



# ERPsim for SAP HANA Reference Guide

## Authors

Jean-François Michon  
Derick Lyle  
Jacques Robert  
Pierre-Majorique Léger  
Gilbert Babin

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## AN INTRODUCTION TO ERPSIM FOR SAP HANA

2015 marks the release of ERPsim for SAP HANA. Powered by ERPsim, an original and fun way to teach and learn ERP concepts, this version also introduce real time analytics using an in-memory database, SAP HANA. While the simulator is also available with SAP ECC 6.07 and ERPsim BI, a technology allowing real-time analytics using SQL Server as the data warehouse, HANA allows to tap directly in the ERP's heart and get meaningful knowledge about your business from its transactional data.

With this new technology becoming available, having ERPsim to be compatible with it was an evidence. Not only the game is an engaging experience for participants to learn business processes and the transactions supporting them, but having access to data that is meaningful to you will entice you to learn more on how to get the best out of it. The best part of it is that SAP Lumira, SAP's data discovery and visualization tool, allows to do all of this in a matter of minutes, if not seconds.

We sincerely hope that you'll enjoy this version of ERPsim!

We'd like to thank those who contributed to and have been involved in the ERPsim for SAP HANA project:

- **Prof. Pierre-Majorique Léger (Ph.D.), Prof. Jacques Robert (Ph.D.), Prof. Gilbert Babin (Ph.D.),  
Prof. Bret Wagner (Ph.D.), Prof. Robert Pellerin (Ph.D.)**  
*Co-inventors of ERPsim;*
- **Jean-François Michon (M.Sc.), Derick Lyle (MBA), Félix Gaudet-Lafontaine (BBA)**  
*development, management and technical team, ERPsim Lab;*
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*testers and analysts, ERPsim Lab;*
- And also all faculty members, UCC partners and SAP University Alliances team members, who provided feedback, comments and suggestions, participated in our betas, and who believe in and support ERPsim for now more than 12 years!

## HOW TO USE THIS GUIDE

This guide was built with the premise that it should be easy to consult, and allow you to get a quick reference on each view's structure. For each view, we'll provide you with a general description, its properties, a description of the measure and dimensions, as well as a few examples how what you can mix-and-match to create useful visualizations with SAP Lumira.

The purpose of this guide is not to teach how to use Lumira, but to give you examples of how one analytics software can be used with ERPsim. Additionally, you are not limited to SAP solutions: with OData support, you may use any tool that supports the protocol to consume data as you're pleased.

Please remember that SAP Lumira is a software that is constantly evolving, with updates being released every month or so. The examples and instructions provided in this guide were created using version **1.31.5** of SAP Lumira. If you are using a different version, please consider that elements covered in this document may be different or not valid anymore. You can review the SAP Lumira user guide and release notes at <http://help.sap.com/lumira>.

## GET STARTED: SELECTING A METHOD FOR ACQUIRING DATA

There are currently two main methods for accessing data: by a **direct connection to HANA**, or by **OData**. The analytics solution you are using will be the main determinant of the method to select. The following table lists, for each tested solution with ERPsim, which methods are supported.

Solution / Tool	Direct	OData	Supported OS
SAP Lumira	Yes <sup>1</sup>	Yes	Windows
Microsoft Excel 2013 and above	No	Yes	Windows
Microsoft PowerBI	No	Yes	Windows
Tableau Desktop	No	Yes	Windows, OS X
Tableau Public	No	Yes	Windows, OS X
Google Sheets	No	Yes	Any

To review the process of connecting to each of the above solutions, please review their individual guide from the ERPsim Learning Portal. Note that while the examples from this guide were made with SAP Lumira, the structure of each view is the same regardless of which method and tool was selected.

<sup>1</sup> This method is reviewed on pages 8 to 10 of this document.

## METHOD 1: DIRECT CONNECTION TO HANA

### Requirements

- Access to the SAP HANA Database, which requires the following information:
  - Connection details to be provided by your instructor. You will need:
    - **Server (Host)** and **Instance/port number**
    - **User account (User)** and **Password**

## METHOD 2: ODATA

### Requirements

- Access to the OData feed, which requires the following information:
  - Connection details to be provided by your instructor. You will need:
    - **OData service URL**, or **HANA server domain** and **port number**
    - **User account (User)** and **Password**

### OData Services and URLs

OData services are called using one of the following URLs:

- Aggregate data (let HANA aggregate the result before returning it for increased performance)  
**[http://<HANA\\_server\\_domain>:80<port>/ERPsim/OData/erpsim.xsodata](http://<HANA_server_domain>:80<port>/ERPsim/OData/erpsim.xsodata)**
- Raw data (returns non-aggregated data)  
**[http://<HANA\\_server\\_domain>:80<port>/ERPsim/OData/erpsim\\_raw.xsodata](http://<HANA_server_domain>:80<port>/ERPsim/OData/erpsim_raw.xsodata)**

Services definitions and additional tools are available at

**[http://<HANA\\_server\\_domain>:80<port>/ERPsim/OData](http://<HANA_server_domain>:80<port>/ERPsim/OData)** (log in with your user account and password)

# GET STARTED: USING SAP LUMIRA WITH A DIRECT CONNECTION TO HANA

## REQUIREMENTS

### Software

- SAP Lumira (latest version), which can be downloaded from <http://go.sap.com/product/analytics/lumira.html>.

### Connection details

- Access to the SAP HANA Database, which requires the following information:
  - Connection details to be provided by your instructor. You will need:
    - **Server (Host)** and **Instance/port number**
    - **User account (User)** and **Password**

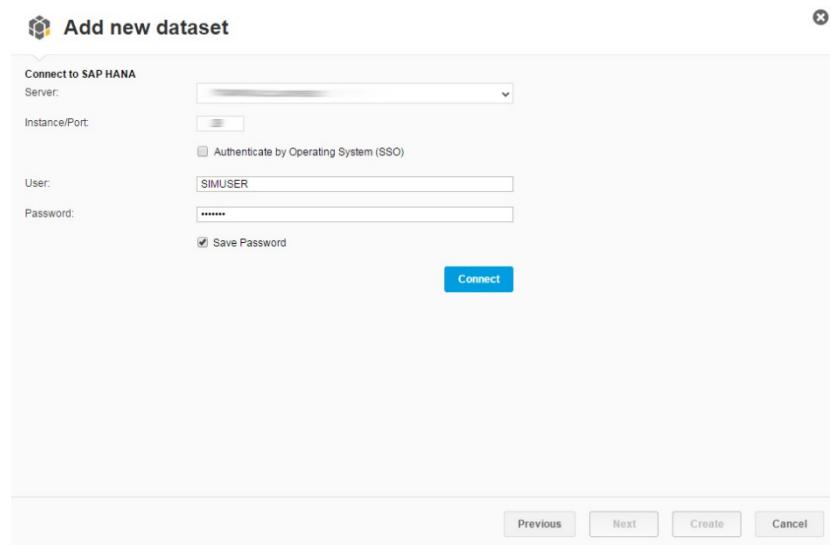
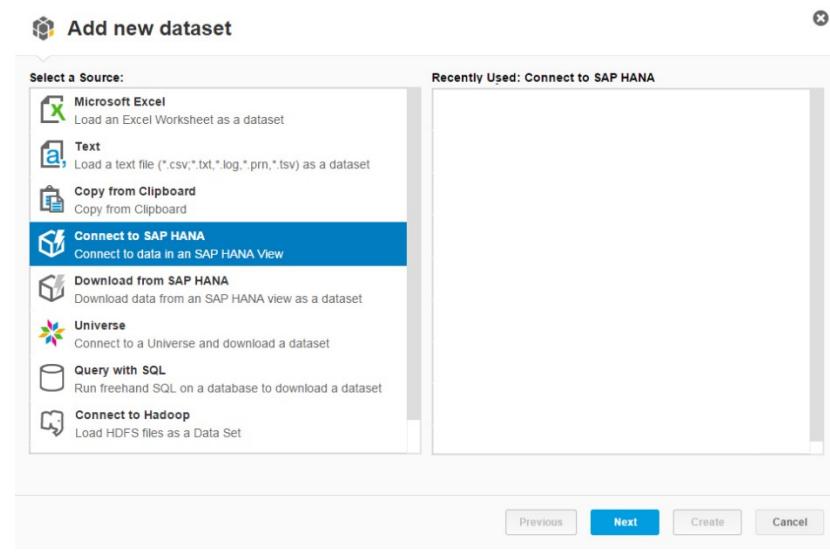
## CONNECTING TO AND ACQUIRING DATA FROM A VIEW

To establish a connection to the HANA database and start using a view:

- 
1. Open SAP Lumira.
  2. On the welcome screen, select **New Document** (can also be reached under **File / New**).
- 



3. Two options for HANA are provided. Select the one that fits your needs:
  - a. **Connect to SAP HANA** uses the HANA engine to return the result of the selections you make in Lumira. It also provides the fastest refresh speed for visualizations. It is the recommended option to use the views out of the box.
  - b. **Download from SAP HANA** downloads the data directly to your computer and does the calculations within the client's engine. Refreshing the data takes longer, but you gain the ability to prepare the data before visualizing it, plus you can rename dimensions and measures, as well as the data defining the dimensions.
4. Once your selection is done, click on **Next**.
5. Provide the connection details:
  - a. Enter the **server**, the **instance/port**, the **user** and the **password** (as mentioned in the previous section "Software and connection details");
  - b. Leave "Authenticate by Operation System (SSO)" unchecked.
  - c. Note that you can check "Save password" to reuse these information later.
  - d. Click on **Connect** to login.



6. Select the view you want to work with, and then click **Next**.
  - a. Note: If you are not sure which one to pick, you can see the description of the view by doing a single click on the name of the view; the description will be displayed in the right section of the window. Also, this document lists all the views available to you in part one of this guide.

**Add new dataset**

Select a SAP HANA View

- Available Views (8)

- ERPSim\_VIEWS\_Restricted (8)
  - ERPSIM\_FINANCIALS\_CUMULATIVE\_BALANCE (Provides c...)
  - ERPSIM\_FINANCIALS\_DAILY\_MOVEMENTS (Provides finan...)
  - ERPSIM\_GOODS\_MOVEMENTS (Analyze material movement...)
  - ERPSIM\_INVENTORY (Track opening and closing inventory b...)
  - ERPSIM\_MARKET (Analyze market shares based on sales qu...)
  - ERPSIM\_SALES (Explore and gain insight from your sales.)**
  - ERPSIM\_SUPPLIER\_PRICES (Analyze the historical price of ...)
  - MUESLI\_PRODUCTION (Review production yield per product.)

Dataset Name:

Explore and gain insight from your sales.

Previous
Next
Create
Cancel

7. You can select the measures and dimensions that will be available in your visualization. If you are unsure which dimension and measure you are going to use, we recommend you leave the selection as-is. Note that you can edit this selection at any time once the dataset is acquired.
8. If you wish to set a document-wide filter on any of the dimensions, you can do so by clicking on the filter icon next to each dimension.
9. Once your selection is done, click on **Create**.

**Add new dataset**

Select Measures and Dimensions

 Show only selected

Measures (8)

Measure Name	Value Preview
Contribution Margin Sum	Click here to see sample values
Cost (at moving average) Sum	Click here to see sample values
Cost (at valuation) Sum	Click here to see sample values
Gross Margin Sum	Click here to see sample values
Nb. of Customers Formula	Click here to see sample values
Nb. of Sales Orders Formula	Click here to see sample values
Net Value Sum	Click here to see sample values
Order Quantity Sum	Click here to see sample values

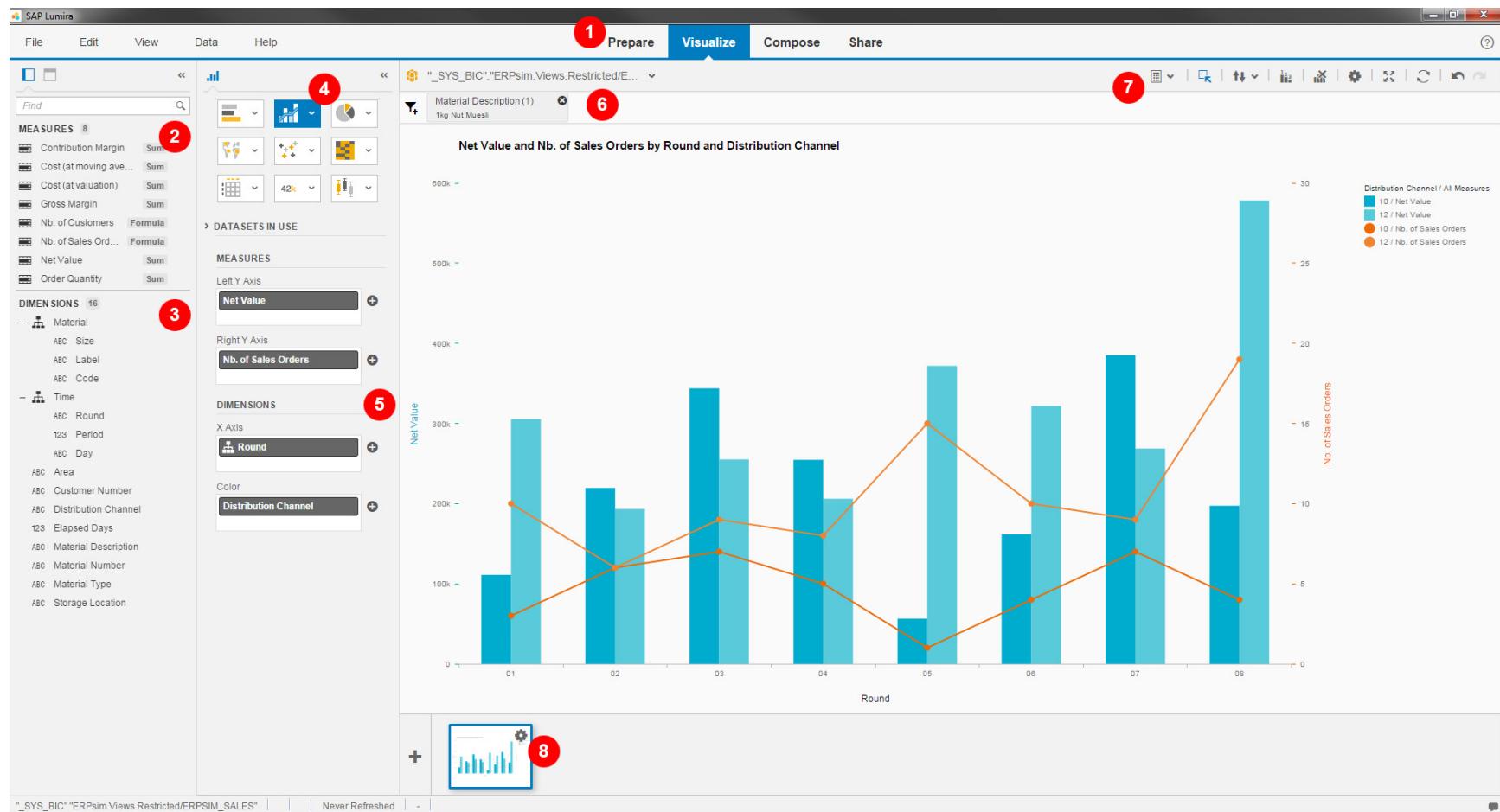
Dimensions (14)

Dimension Name	Value Preview
ABC Area	Click here to see sample values
ABC Code	Click here to see sample values
ABC Customer Number	Click here to see sample values
ABC Day	Click here to see sample values
ABC Distribution Channel	Click here to see sample values
123 Elapsed Days	Click here to see sample values
ABC Label	Click here to see sample values
ABC Material Description	Click here to see sample values
ABC Material Number	Click here to see sample values
ABC Material Type	Click here to see sample values
123 Period	Click here to see sample values
ABC Round	Click here to see sample values

Edit Variables
Previous
Next
Create
Cancel

10. It's time to explore!

## THE INTERFACE



Main elements of the interface:

1. Selection of the stage in the use of the view.
  - a. **Prepare** allows to view the values that the dimensions can take. A right-click on a value will show you all combinations to which this data is linked.
  - b. **Visualize** is the main screen of Lumira, and is also where you build your visualizations using the dimensions and measures provided to you.
  - c. **Compose** is used to create stories, which allows to review multiple visualizations on one screen. You can also apply filters, which will be applied on all visualizations (within the storyboard).
  - d. **Share** allows the exportation of stories to a file, or publish to SAP Lumira Server (this feature is not supported at this time).
2. **Measures** available in the view. The aggregation type is displayed next to each of them. You can also edit the properties of a measure or create a new one by hovering the measure name and by clicking on the cog next to it. Calculated measures can be particularly useful to create ratios (ex.: Average Price = Sales Order Item Net Value / Quantity Sold) or constants (ex.: Warehouse Capacity = 250000).
3. **Dimensions** available in the view. Hover your mouse over a dimensions to edit its properties (by clicking on the cog).
4. **Visualizations** selection can be made from a variety of charts. At any time, you can switch from one chart type to another, but be warned that it may change the selection of measures and dimensions in area #5.
5. Drag-and-drop zone for the measures and dimensions.
6. **Filters** for the visualization.
7. Set options of the visualization, like display of data labels, legend, or apply conditional formatting.
8. List of visualizations that have been created and are available in the Lumira document.

## PART ONE: USING SAP HANA VIEWS FOR ERPSIM

The current release of ERPsim comes with seven views, allowing you to explore your data from different angles. Whether you want to look at your sales, make sense of the market, review your performance in handling your inventory, or analyzing your financials, there is a view for that.

For each view, we're providing you with the following information:

- The **description**, the **view type**, and the **scope** of the view;
- The list of **input parameters**, which are used to filter the data that the view will return;
- The list of **measures**, which provides the calculated values. The aggregation type, which tells the type of calculation done on the values, is indicated for each of them;
- The list of **dimensions**, which are used to regroup and explore the data returned by the measures;
- **Recommendations and additional information** regarding the view, which include recommended use of dimensions and measures combinations, limitations to the type of data provided, and more;
- In some cases, we're providing **examples of custom calculated measures** that can be created directly in Lumira to extend the analysis capabilities (for example, by creating ratios or calculating average values). While not providing a complete list of measures that can be created, these examples can cover a large array of scenarios.

Currently, nine views are available. You may find their description below, and the full details at the page mentioned for each of them.

- **FINANCIALS\_BALANCES** (*pages 15-18*)  
Provides cumulative balance for each account on a daily basis.
- **FINANCIALS\_POSTINGS** (*pages 19-24*)  
Provides financial statements and day-to-day accounting transactions. Allows G/L account analysis using time series. Amounts are provided as real (debit+/credit- or debit-/credit+) and absolute values (requires the use of the debit/credit indicator dimension).
- **GOODS\_MOVEMENTS** (*pages 25-30*)  
Analyze material movements across your company.
- **INVENTORY** (*pages 31-34*)  
Track opening and closing inventory balance.
- **INVENTORY\_KPI** (*pages 35-36*)
- **MARKET** (*pages 37-39*)  
Analyze market shares based on sales quantity or net value. Compare your company's data with the competitors and / or the whole market.
- **PRODUCTION** (*pages 40-42*)  
Review production yield per product.
- **SALES** (*pages 43-47*)  
Explore and gain insight from your sales.
- **SUPPLIER\_PRICES** (*pages 48-50*)  
Analyze the historical price of purchasable goods.

## WHICH VIEW SHOULD I USE?

While not exhaustive, this list present some of the most common questions and recommendations on which view(s) may better answer them. If you are unsure which one to pick, determine which perspective you wish to adopt and explore each view that applies to find the right one.

Perspective	I want...	FINANCIALS_BALANCES	FINANCIALS_POSTINGS	GOODS_MOVEMENTS	INVENTORY	INVENTORY_KPI	MARKET	SALES	SUPPLIER_PRICES	PRODUCTION
Financials	... daily cumulative amounts for a given G/L account	✓								
	... to use time series to analyse the balance of G/L accounts	✓								
	... to see financial statements that updates in real time		✓							
	... a detailed view of my accounting transactions		✓							
Materials	... to analyse goods movements (internally and externally)			✓						
	... to analyse the flow of goods over time			✓						
	... to identify past or potential future stock outs				✓	✓				
	... to identify past or potential future overstocks				✓	✓				
	... to visualise my production runs over time									✓



Perspective	I want...	FINANCIALS_BALANCE	FINANCIALS_POSTINGS	GOODS_MOVEMENTS	INVENTORY	INVENTORY_KPI	MARKET	SALES	SUPPLIER_PRICES	PRODUCTION
Sales	... to compare my company to my competitors and the market					✓				
	... to understand customer demand					✓	✓			
	... a detailed breakdown of my sales							✓		
	... to calculate the margins made on my sales							✓		
	... to visualise price elasticity							✓		
	... to segment my sales by distribution channel and area							✓		
Procurement	... to track the history of my supplier's prices								✓	

## **FINANCIALS\_BALANCES**

Description	Provides cumulative balance for each account on a daily basis.
View Type	Calculation view
Scope (ERPsim games)	All

## **Measures**

Label	Technical Name	Aggregation	Description
Balance	GL_ACCOUNT_BALANCE	Sum	Returns the balance of the account on a daily basis. Follows accounting rules of debit and credit, where a debit increases the balance while credit decreases the balance.
Balance (inverted)	GL_ACCOUNT_BALANCE_INV	Sum	Returns the inverted result of the “Balance” measure.
Balance (absolute)	GL_ACCOUNT_BALANCE_ABS	Sum	Returns the balance of the account on a daily basis in absolute values.

## Dimensions

Label	Technical Name	Type	Description
Financials Statement  (1) <i>Level_1</i> (2) <i>Level_2</i> (3) <i>Level_3</i> (4) <i>Level_4</i> (5) <i>Level_5</i>	Financial_Statement  (1) <i>FS_LEVEL_1</i> (2) <i>FS_LEVEL_2</i> (3) <i>FS_LEVEL_3</i> (4) <i>FS_LEVEL_4</i> (5) <i>FS_LEVEL_5</i>	Hierarchy	Allows the drill-down of values through the financial statements. Start with the highest level ( <i>Level_1</i> ), with up to 5 levels. Levels are displayed only if a financial posting was done on a G/L account.
Time  (1) <i>Round</i> (2) <i>Step</i>	Time  (1) <i>SIM_ROUND</i> (2) <i>SIM_STEP</i>	Hierarchy	Allows analysis based on the virtual dates of ERPsim.
Calendar Date	SIM_CALENDAR_DATE	Date	Simulated date for time series analysis.
Company Code	COMPANY_CODE	Text	Defines the company for which the data will be provided.
Currency	CURRENCY	Text	Key identifying the currency used to maintain the account balance.
Elapsed Steps	SIM_ELAPSED_STEPS	Integer	Number of steps since the beginning of the simulation. Can be used as an alternative to the "Step" dimension (under the "Time" hierarchy).
G/L Account Name	GL_ACCOUNT_NAME	Text	Label describing the general ledger account.
G/L Account Number	GL_ACCOUNT_NUMBER	Text	Unique general ledger account identifier.

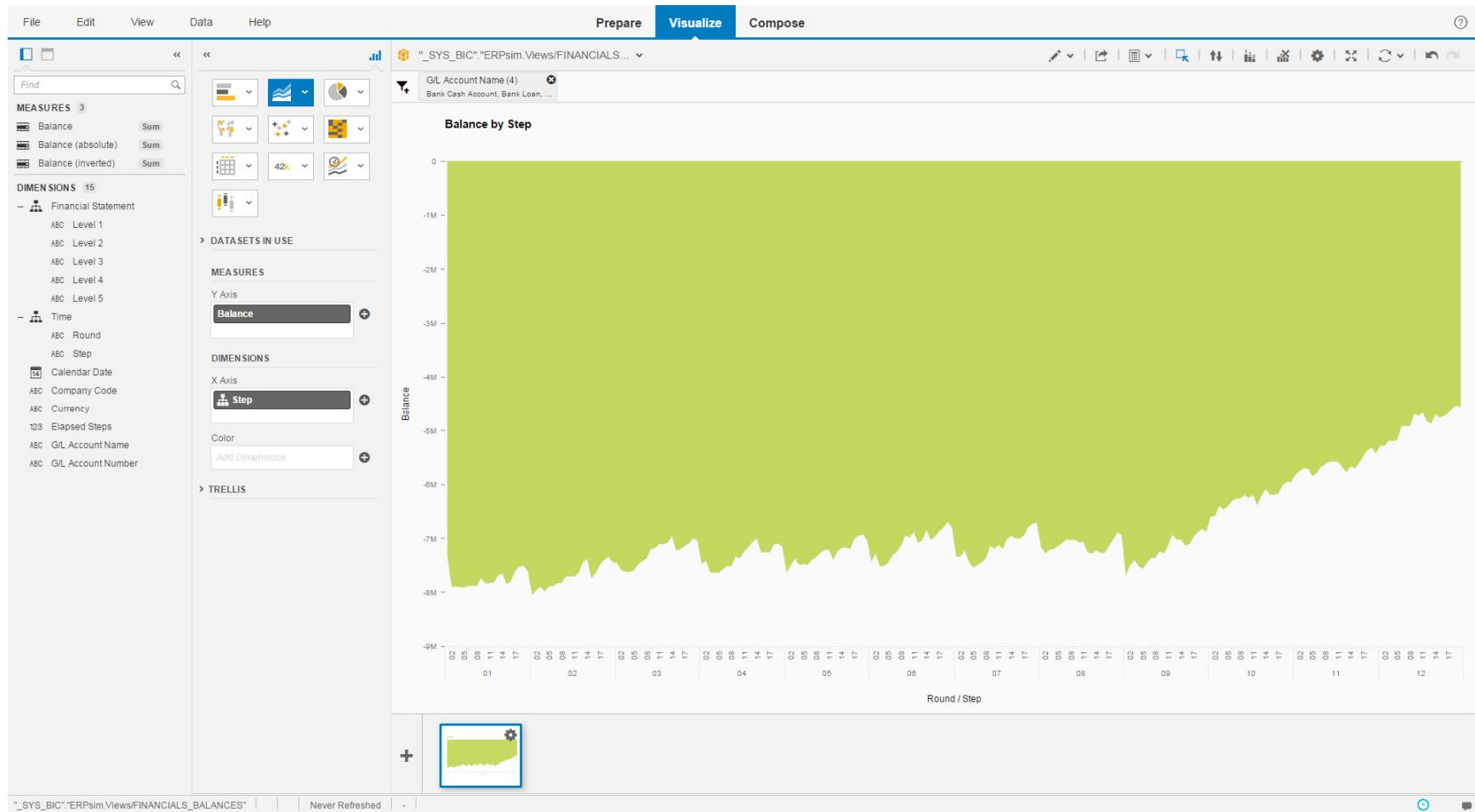
## Recommendations and additional notes

- This view returns balances that are pre-aggregated for each virtual step. Doing a sum of any measure without using the “Date” dimensions (i.e. across many days) will return values that are meaningless. If your objective is to obtain the variation of an account over a definite period of time, consider using view “FINANCIALS\_POSTINGS”.
- It is advised not to use the “Balance (absolute)” measure to analyze the “Bank Cash Account” (GL 113300), since this account can go both ways (negative or positive). To analyze this account, it is recommended to use the “Balance” measure.

## Example 1: Debt Loading

### Visualization: Area Chart (Options: Reference Lines for every Credit Rating step)

Debt loading is one component used in the calculation of the company valuation. The higher the risk on your bank loan and accounts payable, the worst your credit rating will be. This visualization uses the following values of the dimension “G/L Account Description” as the filter: Bank Cash Account, Bank Loan, Customer – Domestic Receivables, and Accounts payable – Domestic.



## FINANCIALS\_POSTINGS

Description	Provides live financial statements and day-to-day accounting transactions. Allows G/L account analysis using time series. Amounts are provided as real (debit+/credit- or debit-/credit+) and absolute values (requires the use of the debit/credit indicator dimension).
View Type	Calculation view
Scope (ERPsim games)	All

## Measures

Label	Technical Name	Aggregation	Description
Amount (absolute)	AMOUNT_ABS	Sum	Returns the absolute value of the accounting document posting. Must be combined with dimension "Debit/Credit Indicator" to properly analyze the data.
Amount	AMOUNT	Sum	Real amount, where debit postings are positive and credit postings are negative. It is best used with balance sheet accounts, which can be obtained by filtering the dimension "Financial Statement / Level 1" for the value "Balance Sheet".
Amount (inverted)	AMOUNT_INV	Sum	Real amount, where debit postings are negative and credit postings are positive. A revenue is represented as a positive posting, while an expense is represented as a negative posting. It is best used with income statement accounts, which can be obtained by filtering the dimension "Financial Statement / Level 1" for the value "Income Statement".



Amount (for B/S)	AMOUNT_BS	Sum	Real amount, where debit postings are positive and credit postings are negative. This measure is a replication of “Amount (D+/C-)”, but will only return values for accounts that are linked to the balance sheet.
Amount (for I/S)	AMOUNT_IS	Sum	Real amount, where debit postings are negative and credit postings are positive. This measure is a replication of “Amount (D-/C+)”, but will only return values for accounts that are linked to the income statement.

## Dimensions

Label	Technical Name	Type	Description
Financials Statement	Financial_Statement	Hierarchy	Allows the drill-down of values through the financial statements. Start with the highest level (Level_1), with up to 5 levels. Levels are displayed only if a financial posting was done on a G/L account.
(1) Level_1	(1) FS_LEVEL_1		
(2) Level_2	(2) FS_LEVEL_2		
(3) Level_3	(3) FS_LEVEL_3		
(4) Level_4	(4) FS_LEVEL_4		
(5) Level_5	(5) FS_LEVEL_5		
Time	Time	Hierarchy	Allows analysis based on the virtual dates of ERPsim.
(1) Round	(1) SIM_ROUND		
(2) Period	(2) SIM_PERIOD		
(3) Step	(3) SIM_STEP		
Calendar Date	SIM_CALENDAR_DATE	Date	Simulated date for time series analysis.
Company Code	COMPANY_CODE	Text	Defines the company for which the data will be provided.



Elapsed Steps	SIM_ELAPSED_STEPS	Integer	Number of steps since the beginning of the simulation. Can be used as an alternative to the “Step” dimension (under the “Time” hierarchy).
G/L Account Name	GL_ACCOUNT_NAME	Text	Label describing the general ledger account.
G/L Account Number	GL_ACCOUNT_NUMBER	Text	Unique general ledger account identifier.
Debit/Credit Indicator	DEBIT_CREDIT_INDICATOR	Text	Indicates if the posting to the G/L account was made as a debit or a credit. It is best used with the “Amount (absolute)” measure.

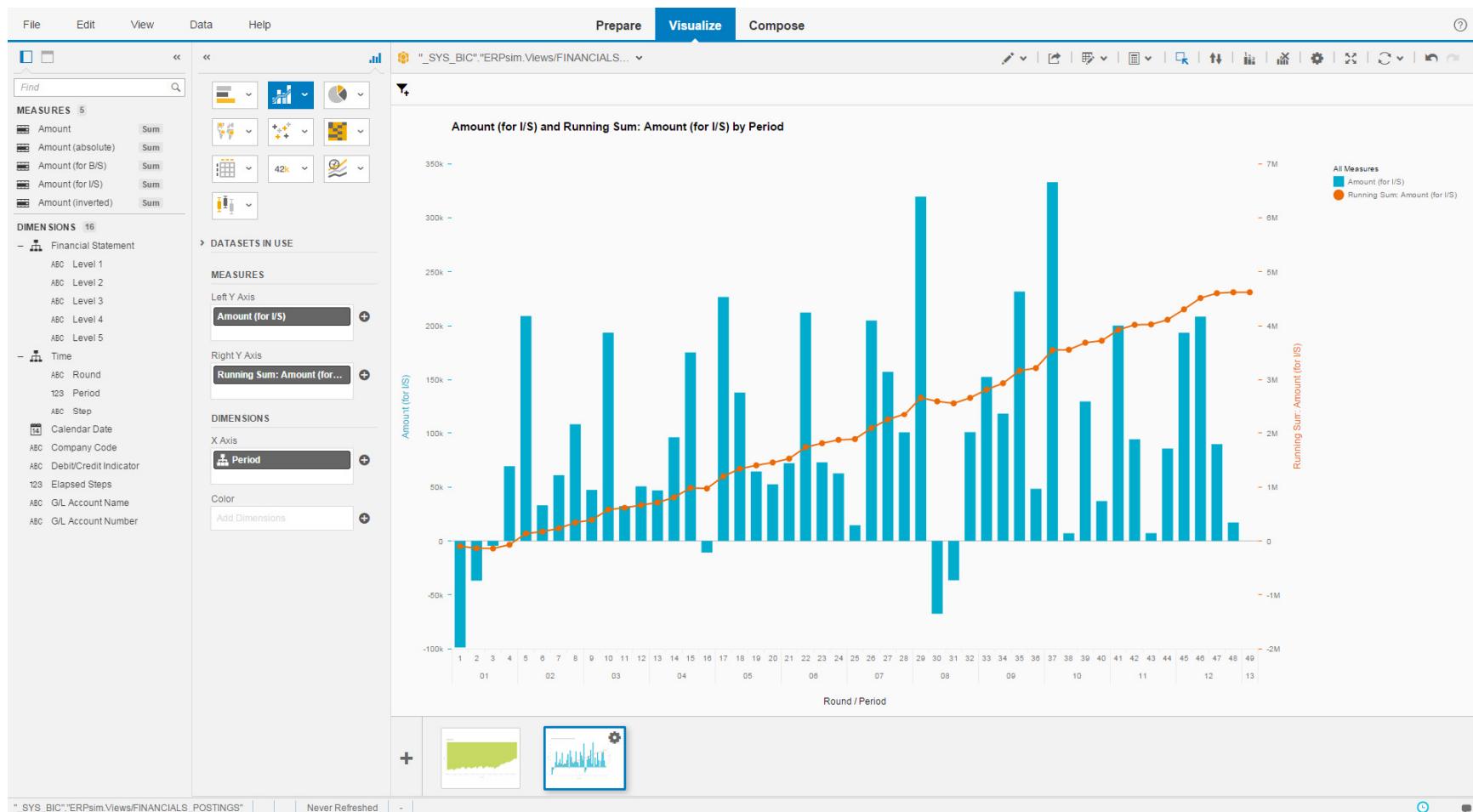
### Recommendations and additional notes

- To get the balance of an account on a certain date, make sure to include all days preceding that date, since the data that is returned by the view is the aggregation of every posting that has not been filtered out. For example, if you wish to obtain the balance of a certain account at the end of round 03, you must include all observations from round 01, 02 and 03.

## Example 1: Net Profit / Loss

### Visualization: Combined Column Line Chart with 2 Y-Axes

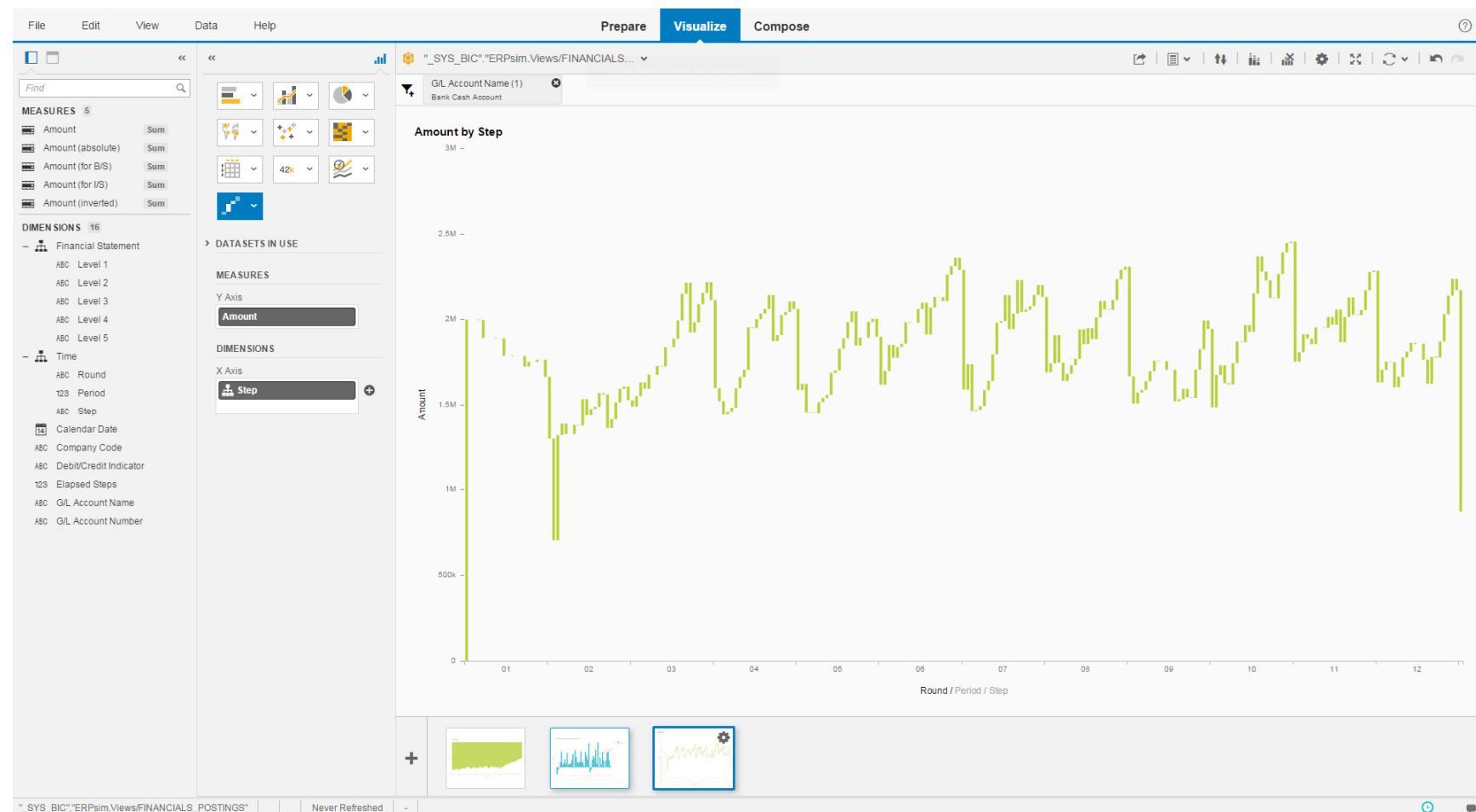
Doing the sum of all amounts (real values) posted in the income statement results in calculating the net income. Using the running sum on the “Amount (inverted)” provides the cumulative net income over time. The columns on the graph represents the variation for each period compared to the previous one. Using the dimension “Period” (which is set to 5 steps per period) helps reduce volatility.



## Example 2: Bank Cash Account Variation

### Visualization: Waterfall Chart

This visualization shows the variations in the bank cash account. It allows to quickly assess the frequency at which the balance is impacted, but also how it is evolving.



### Example 3: Financial Statements

#### Visualization: Crosstab

Financial statements in real-time, quite useful isn't it? The "Financial Statement" hierarchy can be used to drill-down up to five levels. You can also add the "G/L Account Name" and/or "G/L Account Number" dimensions for a more detailed view.

The screenshot shows a business intelligence application interface with the following components:

- Top Bar:** File, Edit, View, Data, Help, Prepare, Visualize (selected), Compose, and a help icon.
- Left Sidebar (Measures):** MEASURES 5: Amount, Amount (absolute), Amount (for B/S), Amount (for I/S), Amount (inverted). Dimensions 16: Financial Statement (ABC Level 1-5), Time (ABC Round, 123 Period, ABC Step), Calendar Date, ABC Company Code, ABC Debit/Credit Indicator, 123 Elapsed Steps, ABC G/L Account Name, ABC G/L Account Number.
- Central Area:** A crosstab titled "Amount (for B/S) and Amount (for I/S) by Level 3". The columns are Level 1, Level 2, Level 3, and Measures (Amount (for B/S), Amount (for I/S)). The rows are categorized by financial statement type (Balance Sheet, Income Statement) and specific account details (Assets, Current assets, Long-term assets, Liabilities and Owners Equity, Equity, Liabilities, Cost of Goods Sold, Inventory Change, Operating Expenses, Revenues, Sales, General, and Admin expenses, Interest expenses, Marketing expenses, Production improve..., SG&A).
- Bottom Navigation:** Buttons for Plus (+), Chart, Line Graph, Waveform, and a gear icon.
- Bottom Status Bar:** Displays the view name ("\_SYS\_BIC"."ERPsim.Views/FINANCIALS\_POSTINGS"), refresh status ("Never Refreshed"), and a circular progress bar.

## **GOODS\_MOVEMENTS**

Description	Analyze material movements across your company.
View Type	Calculation view
Scope (ERPsim games)	All

### **Measures**

Label	Technical Name	Aggregation	Description
Quantity (absolute)	QUANTITY_ABS	Sum	Returns the absolute quantity in the material posting. Combine with dimension “Debit/Credit Indicator” to properly analyze the data.
Quantity (real)	QUANTITY	Sum	Returns the real value, where a debit increase the quantity, and a credit decrease the quantity.

## Dimensions

Label	Technical Name	Type	Description
Material	Material	Hierarchy	Allows analysis based on the detailed properties of the product.
(1) Material Type	(1) MATERIAL_TYPE		
(2) Material Size	(2) MATERIAL_SIZE		
(3) Material Label	(3) MATERIAL_LABEL		
(4) Material Code	(4) MATERIAL_CODE		
Time	Time	Hierarchy	Allows analysis based on the virtual dates of ERPsim.
(1) Round	(1) SIM_ROUND		
(2) Period	(2) SIM_PERIOD		
(3) Step	(3) SIM_STEP		
Calendar Date	SIM_CALENDAR_DATE	Date	Simulated date for time series analysis.
Debit/Credit Indicator	DEBIT_CREDIT_INDICATOR	Text	Indicates if the material posting was made as a debit or a credit. It is best used with the “Quantity (absolute)” measure.
Document Type	DOCUMENT_TYPE	Text	Category of document posted when receiving/delivering goods. Examples: Goods Issue, Goods Issue for Delivery, Goods Receipt.
Elapsed Steps	SIM_ELAPSED_STEPS	Integer	Number of steps since the beginning of the simulation. Can be used as an alternative to the “Step” dimension (under the “Time” hierarchy).
Material Description	MATERIAL_DESCRIPTION	Text	Complete description of the product, including its size (if applicable).
Material Number	MATERIAL_NUMBER	Text	Complete description of the product, including its size (if applicable).



Movement Type	MOVEMENT_TYPE	Text	<p>Identifies the type of movement that was applied to the product. In ERPsim, five types will be present:</p> <ul style="list-style-type: none"> <li>• “GD goods issue: delvy”, which identifies the removal of inventory from the storage location to deliver the product to a customer.</li> <li>• “GI for order”, which identifies the consumption of materials for production.</li> <li>• “GR for order”, which identifies the reception of produced goods.</li> <li>• “GR for goods receipt”, which identifies the reception of goods related to a Purchase Order.</li> <li>• “TF trfr plnt to plnt”, which identifies a transfer between storage locations (Manufacturing Advanced and Logistics games only).</li> </ul>
Plant	PLANT	Text	
Storage Location	STORAGE_LOCATION	Text	Indicates the storage location on which the goods movement applies.
Transaction/Event Type	EVENT_TYPE	Text	Identifies the activity linked to the goods movement.
Unit of Measure	UNIT_OF_MEASURE	Text	Refers to the unit defined in the master data for the product.

### Recommendations and additional notes

- If using the time hierarchy as a time series, be aware that only steps / periods / rounds for which postings have been made will be shown.

## Example 1: Current (and past) inventory

### Visualization: Crosstab

Simple visualization that allows to quickly check inventory level. By not putting any filter on the "Time" hierarchy, the values displayed are the current inventory. The example above shows the inventory at the end of round 3 (out of 8 rounds). Set the filter on "Round" to only show values for "03" to get the inventory variation during that round (delta between end of round 02 inventory and end of round 03 inventory).

The screenshot shows the SAP BusinessObjects Data Explorer application. The top navigation bar includes File, Edit, View, Data, Help, Prepare, Visualize (which is selected), and Compose. A status bar at the bottom indicates the view is "\_SYS\_BIC"."ERPsim.Views/GOODS\_MOVEMENTS" and has never been refreshed.

The left sidebar contains a navigation tree with nodes for Measures (Quantity (absolute), Quantity (real)), Dimensions (Material Type, Material Size, Material Label, Material Code, Time, Round, Period, Step, Calendar Date, Debit/Credit Indicator, Document Type, Elapsed Steps, Material Description, Material Number, Movement Type, Plant, Storage Location, Transaction/Event Type, Unit of Measure), and Datasets in Use.

The main area displays a crosstab titled "Quantity (real) by Storage Location, Material Code". The columns are labeled "Material Type", "Material Size", "Material Label", "Material Code", and "Storage Loc...". The rows are labeled "Quantity (real)" and "02", "02N", "02S", "02W", and "88". The data grid shows various items like Mixed Fruit Muesli, Nut Muesli, Original Muesli, Raisin Muesli, Blueberries, Nuts, Oats, Raisins, Strawberries, Wheat, Large Bag (1kg), and Large Box (1kg) with their respective quantities and storage locations.

At the bottom, there are icons for adding new data, charting, and other visualization options.

Material Type	Material Size	Material Label	Material Code	Storage Loc...	Quantity (real)
Finished Product	1kg	Mixed Fruit Muesli	F16	02	29,600.00
		Nut Muesli	F11	02N	6,500.00
		Original Muesli	F15	02S	13,000.00
		Raisin Muesli	F14	02W	6,500.00
Raw materials	1kg	Blueberries	R02	88	29,000.00
		Nuts	R01		8,035.00
		Oats	R06		15,000.00
		Raisins	R04		7,500.00
		Strawberries	R03		32,070.00
		Wheat	R05		49,929.00
		Large Bag (1kg)	P02		470.05
		Large Box (1kg)	P01		
					1,410.15
					470.05
					3,180.30
					10,601.00
					10,601.00

## Example 2: Analyzing transfers and sales (Manufacturing Advanced, Logistics (all))

### Visualization: Crosstab

By filtering “Movement Type” to keep only the goods issues for delivery (“GD goods issue:delvry”) and the stock transfers from the main storage location to the regional one (“TF trfr plnt to plnt”), we can identify which storage locations ran out of stock for the period we are evaluating. Add the “Movement Type” dimensions to the rows (right under “Label” in above screenshot) to see the amounts that were transferred.

The screenshot shows a SAP BusinessObjects Data Studio interface with the following details:

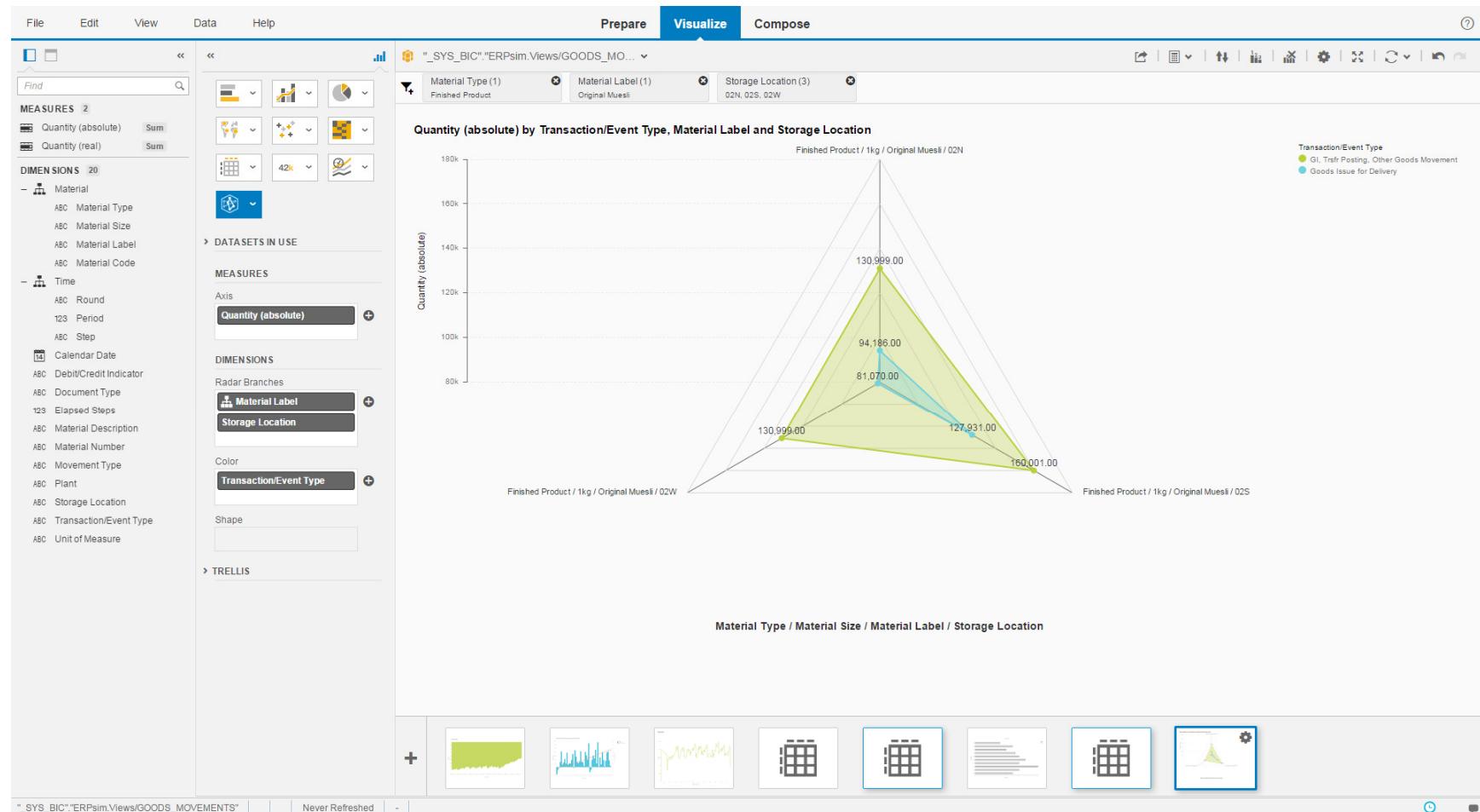
- File, Edit, View, Data, Help, Prepare, Visualize, Compose, and Help menus are visible at the top.**
- Left sidebar (Dimensions and Measures):**
  - MEASURES:** Quantity (absolute), Sum; Quantity (real), Sum.
  - DIMENSIONS:** 20 items listed under Material (Material Type, Material Size, Material Label, Material Code), Time (Round, Period, Step), and Plant (Calendar Date, Debit/Credit Indicator, Document Type, Elapsed Steps, Material Description, Material Number, Movement Type, Plant, Storage Location, Transaction/Event Type, Unit of Measure).
- Central area:**
  - Dataset:** "\_SYS\_BIC"."ERPsim.Views/GOODS\_MO..."
  - Filter:** Material Type (1) - Finished Product; Movement Type (2) - GD goods issue:delvry, TF trfr plnt...
  - Report Title:** Quantity (real) by Storage Location, Material Label
  - Table:** A crosstab table with columns: Storage Loc..., Measures, 02, 02N, 02S, 02W. Rows are grouped by Material Type, Material Size, and Material Label. The table shows the following data:

Material Type	Material Size	Material Label	Storage Loc..., Measures			
			02	02N	02S	02W
Finished Product	1kg	Mixed Fruit Muesli	-1,066,999.00	6,500.00	13,000.00	6,500.00
		Nut Muesli	-1,364,000.00	8,035.00	15,000.00	7,500.00
		Original Muesli	-421,999.00	36,813.00	32,070.00	49,929.00
		Raisin Muesli	-1,300,999.00	12,500.00	15,000.00	9,116.00
- Bottom toolbar:** Includes icons for adding measures, charts, and other visualization options.

### Example 3: Analyzing transfers and sales (Manufacturing Advanced, Logistics (all))

#### Visualization: Radar Chart

When analyzing transfers and sales for Original Muesli after the two first rounds, we can clearly see that storage location 02S (South) got 30,000 more units (Trsfr Posting) to sell as the other two, and it also sold much more in that region than the two others (Goods Issue for Delivery). Using absolute values ensures that the scales starts at a minimum of zero (no negative value).



## INVENTORY

Description	Track opening and closing inventory balance.
View Type	Calculation view
Scope (ERPsim games)	All

## Measures

Label	Technical Name	Aggregation	Description
Inventory (closing balance)	INVENTORY_CLOSING_BALANCE	Sum	Returns the stock quantity at the end of each day.
Inventory (delta)	INVENTORY_DELTA	Sum	Returns the difference between the opening and the closing balance.
Inventory (opening balance)	INVENTORY_OPENING_BALANCE	Sum	Returns the stock quantity at the beginning of each day.

## Dimensions

Label	Technical Name	Type	Description
Material	Material	Hierarchy	Allows analysis based on the detailed properties of the product.
(1) Material Type	(1) MATERIAL_TYPE		
(2) Material Size	(2) MATERIAL_SIZE		
(3) Material Label	(3) MATERIAL_LABEL		
(4) Material Code	(4) MATERIAL_CODE		
Time	Time	Hierarchy	Allows analysis based on the virtual dates of ERPsim.
(1) Round	(1) SIM_ROUND		
(2) Period	(2) SIM_PERIOD		
(3) Step	(3) SIM_STEP		
Calendar Date	SIM_CALENDAR_DATE	Date	Simulated date for time series analysis.
Elapsed Steps	SIM_ELAPSED_STEPS	Integer	Number of steps since the beginning of the simulation. Can be used as an alternative to the “Step” dimension (under the “Time” hierarchy).
Material Description	MATERIAL_DESCRIPTION	Text	Complete description of the product, including its size (if applicable).
Material Number	MATERIAL_NUMBER	Text	Unique number that identifies a product.
Plant	PLANT	Text	Operating area or branch within a company, and to which the inventory belongs to.
Storage Location	STORAGE_LOCATION	Text	Indicates where the goods are stored.

## Recommendations and additional notes

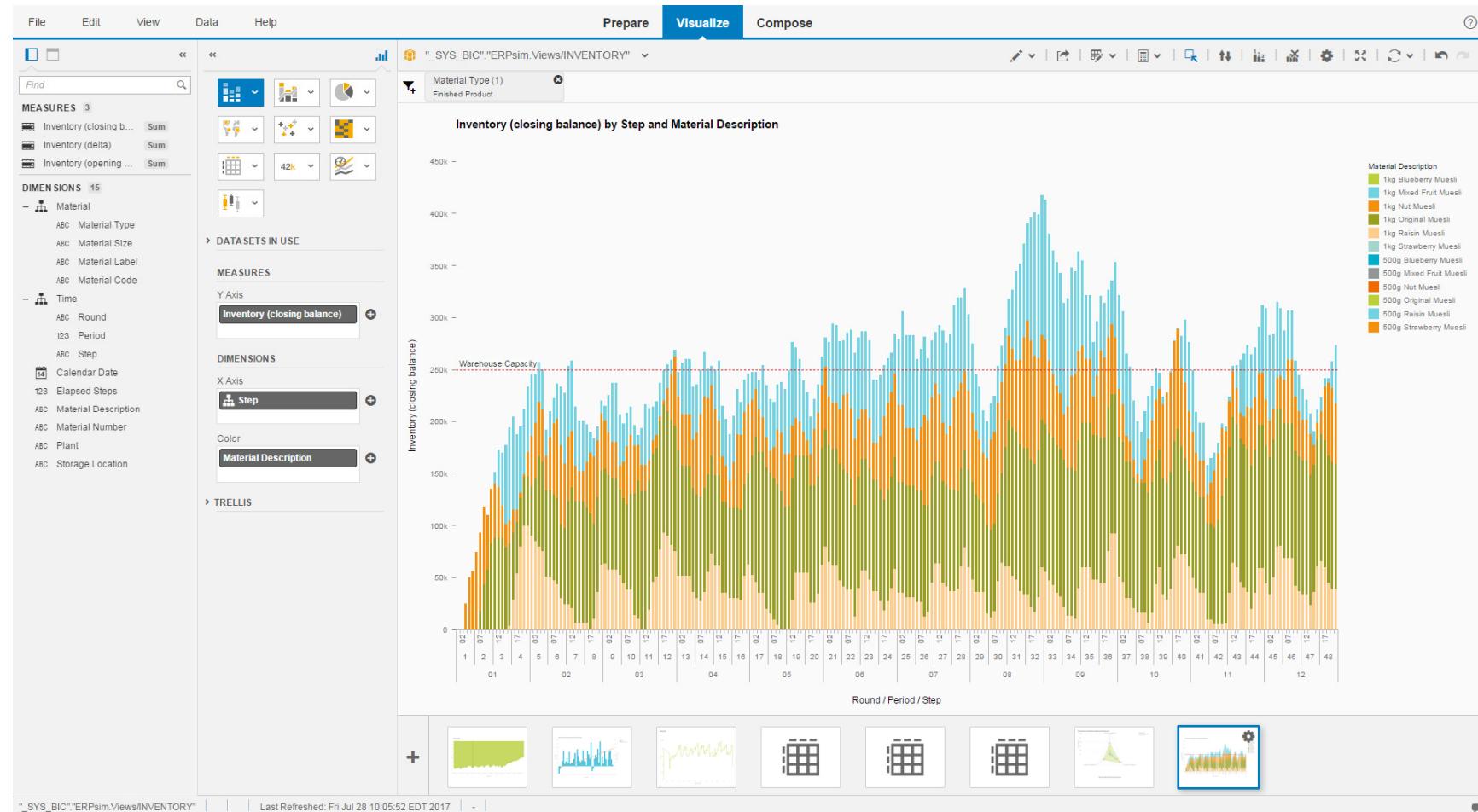
- Measures “Inventory (closing balance)” and “Inventory (opening balance)” are calculated on each virtual day. Doing a sum on any of these two measures across many days will return values that are meaningless.

## Example 1: Closing Inventory / Stockout Detection / Warehouse Capacity

### Visualization: Combined Stacked Line Chart

Using closing balances, we can track the inventory available after the production and the sales happened on each step. The visualization allows us to see potential stockout of products, as well as if we are meeting or going above the warehouse capacity.

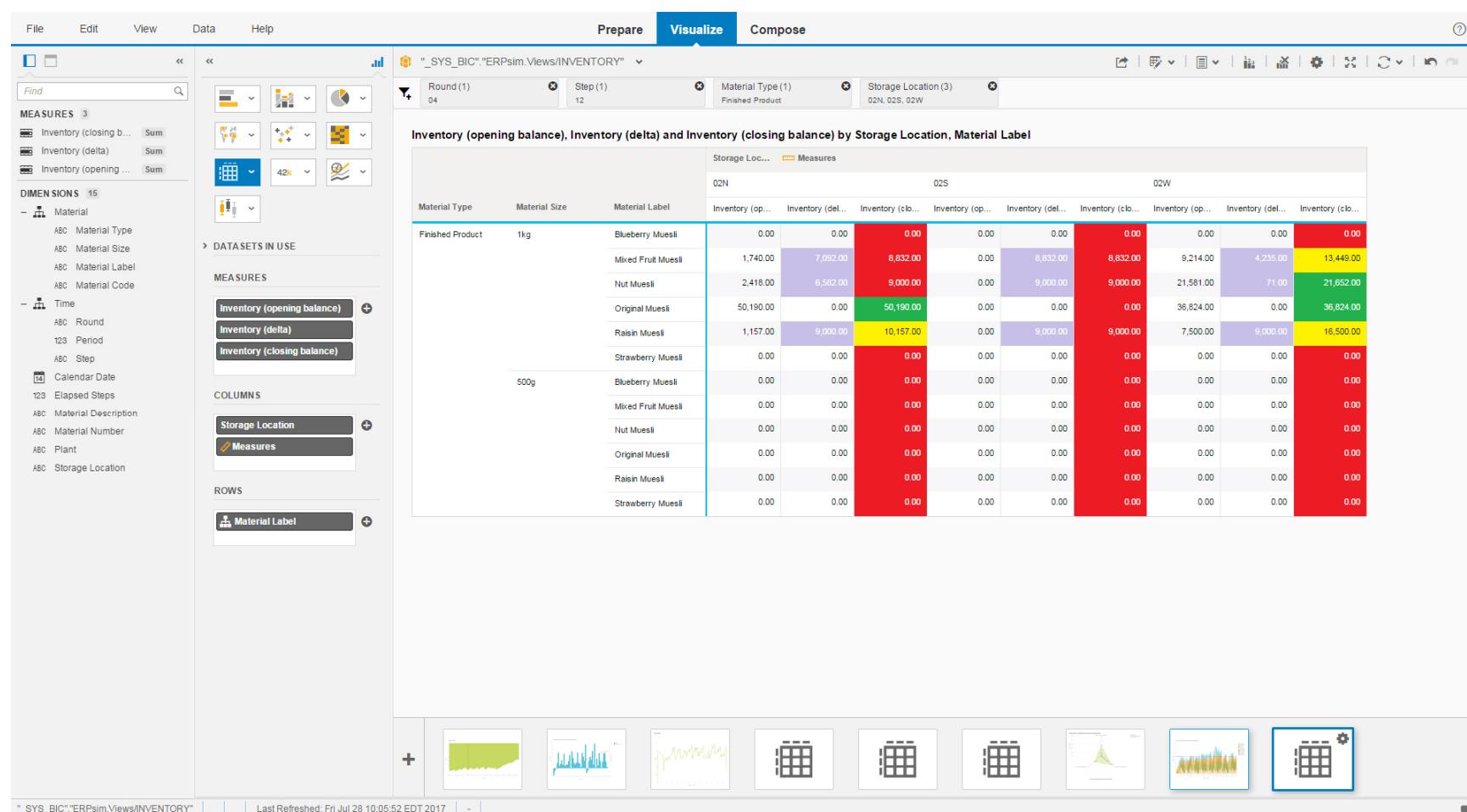
Tip: Use the “Create a new reference line” option to draw the limit of the warehouse capacity. Enter your warehouse capacity limit in the “Set Fixed Value At” field, and then customize the line with a label and color.



## Example 2: Stock Movements / Stockout Detection

### Visualization: Crosstab

Use of conditional formatting for certain measures can be quite practical. In this case, two conditions are set on “Inventory (delta)”: if lower than zero (a sale), set to blue; if over zero (increase in inventory), set to purple. Other conditions are set on “Inventory (closing balance)” to detect risks of stockout, based on the team’s preference (average sales per day, safety stock, etc.): below 10k (red), between 10k and 20k (yellow), above 20k (green). Note that the data is filtered by a fixed date due to the limitations on “Inventory (closing balance)” and “Inventory (opening balance)” (see recommendations).



## INVENTORY\_KPI

Description	
View Type	Calculation view
Scope (ERPsim games)	All

### Measures

Label	Technical Name	Aggregation	Description
Inventory (current)	CURRENT_INVENTORY	Sum	
Quantity Sold	QUANTITY_SOLD	Sum	
Nb. Steps (was available)	NB_STEPS_AVAILABLE	Sum	
Nb. Steps (elapsed)	ELAPSED_STEPS	Sum	

## Dimensions

Label	Technical Name	Type	Description
Material	Material	Hierarchy	Allows analysis based on the detailed properties of the product.
(1) Material Type	(1) MATERIAL_TYPE		
(2) Material Size	(2) MATERIAL_SIZE		
(3) Material Label	(3) MATERIAL_LABEL		
(4) Material Code	(4) MATERIAL_CODE		
Material Description	MATERIAL_DESCRIPTION	Text	Complete description of the product, including its size (if applicable).
Material Number	MATERIAL_NUMBER	Text	Unique number that identifies a product.
Plant	PLANT	Text	Operating area or branch within a company, and to which the inventory belongs to.
Storage Location	STORAGE_LOCATION	Text	Indicates where the goods are stored or from where they were picked.

## MARKET

Description	Analyze market shares based on sales quantity or net value. Compare your company's data with the competitors and / or the whole market.
View Type	Calculation view
Scope (ERPsim games)	All

## Measures

Label	Technical Name	Aggregation	Description
Net Value	NET_VALUE	Sum	Value of the sales orders that were generated. The net value equals the quantity sold of each item multiplied by its respective unit price.
Quantity Sold	QUANTITY	Sum	Represents the sales order item quantity that was purchased by the customer.

## Dimensions

Label	Technical Name	Type	Description
Time	Time	Hierarchy	Allows analysis based on the virtual dates of ERPsim.
(1) Round (2) Period	(1) SIM_ROUND (2) SIM_PERIOD		
Area	AREA	Text	Defines the region in which the sales were made (North, South, West).
Average Price	AVERAGE_PRICE	Numeric (Double)	Average price of the goods sold (equals to Net Value / Quantity Sold)
Distribution Channel	DISTRIBUTION_CHANNEL	Text	Group of customers to which the products were sold.
Material Description	MATERIAL_DESCRIPTION	Text	Complete description of the product, including its size (if applicable).
Sales Organization	SALES_ORGANIZATION	Text	Defines the unit to which the sales are attached to. Three units are available: <ul style="list-style-type: none"> <li>• Company: Your company's sales;</li> <li>• Competitors: The sum of sales of all of your competitors;</li> <li>• Market: The sum of sales on the whole market (equals Company + Competitors).</li> </ul>

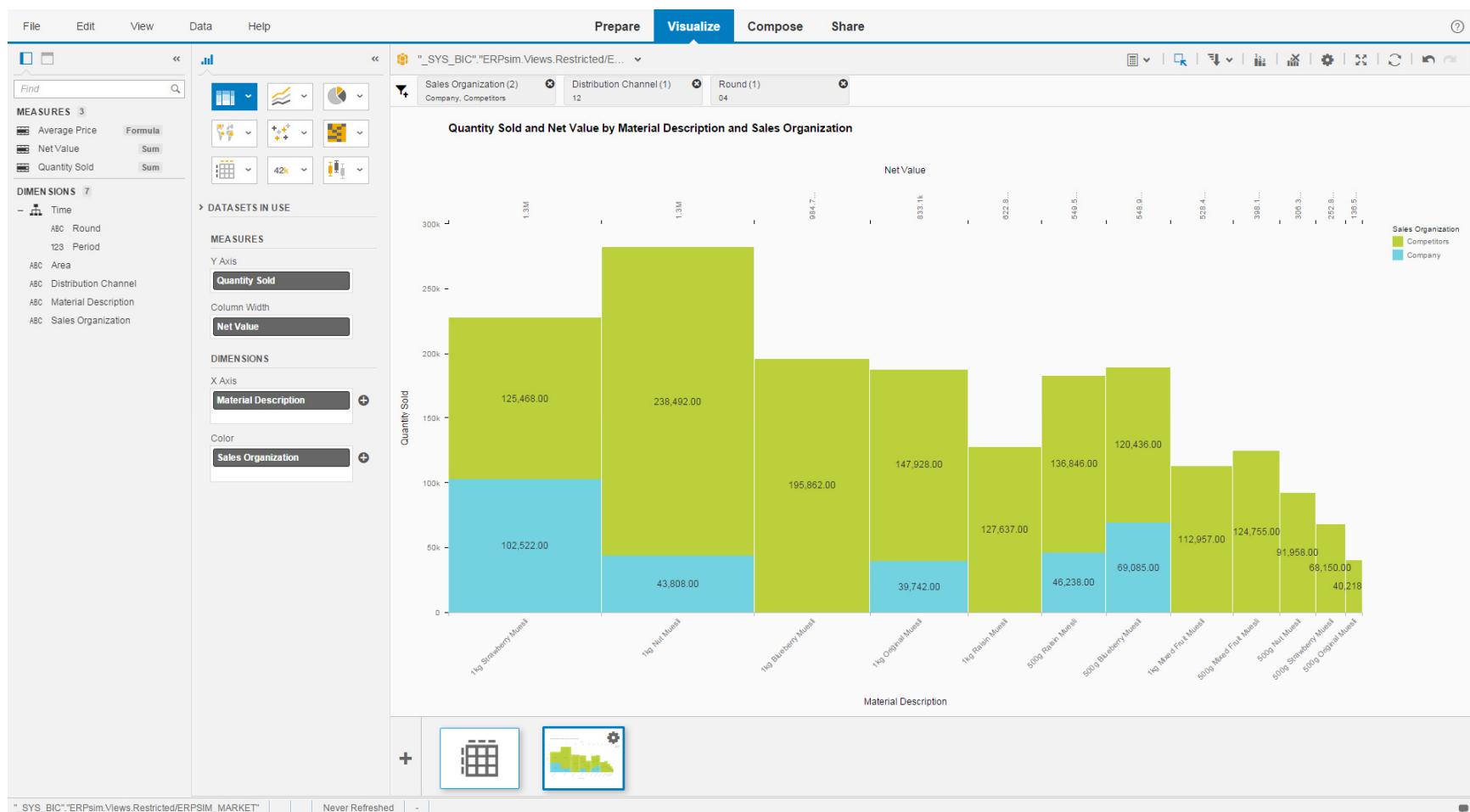
## Recommendations and additional notes

- In most situations, always use the “Sales Organization” dimension to filter out the units that does not belong in your visualization. When using visualizations that works with percentages (Pie Chart, 100% Marimekko Chart, etc.), remember that having all three units is the same as having 200% of the market on the same chart.

## Example 1: Market Comparison

### Visualization: 100% Marimekko Chart (in normal stacking mode, sorted in descending order by net value)

Knowing that the net value is affected by the quantity sold (the more you sell, the higher the net value), using this visualization allows us to identify markets where more value is generated with lower quantities sold. In this example, we can see that 1kg Strawberry Muesli and 1kg Nut Muesli have a similar Net Value, but the quantities involved are clearly not the same.



## PRODUCTION

Description	Review production yield per product.
View Type	Calculation view
Scope (ERPsim games)	Manufacturing game (all variants)

### Measures

Label	Technical Name	Aggregation	Description
Yield	YIELD	Sum	Quantity of finished goods for which the production has been confirmed.

## Dimensions

Name		Type	Description
Material	Material	Hierarchy	Allows analysis based on the detailed properties of the product.
(1) Material Size	(1) MATERIAL_SIZE		
(2) Material Label	(2) MATERIAL_LABEL		
(3) Material Code	(3) MATERIAL_CODE		
Time	Time	Hierarchy	Allows analysis based on the virtual dates of ERPsim.
(1) Round	(1) SIM_ROUND		
(2) Period	(2) SIM_PERIOD		
(3) Step	(3) SIM_STEP		
Calendar Date	SIM_CALENDAR_DATE	Date	Simulated date for time series analysis.
Date	SIM_DATE	Text	Allows analysis on a daily basis based on the format Round/Step.
Elapsed Steps	SIM_ELAPSED_STEPS	Numeric	Number of steps since the beginning of the simulation. Can be used as an alternative to the "Step" dimension (under the "Time" hierarchy).
Material Description	MATERIAL_DESCRIPTION	Text	Complete description of the product, including its size (if applicable).
Material Number	MATERIAL_NUMBER	Text	Unique number that identifies a product.
Plant	PLANT	Text	Operating area or branch within a company where the production activity happened.

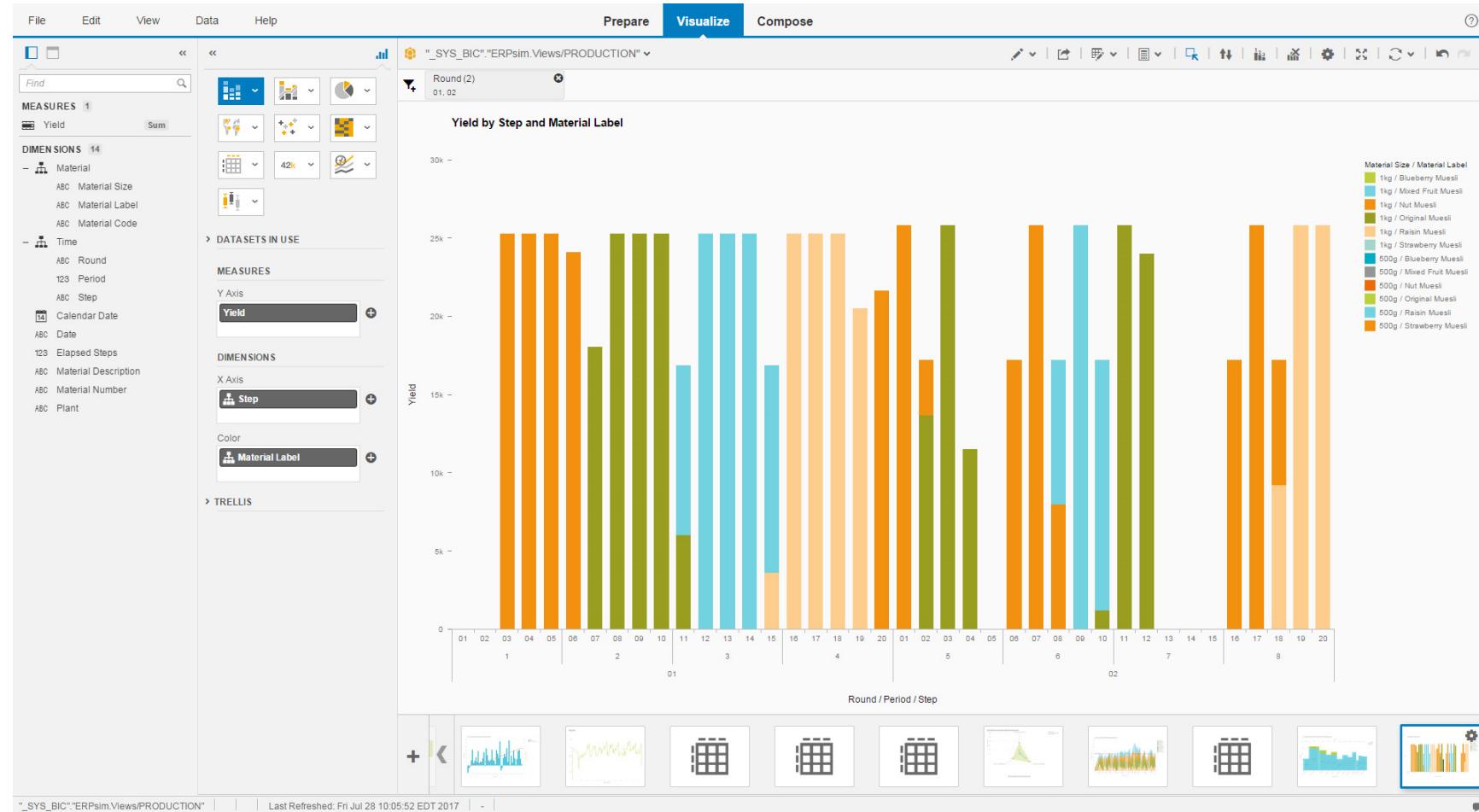
## Recommendations and additional notes

- This view can be used with time series. All days will be shown, even if there was no production confirmed.

## Example 1: Production Runs

### Visualization: Stacked Column Chart

This visualization shows production runs and downtimes (setup time) and days for which the production capacity is not used to its maximum.



## SALES

Description	Explore and gain insight from your sales.
View Type	Calculation view
Scope (ERPsim games)	All

## Measures

Label	Technical Name	Aggregation	Description
Contribution Margin	CONTRIBUTION_MARGIN	Sum	Represent the margin based on the cost at valuation (Net Value – Cost).
Contribution Margin (%)	CONTRIBUTION_MARGIN_PCT	Sum	
Cost	COST	Sum	Represents the cost of the product based on its valuation. For a finished good, valuation is made using standard cost. For a trading good, valuation is made using moving average price.
Number of Customers	COUNT_CUSTOMERS	Count	Count of unique customers who made a purchase.
Number of Sales Orders	COUNT_SALES_ORDERS	Count	Count of unique sales orders.
Net Value	NET_VALUE	Sum	Value of the sales orders that were generated. The net value equals the quantity sold of each item multiplied by its respective unit price.
Quantity Sold	QUANTITY	Sum	Represents the sales order item quantity that was purchased by the customer.

## Dimensions

Label	Technical Name	Type	Description
Material	Material	Hierarchy	Allows analysis based on the detailed properties of the product.
(4) Material Type	(4) MATERIAL_TYPE		
(5) Material Size	(5) MATERIAL_SIZE		
(6) Material Label	(6) MATERIAL_LABEL		
(7) Material Code	(7) MATERIAL_CODE		
Time	Time	Hierarchy	Allows analysis based on the virtual dates of ERPsim.
(4) Round	(4) SIM_ROUND		
(5) Period	(5) SIM_PERIOD		
(6) Step	(6) SIM_STEP		
Area	AREA	Text	Defines the region in which the sales were made (North, South, West).
Customer Number	CUSTOMER_NUMBER	Text	Unique number that identifies a business partner that purchased the goods.
Calendar Date	SIM_CALENDAR_DATE	Date	Simulated date for time series analysis.
Distribution Channel	DISTRIBUTION_CHANNEL	Text	Group of customers to which the products were sold.
Elapsed Steps	SIM_ELAPSED_STEPS	Integer	Number of days since the beginning of the simulation. Can be used as an alternative to the "Day" dimension (under the "Time" hierarchy).
Material Description	MATERIAL_DESCRIPTION	Text	Complete description of the product, including its size (if applicable).
Material Number	MATERIAL_NUMBER	Text	Unique number that identifies a product.
Material Type	MATERIAL_TYPE	Text	Identifies the category to which the product belongs.



Net Price	NET_PRICE	Numeric (Decimal)	Average item price per item that were sold to customers.
Sales Organization	SALES_ORGANIZATION	Text	Organizational unit who made the sale.
Storage Location	STORAGE_LOCATION	Text	Indicates from where the goods sold to the customer where picked.

### Recommendations and additional notes

- Measures "Number of Customers" and "Number of Sales Orders" can be used to calculate different ratios. For example, the average quantity sold per sales order can be obtained by dividing "Order Quantity" by "Number of Sales Orders".
- If using the time hierarchy as a time series, be aware that only days / periods / rounds for which sales have been recorder will be shown.

### Examples of custom calculated measures

While not inclusive of all the possible calculations that can be made out of the available measures, the following are the most common calculations that you may want to use to design your visualizations:

- "Average Order Quantity" = {Quantity Sold} / {Number of Sales Order}
- "Average Unit Price" = {Net Value} / {Quantity Sold}
- "Margin per Unit" = {Contribution Margin} / {Quantity Sold}

## Example 1: Sales Analysis

### Visualization: Crosstab

This visualization relies on many custom calculated measures (see “Examples of custom calculated measures” for this view) to easily identify products that are not selling well or those that does not provide a margin that meets our expectations.

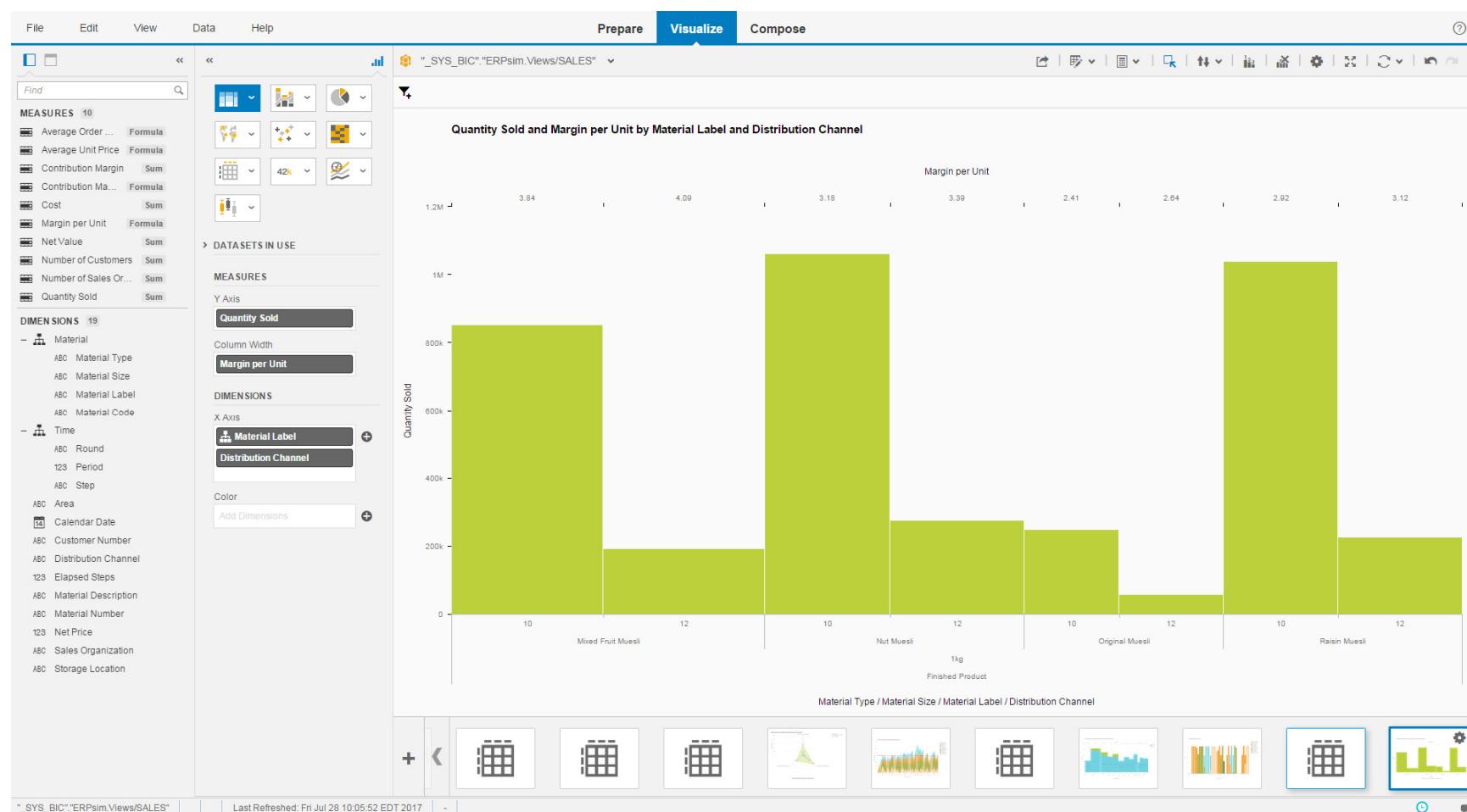
The screenshot shows a business intelligence tool interface with a "Visualize" tab selected. On the left, there are several panels for "MEASURES" and "DIMENSIONS". The "MEASURES" panel lists various calculated measures like Average Order Quantity, Contribution Margin (%), and Margin per Unit. The "DIMENSIONS" panel lists dimensions such as Material, Time, and Area. The main area displays a crosstab titled "Number of Sales Orders, Quantity Sold, Average Order Quantity, Average Unit Price, Contribution Margin (%) and Margin per Unit by Distribution Channel, Material Label". The crosstab has "Distribution Channel" and "Material Label" as rows, and "Measures" as columns. The data shows sales for three distribution channels (10, 12, 14) across four material labels (Mixed Fruit Muesli, Nut Muesli, Original Muesli, Raisin Muesli). The columns include Number of Sales Orders, Quantity Sold, Average Order Quantity, Average Unit Price, Contribution Margin (%), and Margin per Unit. The data is as follows:

Distribution Channel	Material Label	Measures					
		Number of Sales Orders	Quantity Sold	Average Order Quantity	Average Unit Price	Contribution Margin (%)	Margin per Unit
10	Mixed Fruit Muesli	177	850,307.00	4,803.99	5.57	0.69	3.84
	Nut Muesli	173	1,059,890.00	6,126.53	4.75	0.67	3.18
	Original Muesli	38	246,562.00	6,488.47	3.76	0.64	2.41
	Raisin Muesli	161	1,038,643.00	6,451.20	4.29	0.68	2.92
12	Mixed Fruit Muesli	56	190,692.00	3,405.21	5.85	0.70	4.09
	Nut Muesli	75	273,575.00	3,647.67	4.91	0.69	3.39
	Original Muesli	19	56,625.00	2,980.26	4.00	0.66	2.64
	Raisin Muesli	53	225,740.00	4,259.25	4.53	0.69	3.12
14	Mixed Fruit Muesli	120	1,000,000.00	5,000.00	5.00	0.70	3.00
	Nut Muesli	110	1,100,000.00	5,500.00	4.91	0.69	3.39
	Original Muesli	100	900,000.00	4,500.00	4.50	0.66	2.64
	Raisin Muesli	90	800,000.00	4,444.44	4.44	0.68	2.92

## Example 2: Quantity Sold / Margins / Pricing Strategy Analysis

### Visualization: 100% Marimekko Chart (in normal stacking mode)

Seeing how much unit we've sold is nice, but knowing which products performs with higher margins and/or with adequate pricing is better. In this example, we can see that two of our products are set with the same margin (same sale price) on both DC10 and 12. However, the specificities of these two groups of customers will fare different results, since DC 10 is more sensitive to pricing. If the goal is to sell more units, adjusting prices for DC 10 could help moving more items.



## **SUPPLIER\_PRICES**

Description	Analyze the historical price of purchasable goods.
View Type	Calculation view
Scope (ERPsim games)	All

### **Measures**

Label	Technical Name	Aggregation	Description
Unit Price (max)	MAX_UNIT_PRICE	Max	Maximum price at which one unit of the product was available.
Unit Price (min)	MIN_UNIT_PRICE	Min	Minimum price at which one unit of the product was available.

## Dimensions

Label	Technical Name	Type	Description
Time	Time	Hierarchy	Allows analysis based on the virtual dates of ERPsim.
(1) Round	(1) SIM_ROUND		
(2) Period	(2) SIM_PERIOD		
(3) Step	(3) SIM_STEP		
Calendar Date	SIM_CALENDAR_DATE	Date	Simulated date for time series analysis.
Elapsed Steps	SIM_ELAPSED_STEPS	Numeric (Integer)	Number of steps since the beginning of the simulation. Can be used as an alternative to the “Step” dimension (under the “Time” hierarchy).
Material Description	MATERIAL_DESCRIPTION	Text	Complete description of the product, including its size (if applicable).
Material Number	MATERIAL_NUMBER	Text	Unique number that identifies a product.
Material Type	MATERIAL_TYPE	Text	Identifies the category to which the product belongs.

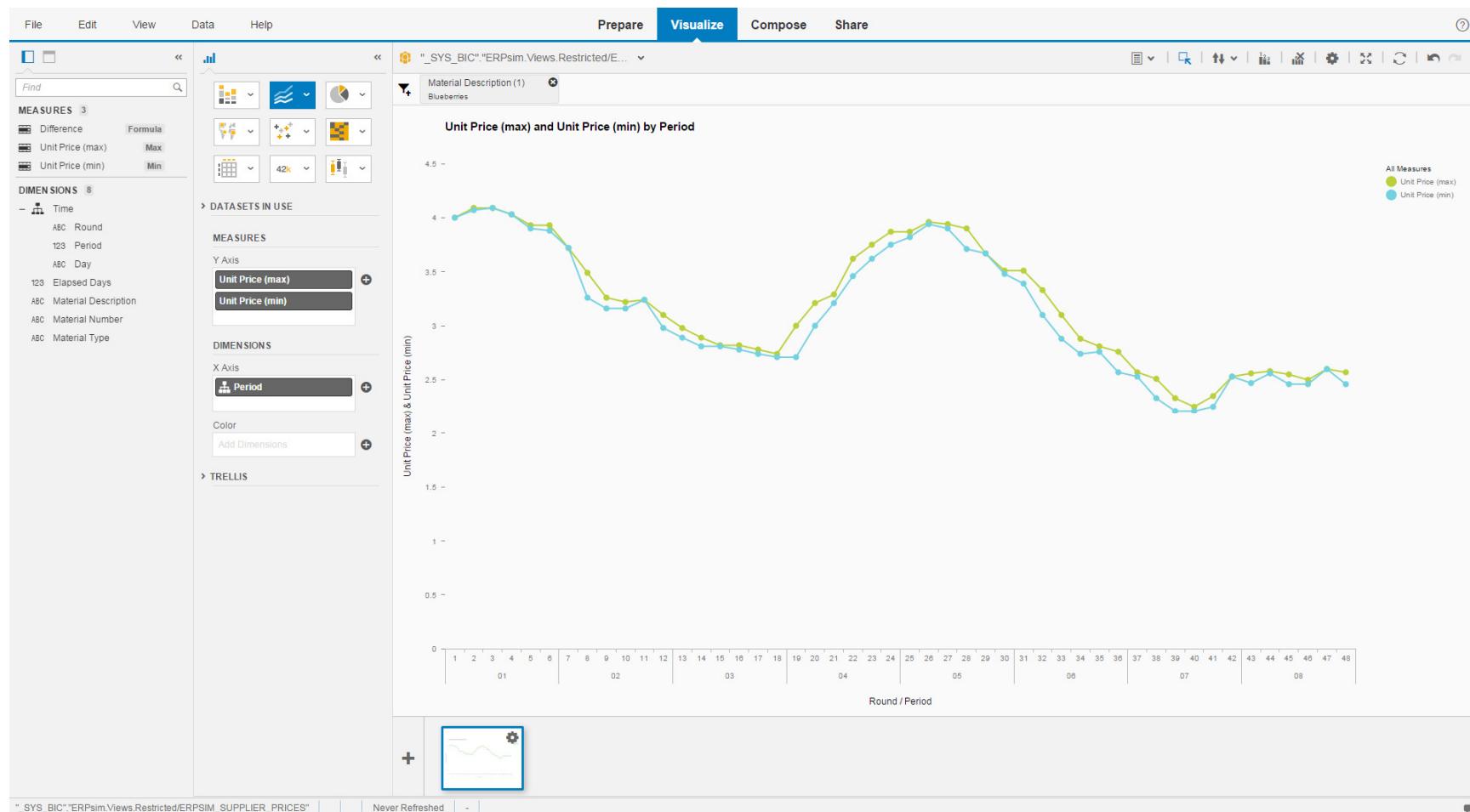
## Recommendations and additional notes

- Time series analysis is possible, since each and every simulated day is available in this view.
- When using the “Step” dimension, using either the minimum or the maximum unit price as a measure will return the same result, since the supplier’s price is updated once a step.

## Example 1: Trends

### Visualization: Line Chart

By using both the minimum and maximum unit price measures with the time hierarchy, we are able to see the trends in pricing. As we increase the number of days in each period (using the input parameter), we lose precision in the visualization. If we switch the "Time" dimension from "Period" to "Day", the two curves will merge and provide the exact price at which the products were available.



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## DOCUMENT REVISION CONTROL

<b>Revision</b>	<b>Draft</b>	<b>Date</b>	<b>Author/Reviewer</b>	<b>Comments</b>
1	1	2015-03-08	Jean-François Michon	Document created.
1	2	2015-08-20	Hikmath Yemissi Eytayo	Initial draft of the structure of each view.
1	3	2015-09-07	Jean-François Michon	Improvement of the description of each item within the views' structure.
1	4	2015-09-15	Hikmath Yemissi Eytayo	Update of Lumira's examples views.
1	5	2015-09-17	Jean-François Michon	Major redaction work.
<b>1</b>	-	<b>2015-09-24</b>	<b>Jean-François Michon</b>	<b>Released.</b>
2	1	2015-09-25	Jean-François Michon	Minor updates to text and layout.
2	2	2015-10-01	Jean-François Michon	Minor layout updates. Fixes to introduction.
2	3	2015-10-02	Jean-François Michon	Section title revision.
2	4	2015-11-30	Jean-François Michon	Added: New view (ERPSIM_SUPPLIER_PRICES) Minor revisions to the text.
2	5	2016-02-17	Jean-François Michon	Revision of the introduction for "PART ONE: USING SAP HANA VIEWS FOR ERPSIM" Minor updates to text.
<b>2</b>	-	<b>2016-08-12</b>	<b>Jean-François Michon</b>	<b>Released.</b>
3	1	2016-08-12	Jean-François Michon	Updated views' name according to latest release. Reviewed dimensions and measures, as well as the example, for view ERPSIM_FINANCIALS_CUMULATIVE_BALANCE. Added the Calendar Date dimension to all the views that has it.
<b>3</b>	-	<b>2016-08-15</b>	<b>Jean-François Michon</b>	<b>Released</b>

<b>Revision</b>	<b>Draft</b>	<b>Date</b>	<b>Author/Reviewer</b>	<b>Comments</b>
4	1	2016-08-16	Jean-François Michon	<p>View ERPSIM_INVENTORY: added missing dimension “Storage Location”, removed calculated measures examples.</p> <p>View MUESLI_PRODUCTION: added missing dimension “Date”.</p>
4	2	2016-10-06	Jean-François Michon	View ERPSIM_FINANCIALS_CUMULATIVE_BALANCES: added measure (Balance (inverted) following its addition in 2016r10_1 release.
4	3	2016-10-13	Jean-François Michon	<p>Updated required software and connectivity details section.</p> <p>Minor update to styling.</p> <p>Few Improvements made to instructions on using Lumira.</p>
<b>4</b>	-	<b>2016-10-13</b>	<b>Jean-François Michon</b>	<b>Released</b>
5	1	2017-07-25	Jean-François Michon	Revisited each view to match new HANA views structure and architecture.
5	2	2017-07-27	Jean-François Michon	Revisited all screenshots.
5	3	2017-08-30	Jean-François Michon	Final revision before release.
<b>5</b>	-	<b>2017-08-30</b>	<b>Jean-François Michon</b>	<b>Released</b>
6	1	2017-09-20	Jean-François Michon	Added instructions for OData access.
6	2	2017-10-16	Jean-François Michon	Corrected typos.
<b>6</b>	-	<b>2017-10-16</b>	<b>Jean-François Michon</b>	<b>Released</b>