

Browse the Book

This sample chapter looks at different planning dashboards related to the planner and controller roles, outlines some of the off-the-shelf features available in SAP Analytics Cloud to help build the planning model, and demonstrates how to take advantage of the IBCS-compliant tables in SAP Analytics Cloud. It also introduces the value driver tree, and highlights some design features in a planning dashboard that make the central table more usable and increase the visibility of important data to optimize the planning experience, including data locking capabilities and inserting charts in columns.



“Dashboards for Planners and Controllers”



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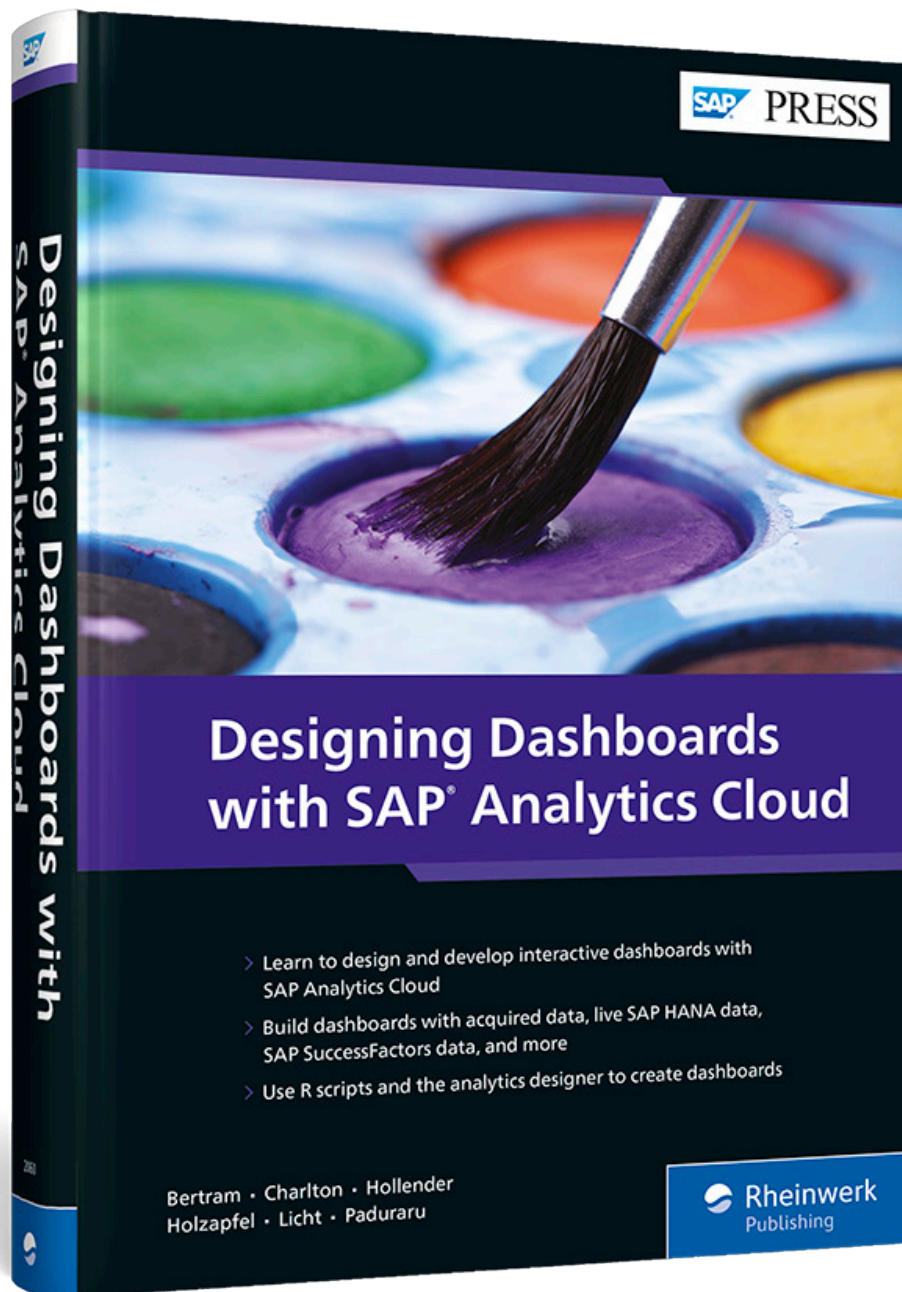
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Chapter 6

Dashboards for Planners and Controllers

Dashboards for planning must present large amounts of data for both analysis and data entry. These dashboards include the key performance indicators (KPIs) and charts we've covered in previous dashboards, but the key element is the central table that holds all the numbers. Getting the table design right is the priority for designing great planning dashboards.

This chapter is for anyone designing dashboards for financial planners and controllers. The world of business financial reporting and planning is a vast area that often includes multiple dashboards for different reporting and data entry processes. These dashboards are used by several different user personas, from the financial controller overseeing the accounting operations, business analysts forecasting budgets and spending, and process participants such as accountants entering figures for their part of the operation.

It isn't possible, or even desirable, to design a single dashboard that covers all these planning requirements and user personas. In this chapter we'll present a dashboard that includes key planning features available in SAP Analytics Cloud that can be integrated into any dashboard for part of the planning process. We'll concentrate on these components, explaining the best way to design them, why it's important to use the International Business Communication Standards (IBCS) compatibility of SAP Analytics Cloud's tables and charts to guarantee the usability of your planning dashboards, and how to tweak the behavior of some of these components to align them with practical user expectations that can be slightly different from the recommended industry design standards.

As you'll learn in more detail in Section 6.1, the dashboard in this chapter has a different purpose from those designed in previous chapters, so we'll be following a slightly different approach. The following list is an overview of what this chapter covers:

- In Section 6.1, we'll look briefly at different planning dashboards related to different roles of the planners and controllers using them. This will serve as an introduction to how planning is organized in a company.

- For Section 6.2, we'll look at what some of the off-the-shelf features available in SAP Analytics Cloud to help build the planning model, ensuring that the requirements of the planning team are all integrated correctly before generating the finished model.
- The major part of the chapter is covered in Section 6.3, where we'll look at how important (and easy) it is to take advantage of the IBCS-compliant tables in SAP Analytics Cloud. We'll look at what makes a good dashboard for planning and how SAP Analytics Cloud makes the design of tables intuitive and smooth. We'll discuss the benefits of using the IBCS-compliant tables to ensure that the dashboard's usability is optimal and introduce the value driver tree, an excellent tool to design and simulate planning scenarios.
- In Section 6.4, we'll pick some of the most interesting design features in a planning dashboard that make the central table more usable and increase the visibility of important data to optimize the planning experience, including data locking capabilities and inserting charts in columns.

The next section provides an end-to-end planning process overview to give you some background to the types of features that SAP Analytics Cloud offers planners and controllers.

6.1 Scenario

Figure 6.1 shows the dashboard designed for use in this chapter to showcase the essential design elements for a planning dashboard. We use the central table to input the data. The KPIs in the top horizontal lane monitor the actuals data. As data is entered, you can visualize the impact of changes to the measures in the charts underneath the table.

We won't be discussing the KPIs or the charts under the table, as the design, and creation of these elements has been covered already in Chapter 3 and Chapter 5. We'll be concentrating on the design of tables that will allow you to optimize the way data is viewed and entered, as well as another planning element called the value driver tree, which will be your greatest design companion to see all of your planning data in a single place.

Planning dashboards are different from the previous analytical dashboards we've designed so far because they follow the requirements of a planning process and so are more like a series of linked stories, each corresponding to a stage in the planning process and targeted to a different user persona. There is another important difference—the data preparation.

In dashboards built on an acquired data source or using a live data connection, the data preparation in the model is important to ensure that the available data structures support the usability of the dashboard. However, we haven't had to take into consideration

the functional design of the model because SAP Analytics Cloud provides so many great analytics to get the most out of the data at the report level. This is perhaps less so for a live data connection, but even there, we have access to the predesigned structures and calculations already available in the query behind the model.

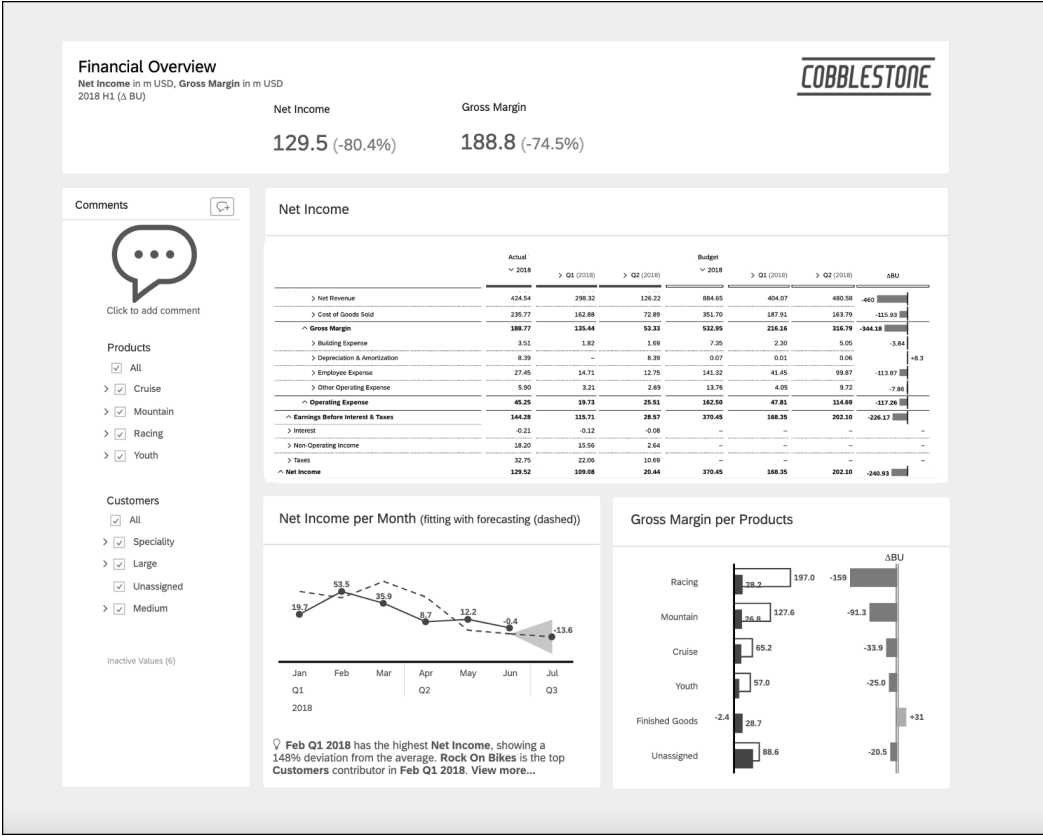


Figure 6.1 Example Dashboard for Table Design

This changes with a planning model; you're stuck with the things you create in the model because the model can't be changed or updated. The successful design of dashboards for planning depends on how carefully the planning model has been designed to ensure that the correct dimensions are available, that they are mapped to the required versions, that currency conversion is correctly activated, that data locking is configured, and that data lifecycle management has been considered.

All planning organizations use multiple dashboards, and each one is designed with features to inform and serve the target user group. While KPIs would be useful for controllers who need to monitor business activity to get an overview of potential problem areas needing strategic budget or procurement solutions, the central element of all planning dashboards is the table for presenting and entering data.

We'll look at how tables are used by different users during an end-to-end planning story. We'll take examples from the excellent *Discover End-to-End Planning with the Planning Overview Series*, which is a video blog created by the SAP Analytics Cloud User Assistance and Product teams. It follows the complete planning cycle for a bike company, including revenue and expense, sales and annual budgets, marketing, workforce, and integration with SAP S/4HANA.

Note

If you want to learn more about the full planning capabilities offered by SAP Analytics Cloud, visit the full video blog here: <https://saphanajourney.com/sap-analytics-cloud/resources/planning-overview-video-series/>.

At the first stage of the planning cycle, a global controller starts with a dashboard that provides an overview of all the important global and regional sales, product, and budget information in a company. Profit and loss (P&L) updates are shown in KPIs, and a controller can refer to tables showing regional details of revenue and product. Figure 6.2 shows tables that contain charts indicating increasing or declining sales.

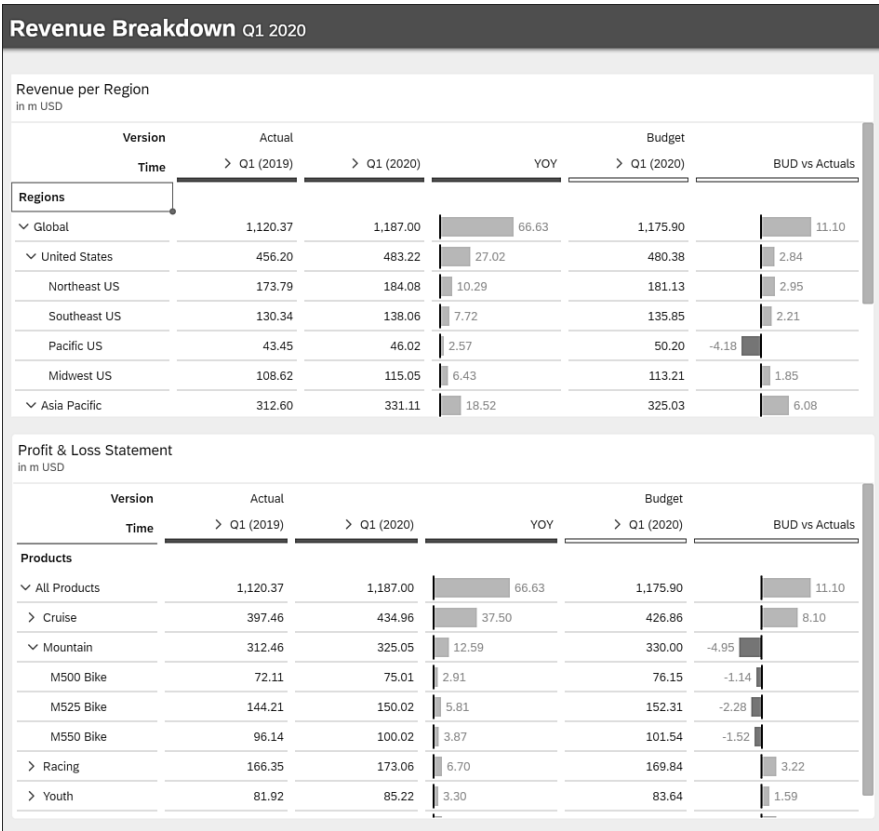


Figure 6.2 Revenue Breakdown by Region Tables

The results of the regional P&L analysis are then taken further by other controllers for forecasting, revenue, and expense planning. Often dashboards for these roles contain only tables, as they are the best containers for viewing and understanding values over multiple quarters and years.

Figure 6.3 shows revenue forecasting over the next three quarters (Q2, Q3, and Q4) using the Smart Predict feature in SAP Analytics Cloud. The table contains collapsible columns and is formatted and oriented on IBCS standards. When you add a measure or dimension that contains a hierarchy to a table, the column is automatically inserted as collapsible. You can expand the columns to see the levels or collapse to the lowest level.

Revenue Breakdown in m USD															
GL Account	Regions	Products	Version	Actual	Budget		Previous Forecast		Smart Prediction						Delta
			Time	> 2020	> Q1 (2020)	> 2020	> 2020	> 2020	> Q1 (2020)	> Q2 (2020)	> Q3 (2020)	> Q4 (2020)			
> Gross Revenue	> Global	> All Products		1,187.00	1,187.00	5,076.58	5,098.19	5,045.97	1,187.00	1,259.89	1,279.63	1,319.45	-52.28		
		> Cruise		434.96	434.96	1,807.88	1,855.47	1,875.38	434.96	473.43	474.40	492.58		19.91	
		> Mountain		325.05	325.05	1,473.14	1,412.33	1,342.81	325.05	334.59	339.16	344.00	-69.52		
		> Racing		173.06	173.06	724.24	739.27	744.48	173.06	183.85	190.04	197.53		9.21	
		> Youth		85.22	85.22	360.76	365.53	369.65	85.22	91.51	94.62	98.30		4.12	
		> Cross Bikes		168.71	168.71	710.56	725.59	713.65	168.71	176.50	181.40	187.04	-11.94		
	> United States	> All Products		483.22	483.22	2,214.02	2,075.43	2,066.06	483.22	518.23	524.82	539.79	-9.37		
		> Cruise		177.07	177.07	788.17	755.34	754.71	177.07	192.04	189.82	195.78	-0.63		
		> Mountain		132.33	132.33	642.87	574.95	562.04	132.33	140.34	143.24	146.14	-12.90		
		> Racing		70.45	70.45	315.78	300.95	310.39	70.45	76.97	79.94	83.04		9.44	
		> Youth		34.69	34.69	157.33	148.80	154.18	34.69	38.34	39.81	41.34		5.37	
		> Cross Bikes		68.68	68.68	306.85	295.38	284.73	68.68	70.54	72.02	73.49	-10.65		

Figure 6.3 Forecasting Revenues for Products by Regions

When more than one table is used on a single dashboard, it becomes even more important that the design is as simple and consistent as possible. Using large computer screens is also useful. In Figure 6.4, we see two tables side by side as the controller looks to redistribute budget money from poor-performing products to better performers, requiring a breakdown of sales and expense numbers by region and product.

Revenue by Region in m USD											
Regions	Version Time	Budget * ✓ 2021	> Q1 (2021)	> Q2 (2021)	> Q3 (2021)	> Q4 (2021)	Forecast				
							> 2020				
Totals		5,275.00	1,318.75	1,318.75	1,318.75	1,318.75	5,098.19				
Unassigned		0.00	0.00	0.00	0.00	0.00	0.00	-			
> Global		5,275.00	1,318.75	1,318.75	1,318.75	1,318.75	5,098.19				
> United States		2,147.40	536.85	536.85	536.85	536.85	2,075.43				
> Northeast US		747.76	134.21	204.51	204.51	204.51	736.76				
> Southeast US		594.37	134.21	153.39	153.39	153.39	578.28				
> Pacific US		287.60	134.21	51.13	51.13	51.13	261.34				
> Midwest US		517.68	134.21	127.82	127.82	127.82	499.05				
> Europe		1,656.15	414.04	414.04	414.04	414.04	1,600.63				
> Germany		847.79	138.01	236.59	236.59	236.59	839.09				
> France		492.90	138.01	118.30	118.30	118.30	472.44				
> Italy		315.46	138.01	59.15	59.15	59.15	289.11				
> Asia Pacific		1,471.45	367.86	367.86	367.86	367.86	1,422.13				
> China		788.91	197.23	197.23	197.23	197.23	762.47				
> India		682.54	170.64	170.64	170.64	170.64	659.66				

Revenue by Product in m USD											
Products	Bike Type	Version Time	Budget * ✓ 2021	> Q1 (2021)	> Q2 (2021)	> Q3 (2021)	> Q4 (2021)	Forecast			
								> 2020			
Totals			5,275.00	1,318.75	1,318.75	1,318.75	1,318.75	5,098.19			
> All Products			5,275.00	1,318.75	1,318.75	1,318.75	1,318.75	5,098.19			
> Cross Bikes			773.84	193.46	193.46	193.46	193.46	725.59			
> Global			5,275.00	1,318.75	1,318.75	1,318.75	1,318.75	5,098.19			
> United States			2,147.40	536.85	536.85	536.85	536.85	2,075.43			
> Northeast US			747.76	134.21	204.51	204.51	204.51	736.76			
> Southeast US			594.37	134.21	153.39	153.39	153.39	578.28			
> Pacific US			287.60	134.21	51.13	51.13	51.13	261.34			
> Midwest US			517.68	134.21	127.82	127.82	127.82	499.05			
> Europe			1,656.15	414.04	414.04	414.04	414.04	1,600.63			
> Germany			847.79	138.01	236.59	236.59	236.59	839.09			
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> China			788.91	197.23	197.23	197.23	197.23	762.47			
> India			682.54	170.64	170.64	170.64	170.64	659.66			

Figure 6.4 Two Tables Showing Sales and Expenses over Region and Product

6.2 Data Structure

We’ve seen that designing a dashboard for planners is different from designing a dashboard for business analysts and business intelligence (BI) users. An analytics dashboard is a data-first approach; you bring in your data without worrying too much about how the data is structured as SAP Analytics Cloud provides you with all the reporting features you need to build and design your views and charts with freedom and creativity.

Designing a planning dashboard is a structure-first approach. When you prepare dashboards for planners and controllers, your design starts with carefully setting the right parameters in the planning model, as what the user sees in the dashboard depends entirely on the data structure behind it. Some important questions include the following:

- What hierarchies do you have?
- How do your planners plan?
- What is the planning process?

The data structure drives the planning process. You usually have different pages in a planning dashboard, where each page represents a specific stage in your planning process, such as an overview story, a strategic plan, and a growth plan. Each page requires a certain level of data granularity, which needs to be accounted for in the model.

For example, let’s take a common task—allocating sales revenue to regions. If Cobblestone Bike Stores plan to make 50 million euros in Europe and 10 million euros in the United Kingdom, initially you make the data available at this low level of granularity. Then at the next level, your country managers break this down into the different bike models sold in each country. These numbers are allocated to the model, and then separated further into other dimensions, for example, the product type. This would be a different page within the story because the actuals, budgets, and forecast sales are taking place on a different dimension.

So, you have different planning versions that are then compared to each other, allowing you to control how your business develops over different planning cycles. At a minimum, there are already two different dashboards required:

- An overview page for the low granularity view. The first thing you expect to see are the most important numbers, for example, actuals compared to last year, maybe compare different versions: actual versus budget, or forecast versus budget.
- A strategic plan page based on the following question: How much revenue do I want to generate in specific regions? Here we’re still not concerned with products, but we want to reach a target total of revenue in a country.
- Another page for revenue and forecasts that are related to product lines.

The planning model must support the data requirements for numerous dashboards, each dealing with a particular phase of the planning process. One advantage of the planning model in SAP Analytics Cloud is that it not only provides all the planning requirements but also all the analytic tools on the reporting side are available. The same charts and KPIs you design for BI dashboards are also available for planning dashboards.

Note

The SAP Analytics Cloud online help provides a full description of the many off-the-shelf features available in the planning model. Search for “Model Preferences” directly in the SAP Analytics Cloud page on the SAP Help Portal at https://help.sap.com/viewer/product/SAP_ANALYTICS_CLOUD/release/en-US.

Following are some of the features available when you configure a planning model:

- Categories for budgets, plans, and forecasts
- Default time periods that you can quickly adjust to suit your data
- Auditing features for traceability
- Security features that make it possible for you to restrict access to specific values in data grids to named individuals

When working with a planning model in a story, users with planning privileges can create their own versions of model data, and they can write data to the model by typing new values, copy and pasting data, and using allocations features.

In SAP Analytics Cloud, you create a planning model using the Modeler tool available from the navigation sidebar. The Modeler now allows you to create two types of models:

- **New model**
The new model type lets you add and configure multiple measures with aggregation and units to fit your data. For full information, go to the SAP Analytics Cloud official documentation on the SAP Help Portal, and search for “Getting Started with the New Model Type”.
- **Classic model**
The classic model, which has been available in the past, uses a single default measure to store all values. You use the account structure to add calculations, specify units, set up an account hierarchy, and set aggregation types for all the data. For full information, go to the SAP Analytics Cloud official documentation on the SAP Help Portal, and search for the topic “Models”.

The two model options are available when you select **Create New Model** from the **Modeler** page, as shown in Figure 6.5.

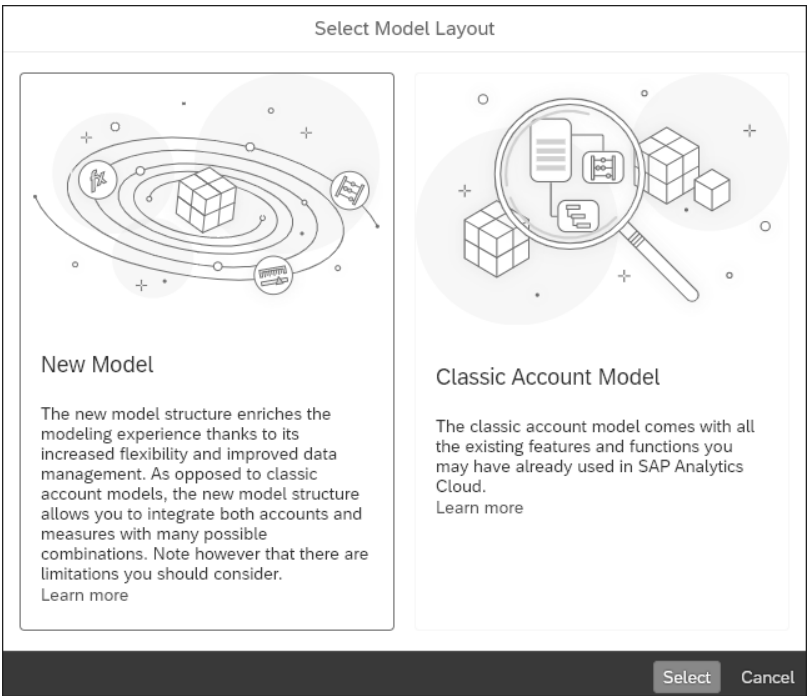


Figure 6.5 Two Model Types Now Available for Planning Models

We’ve discussed the importance of taking a structural approach to building the planning model and described some of SAP Analytics available features in the model creation parameters that facilitate the modeling process. In the next section, we’ll look at the design capabilities of SAP Analytics Cloud which ensure that the essential element of the planning dashboard, the table that holds the data, is designed as well as it can be.

6.3 Dashboard Features

Now let’s take an in-depth look at designing the appropriate table for your planning needs. The key to this is understanding the value of the IBCS compliancy available in table and chart design in SAP Analytics Cloud.

The IBCS standards are best practice recommendations for displaying information graphically in reports, presentations, and dashboards. When you apply the standards to your information content, you give users a clear and precise way to conceptualize the content, to perceive it visually, and to easily understand its semantic notation.

Further Reading

IBCS standards are now well documented in dashboard and report design literature found on the Web. The authoritative site is the IBCS home page at www.ibcs.com/. In

addition, there are a number of SAP Analytics Cloud blogs that discuss this field very well, including Ingo Hilgefort’s excellent “Top 10 IBCS Standardization Elements” available as a learning resource from the Data & Analytics Solutions in the cloud site at <https://saphanajourney.com/>. You’ll find other IBCS resources in Appendix B.

The goal of applying IBCS to your dashboard design is to ensure that all the architectural and graphical elements are meaningful and can be understood as quickly as possible by your users. Our goal here isn’t to extensively go over information available elsewhere, but to present the key IBCS standards that apply to designing dashboards for planning with SAP Analytics Cloud.

In this section, we’ll start with a brief look at the IBCS standards and how following these guidelines when designing dashboards ensures that information is presented as effectively as possible for users. We’ll then discuss how IBCS standards are applied to the following areas of dashboard design for planning:

- The design advantages you get using the IBCS-ready tables in SAP Analytics Cloud and the ways you can optimize their use to communicate information, do data entry, implement security, and communicate with other collaborators on the same table
- The usefulness of the value driver tree as a planning tool that gives you complete vision across the interdependencies of all your measures and the metrics they influence

6.3.1 Designing IBCS-Compliant Dashboards for Planning

SAP Analytics Cloud provides table and chart templates along with associated graphic and textual support that are IBCS-ready. More and more software and dashboard designers are aware of the importance of IBCS in user interface design. It provides an industry standard for reporting and visualization to improve how we communicate with data.

In this section, we’ll look at two pages of a planning dashboard built using the IBCS-ready table settings in SAP Analytics Cloud. This is a composite dashboard, one that includes reporting and planning features that we designed to showcase how easy it is to design a successful planning dashboard using the semantic IBCS notation. We’ll discuss some of these features in detail, explaining how they improve the readability and usability of the dashboard.

Figure 6.6 shows the table and filters of the example dashboard. The table is used for both data monitoring and entry. Note that while this type of dashboard would have a table to show P&L data, it wouldn’t normally be used for data entry. We’re showing it here so we can discuss both types of tables. The table was created using the Report Styling template.

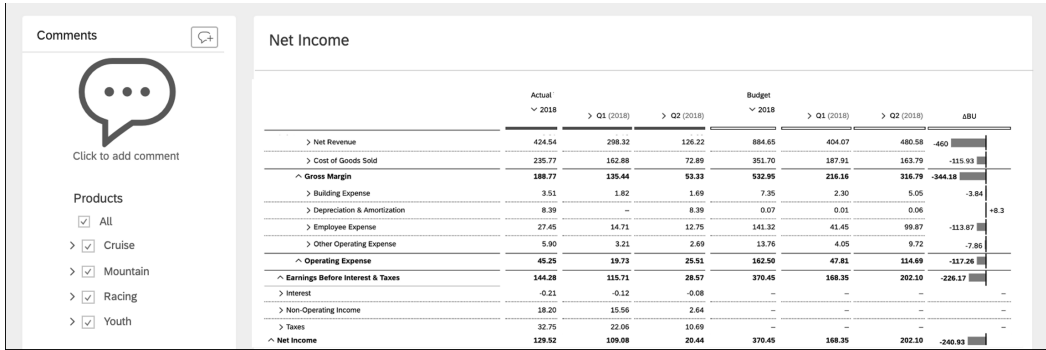


Figure 6.6 Planning Table Created Using the Report Styling Template in SAP Analytics Cloud

In this dashboard, the data is already at a high granularity level, showing the calculation of the net income and the gross margin by product, and there is a filter in the sidebar on products and customers. Note, that the net income can only be calculated precisely for the whole company. This filter option is therefore only an estimate.

This story would form part of a series of planning dashboards that show planning at different granularity levels, for example, initially only at a country level, then regional, and then moving into specific planning at the product level. This architecture is organized in the planning model.

The second page of the dashboard (see Figure 6.7) shows the **Value Driver Tree**. It's a tree structure display of all your planning elements that allows you to identify key driver values and model their impacts on top-level metrics.

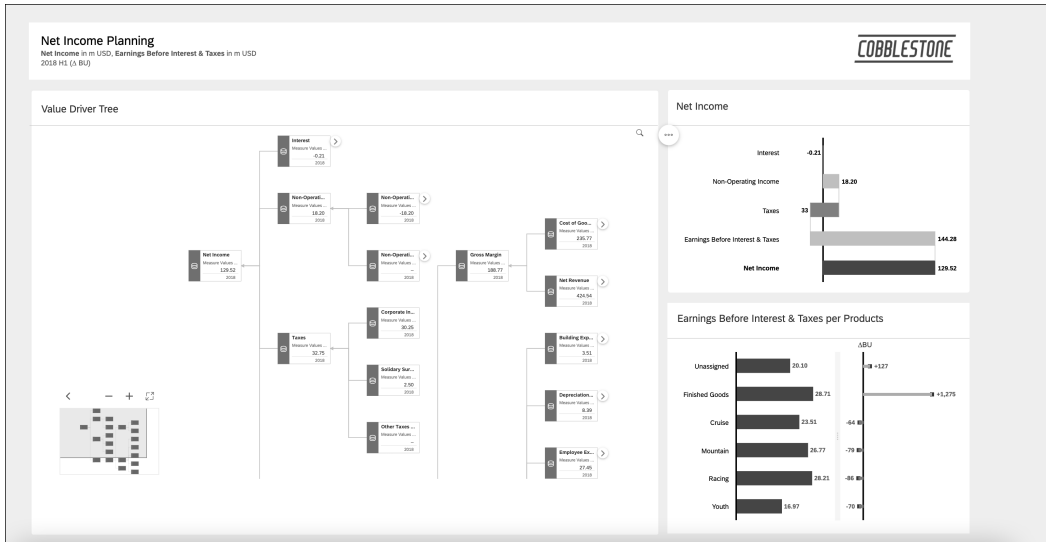


Figure 6.7 Second Page of a Planning Dashboard with the Value Driver Tree

6.3.2 Using Tables for Planning

The table is the central element in planning dashboards. In SAP Analytics Cloud, you can choose any type of table to use for planning, but we recommend applying the table template **Report Styling** in the **Table Properties** options from the **Styling** pane. This ensures that the IBCS standards for tables are automatically applied. We'll look at the main IBCS recommendations using the table in our example dashboard. Figure 6.8 shows the planning dashboard showing KPIs and the table that is used in this chapter to show how IBCS-compliant design gives users a clear and easy way to understand the visual experience.

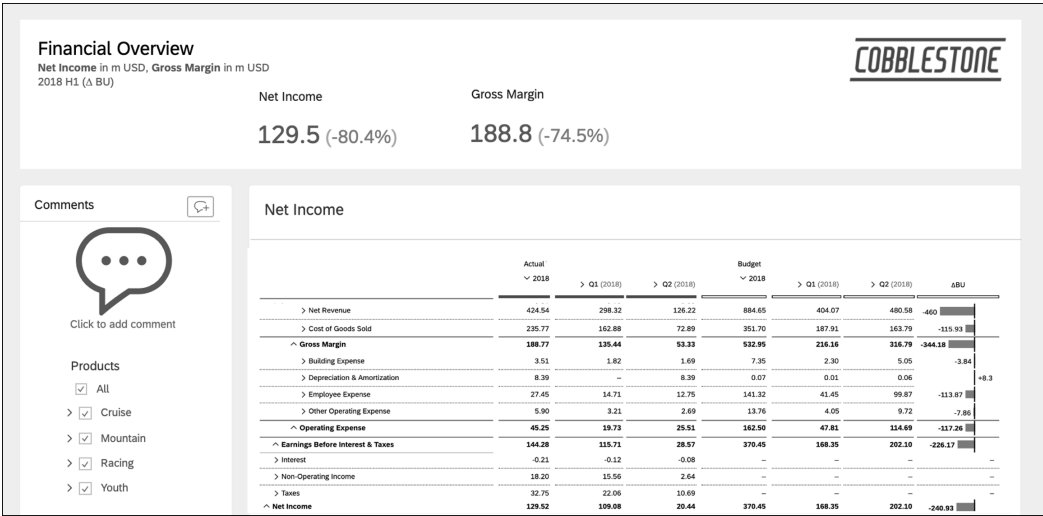


Figure 6.8 Planning Dashboard Showing the KPIs and the Table

IBCS standards define a table as a communication object in which data is arranged in columns and rows. The content of a column is described by the column header, and a row by its row header. Although this is how most of us understand a normal definition of a table, that doesn't stop applications from offering very complicated and unusable tables for users to struggle to interpret. Stephen Few in his book, *Show Me the Numbers*, shows some of the tortured examples used in popular business software over the past few decades. They make very interesting and often humorous reading, but the sad part is that many of us have fallen into the trap of using these tables on steroids, overloaded with color and graphical innovations, at one time or another. IBCS standards keep the focus on the important part—communicating the content effectively. A user should not lose any time trying to decipher the architecture or the semantic of a table. The only thing that matters is understanding the data as quickly as possible.

We'll be looking at three types of tables identified by IBCS:

- **Time series**
Contains time columns such as **Year**, **Quarter**, and **Month** that contain measure or structure data.
- **Variance**
Combines scenario and variance columns with measure or structure rows.
- **Cross**
Combines structure columns with structure rows.

The tables we use for planning purposes are combined; that is, they can contain something of all the three table types. When you insert a table for planning with SAP Analytics Cloud, it's automatically possible to use it by combining all three types defined by IBCS. The best way to understand tables is to see how the columns and rows are put together.

First, we'll look at how columns should be designed, and then move on to rows.

Designing Columns

Column types contain similar content and headers. In planning tables, time columns are used with monthly, quarterly, or yearly data, and scenario columns are used that contain the actuals or planning data. All column types should be formatted as follows:

- The same column types have the same width, irrespective of the column header length.
- Columns with numerical values are right-aligned, and text-based values are left-aligned. Column headers are aligned in the same way as their values.
- Separate columns with vertical gaps that infer the border rather than using bold ink lines that grab the reader's visual attention rather than the data.
- The column containing the row headers is positioned to the left of the table. Make it wider than the other columns, and ensure there is a wider gap between this column and the first data column of the table.

Figure 6.9 shows standardized column width, alignment based on value types, inferred column separators, and left-positioned row header columns. The limited number of digits and the condensed layout increases the information density drastically.

Here are some recommendations for specific column types:

- **Scenario columns**
Columns that contain actual, budget, and forecast data. Make sure that these columns appear in the table in a sequentially consistent order based on their content first in chronological order, then ordered by version with **Actuals**, **Budget**, and **Forecast**.
- **Variance columns**
These show calculation results, for example, the difference between forecast and

budget spending. SAP Analytics Cloud gives you the option of representing variance data as a chart within the column.

- **Time columns**
Place the columns in temporal order, for example, Q1, Q2, Q3, Q4.
- **Totals columns**
Position a totals column to the right of the columns included in the total. Ensure that the totals column is distinguished from the others by highlighting the column header or using a color shade for the column.

	Actual ✓ 2018	> Q1 (2018)
> Net Revenue	424.54	298.32
> Cost of Goods Sold	235.77	162.88
^ Gross Margin	188.77	135.44
> Building Expense	3.51	1.82
> Depreciation & Amortization	8.39	—
> Employee Expense	27.45	14.71
> Other Operating Expense	5.90	3.21
^ Operating Expense	45.25	19.73
^ Earnings Before Interest & Taxes	144.28	115.71
> Interest	-0.21	-0.12
> Non-Operating Income	18.20	15.56
> Taxes	32.75	22.06
^ Net Income	129.52	109.08

Figure 6.9 Columns with Data and Headers Aligned according to Column Type

Figure 6.10 shows scenario columns arranged sequentially and a variance column with a chart showing the calculation result.

So far, we've described different types of single columns; however, many of the columns in a planning table are dimensions that include levels or hierarchies, for example, a year dimension with quarters 1 to 4. IBCS standards call these columns *hierarchical columns*. SAP Analytics Cloud automatically recognizes dimensions with hierarchies and places the columns in the order designated by the hierarchy. In the table, separate the parent columns with a wider gap and different line widths than those used for each of the level columns. This semantic notation helps the user read this hierarchy in all columns in the table quicker.

Actual ▽ 2018	Budget		▽ 2018	Budget		ΔBU
	> Q1 (2018)	> Q2 (2018)		> Q1 (2018)	> Q2 (2018)	
424.54	298.32	126.22	884.65	404.07	480.58	-460
235.77	162.88	72.89	351.70	187.91	163.79	-115.93
188.77	135.44	53.33	532.95	216.16	316.79	-344.18
3.51	1.82	1.69	7.35	2.30	5.05	-3.84
8.39	—	8.39	0.07	0.01	0.06	+8.3
27.45	14.71	12.75	141.32	41.45	99.87	-113.87
5.90	3.21	2.69	13.76	4.05	9.72	-7.86
45.25	19.73	25.51	162.50	47.81	114.69	-117.26
144.28	115.71	28.57	370.45	168.35	202.10	-226.17
-0.21	-0.12	-0.08	—	—	—	—
18.20	15.56	2.64	—	—	—	—
32.75	22.06	10.69	—	—	—	—
129.52	109.08	20.44	370.45	168.35	202.10	-240.93

Figure 6.10 Columns Arranged Sequentially and Variance Shown as a Chart

In Figure 6.11, the parent year columns, in this case one for **2018 Actual** and the other **2018 Budget**, are separated with a wider gap than the quarter elements for the **Budget** column.

Budget ▽ 2018	Budget	
	> Q1 (2018)	> Q2 (2018)
884.65	404.07	480.58
351.70	187.91	163.79
532.95	216.16	316.79
7.35	2.30	5.05
0.07	0.01	0.06
141.32	41.45	99.87
13.76	4.05	9.72
162.50	47.81	114.69
370.45	168.35	202.10
—	—	—
—	—	—
—	—	—
370.45	168.35	202.10

Figure 6.11 Parent Hierarchical Columns Separated with Wider Gaps Than the Child Element Columns

Golden Rule: Construction

A planning table without a clear grid structure is never helpful for any reader. Stick to the IBCS standards that provide you guidance in setting up your planning tables. Within tables, you can then use other graphical elements, for example, in-cell charts, to guide the eye of the user to the most important and visually highlighted variances of your report. Avoid overloading your tables with redundant information, and stick to showing the users what they really need to know.

Designing Rows

We’ve looked at some ways that SAP Analytics Cloud allows you to design columns for a planning table that conforms to IBCS standards. We’ll now look at how you can ensure your table rows are designed to optimize readability and usability of data.

Row types contain similar content and row headers. There are two main types of rows: *measure rows*, which contain measures such as revenue, expenses, and income, and *structure rows*, which contain dimension members such as country, employee name, and product name.

All row types should be formatted as follows:

- The same row types should all be the same height.
- Separate rows with lightly inked lines. This increases readability while remaining unobtrusive.

Figure 6.12 shows the rows for travel expenses with each row the same height and separated by a lightly traced line.

> Building Expense	3.51	1.82	1.69
> Depreciation & Amortization	8.39	—	8.39
> Employee Expense	27.45	14.71	12.75
> Other Operating Expense	5.90	3.21	2.69
^ Operating Expense	45.25	19.73	25.51

Figure 6.12 Rows Separated with Constant Spacing and Lightly Inked Lines

Measure rows that show totals should be separated by a solid line with the total shown in bold font. Given the totals are key to understanding data in the table, it’s obvious that they need to stand out to be instantly readable and understood by the user.

As SAP Analytics Cloud follows the IBCS standard for tables, the rows showing totals for a group of rows, for example, **Operating Expense**, are placed below the rows that make up the total and separated by a bold line. This differs from the expectation of expanding a hierarchy below the parent note. For summarizing single rows together to a total

sum (the parent note), this order is more convenient. It still can take a bit of getting used to if you expect the total to be at the top of its contained rows, and you click the total to open the member list.

Figure 6.13 shows measure rows with totals highlighted in bold and placed at the bottom of the rows **Gross Margin**, **Operating Expense**, and **Earnings Before Interest & Taxes**. The **Budget**, **Actual**, and **Delta** values are shown. When you click on a bolded total, its contained measure rows are expanded above it.

> Net Revenue	424.54	298.32	126.22
> Cost of Goods Sold	235.77	162.88	72.89
^ Gross Margin	188.77	135.44	53.33
> Building Expense	3.51	1.82	1.69
> Depreciation & Amortization	8.39	—	8.39
> Employee Expense	27.45	14.71	12.75
> Other Operating Expense	5.90	3.21	2.69
^ Operating Expense	45.25	19.73	25.51
^ Earnings Before Interest & Taxes	144.28	115.71	28.57

Figure 6.13 Total Rows Shown in Bold with the Measure Rows Used to Calculate the Total Expanded Above

We’ve described the main building features for creating tables provided by SAP Analytics Cloud that allow you to format a table for planning that conforms to the IBCS recommendations for tables. We’ll discuss other features that SAP Analytics Cloud provides to optimize the use of your planning table in Section 6.4, such as row locking to facilitate and secure data entry, inserting a chart into a variance column to improve the visibility of positive and negative variance, and ensuring that versioning is activated in the planning model so that temporal categories such as quarters are automatically included in the table when the year dimension is added.

To follow on from the discussion on designing tables, we’ll now turn our attention to the value driver tree modeling tool within SAP Analytics Cloud that gives you another view of the planning process, allowing you to quickly identify dependencies and perform simulations over the full range of data in your planning model.

Golden Rule: Container

It’s obvious by now that we consider the table to be the best container for values that need to be evaluated and entered. A table is a simple but most useful widget available in SAP Analytics Cloud for planners to use to display data to the user. The information is encoded either in numbers or text. A clear table structure is crucial if you want the user to quickly understand the message you want to convey and understand exactly where to enter data. We strongly recommend that you design your tables using the IBCS stan-

dards, so we’ve dedicated most of this chapter to the basic IBCS standards you can use for tables. For any widget that contains data in your stories, IBCS standards are easy to follow when creating both tables and charts. Applying the IBCS standards will make your dashboards easy and quick to understand, as well as clear, clean, uncluttered, and always relevant (regardless of design fashions).

6.3.3 Value Driver Trees

A value driver tree is a visualization of relationships in a planning system that links measure values to the scenarios that drive or influence operational changes.

Ingo Hilgefort, in his excellent blog post, “Using SAP Analytics Cloud and a Value Driver Tree for Visual Planning and Simulation” (www.linkedin.com/pulse/using-sap-analytics-cloud-value-driver-tree-visual-part-hilgefort/), explains that the value driver tree in SAP Analytics Cloud shows the relationship between input and outcome to provide you with a holistic view on the important measures of your complete organization. Hilgefort says it models a “network that visualizes the chain of consequences.”

Whereas a spreadsheet table shows the numbers that change in a department or a specific part of a company, the value driver tree can visually present the full chain of effects that impact measures across the company or at least that are available in the planning model. It’s an important tool to provide insights when budgeting or forecasting, and so it can be a valuable aid to design better and more relevant dashboards for planners.

Another great advantage of using the value driver tree in SAP Analytics Cloud is the ability to test budget and forecast assumptions across the full range of measures in the planning model. You can try out simulations to validate a particular planning scenario and then modify or correct values in the planning table. The simulations are a fast way to test different scenarios that can help a team achieve consensus on proposed strategies and goals.

Figure 6.14 shows the **Value Driver Tree** created from the same model used for the planning table discussed previously in Figure 6.6, which showed a net income table.

Here you’ll find everything represented in the net income table, but in a form that allows you to see how all the dimensions and measures are linked.

We’ve used IBCS as the basis for discussing the best ways to visually present the tables that are the central part of planning dashboards. The value driver tree can take the important role of helping you design the architecture of the table. This ensures that the table displays data in a way that highlights the business structure of your data. For example, if you want to show the net income, the table should be organized like the business calculation of your net income.

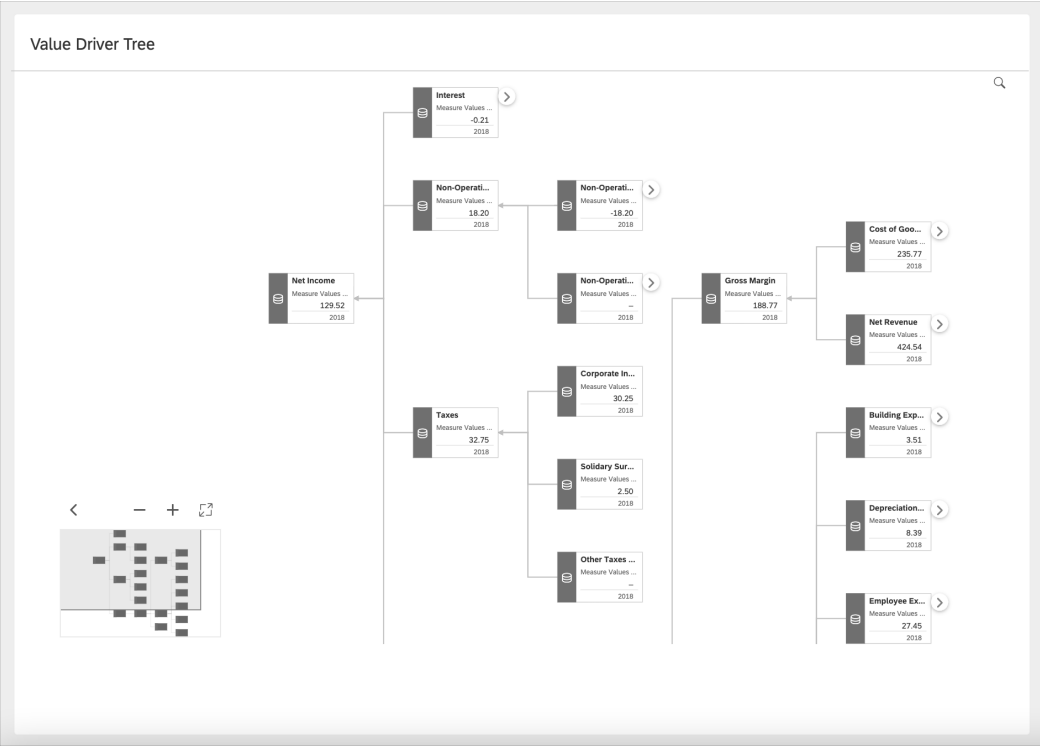


Figure 6.14 Value Driver Tree of the Net Income Planning Table

Using the values driver tree also ensures that a dashboard only contains the necessary elements to view and understand the data. This not only concerns the business knowledge, as using the value driver tree can help filter out the relevant measures within huge planning models. By simulating different scenarios, the value driver tree provides a way to highlight the relationships between the measures.

SAP Analytics Cloud makes it easy to simulate by applying a set percentage change across measures. For example, in the net income value driver tree we decide to simulate an increase in the budget for the **Non-Operating Expense** measure shown in Figure 6.15.

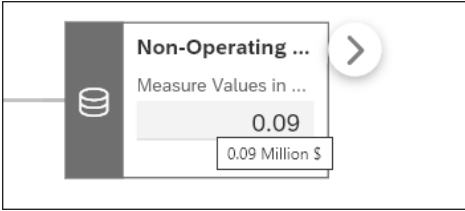


Figure 6.15 Non-Operating Expense Measure in the Example Value Driver Tree

Click the measure and enter a percentage change to simulate the input either by using the slider or the keypad, as shown in Figure 6.16.

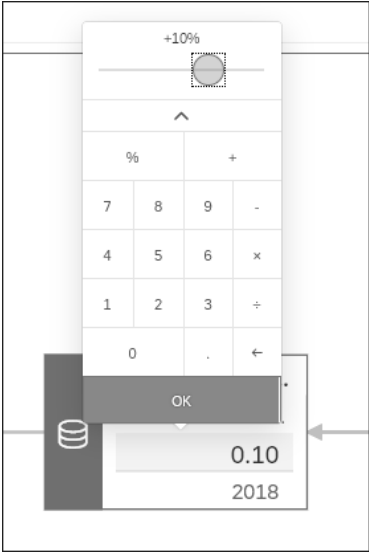


Figure 6.16 Selecting the Percentage Change to Apply to the Measure in the Value Driver Tree

The resulting simulation is applied to all affected measures in the value driver tree; each one is highlighted in Figure 6.17.

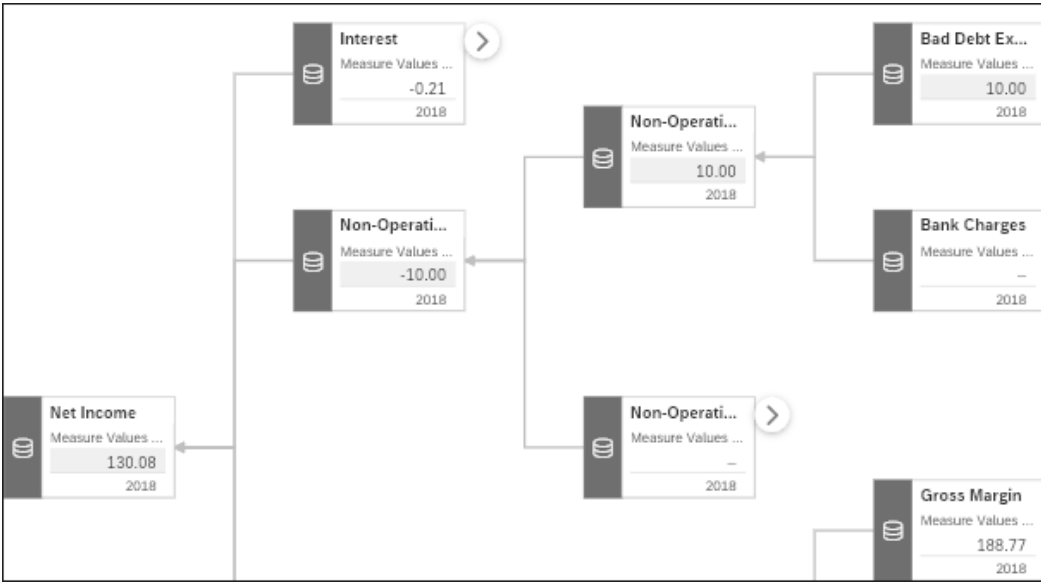


Figure 6.17 A Simulated 10% Change with Affected Measures Highlighted

6.4 Creating the Dashboard

We started the chapter with an example of a planning dashboard that shows actuals vs. budget planning for Cobblestone Bike Stores’ net income and gross margin in H1 of 2018. The dashboard is a composite one designed to show how the analytic tools such as KPIs and charts can be combined with the central planning data entry table. Designing and building KPIs and charts, as well as building tables are already well covered in previous chapters, so here we concentrated on what can be done for the table to ensure that it follows the recommendations from IBCS for table presentation and design.

Let’s delve a bit deeper into specific graphical and functional tools available in SAP Analytics Cloud to make your planning table as usable and accurate as possible:

- Creating the value driver tree
- Locking data
- Inserting a chart into a variance column

6.4.1 Creating the Value Driver Tree

You can create a value driver tree at any time, either letting SAP Analytics Cloud bring in all of the measures into your planning model, or if you have a very large model, you can select measures to display. You can do this as follows:

1. From your story, Click **Add** from the menu bar and select **Value Driver Tree** from the dropdown list as shown in Figure 6.18.

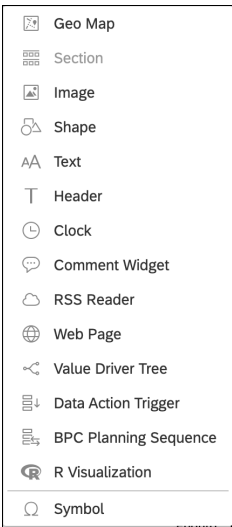


Figure 6.18 Adding the Value Driver Tree to the Story

2. Select the **Create New Value Driver Tree** radio button and then select the planning model from the data source selection field (**Based on**) as shown in Figure 6.19.

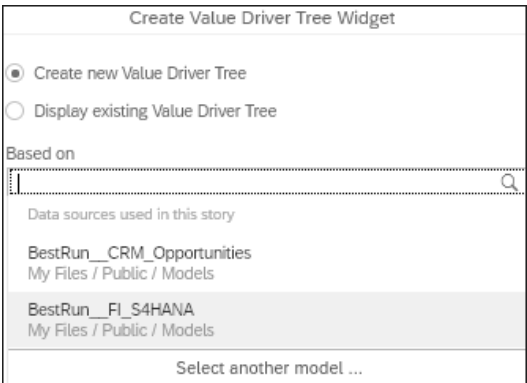


Figure 6.19 Selecting the Planning Model for the Value Driver Tree

3. You now get a choice to either manually set up your value driver tree node by node or select **Auto-create Value Driver Tree from Model**. This means SAP Analytics Cloud will display a list with all the measures in the planning model. You can choose the nodes from the list. We’ll select this option and then browse to the **Net Income** node as shown in Figure 6.20.

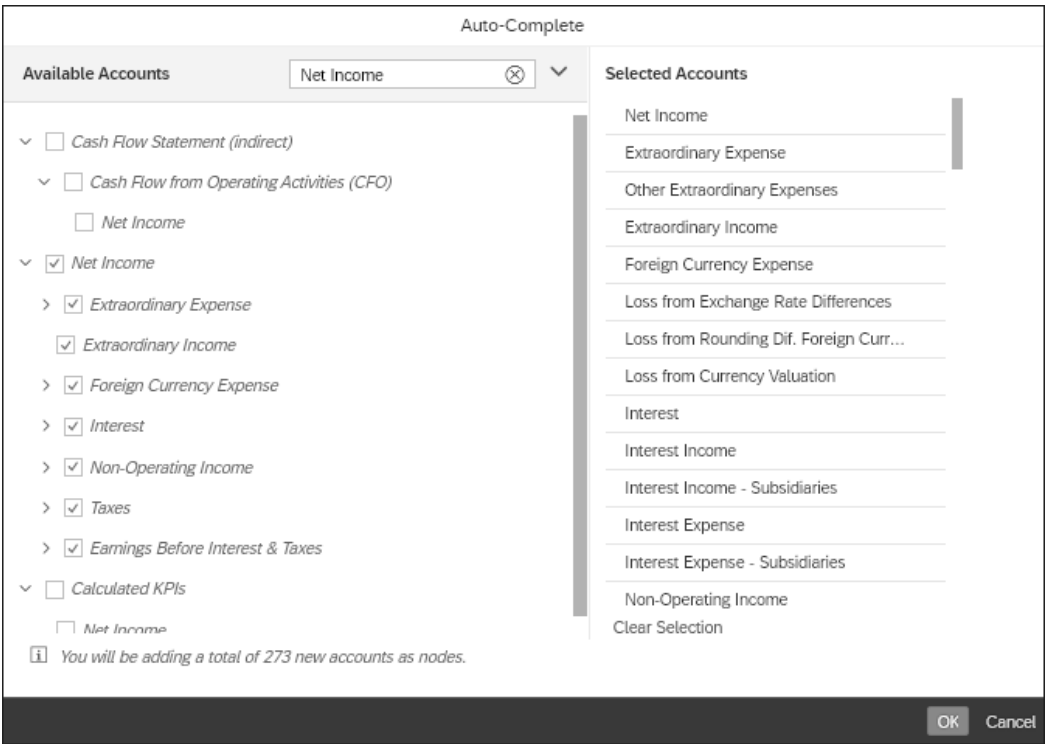


Figure 6.20 Selecting the Net Income Node to Create the Value Driver Tree

4. Click **OK** to create the value driver tree as was shown in Figure 6.14.

We’ve introduced the value driver tree as a very useful SAP Analytics Cloud tool to help you design a planning dashboard. It allows you to see measure dependencies across your entire model if required, or in specific nodes that you can choose when creating the tree. The value driver tree is an aid to structuring the content of your planning table and getting consensus on the scenarios included in the table by using input and outcome simulations.

Golden Rule: Context

The value driver tree is a classic example of a tree map. As explained in chapter 1, a single number only has a meaning in a specific context. Creating a value driver tree allows you to put your numbers into a larger context where they can be compared with each other, for example by looking at their evolution over time. The value driver trees in SAP Analytics Cloud are easy to use, quick to understand and simple to apply. Try to put your data so you see numbers in their full context, this enables the reader to extract the right message out of your dashboard.

6.4.2 Locking Data Values

Values can be locked in a table to prevent them being changed by data entry and other planning operations in stories. One type of locking capability can be configured in the model that allows you to define specific combinations of dimensions to lock, while keeping others open. For example, you might decide that, in this planning cycle, you want to enter data in **Budget 2019**, and because you only want to plan **My Net Revenue**, you’ll keep that open. However, all the other combinations, such as costs or sales expenses, will be locked for this planning cycle.

Locking is also useful when planning for different regions; for example, if you want to do you planning now for Europe, but you have a later planning cycle for the United States, you can lock it for now but will open it later.

There are two types of data locking, one in the model, and the other at the individual cell level applied directly in the table. We’ll discuss each one in the following sections.

6.4.3 Data Locking Defined in the Planning Model

You can enable the model to allow dimension locking. You also have a simpler cell locking capability which is very useful on the fly when you don’t want to update a particular value but want to see what impact a change will have on its dependencies. Data locking at the dimension level is enabled from the **Preferences** page of the model. The **Data**

Locking parameter is set to **ON** to enable, and **Default Lock State** is set to **Open**, as shown in Figure 6.21.

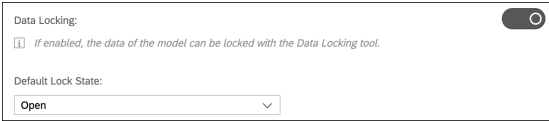


Figure 6.21 Setting Up Data Locking in the Model Preferences

Once activated, you can configure data locks in a table from the **Configure Data Locks** menu item in a story. You must have the appropriate permissions to configure data locking. These permissions are described in the SAP Analytics Cloud Online Help available from the SAP Help Portal.

The **Configure Data Locks** menu item opens the **Data Locking** page that lists driving dimensions prefiltered based on the members of the ownership-enabled dimensions that are owned by your current user. This allows you to select driving dimensions and set combinations of their members as **Locked**, **Open**, or **Restricted**. For example, if you want to lock the **2018 Forecast** for **Building Expenses**, you can use **Version**, **Date**, and **Organization** as your driving dimensions. An example of the data locking page is shown in Figure 6.22.

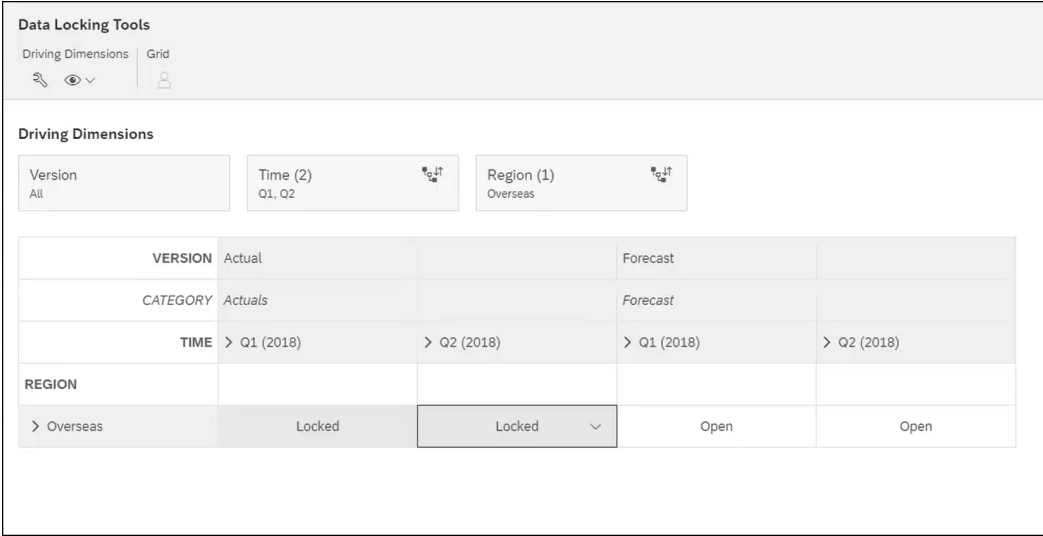


Figure 6.22 Data Locking Page Showing the Overseas Member of the Region Dimension Locked for Q1 and Q2 2018

Further Reading

The full procedure to enable dimension locking is best described in the video *Apply data locking: SAP Analytics Cloud* available in the SAP Analytics Training YouTube channel at <http://s-prs.co/v523536>.

The second type of data locking is a much simpler locking tool that you can apply directly in the table on the fly. This is useful when you don't want to update a particular value but want to see what impact a change will have on its dependencies. Let's look at it now.

6.4.4 Locking Individual Cells Directly in the Table

You can lock an individual cell directly in the table. This is very useful when entering data, but you want to keep a value constant, while updating others. For example, you decide to lock personal and IT costs, but increase operating expenses by 5%. This increase is applied to the open cells, but the locked ones remain stable. This is very useful for your distributions, seeing the impact of certain changes when there is a need to freeze figures in some cases.

You can lock data entry in a cell by right-clicking the cell in the table and selecting **Lock Cell** from the context menu, as shown in Figure 6.23.

> Office Expense	3.20	11.22	11.58
> Payroll	14.35		
> Travel	2.92		
> Employee Expense Other	1.84		
^ Employee Expense	22.31		
> Other Operating Expense	4.81		
^ Operating Expense	31.93		
Gain from Asset Transactions	-0.45		
^ Other Operating Revenue	-0.45		

Figure 6.23 Selecting Lock Cell from the Context Menu

6.4.5 Inserting a Variance Chart in a Column

In the planning dashboard example at the start of the chapter, the ΔBu column represented the variance calculation results ($AC - BUD$) as a chart showing the positive or negative variance visually (see Figure 6.24).

Budget				
> 2018	> Q1 (2018)	> Q2 (2018)		ΔBU
884.65	404.07	480.58	-460	
351.70	187.91	163.79	-115.93	
532.95	216.16	316.79	-344.18	
7.35	2.30	5.05	-3.84	
0.07	0.01	0.06		+8.3
141.32	41.45	99.87	-113.87	
13.76	4.05	9.72	-7.86	
162.50	47.81	114.69	-117.26	
370.45	168.35	202.10	-226.17	
-	-	-	-	
-	-	-	-	
-	-	-	-	
370.45	168.35	202.10	-240.93	

Figure 6.24 Actual versus Budget Variance Shown as a Chart within a Column

Particularly in a table that contains a lot of data, this is a great method to place the focus on the important variances in your data. Follow these steps to insert a chart into a column:

1. Add a column to contain the calculated values by right-clicking the column you want to insert the column next to and selecting **Add Column • Single**, as shown in Figure 6.25.

Budget
> 2018
> Q1 (2018)
> Q2 (2018)
351.7
884.6
532.9
162.5
370.4
370.4
370.45
168.35
202.10

Figure 6.25 Adding a Column to Contain a Variance Chart

- 2. Click in the new column's header, and add the calculation formula. In our example, enter "=", then click on **Actual**, enter "-", and then click on the **Budget** header, as shown in Figure 6.26.

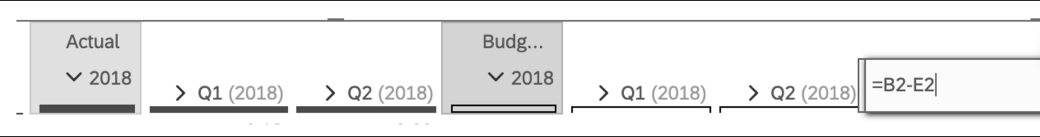


Figure 6.26 Adding the Calculation Formula to the New Column's Header

- 3. Click again in the new column header, and type in a column name. The calculation appears in the formula bar at the top of the page. You can display it by clicking the **Formula Bar** icon in the menu bar. The calculated values now appear in the new column, as shown in Figure 6.27.

Budget			
▼ 2018	> Q1 (2018)	> Q2 (2018)	ΔBU
-	-	-	-
-	-	-	-
-	-	-	-
351.70	187.91	163.79	-115.93
884.65	404.07	480.58	-460.11
532.95	216.16	316.79	-344.18
162.50	47.81	114.69	-117.26
-	-	-	-
370.45	168.35	202.10	-226.17
370.45	168.35	202.10	-226.17
370.45	168.35	202.10	-240.93

Figure 6.27 Variance Column Showing the Calculation Results

- 4. Right-click the new calculated column's header, and select **In-cell chart** from the context menu. If the chart doesn't display immediately, click the **Refresh** icon in the top menu bar to reload the data.

The initial bars in the chart are black, so to get them to show the positive and negative variance, go to the **Builder** pane, and select **Variance bar** from the **Comparison Chart** menu under **Chart Structure**. The variance now appears as green and red bars in the chart.

Golden Rule: Contrast

Every widget on your dashboard should use clearly contrasted colors. This helps the eye of the reader to extract the most important information as quickly as possible. Colors such as green or red (for positive and negative) support the user's understanding of the numbers quicker, given that they are used exclusively for highlighting positive or negative variances. Remember to keep your design as simple and neutral as possible, and always remove redundant content.

6.5 Summary

We've looked at designing a dashboard for planning purposes from different design angles. The central element for planning is the data entry table. We've described the advantages of SAP Analytics Cloud's IBCS-compliant tables that you can use out of the box. These facilitate the visual design of tables, ensuring a level of simplicity and functionality by default. We studied the value driver tree, a hidden treasure among the SAP Analytics Cloud tools that can be used both to optimize table design and as a simulation tool, giving you the opportunity to try out different planning scenarios with data entry over multiple dimensions, and seeing the change in measure dependencies over the whole model or selected sections.

We've had a look through a company's planning processes, mapping the route that leads to different dashboards for different planning scenarios, with reference to resources available in SAP Analytics Cloud official documentation and videos, as well as blogs by SAP experts.

Finally, we took a closer look at some of the more interesting features that can improve the design of tables and facilitate data entry over different teams.

Up to this point, we've been using great design features that come ready to use with SAP Analytics Cloud. In the next chapter, we'll see how the analytics designer can be used to customize and add functionality to your dashboards.

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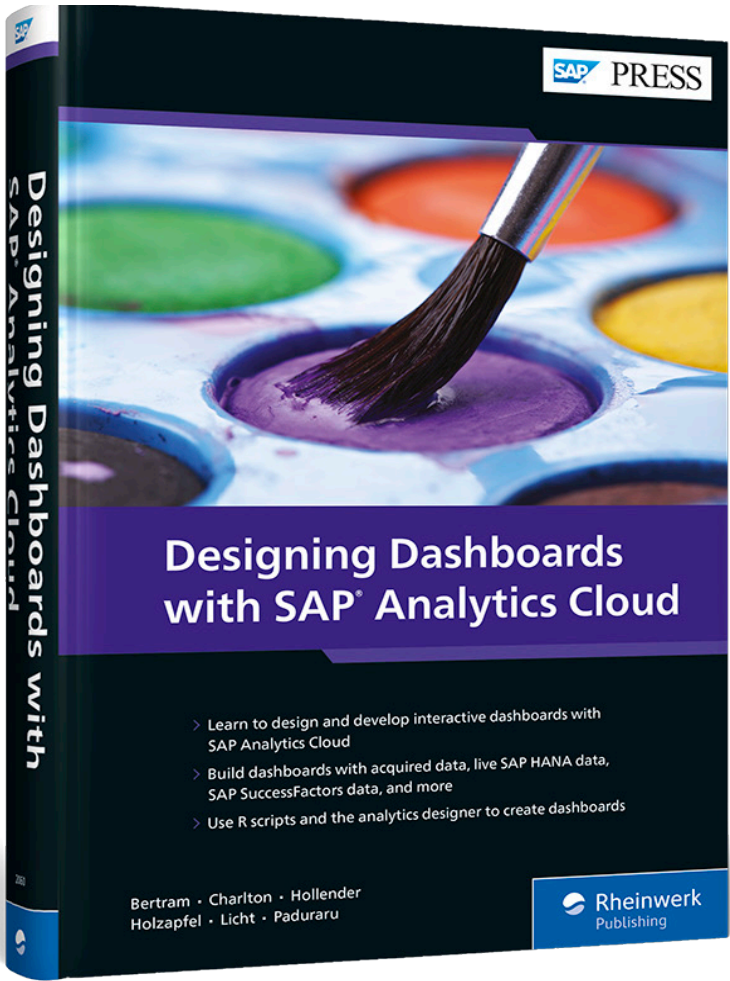
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