Looking Past the Flash of Dashboard Design

Written by: Chris du Toit

stellar

Stellar Consulting Group Ltd. Level 27, PWC Tower, 188 Quay St. PO Box 997, Shortland St, Auckland 1140, NZ. Ph: 0800 22 88 72 www.stellarconsulting.co.nz

Introduction

Using dashboards as a quick gauge of performance is not a new concept and many texts covering different aspects of dashboards have been written already. A Google search for "Executive dashboards" returns over 750,000 results and most of them show endless arrangements of gauges, dials, pie charts, pyramid charts, traffic lights, etc. This probably stems from the fact that most people associate dashboards with these types of objects.

Although pretty, these tools do have their drawbacks. Eye candy is boosted whilst decreasing screen space, comparability and more useful information.

This paper will have a look at dashboards that are currently viewable using a Google search and will comment on what changes could be made for the better. Dashboards are as varied as snowflakes and their definitions are not any different. For the purpose of this paper a dashboard will be defined as:

"A dashboard is a single page, top-down view that easily shows how related business processes, areas and/or indicators are performing against preset comparable values."

Our definition explained:

Single page view

Single page implies that the dashboard should achieve its goal of gauging performance in one view and shouldn't require any additional interactions such as scrolling, tabbing, hovering for flyovers and opening supplemental information to assess how the indicator in focus is performing.

Top-down view

Only by knowing what the overall performance of a business indicator is, would you know if it requires further investigation to understand what the underlying factors are. A dashboard forcing the user to pick one sales representative at a time is fairly useless if it isn't accompanied by a view that compares all sales representatives with each other and thus showing which representatives you need to select and analyse.

Related business processes, areas and/or indicators performing against preset comparable values

Deciding what should be shown on a dashboard and what message it should convey is the first step when designing a dashboard. A dashboard that does not convey a message is merely a report and could be useful to some users, but won't be seen as an integral part of performance management. Showing actual and budget sales next to each other will show a relationship, but this can then be taken a step further by highlighting variations and alerting the user to areas that require attention. A message can only be conveyed when values are compared to something else. Displaying January sales as $200K is good, showing that the growth over the prior year is 7% is better and highlighting that the expected growth should be 10% and that the business is not exactly on track is even better.

Saving space, reducing variety, and improving effectiveness

Figure 1 below is dashboard of a magazine's revenue performance. The following issues can be found by looking a little closer:

- There is no title to specify what the dashboard should be used for
- Visualizations are too varied and large, making it difficult to view relationships and waste screen space
- Each month is shown on a single thermometer graph, making comparison and trending difficult
- Comparing the position of the dials for Magazine Revenue doesn't mean much, because the performance bandings are all different.

It is unnecessary to vary the tools used for visualisation just because they are available or you feel that a change is required. In most cases, the information needs of users can be achieved with a small number of visualisation tools – leading to a simpler and more cohesive dashboard design.

Figure 1

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BRIGHTER BUSINESS INTELLIGENCE

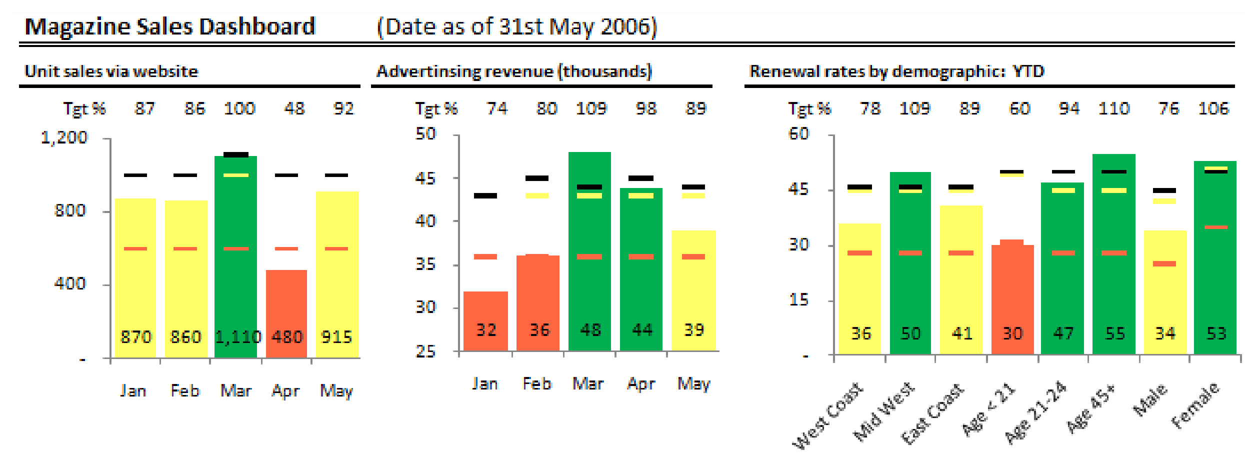
Saving space, reducing variety, and improving effectiveness

The dashboard in figure 2 presents the same data as Figure 1, but uses only one chart type to replace most of the gauges and 2 grids for Revenue Sources and Website Clicks. The following adjustments were made to the dashboard:

- Title with date added to inform the user what data and period they are looking at.
- Unit Sales, Advertising Revenue and Renewal Rates are displayed in 3 charts making it easier to see trends and compare performance.
- Percentage of target achieved makes it easier to gauge performance on members with different target values.
- Unit Sales and Advertising revenue are moved next to each other to make it easier to see if there is a correlation between the two.

Revenue by Source and Website clicks are moved to grids to save space without sacrificing the ability to gauge performance. Percentage of total added to Website clicks to draw attention large contributors that are off target.

All these changes make for a more insightful dashboard that saves space and gives the user the option to replace the newly gained space with more relevant information: Top 10/Bottom 10 lists, show advertising revenue and website clicks by month to show trends, showing cost information etc. The amount of space saved can be viewed in figure 3.



	$	Tgt	Tgt%	Status
Renewals	205	200	103	2.5% above par
Advertising	39	21	186	2.5% below par
New Subscriptions	17	21	81	29.2% below par

	Clicks	% Total
Guest visits	279,500	51.6
Subscriber content	88,500	16.3
Web shop	160,000	29.5
Advertiser links	13,500	2.5

Figure 2

Figure 3

Showing the bigger picture

The dashboard shown in Figure 4 allows you to see the monthly sales trend for each of the company's 14 sales representatives. It is a good looking presentation and contains nice animations when you move from one rep to the next, but the following shortcomings render the dashboard all but useless:

- No overall view to show whether the reps' contributions are overall on target
- No indicator to draw attention to underperforming reps
- A percentage contribution gauge that makes no sense by having bandings
- The ability to view only one rep at a time makes comparison very difficult

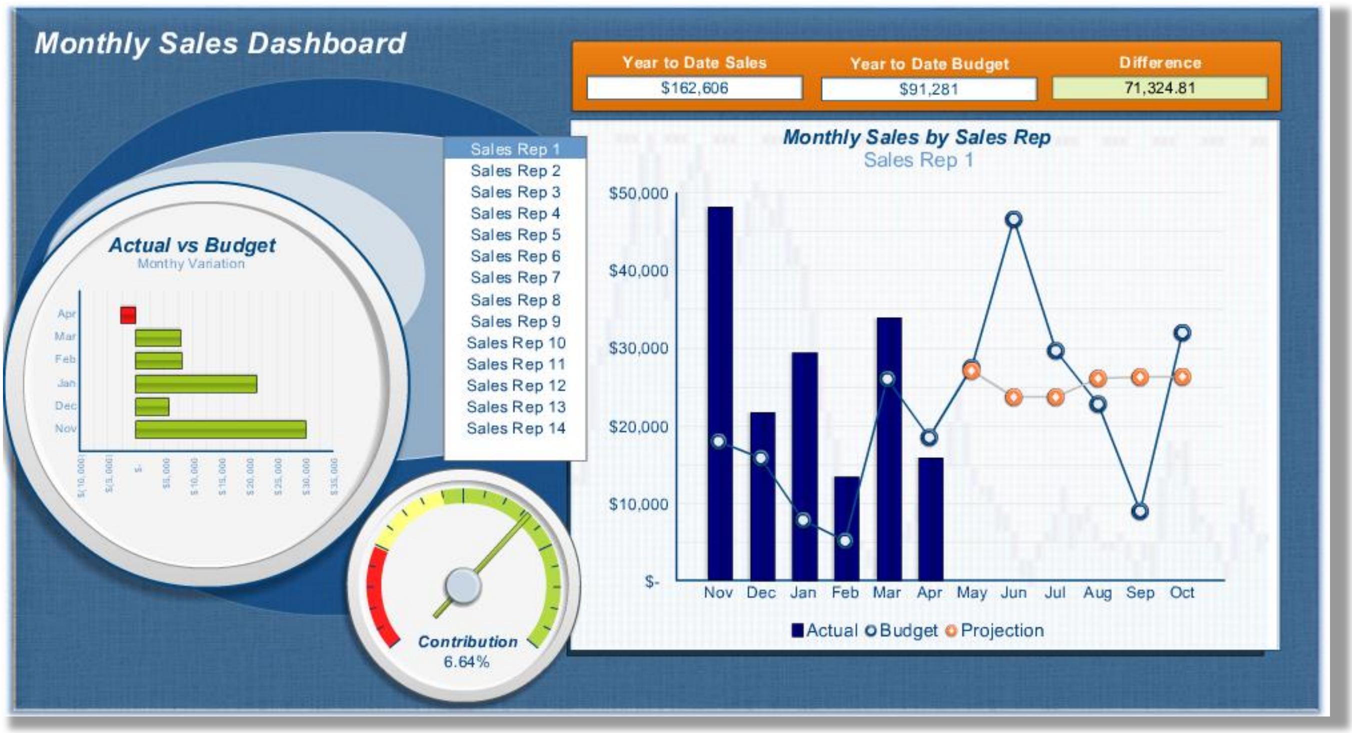


Figure 4

Showing the Bigger Picture

Clearly the dashboard in Figure 4 can deliver much more information and insight and this is shown in the re-worked sample in Figure 5.

Although the new dashboard is less graphical it has clear advantages over its predecessor. One of these advantages is the ability to see the relevant figures for all Sales Reps in one view and having a total line to gauge performance of the group. Some of the other key changes made are:

- Red dots are used to bring attention on variations that are out of range.
- Actual and Budgets are shown as micro charts in its own cell to help assess the trend.
- Cells that contain values are enriched with a value bar, quickly allowing comparison between reps on the grid.
- The two charts in the old dashboard are combined into a single chart to allow the user to see how actual figures are performing against the budget as well as seeing how the projection will fare against the budget.
- The final column in grid also draws attention to sales figures that might start to slip by comparing the actual and budget variance to the projection and budget variance.

Sales Rep Performance Dashboard (Date as of 30th April 2008)

Rep Actual, Budget and Projection Overview (thousands)

	Actual	Budget	Actual YTD	Budget YTD	Act/Bud % Var	Actual % Contrib	Projection Full Year	Budget Full Year	Proj/Bud % Var	Change in % Var
Sales Rep 1			162.6	91.3	78.1	6.6	315.8	258.9	22.0	-56.1
Sales Rep 2			208.2	157.2	32.5	8.5	404.5	286.6	41.1	8.6
Sales Rep 3			172.8	156.7	10.2	7.1	335.6	306.6	9.5	-0.8
Sales Rep 4			191.4	173.1	10.6	7.8	371.8	308.9	20.4	9.8
Sales Rep 5			217.6	206.7	5.3	8.9	422.7	369.9	14.3	9.0
Sales Rep 6			156.8	186.1	-15.7	6.4	304.6	375.9	-19.0	-3.2
Sales Rep 7			178.6	113.3	57.6	7.3	346.8	277.3	25.1	-32.5
Sales Rep 8			189.5	141.6	33.8	7.7	368.1	281.0	31.0	-2.8
Sales Rep 9			193.2	168.9	14.4	7.9	375.3	324.9	15.5	1.1
Sales Rep 10			156.5	164.7	-5.0	6.4	303.9	311.2	-2.4	2.6
Sales Rep 11			182.7	235.1	-22.3	7.5	354.9	392.7	-9.6	12.6
Sales Rep 12			157.1	146.0	7.6	6.4	305.1	294.0	3.8	-3.8
Sales Rep 13			135.9	184.1	-26.2	5.6	264.0	338.0	-21.9	4.3
Sales Rep 14			145.1	180.3	-19.5	5.9	281.9	341.4	-17.4	2.1
Total			2,448	2,305	6.2		4,755	4,467	6.4	0.2

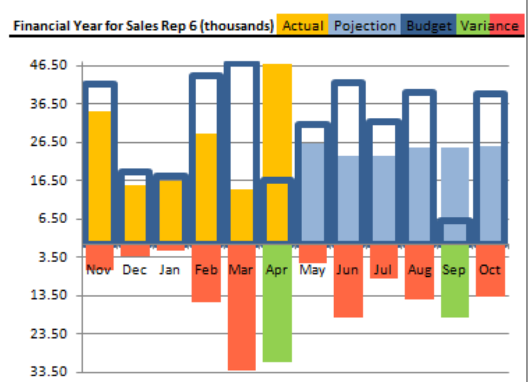


Figure 5

Even a Few can be better

I am a great fan of Stephen Few's writing, especially Information Dashboard Design that covers all the major aspects of designing a dashboard. He is outspoken and rarely holds back on delivering his own thoughts and opinions. Figure 6 is a typical dashboard designed by Few and some of the obvious trademarks are the use of horizontal bullet graphs, using red dots to attract attention, not using extravagant gauges or dials and the use of top 10 lists. It is this top 10 list, in this case Top 10 Customers in the Pipeline (Revenue) that I want to focus on.

The top 10 list is definitely a good tool to use on most dashboards. It provides relevant and useful information in a small list and does help to bring focus to items that are performing well or not so well.

The list in figure 6 can easily be extended by adding 3 columns and rows to provide very useful information. Figure 7 shows the updated top 10 list with the following features:

- Column added to show percentage contribution
- Subtotal rows added for top 10, customer not in top 10 and grand total

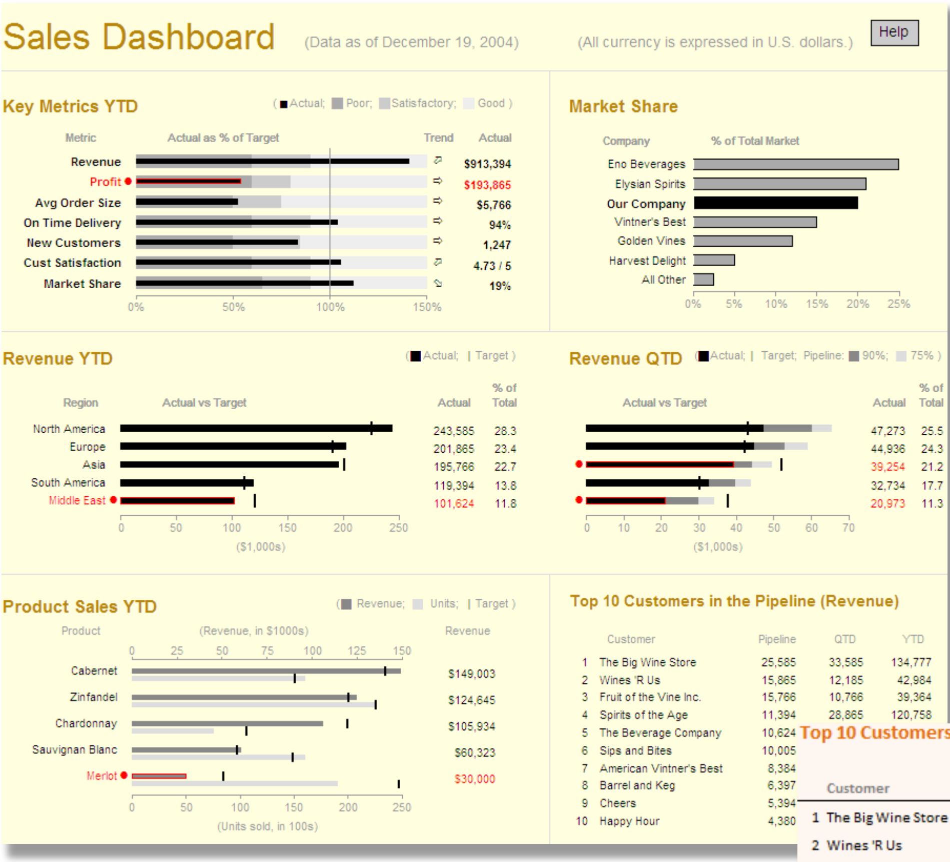


Figure 6

These additional fields help the user come to additional conclusions such as "about 70% of all sales come from our top 10 customers", "the business has 248 customers in total" and "the top 10 have gained momentum in the current quarter and this is causing the other 238 to lag". These are important facts to know and should be part of any top 10 list.

Top 10 Customers in the Pipeline (Revenue)

Customer	Pipeline $	Pipeline %	QTD $	QTD %	YTD $	YTD %
1 The Big Wine Store	25.6	14	33.6	14	134.8	15
2 Wines 'R Us	15.9	9	12.2	5	43.0	5
3 Fruit of the Vine Inc.	15.8	9	10.8	5	39.4	4
4 Spirits of the Age	11.4	6	28.9	12	120.8	13
5 The Beverage Company	10.6	6	16.6	7	81.8	9
6 Sips and Bites	10.0	6	9.8	4	24.6	3
7 American Vintner's Best	8.4	5	11.9	5	38.0	4
8 Barrel and Keg	6.4	4	10.8	5	39.4	4
9 Cheers	5.4	3	22.9	10	91.1	10
10 Happy Hour	4.4	2	9.6	4	18.5	2
Top 10 Sub Total	113.8	63	166.9	71	631.3	69
Other 238	65.7	37	69.0	29	282.1	31
Total	**179.5**		**235.9**		**913.4**	

Figure 7

Out of clutter, find simplicity. From discord, find harmony. In the middle of difficulty lies opportunity. *Albert Einstein*

Business success is determined by the decisions you make and the quality of the information you base those decisions on. As a leader in Business Intelligence, Stellar transforms otherwise senseless data into insightful information, giving you the power to make better business decisions.

Stellar's team of BI specialists offers unrivalled strategic thinking and industry experience. We know the hallmarks of a successful BI programme and we apply that knowledge to every Stellar project. Stellar's unique BI 'Quick Start Strategy' maps our learnings to your requirements, setting out a clear way forward and saving considerable time and money down the track.

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In a nutshell, Stellar works collaboratively with customers to tailor BI solutions to their needs – solutions that work right the first time. BI delivered on schedule, to budget, using industry best practices and expert resources. Think of it simply as brighter Business Intelligence.

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