond	Cool Drinks	Cola	363.0	65.63	23823.69
Jun	Ohio	Dayton	Confectionary	Mints	159.0	91.54	14554.86
Jun	Arkansas	Conway	Cool Drinks	Soda	320.0	73.04	23372.800000000003
Jun	Arkansas	Springdale	Bakery	Cookies	133.0	359.94	47872.02
Jun	Florida	Orlando	Alcoholic Drinks	Whisky	327.0	341.85	111784.950000000001
Jun	Florida	Orlando	Fruit Juices	Apple	354.0	140.63	49783.02
Jun	Washington	Seattle	Fruit Juices	Apple	263.0	131.11	34481.93
Jun	Washington	Redmond	Confectionary	Mints	390.0	102.82	40099.799999999996
Jun	Florida	Lakeland	Tea	Ginger Tea	73.2	145.25	10632.300000000001
Jun	Arizona	Scottsdale	Tea	Green Tea	23.6	86.12	2032.43200000000002
Jun	Arizona	Scottsdale	Tea	Ginger Tea	72.6000000000000001	157.92	11464.992
Jun	Florida	Lakeland	Confectionary	Toffees	169.0	55.7	9413.30000000000001
Jun	Florida	Orlando	Health Drinks	Chocolate	297.75	150.4160000000000003	44786.364000000001
Jun	Arizona	Scottsdale	Fruit Juices	Mango	235.0	153.26	36016.1
Jun	Arizona	Scottsdale	Health Drinks	Chocolate	306.25	333.3200000000000005	51290.95200000000005
Jun	Arizona	Scottsdale	Ice Cream	Pineapple	239.0	98.7	23589.3
Jun	Arizona	Scottsdale	Bakery	Cake	117.0	122.92	14361.64
Jun	Arkansas	Springdale	Fruit Juices	Orange	193.0	151.61	27744.63
Jun	Arkansas	Springdale	Alcoholic Drinks	Beer	241.0	376.26	90678.66
Jun	Arkansas	Conway	Health Drinks	Strawberry	203.25	81.1360000000000001	16480.89200000000003
Jun	Washington	Seattle	Ice Cream	Pineapple	102.0	114.96	11725.92
Jun	Washington	Redmond	Cool Drinks	Cola	253.0	61.81	15637.93
Jun	Washington	Seattle	Ice Cream	Vanilla	104.0	149.12	15506.48
Jun	Florida	Lakeland	Bakery	Cookies	394.0	307.73	121245.620000000001
Jun	Florida	Lakeland	Tea	Ginger Tea	27.0	155.67	4208.49
Jun	Washington	Redmond	Snacks	Noodles	186.0	87.71	16314.06
Jun	Washington	Redmond	Fruit Juices	Apple	327.0	131.3	42935.10000000000006
Jun	Arkansas	Conway	Tea	Ginger Tea	34.4	129.0	4437.5999999999999
Jun	Washington	Seattle	Tea	Green Tea	30.4000000000000002	106.51	3237.9040000000000005
Jun	Washington	Redmond	Cool Drinks	Soda	245.0	72.47	17755.15
Jun	Ohio	Dayton	Fruit Juices	Apple	156.0	117.13	18272.28
Jun	Arkansas	Conway	Bakery	Cake	135.0	132.05	17826.75
Jun	Arkansas	Springdale	Ice Cream	Vanilla	153.0	115.67	17728.11
Jun	Arkansas	Conway	Ice Cream	Pineapple	148.0	99.59	14739.32
Jun	Florida	Lakeland	Confectionary	Mints	120.0	91.41	10969.199999999999

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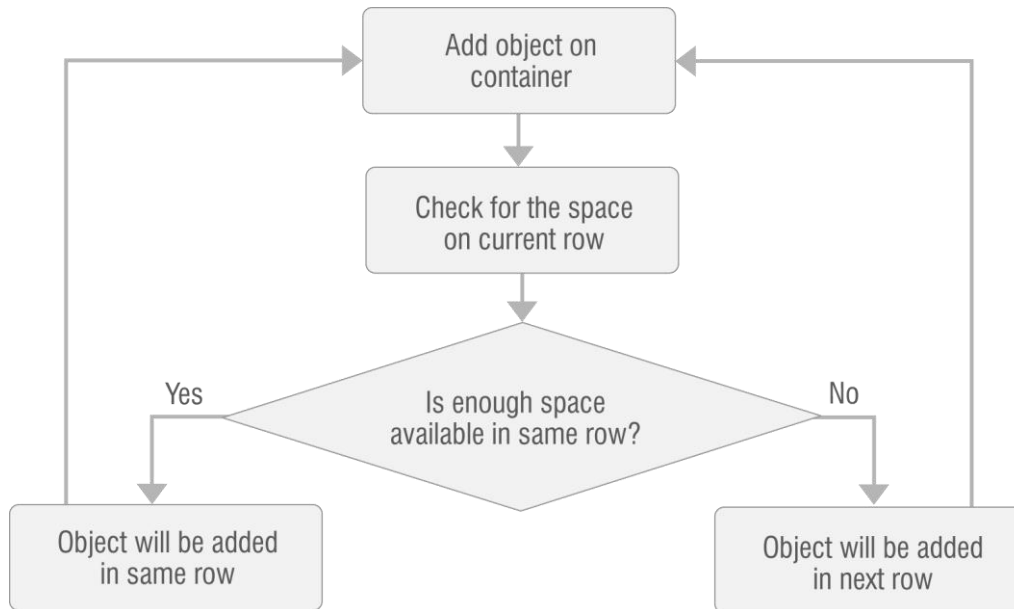
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REPORT DISPLAYED WITH "CENTER" ALIGNMENT

5 Object rendering flow—Left to Right

The grid system adjusts objects automatically on the page from left to right. If it does not find enough space, the object will automatically move down.

A typical flow is explained below.



FLOW CHART: DASHBOARD OBJECT RENDERING—LEFT TO RIGHT

Example:

There are 5 objects in a page, and object width in screen units is as shown below, and all objects have the same height.

Object 1—60 screen units

Object 2—40 screen units

Object 3—50 screen units

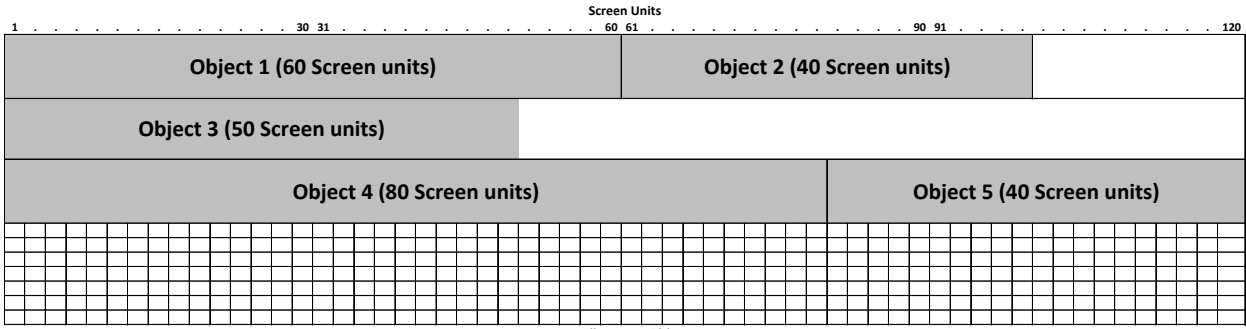
Object 4—80 screen units

Object 5—40 screen units

The system will start rendering objects from left to right in the first row. Object 1 will be rendered with 60 screen units in row 1, then object 2 with 40 screen units in the same row, but now row 1 has already occupied 100 screen units, and only 20 screen units are available in row 1. Object 3 has 50 screen units, which cannot be accommodated in row 1. So, in this case, object 3 will be moved to a new row, i.e., row 2.

In row 2, Object 3 occupies 50 screen units, and 70 screen units are available. Object 4 needs 80 screen units, so object 4 will be moved to a new row, i.e., row 3.

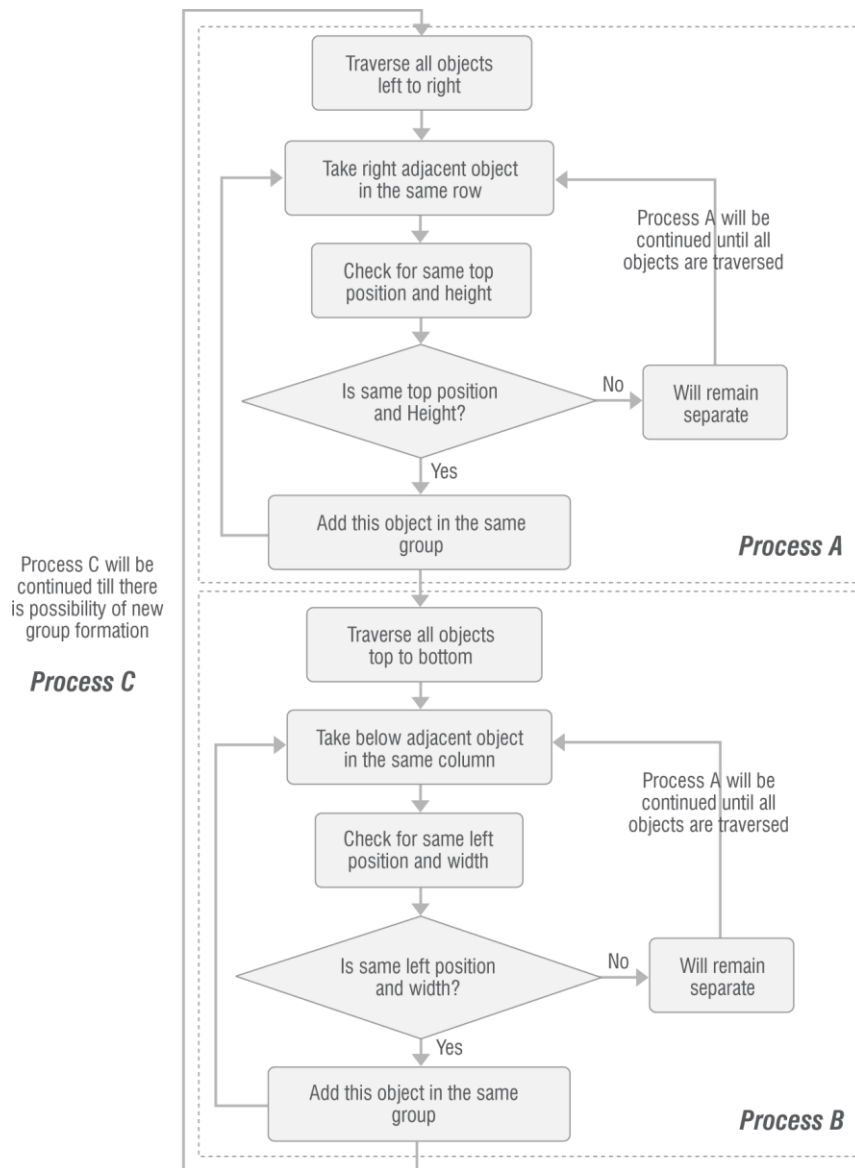
Object 5 needs 40 screen units, and row 3 has 40 screen units available, so object 5 will be rendered in row 3.



DASHBOARD OBJECT RENDERING—LEFT TO RIGHT

6 Object Grouping

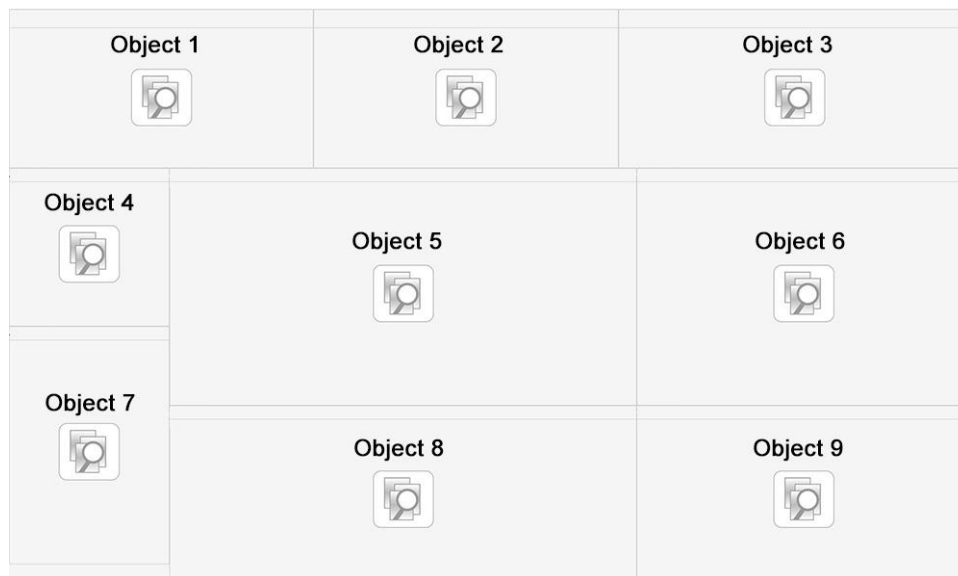
The object grouping mechanism will help maintain the same dashboard design/layout in different screen sizes.



FLOW CHART: DASHBOARD OBJECT GROUPING

Example:

There are 9 objects placed in the dashboard layout below. Steps shown will explain the grouping logic on this sample layout.



DASHBOARD OBJECT GROUPING: SAMPLE DESIGN LAYOUT

Process C round 1—after process A

As per above-mentioned grouping algorithm, process A will be performed as part of process C. After this process, groups below will be created based on objects' same top position and height.

Group 1—Object 1 + Object 2 + Object 3

Group 2—Object 5 + Object 6

Group 3—Object 8 + Object 9



DASHBOARD OBJECT GROUPING: PROCESS C ROUND 1—AFTER PROCESS A

Process C round 1—after process B

Now process B will be performed. It will check for the same left position and width for objects. The group shown below will be created after this process:

Group 4—Object 4 + Object 7



DASHBOARD OBJECT GROUPING: PROCESS C ROUND 1—AFTER PROCESS B

Process C round 2—after process A (No change)

Next, round 2 of process C will be performed. After process A of this round, any new group will not be created because there are no objects/groups with the same top position and height.



DASHBOARD OBJECT GROUPING: PROCESS C ROUND 2—AFTER PROCESS A

Process C round 2—after process B

Now, process B will be performed in round 2. This will create the group below:

Group 5—Group 2 + Group 3



DASHBOARD OBJECT GROUPING: PROCESS C ROUND 2—AFTER PROCESS B

Process C round 3—after process A

Now, round 3 of process C will be performed. After process A in this round, the groups below will be created:

Group 6—Group 4 + Group 5

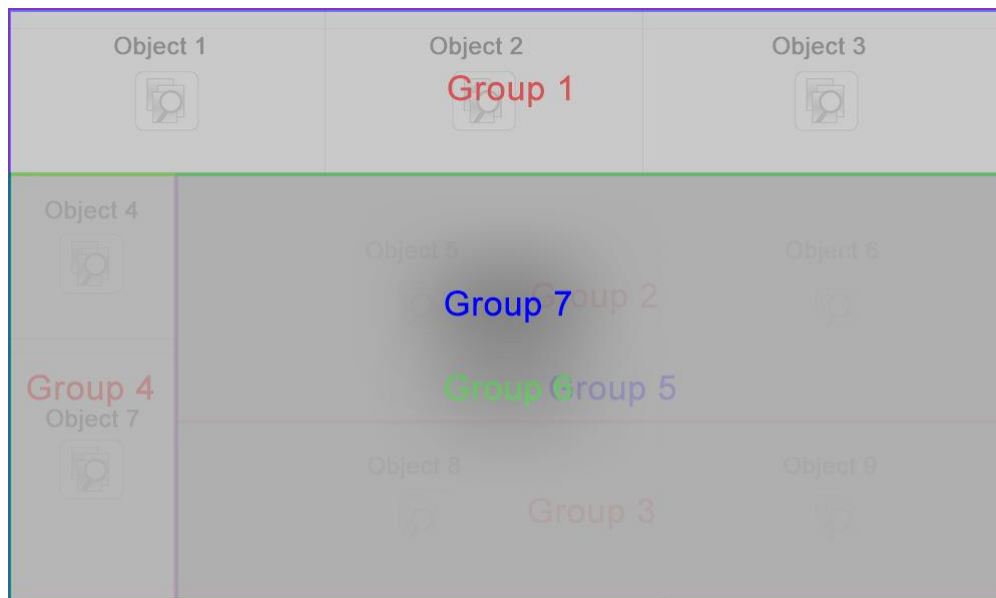


DASHBOARD OBJECT GROUPING: PROCESS C ROUND 3—AFTER PROCESS A

Process C round 3—after process B (Complete)

Process 3 for round 3 will be performed next. The group below will be created after this process:

Group 7—Group 1 + Group 6



DASHBOARD OBJECT GROUPING: PROCESS C ROUND 3—AFTER PROCESS B

Process will be finished after this round, as there is no possibility to create a new group.

Note:

If vertical grouping option is enabled then Process C will be start with Process B first and then followed by Process A.

7 Dashboard preview mode—Section rendering behavior

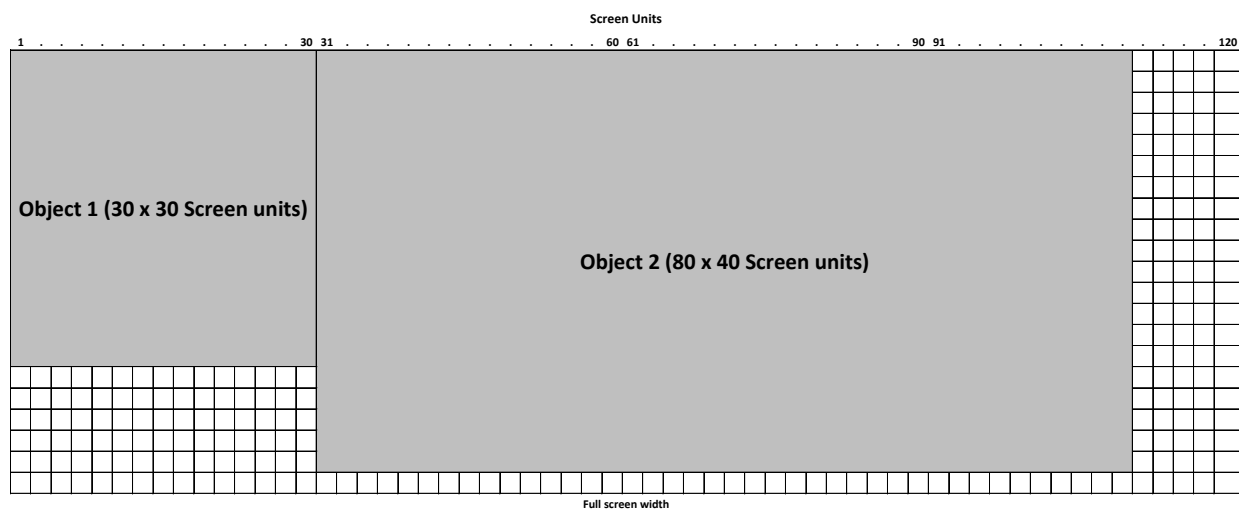
Dashboard sections will be resized and rendered as per grid-based responsive mechanism in different screen resolutions. As explained in previous topics, Smarten object size is measured in screen units. There will be different pixels value per screen unit for different screen resolution. So, dashboard sections' size will be calculated as per formula below while rendering:

Section width (in pixels) = section screen unit width * pixels per screen unit for current resolution

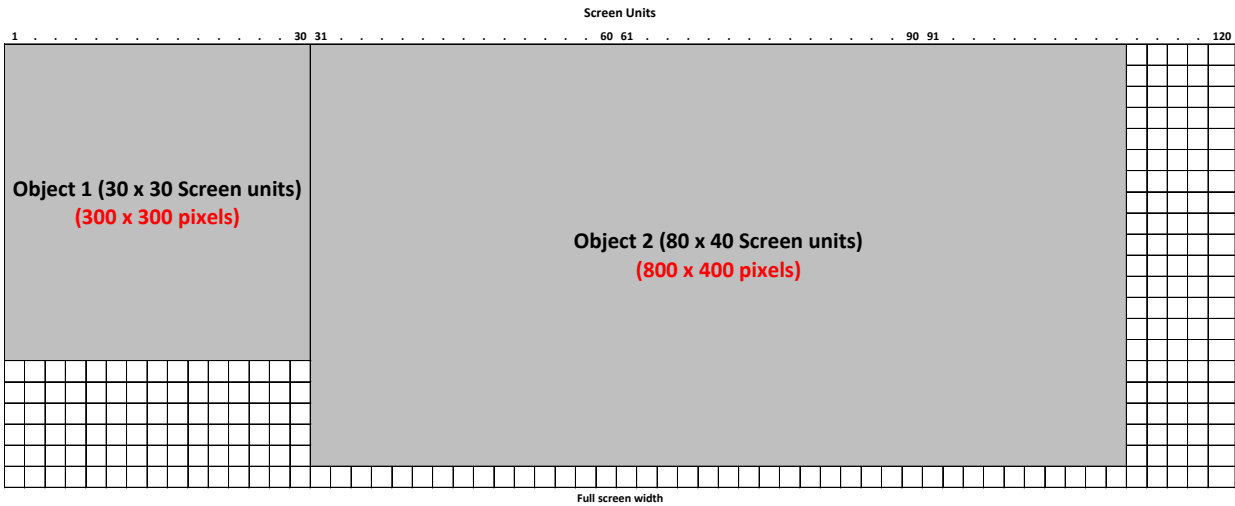
Section height (in pixels) = section screen unit height * pixels per screen unit for current resolution

Example:

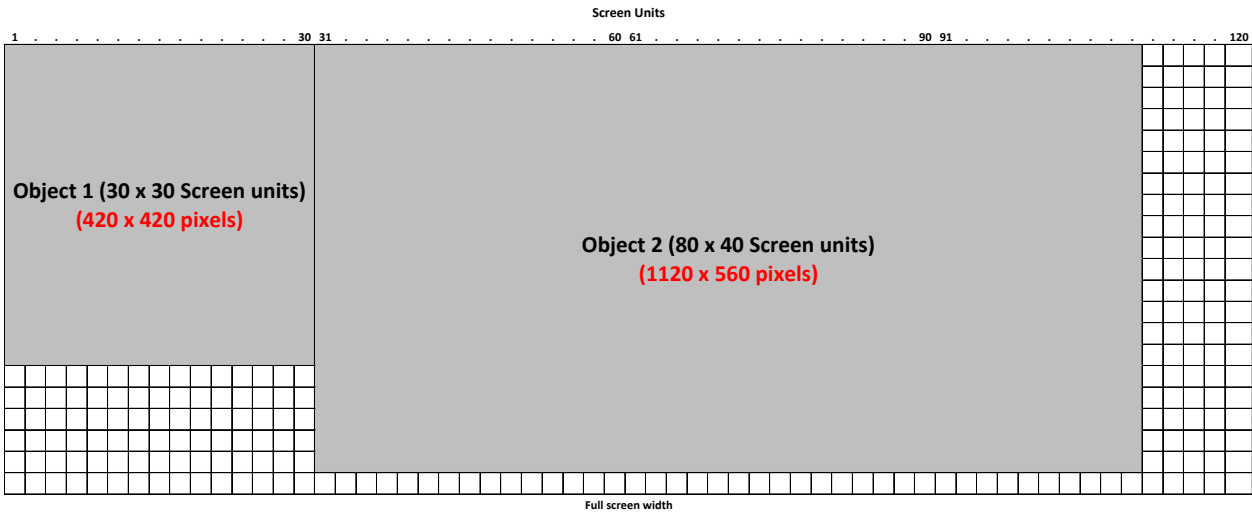
Section size (in screen units)	Screen Resolution (in pixels)	Pixels per screen units	Section size (in pixels)
30 x 30	1200 x 800	10	300 x 300
	1320 x 900	11	330 x 330
	1680 x 1024	14	420 x 420
80 x 40	1200 x 800	10	800 x 400
	1320 x 900	11	880 x 440
	1680 x 1024	14	1120 x 560



DASHBOARD DESIGN MODE



DASHBOARD PREVIEW MODE—1200 X 800 SCREEN RESOLUTION



DASHBOARD PREVIEW MODE—1680 X 1024 SCREEN RESOLUTION

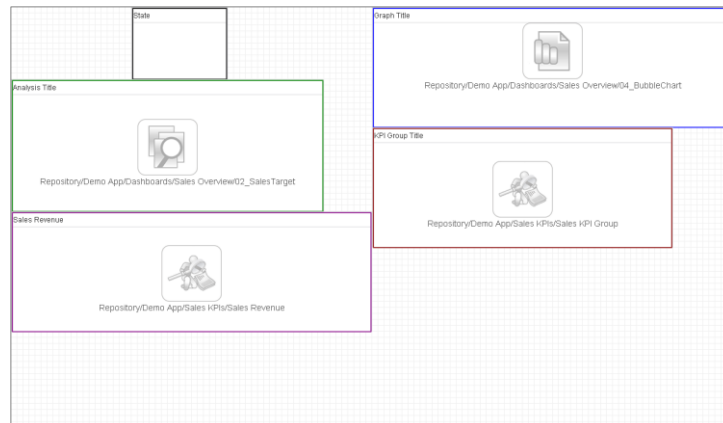
8 Dashboard Design Guidelines

a. Keep same alignment and size for adjacent objects

While designing the dashboard, try to keep the same top/left and width/height for adjacent objects. This will help to form proper groups as per grouping algorithm, and the layout will be rendered as it is seen in design mode for different screen resolutions.

Problem

The layout example below shows the actual problem when objects are not arranged properly in the dashboard. It shows how improper object arrangement renders objects in the preview mode.



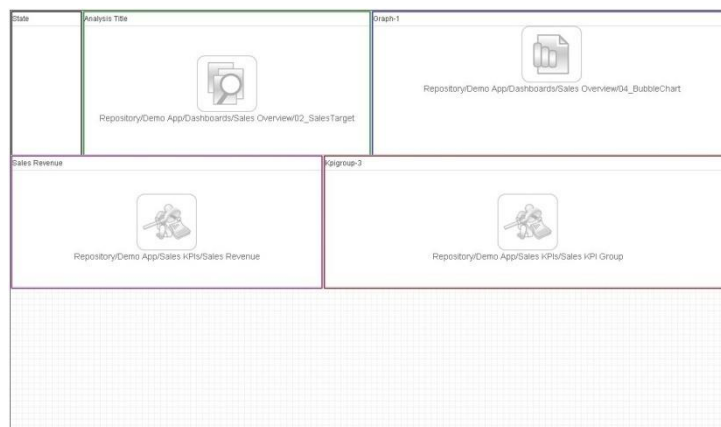
IMPROPER OBJECT ARRANGEMENT—DESIGN MODE



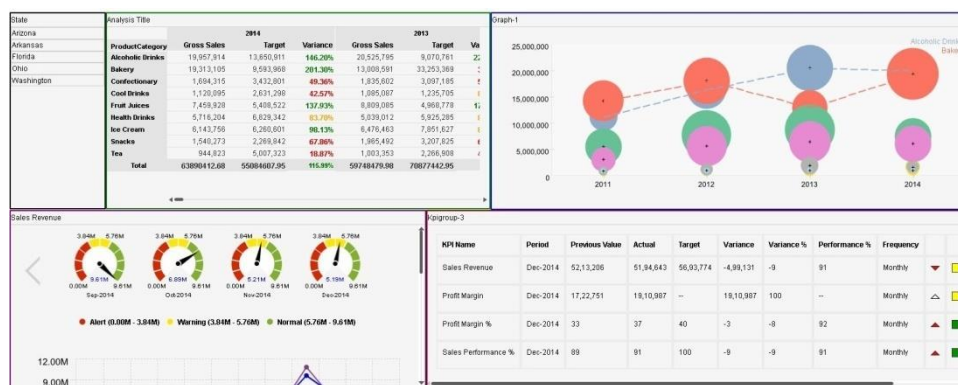
IMPROPER OBJECT ARRANGEMENT—PREVIEW MODE

Recommendation

The layout example below shows how objects should be arranged in the dashboard. It renders properly in the preview mode as seen in the design mode.



PROPER OBJECT ARRANGEMENT—DESIGN MODE

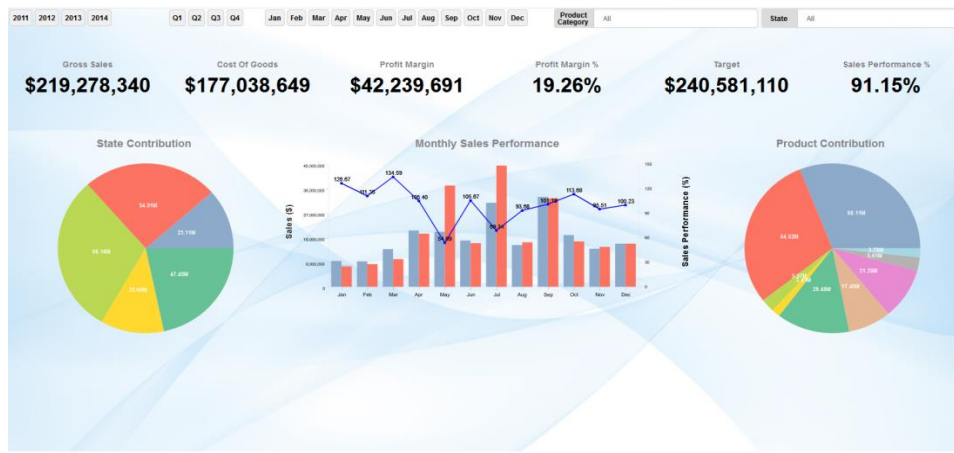


PROPER OBJECT ARRANGEMENT—PREVIEW MODE

b. Design with minimum resolution of target desktop

For the desktop view, design the dashboard in minimum targeted resolution. This will avoid scrolling within the sections for lower resolution.

The example below shows that sample dashboard is developed in 1600x900 screen resolution. When it renders in 1024x780 resolution, the dashboard becomes clumsy. To avoid this, always design the dashboard in lower resolution.



PREVIEW MODE—1600X900 SCREEN RESOLUTION



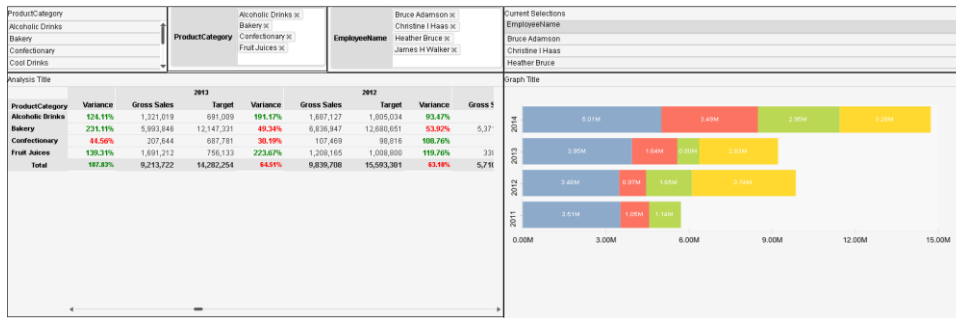
PREVIEW MODE—1024X780 SCREEN RESOLUTION

c. Carefully place auto-growing components

Place auto height growing objects in the proper place to avoid height growing effects. Objects such as filter components, time series component and text component are auto height growing objects based on values. These objects adjust their height based on the content of the objects.

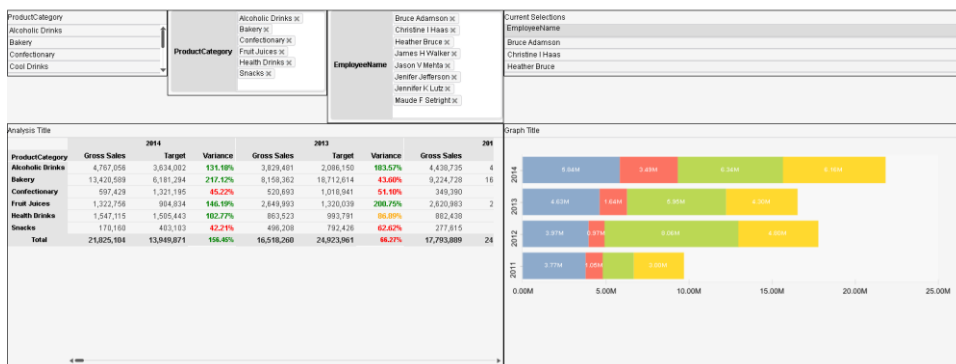
Problem

The sample dashboard layout below shows the actual problem. There are filter components placed in the first row.



DASHBOARD PREVIEW MODE

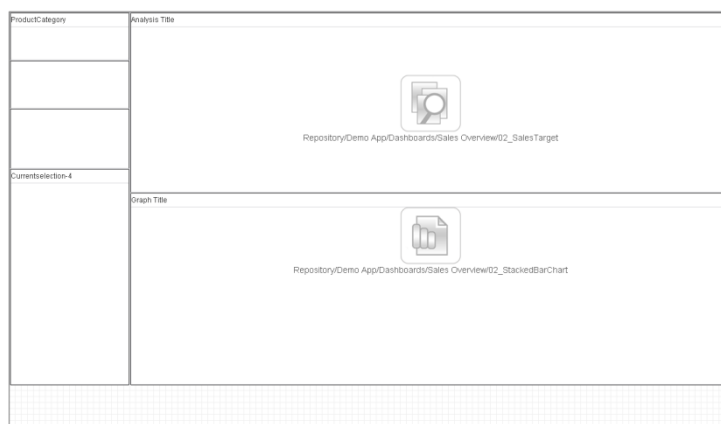
After selecting multiple values in filters, as shown in the screen below, the height of filter components are increased. It causes the empty space below some components of the first row.



DASHBOARD PREVIEW MODE—AFTER FILTER INPUTS

Recommendation

To avoid the above problem, the developer should design the dashboard as shown below. In this design, auto-growing components, such as filters, are placed at the left-hand side. As shown in preview below, this kind of layout avoids auto height growing effects.



AUTO-GROWING COMPONENTS—DESIGN MODE

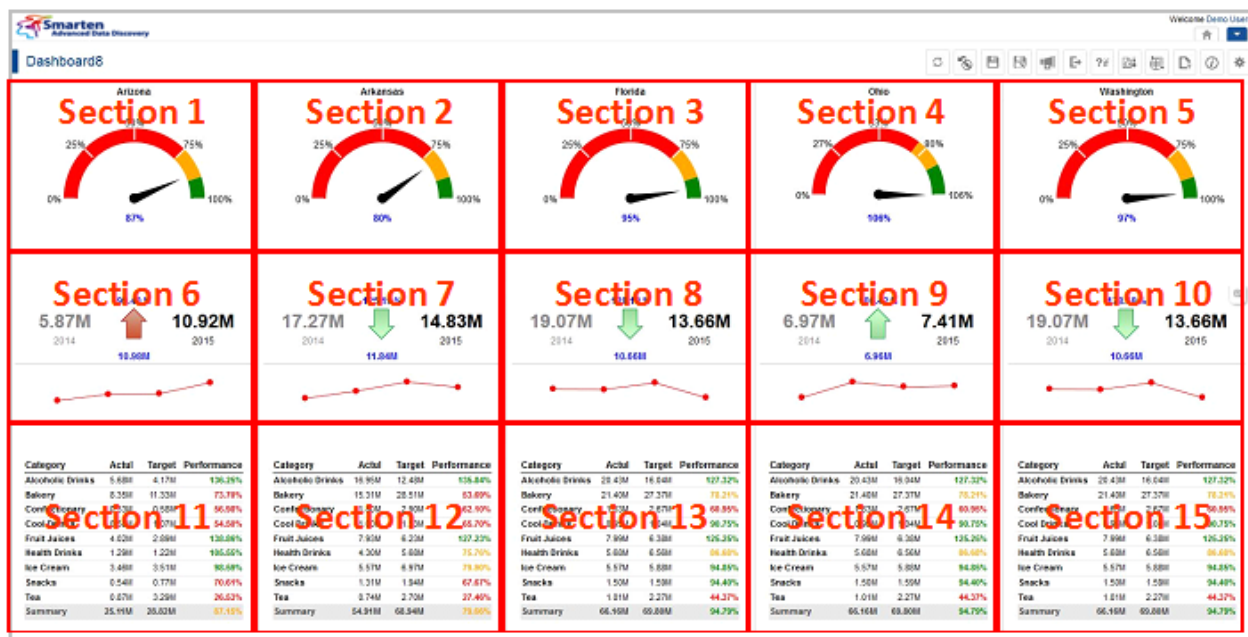


AUTO-GROWING COMPONENTS—PREVIEW MODE

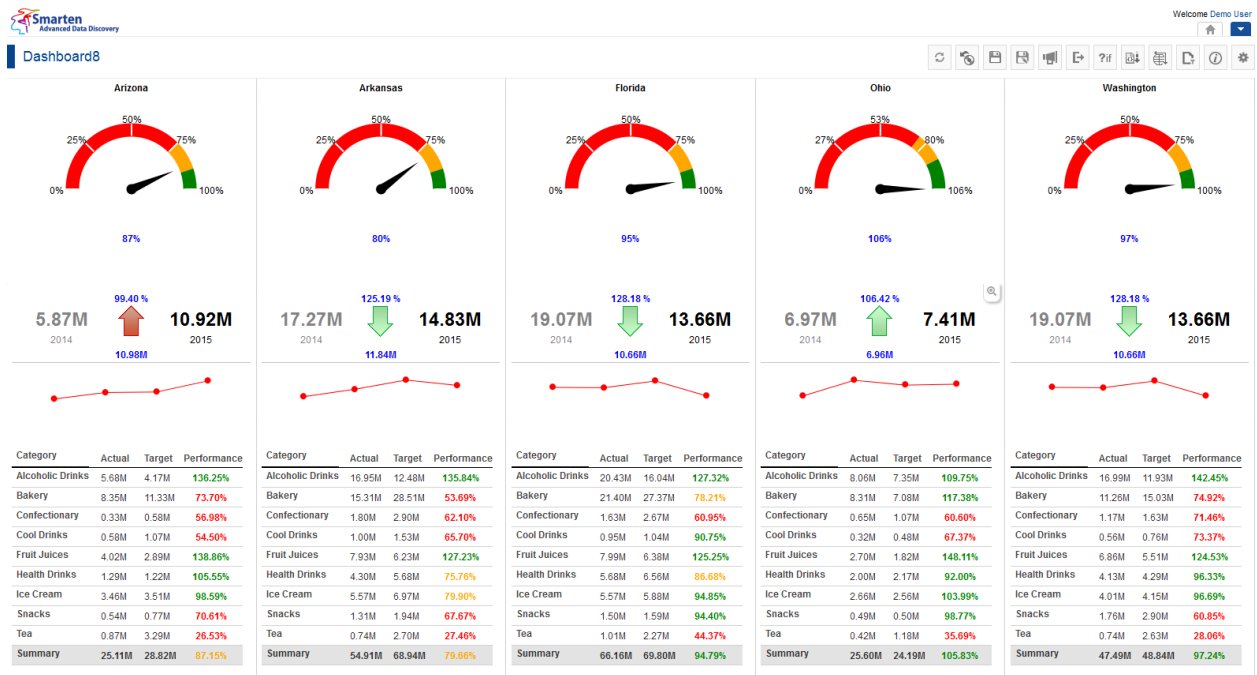
d. Enable vertical grouping option when required

With default (horizontal) grouping, system displays objects from left to right in the tablet view.

For example, consider this particular dashboard design where state wise vertical strips are designed with a gauge, a performance and a table view for each state.

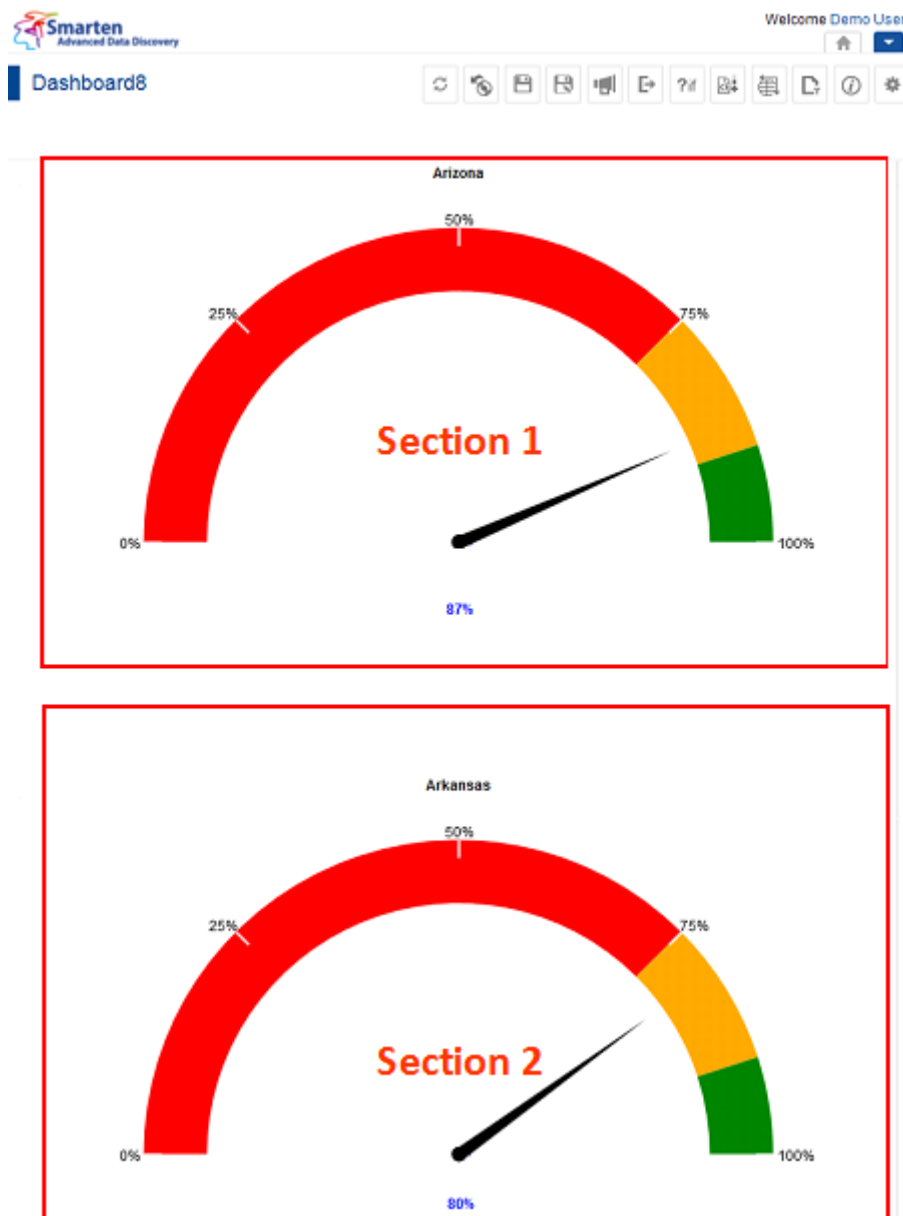


DASHBOARD IN DESIGN MODE



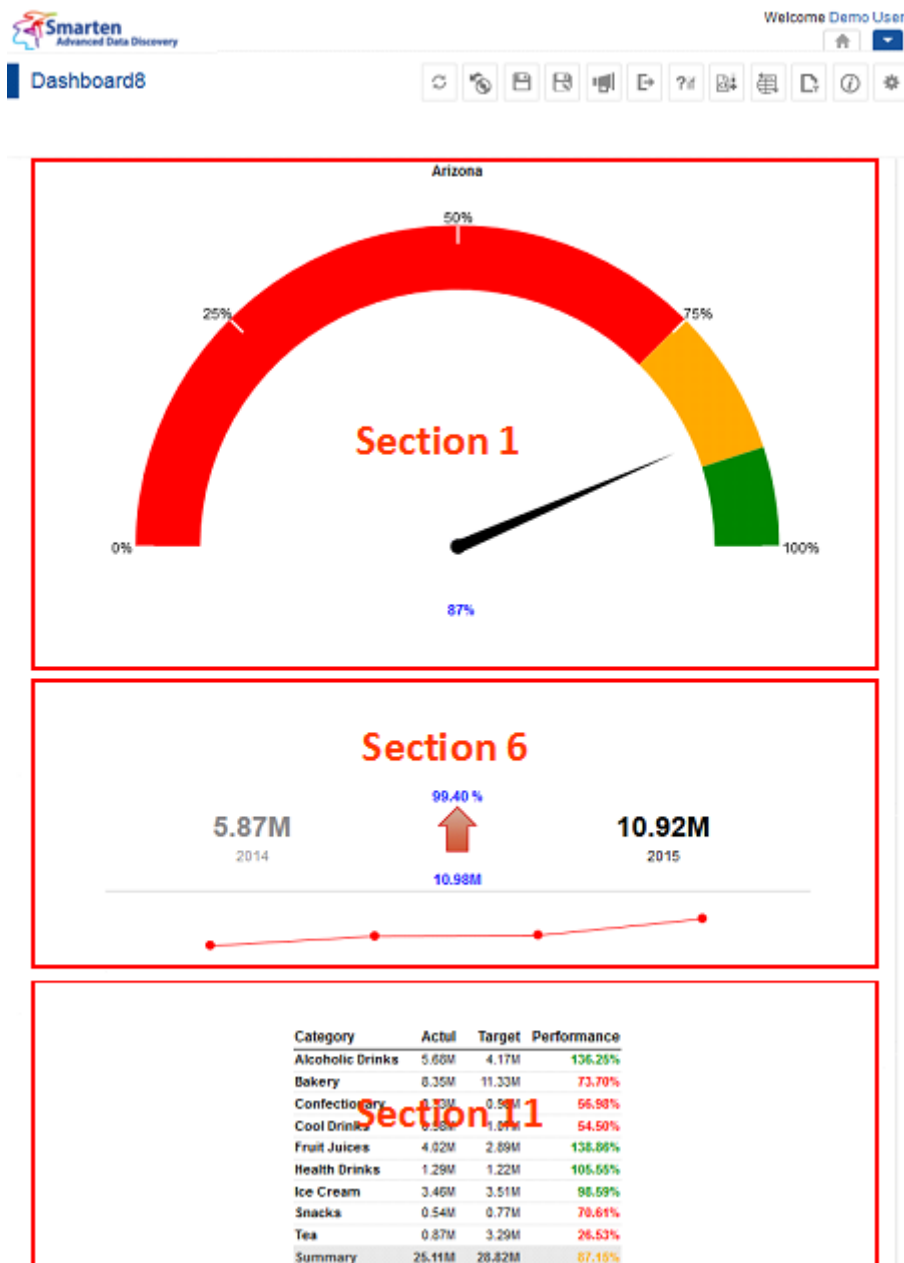
DASHBOARD IN DESKTOP VIEW

With default (horizontal) grouping, system displays objects from left to right in the tablet view. So, in this example, tablet view will display gauge chart for Arizona and then gauge chart for Arkansas.



DASHBOARD IN TABLET VIEW WITH HORIZONTAL GROUPING

To avoid the above problem in such a scenario, the developer should design the dashboard with vertical grouping. If vertical grouping is applied, system displays objects from top to bottom in the tablet view. So, in this example, tablet view will display gauge chart for Arizona, performance view of Arizona, report of Arizona, gauge chart for Arkansas and so on.



DASHBOARD IN TABLET VIEW WITH VERTICAL GROUPING

9 Product and Support Information

Find more information about Smarten and its features at www.smartent.com

Support: support@smartent.com

Sales: sales@smartent.com

Feedback & Suggestions: support@smartent.com

Support & Knowledgebase Portal: support.smartent.com