

# **SAP Analytics Cloud: Usability and Performance Improvements**

## **Optimized View Mode Webinar**

INTERNAL

Christina Obry, SAP

Tunir Kapil, SAP

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# Concerns Raised by Customers

## Usability Feedback

- It is difficult to tell which objects are loading versus which objects have been rendered
- It is difficult to navigate through large hierarchies
- It is difficult to recognize that collapsed input controls and filters can be expanded
- Tooltips are always snapped to the top right or top left corner of the object causing the viewer to shift their focus from the data point to the tooltip

## Performance Feedback

- Opening a dashboard is slow especially one that consumes a high volume of expensive visualizations or large expand hierarchies
- Interaction with a story or page filter is slow to render the entire dashboard
- Expansion and initial loading of a large hierarchy causes all levels which makes it difficult to interact with the hierarchy

## Dashboard Characteristics

- There are several data models that contain a large amount of model information
  - 40 or more measures
  - 40 or more dimensions
  - Large hierarchies (many levels deep or many children under a single parent node)
- There are many visualizations on the first page of the story that contain a set of complex features (for example calculations, variances, thresholds, and so on)
- There are several expanded page filters that are based on large hierarchies

# Usability Improvements

With the refactoring investment there were several usability and user experience improvements that were made based on the feedback we heard from customers. Details on each improvement can be found in this [blog post](#).

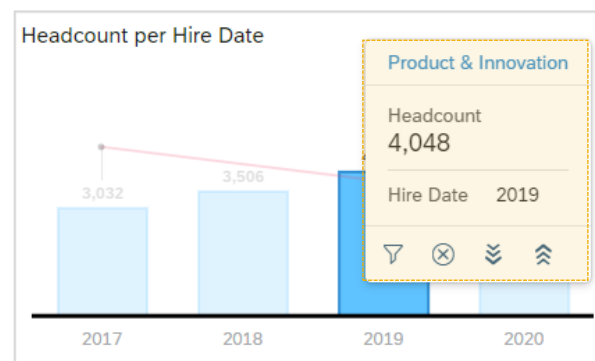
## Filter Improvements

- Collapsed Input Control Discoverability
- Input Control Expanded Width
- Loading and Navigation of Large Hierarchies
- Inactive Values Hidden by Default

## Visualizations

- Tooltip Position
- Access and Configuration of Details
- Ghost Loading Indicator
- View Time Undo / Redo (excludes Table and R-Widget)

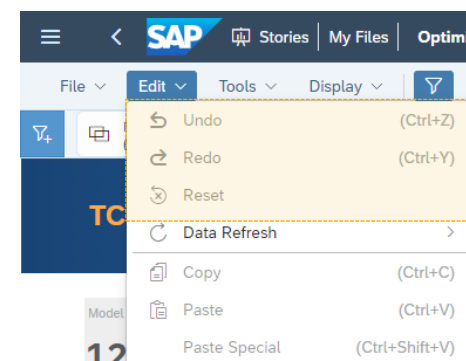
### TOOLTIP POSITION



### GHOST LOADING INDICATOR



### VIEW TIME UNDO / REDO



### INPUT CONTROL DISCOVERABILITY



# Improved Story Interactivity in **Optimized View Mode**

[Active Viewport Rendering Blog Post](#)

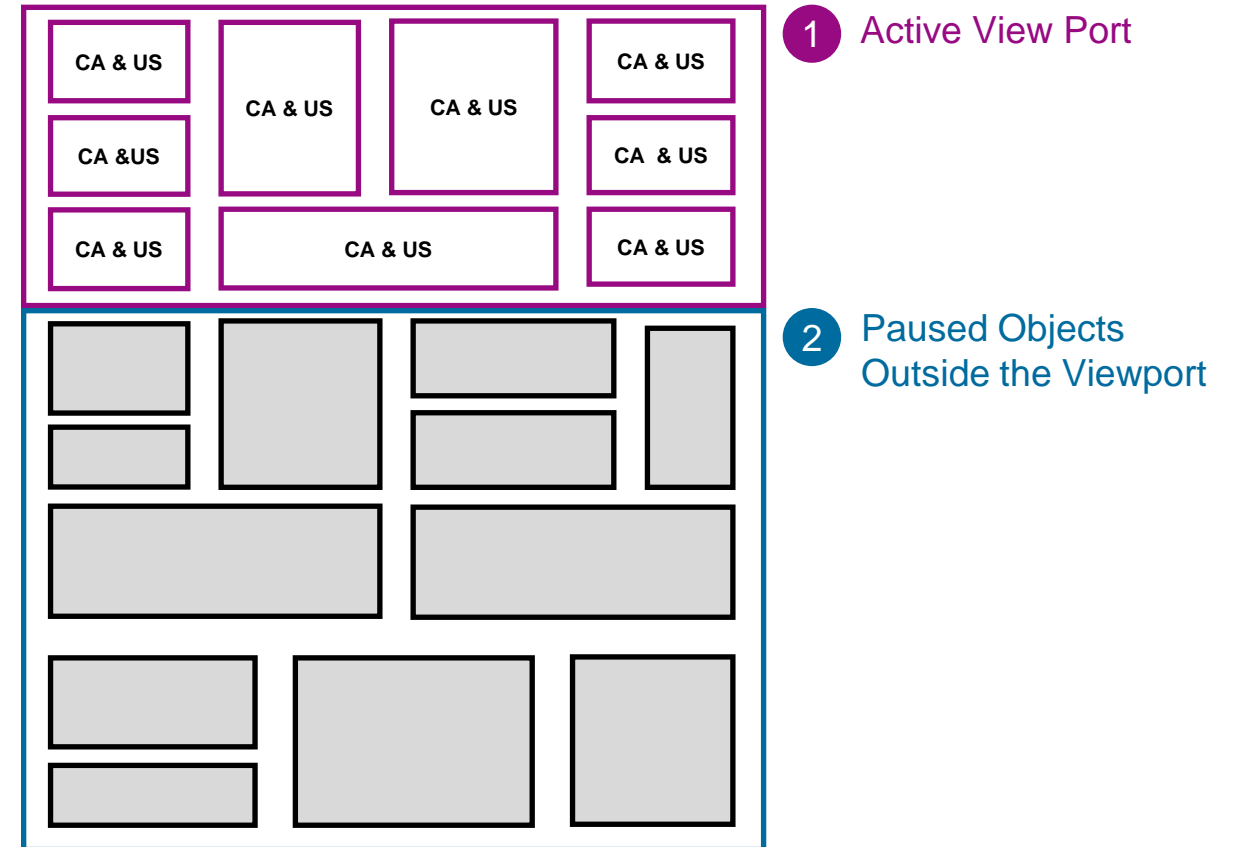
Optimized View Mode significantly improves story opening. Customer feedback indicated that the performance of **story interactivity is equally as important as story open**.

Interactions such as filtering are progressively slower the more widgets a page contains. Often a **majority of these widgets are not visible** to the user based on the browser size. Therefore, **loading them may be redundant**.

## The New Experience – Active Viewport Rendering

Active Viewport Rendering, the new default rendering experience, only processes **objects that are visible to the user, those that are dependent and objects that are not supported with Active Viewport Rendering**.

Objects outside the viewport are paused and only processed when the user scrolls to bring them into the new active viewport.



# Optimized View Mode – MYTH BUSTER

## True or False

There are several customers that have complained about performance in SAP Analytics Cloud. Optimized View Mode (BOLT) will solve all their performance issues.

**Answer: FALSE**

## Optimized View Mode (BOLT)

Optimized View Mode **addresses specific client side performance challenges only**. If the customer's performance challenges are related to the backend, due to slow network or outside the scope of project BOLT, then Optimized View Mode will show no or very little performance improvements.

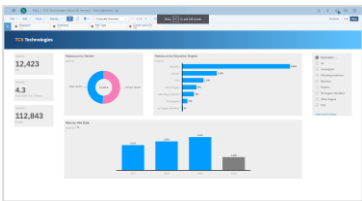
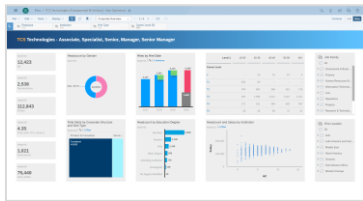
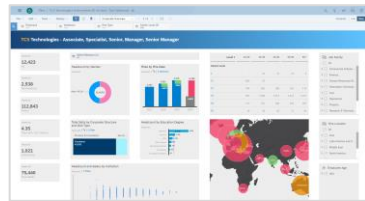
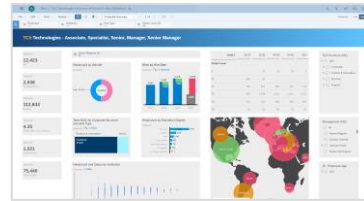
Understand where the customer's performance challenges are and setting proper expectation is of utmost importance when talking to customers about Optimized View Mode.

# Sample Scenario – TCS Technologies Overview

## TCS Technologies Sample Stories and Performance Measurements

We are measuring **four versions** of a reference story in different complexities. The stories represent various classes of a HANA dashboard that a customer may create within SAP Analytics Cloud. Improvements on customer stories **will depend on the complexity of the story and the amount of data you consume**. The measurements that are reported is based on **current work in progress (2021.12)** which is run weekly. It does not include all planned improvements.

The Chrome Browser (Client) is in Europe and SAP Analytics Cloud (Server) is in the US. The configuration is based on customer feedback.

	Basic BI Story	Fundamental BI Story	Intermediate BI Story	Advanced BI Story
Timings (in s) *	Cached <div>8.1</div> <div>6.6</div> } ↓ -18.5% UnCached <div>13.3</div> <div>9.4</div> } ↓ -29.3%	Cached <div>11.9</div> <div>10.8</div> } ↓ -9.2% UnCached <div>19.8</div> <div>13.1</div> } ↓ -33.8%	Cached <div>27.4</div> <div>14.5</div> } ↓ -47.1% UnCached <div>35.6</div> <div>18.5</div> } ↓ -48.0%	Cached <div>37.6</div> <div>13.1</div> } ↓ -65.2 % UnCached <div>45.7</div> <div>17.3</div> } ↓ -62.1%
Stories	 <ul style="list-style-type: none"> <li>Charts</li> <li>Page and Story Filters</li> <li>Linked Analysis</li> </ul>	 <ul style="list-style-type: none"> <li>Basic BI Features</li> <li>Presentation Table</li> <li>Time Based Variance</li> <li>Dynamic Text</li> </ul>	 <ul style="list-style-type: none"> <li>Fundamental BI Features</li> <li>Geo Visualization</li> <li>Thresholds</li> <li>Calculations</li> </ul>	 <ul style="list-style-type: none"> <li>Intermediate BI Features</li> <li>Large Hierarchies (i.e. 7 Levels Deep and ~ 15000 Leaf Nodes)</li> </ul>

Baseline – SAC Existing Client Measurements from Dec 2020 (Wave 2021.02)

Last Update – SAC Refactored Client Measurements from June 2021 (Wave 2021.12)

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\* The measurements based on the Open Story via URL workflow. Results are based on 50 iterations in where the reported number is calculated based on the 90<sup>th</sup> percentile. The numbers may fluctuate due to the network. Furthermore, cached scenario reflects client-side caches.



# Enabling **Optimized View Mode Demo**

# Released Features for 2021 Q3 QRC (2021.14)

Full list of unsupported features and limitations are found [here](#).

## Backwards Compatibility

Stories that have been saved in Optimized View Mode in 2021.07 will work with any new version of SAP Analytics Cloud. However, stories **are required to be re-saved** to unblock functionality that was previously not supported in an older version of Optimized View Mode. Details [HERE](#).

## Story and Models

- Acquired Analytic Models, Currency Conversion Enabled Models, Fiscal Time Enabled Models, Live HANA (includes Enriched Time), and Live BW
- Linked Analysis (excludes Table as Sender and All Widgets in Story) and Filtering Across Models, and Hyperlinks (excludes Jump to Story with Filter Context)
- Dynamic Text (excludes Table Local Filters and Tile Variables)
- R-Widget and Value Driver Tree (VDT)
- View Time Undo / Redo (excludes Table, R-Widget, and Unsupported Features)
- Data Access Language
- Story Data Refresh (excludes Metadata Refresh)
- Bookmarks for Story Filters, Page Filters, and Local Filters (excludes Table)
- Page Cache for Visited Pages
- Active Viewport Rendering (**New Feature**)

## Geo Visualization

- Geo Layers (Choropleth Layer excludes Area Enrichment)
- Bubble Layer Clustering
- Enhanced Geo Details
- Geo Tooltip Chart

## Charts / Tables

- Optimized Presentation Table and Charts (excludes Histogram)
- Timeseries Chart (excludes Timestamp Dimension)
- Story and Model Thresholds (excludes Threshold Tooltip in Table)
- Enhanced Visualization Details and Tooltips
- Auto Top N, CGR, Axis Alignment, Custom Sort (excludes View Time Modification)
- Model Defined Formatting for Charts and Measure Formatting in Tables
- Table In-Cell Charts (excludes Chart Scaling for In-Cell Charts)
- Export to CSV (excludes Chart) and XLS
- Table Frontend Calculations
- Currency Conversion Selector in Charts (excludes BW)

## Filter / Input Controls and Calculations

- Dynamic Time Range Filter, Advanced Filter, Widget Local Filter, Numeric Range Filter, Timestamp Filter, Scoped Page Filters (Filters with Linked Analysis), and Custom Current Date
- Measure, Dimension, and Calculation Input Control (excludes Cross Calculation Input Control)
- Calculations (excludes Invalid Calculations)
- Model Variables / Prompts (includes Story Filter Bar)
- Filter Reset in Story Filters and Local Filters (excludes Table)
- View Mode Complex Filter (excludes Table)
- Paste Filter Values

# Planned Features for **Optimized View Mode**

Full list of unsupported features and limitations are found [here](#).

## Wave 2021.15

### Story and Models

- Search to Insight Launched from a Story

## Wave 2021.16

### Filter / Input Controls and Calculations

- Switch ID and Description in View Time for Input Controls

## Wave 2021.17

### Story and Models

- Switch Custom Sort at View Time
  - For BW Data Source it requires BW Version  $\geq$  BW/4 2.00 FP04
- Custom Groups (Only for BW Data Sources)
- Independent Rank and Sort

### Filter / Input Controls and Calculations

- View Time Creation of Story Dynamic Time Range Filters

## 2021.18

### Story and Models

- Story and Model Rename Measure / Dimension Rename
- View Time Bookmark with Dimension, Measure, and Calculation Input Control
- Multiple Browser Support (Edge and Safari)

### Charts / Table

- Zero Suppression

### Geo Visualization

- Geo with BW Data Models (excludes Choropleth and Layers with Dynamic Filters)

### Filter / Input Controls and Calculations


- Wild Card Search



# Optimized View Mode **Unsupported Features (1 / 2)**

## Features Blocking Optimized View Mode

The Story Designer will be able to save the story but NOT as Optimized View Mode:

- Unsupported Data Models (i.e. Planning Enabled Model)
- Measure Based Story Filter
- More...

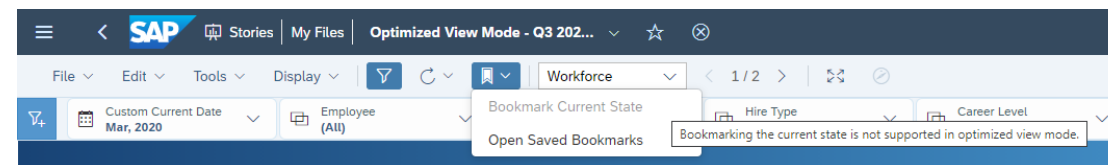


 Your story has some items unsupported in optimized view time mode. To save the story in optimized view time mode, modify your story and try again.   
[Show More](#)

## Unsupported Features

These features are **NOT YET** available to the Story Viewer:

- Create and Edit Bookmarks
- Smart Query / Query Merge (BW)
- More...

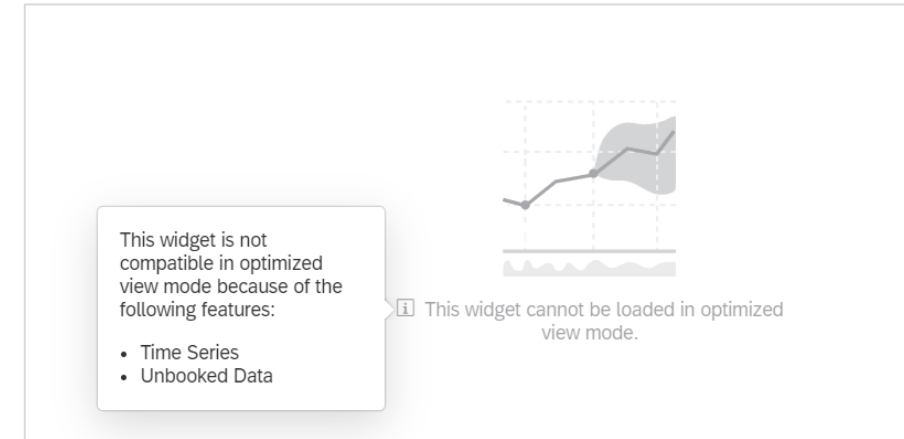


# Optimized View Mode **Unsupported Features (2 / 2)**

## Features Displaying as a Ghost Widget

Unsupported objects or objects that contain unsupported functionality will show up as a Ghost Widget:

- Independent Rank and Sort
- Histogram or Timeseries with Timestamp Dimension
- More...



## Discontinued Features and Support

These features will no longer be supported and required changes from either the Story Designer or the Data Source:

- Non-Optimized Presentation Table
- Grid Pages
- Display Full Range Slider for Time Input Controls
- BW Interfaces without Complex Filter Capabilities

# Handling Unsupported Features in **Optimized View** **Mode Demo**

# Performance Improvements **Details**

# Understanding the **Delivered Performance Optimizations**

## All Data Sources

- Option for Story Designers to determine rendering behavior between [Classic Rendering or Active View Port Rendering](#)
- Improvements in hierarchy interactivity by retrieving children on demand

## HANA / Acquired Data Sources

- Improved rendering of the first page when an end user first opens a story by persisting information of the widgets. It allows the queries to be fired earlier in the process of story open\*
- Model information will be downloaded based on user interactions (for example, filter interaction, page switch, and so on)\*

## Live BW

- Improvements in dynamic content loading, content caching on browser as well as client-server communication (reduced the number of sequential network roundtrips)
- With the Q4 QRC the variable submit requests are removed as variable metadata responses have been optimized to request only relevant information.

\* these improvements **do not** apply when the story contains Dynamic Variables or Forced Variable Prompts



# Improved Rendering via **Persisted Information** \*

Improved performance on **story open** by persisting information of widgets on the first page. It allows queries to be fired earlier in the process and eliminates the need to download model information until an action is executed.

## Where it helps you...

- Improved rendering of the active view port on story open
- Stories that have several widgets with complex features on the first page
- Stories that contain several data models with a large amount of model information
  - 40 or more measures
  - 40 or more dimensions
  - Large hierarchies (many levels deep or many children under a each parent node)
- Stories that have a expanded page filters based on large hierarchies

## Where it does not help you...

- Stories that have an initial landing page with no or few data related visualizations
- Stories that consume dynamic variables or forced variable prompts
- Rendering of widgets outside of the active view port
- Information on subsequent pages is not persisted as it would be invalidated as soon as there is an interaction with a story filter or model variable

\* these improvements are available in the Controlled Release (Live HANA and Acquired Analytic Data Models). It does not apply to customers that are part of the BW Beta

# Model Information Downloaded on Demand

On story open, model information is no longer downloaded. It is downloaded based on the user interaction that is executed (for example, opening filter tokens, visualization context menu, expansion of parent node in a hierarchy, filter interaction, page switch, linked analysis, and so on)

## Where it helps me...

- Stories that contain several data models with a large amount of model information\* as data models
- Interaction with large complex hierarchies\* as children are loaded on demand via the expansion of the respective parent node

## Where it has a side-effect...

- The initial interaction per model that the user executes results in model information\* being downloaded. It may result in slower performance than a non-optimized story as downloading model information is an expensive action. Examples include:
  - Expansion of a collapsed filter
  - Executing a page switch prior to any other action
- Interaction with any hierarchy will result in children being loaded on demand. Hence, performance may feel worse of

\* model information and large complex hierarchies are defined on the previous slide

# Optimized View Mode **Compatibility Guidance with BW**

It is recommended to keep your **BW InA Interface up to date with the latest BW version and patches**. It benefits you with Optimized View Mode as:

- You can take advantage of the new performance enhancements.
- Benefit from the new behavior improvements that are not available with a non-optimized story.

BW InA Interfaces that do not have **Linked Analysis Complex Filter Capabilities** will be blocked from using Optimized View Mode. You require a minimum version of SAP BW 7.5 SP16.

For more information on the existing SAP Analytics Cloud patches to apply to your BW system, see the following SAP Note [2715030](#) (SAP BW and SAP S/4HANA Live Connections in SAC)

With Optimized View Mode, there are additional patches that are recommended to be applied to your BW InA Interface:

- SAP Note [3029060](#) (InA: Rest node initially not expanded if dimension is initially on free axis)
- SAP Note: [3045207](#) (Exception in CL\_RSR\_RRK0\_QUERY\_RUNTIME=>BROWSE)
- SAP Note: [3049412](#) (BICS INA : Incorrect error message for user with no Authorization for BW Query)
- SAP Note: [3041816](#) (InA: Incorrect parent indexes for flat presentation (value instead of -1))
- SAP Note: [3048800](#) (InA: Hierarchy value help not working in case of temporal hierarchy join)
- SAP Note: [2981266](#) (Problem when requesting leaves of the "not assigned" Node)

# Key Takeaways

Optimized View Mode improves **usability and performance (in certain scenarios)** for SAP Analytics Cloud Stories. The usability improvements range from improved loading indicators, filtering experience, and visualization interactivity.

Optimized View Mode **addresses specific client-side performance challenges**. It will show little to no performance improvements if the main performance challenge is related to the server (backend). The performance improvements observed **depends on the complexity of your dashboard**.

It is the first iteration of Optimized View Mode. There may be features that are currently not supported in Optimized View Mode. However, **features will be delivered incrementally while building innovation**.

# Resources and Upcoming Performance Webinars

## [Product Updates – Updates on New Features Available in Optimized View Mode and in SAP Analytics Cloud](#)

### Blog Posts

- [Experience Performance and Usability Improvements with SAP Analytics Cloud Stories](#)
- [The New Rendering Experience – Active Viewport Rendering](#)

### Documentation Available in SAP Analytics Cloud

- [How to Enable Optimized View Mode](#)
- [Optimized View Mode Limitations](#)
- [Feature Behavior Improvements](#)

## [Best Practices for SAP Analytics Cloud General Troubleshooting \(Tuesday, August 24, 2021, 11:00 AM EDT\)](#)

Our team will provide an introduction on project performance requirements, optimal design tips and tricks, and a high-level architecture definition so you can identify the opportunities to improve.

## [Best Practices for SAP Analytics Cloud Backend and Analytics Designer Performance \(Wednesday, August 25, 2021, 11:00 AM EDT\)](#)

You will learn how to optimize performance of SAP Analytics Cloud when using SAP BW Live and SAP HANA live data sources. Our team will also explain how to optimize and troubleshoot performance of Analytics Designer in SAP Analytics Cloud.

## [Best Practices for SAP Analytics Cloud for Planning \(Thursday, August 26, 2021, 11:00 AM EDT\)](#)

Our team will show you various aspects that can impact planning performance including calculations and Data Actions. There will also be a demo of the new Data Action Performance Statistics and Analysis story.

**Q&A**

# Appendix

# Backwards Compatibility in **Optimized View Mode**



# Backwards Compatibility in Optimized View Mode

## Designed Behavior

Stories that have been saved in 2021.07 will work with any new version of SAP Analytics Cloud. It means that a story **will continue to open and look identical** (including blocked functionality) as it did in 2021.07 assuming the **story has not been re-saved**.

For example, assume that we now support Timeseries Chart with a Timestamp Dimension in 2021.XX. If I open a story that I saved in 2021.07 on an SAC version 2021.09, then the Timeseries Chart with a Timestamp Dimension **will remain blocked**. I would be required to re-save the story as Optimized View Mode to unblock the Timeseries Chart.

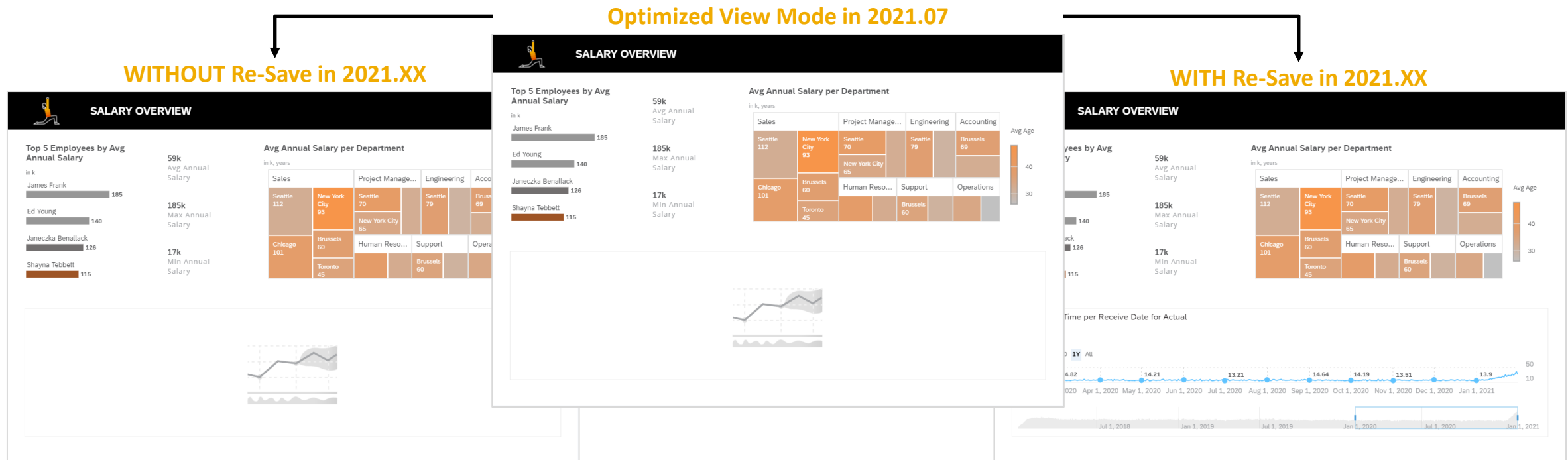
# Example #1 – Blocked Widget

## Scenario Description and Expected Behavior

Story Designer saves a story as Optimized View Mode in 2021.07. It contains a Timeseries Chart with a Timestamp Dimension which is was unsupported in 2021.07.

In 2021.XX, Timeseries Chart with a Timestamp Dimension is now **supported**. However, the Story Designer has **not re-saved the story since**. Hence, when a Story Viewer opens the same Optimized Story that was saved in 2021.07 in 2021.XX, the dashboard will continue to look identical where the Timeseries Chart with a Timestamp Dimension will remain blocked.

If the Story Designer **re-saves the story as Optimized View Mode in 2021.XX** and the Story Viewer opens the story, then they will now see that the Timeseries Chart with a Timestamp dimension is **unblocked**.



## Example #2 – Toolbar in Optimized View Mode

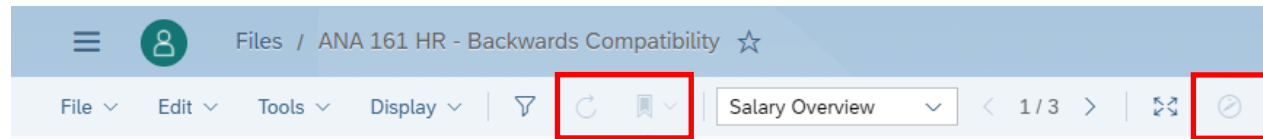
### Scenario Description and Expected Behavior

Story Designer saves a story as Optimized View Mode in 2021.07. It has bookmarks, explorer, and data refresh blocked as it is unsupported in 2021.07.

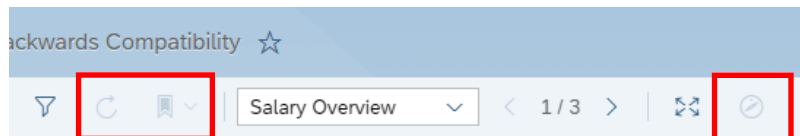
In 2021.XX, explorer, bookmarks, and data refresh are now **supported**. However, the Story Designer has **not re-saved the story since**. Hence, when a Story Viewer opens the same Optimized Story that was saved in 2021.07 in 2021.XX, bookmarks, explorer, and data refresh will remain **blocked**.

However, if the Story Designer **re-saves the story as Optimized View Mode in 2021.XX** and then the Story Viewer opens then story, they will now have explorer, bookmarks, and data refresh available for consumption.

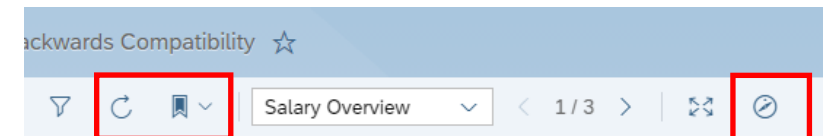
### Optimized View Mode in 2021.07



### WITHOUT Re-Save in 2021.XX



### WITH Re-Save in 2021.XX



# **Active View Port vs. Classic Rendering in Optimized View Mode**

# Object Rendering in SAP Analytics Cloud

## Story Open / Digital Boardroom Open

1. Objects **within** the Active View Port\* are rendered as part of the initial load and is prioritized
2. Objects **outside** the Active View Port are then background loaded incrementally (one by one)
3. Modifying the Active View Port (i.e. scrolling in the dashboard) will prioritize the New Active View Port over background loading

## User Interactions

1. All Objects (inside and outside of the Active View Port) are rendered at the same time

### Problems with Current Implementation

- An expensive dashboard (with many widgets) often results in the browser temporarily freezing (CPU dependent) and preventing the user from executing subsequent actions
- Objects outside the Active View Port are always rendered which may not be required based on the analysis conducted by the end user
- Requesting all objects (including those outside the active view port) to render at the same time causes a large load on the backend system

# Active View Port Rendering vs. Classic Rendering

## Active View Port Rendering

### Story Open / User Interaction

1. Only objects **within** the Active View Port are rendered
2. Objects **outside** the Active View Port are paused
3. Modifying the Active View Port (i.e. scrolling in the dashboard) will show stale data (with overlay and warning message) until scrolling stops
4. Objects **within** the **new** Active View Port are rendered

## Classic Rendering

### Story Open

1. Objects **within** the Active View Port are rendered as part of the initial load and is prioritized
2. Objects **outside** the Active View Port are then background loaded incrementally (one by one)
3. Modifying the Active View Port (i.e. scrolling in the dashboard) will prioritize the New Active View Port over background loading

### User Interaction

1. All Objects (inside and outside of the Active View Port) and rendered at the same time upon user interaction

Active View Port Rendering is the **new default rendering** which allows for a consistent experience from opening a story to executing subsequent interactions as **all objects within the view port are requested for at the same time**

# Enabling Active View Port Rendering

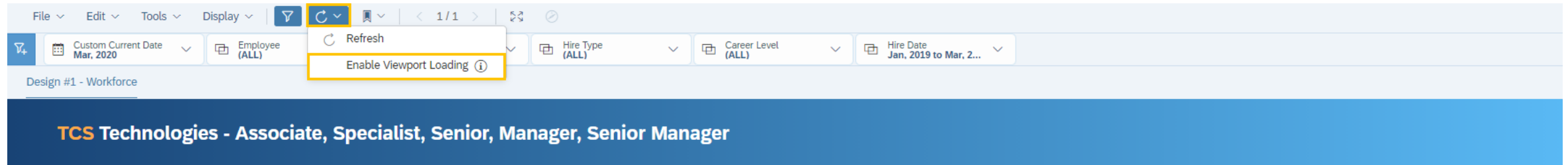
## Details on Active View Port Rendering

### Story Designer

- Ability to disable Active Viewport rendering as the default rendering experience
- Disabled via Data Refresh dropdown in the story toolbar

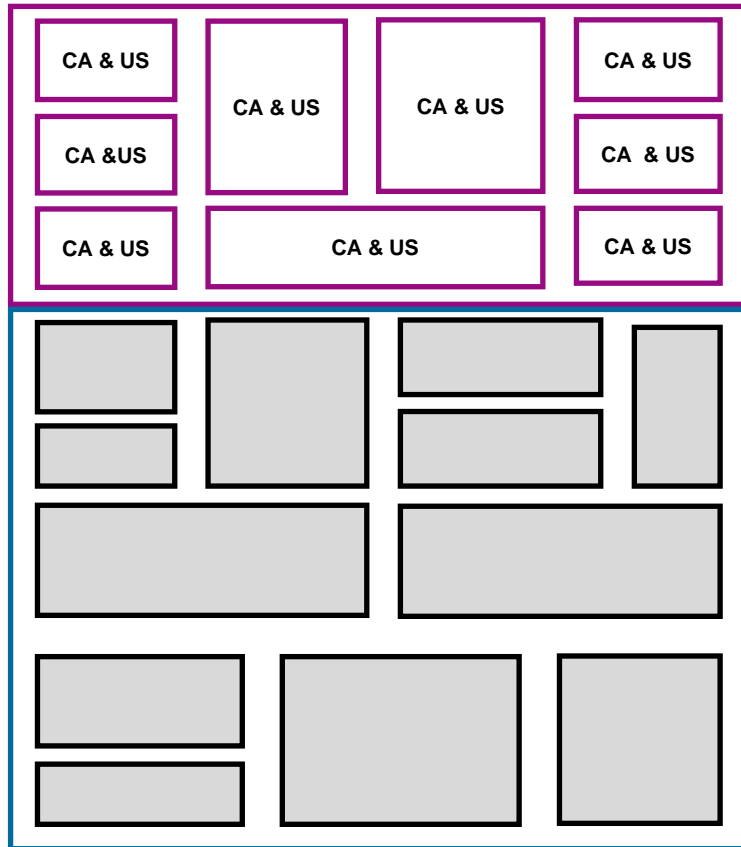
### Story Viewer

- Ability to override rendering behavior on a per session basis
- Returning to a story will consume the default rendering behavior set by story designer



# Active View Port Rendering Workflow

## Example #1 – Story Open Without Any Modification (Scrolling)



### 1 Active View Port

Objects **within** the Active View Port are sent in batches at the same time to the backend

Objects that have been processed are then returned to the client one by one

### 2 Objects Paused

Objects **outside** the Active View Port are paused and are never requested for

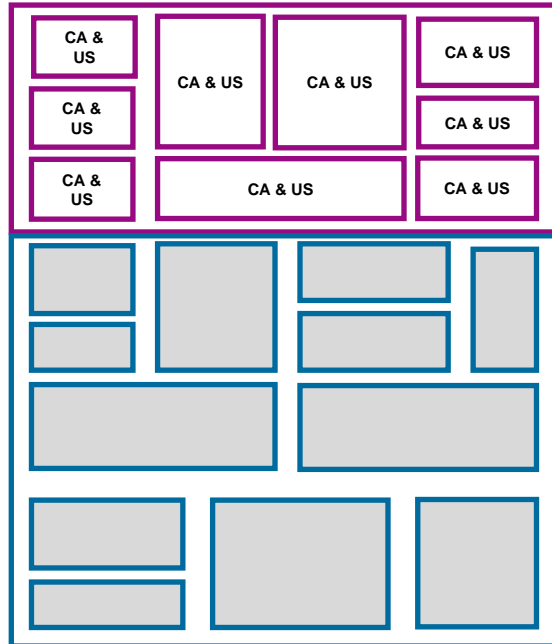


# Active View Port Rendering Workflow

## Example #2 – Story Open with User Modifications

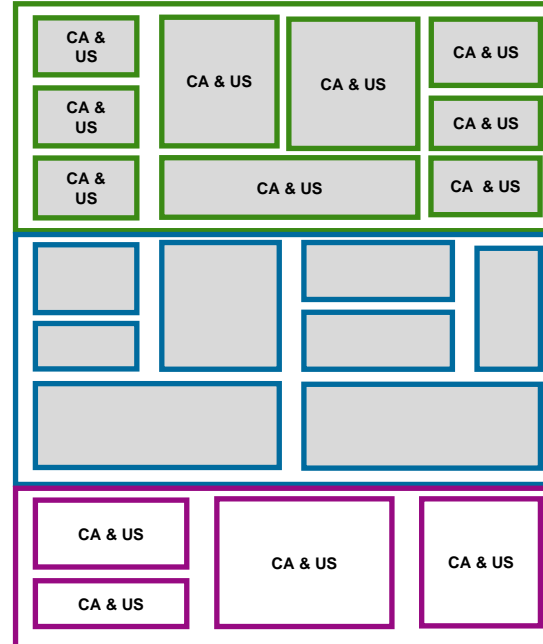
1

User Opens Story – Displays Results for Canada (CA) and United States (US)



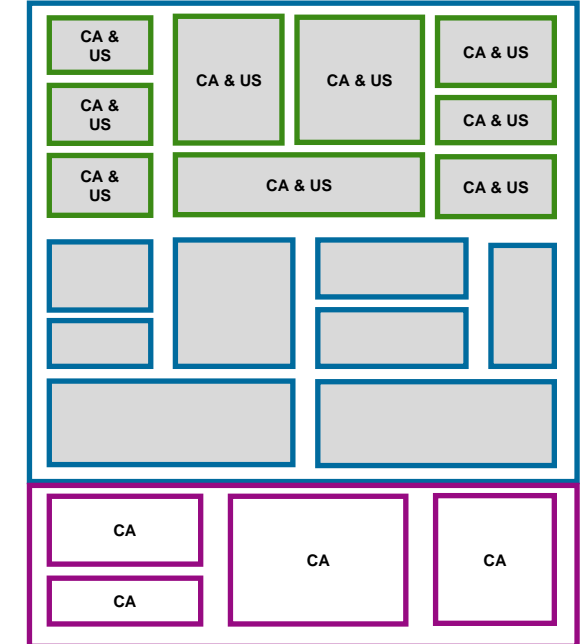
2

User Scrolls to Bottom - **Active View Port Changes** and Displays Results for CA & US



3

User Applies a Story Filter to Only Show Results for CA



- **Active View Port** - Objects **within** the Active View Port are sent in batches at the same time to the backend and then returned to the client one by one
- **Objects Paused** - These objects are never requested for as they are outside the Active View Port
- **Previously Rendered** - Any previously rendered object are paused when the Active View Port changes and will display stale data if any modifications (e.g. Story Filter) are made until the user scrolls and modifies their active view port. An overlay and warning message will continue to display until the user stops scrolling

# Usability Improvements in **Optimized View Mode**

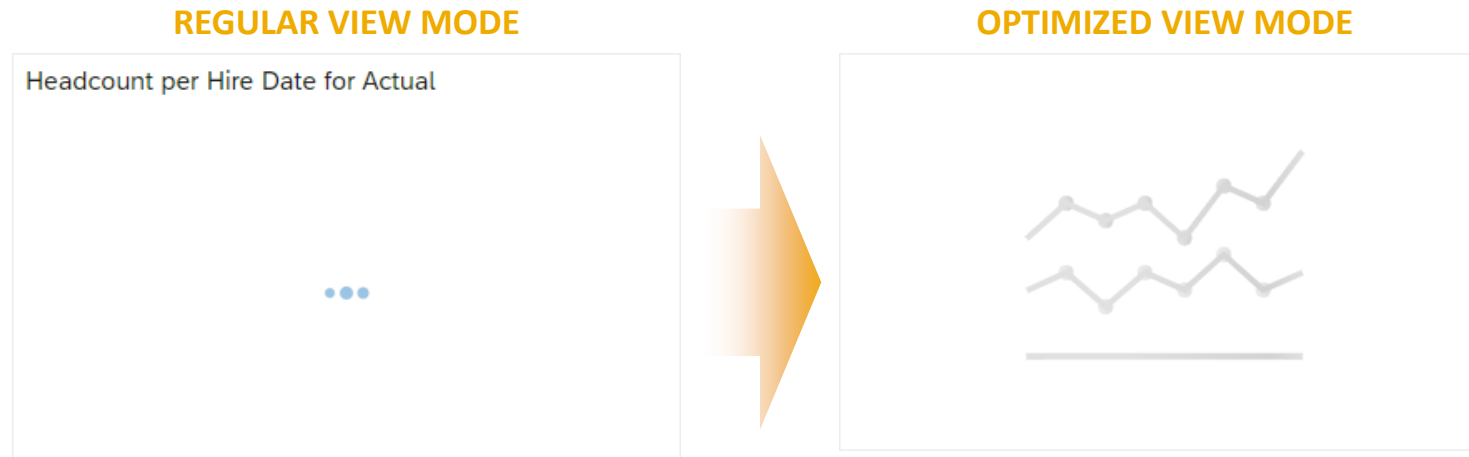
# Ghost Loading Indicator

## The New Experience

Dashboards now display an animated ghost widget, while data from the server is retrieved.

## Benefits

- It provides the story viewer an early insight to the type of visualization that is rendering, making it easier to tell which objects are loading especially when they are small.



# Tooltip Improvements

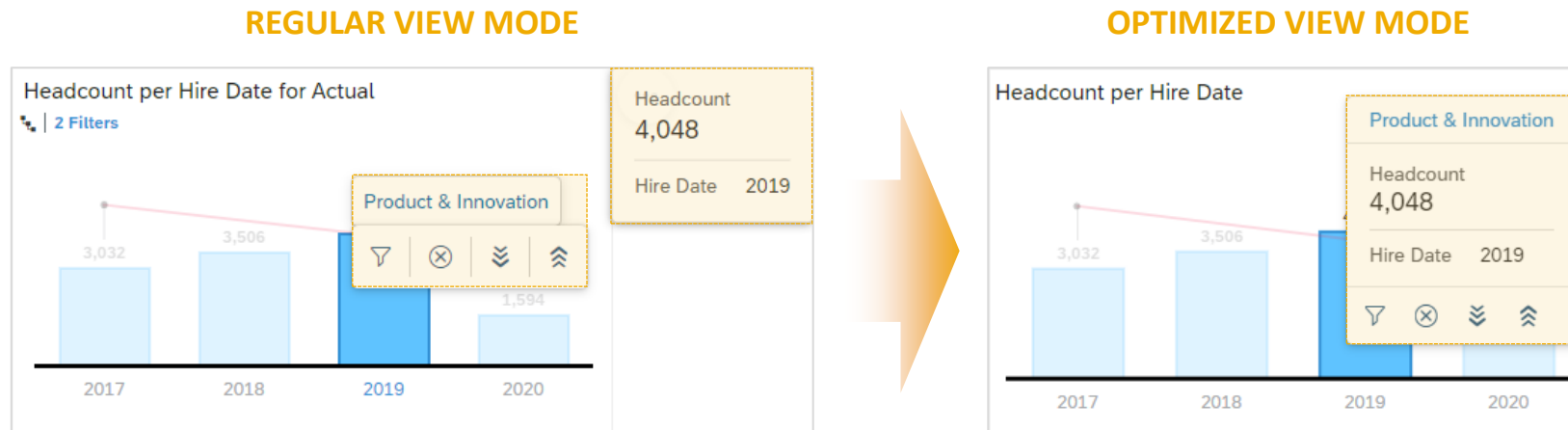
## The New Experience

The tooltip and data point interactions are now consolidated into a single menu.

Additional actions are still available via the right click context menu.

## Benefits

- The tooltip will be shown closer to the position of the mouse, leading to easier access.



# Context Menu and Access and Configuration of Details

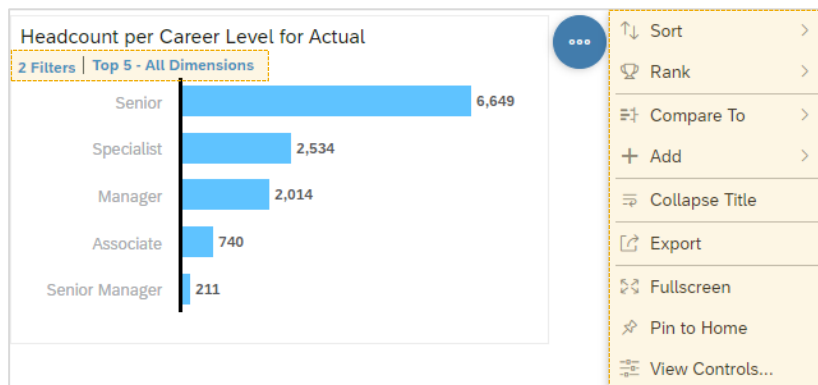
## The New Experience

Information and configuration options have now been moved from inside the widget into a grouped single menu item.

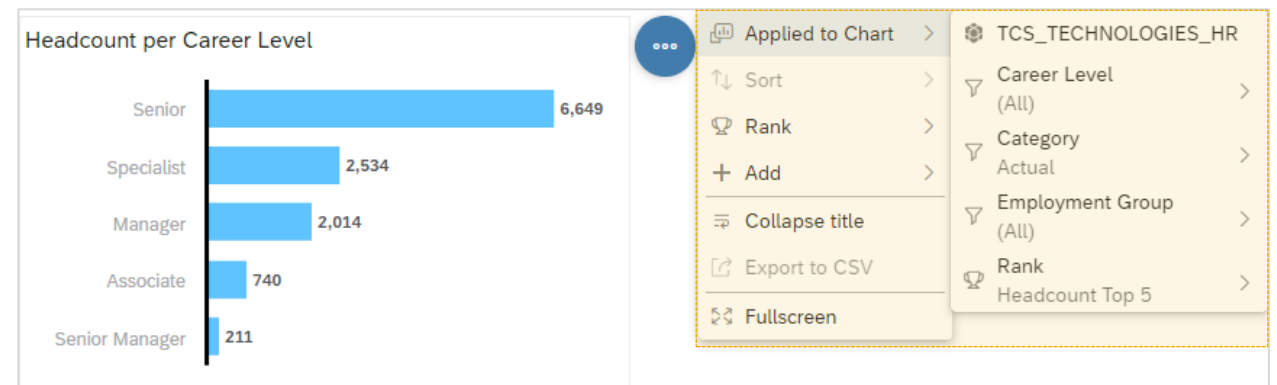
## Benefits

- It results in a cleaner look of the dashboard while providing access to valuable information such as warnings, filters, drill levels, and variables.

### REGULAR VIEW MODE



### OPTIMIZED VIEW MODE



# Collapsed Input Controls Discoverability

## The New Experience

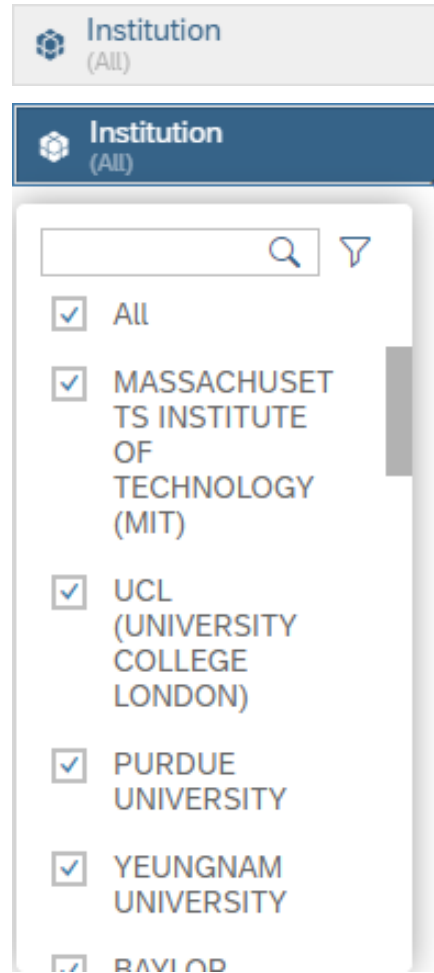
A visual update to story filters and collapsed input controls now makes the dropdown more discoverable.

The width of the drop-down menu has been expanded for better readability.

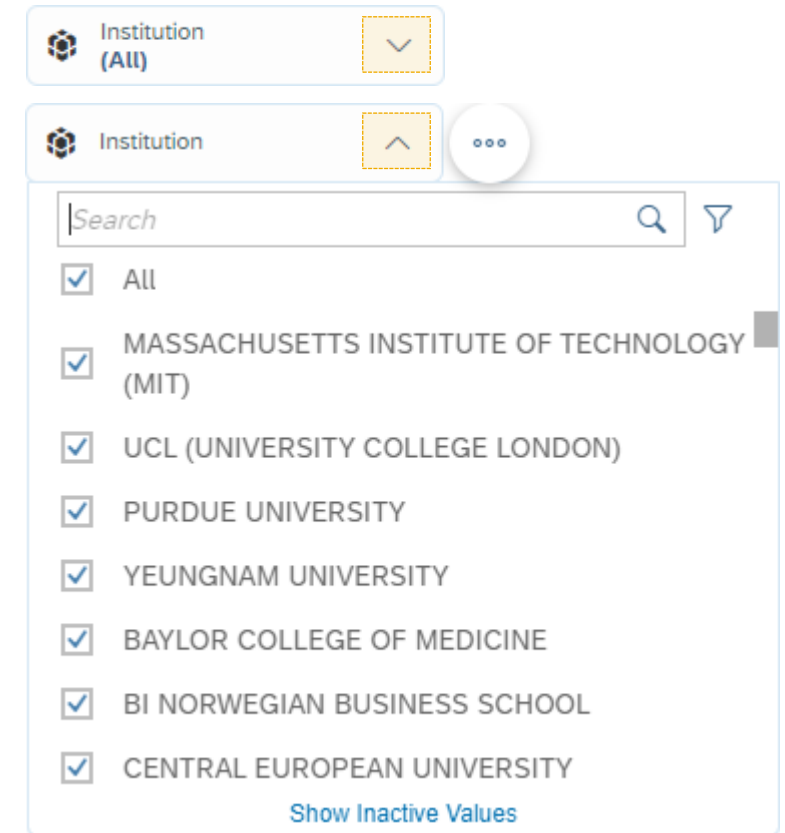
## Benefits

- The visual update and expansion leads to higher discoverability and better readability.

### REGULAR VIEW MODE



### OPTIMIZED VIEW MODE



# Hierarchy Improvements (1/2)

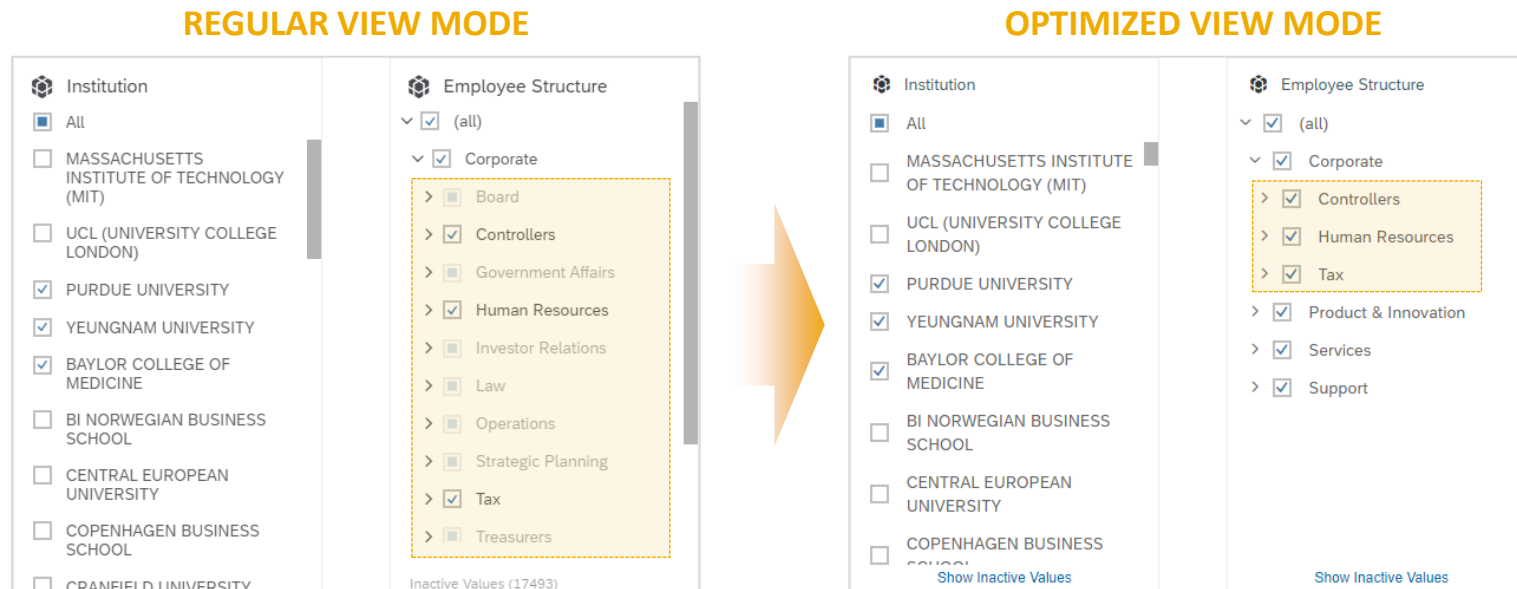
## The New Experience

### Children Loaded on Demand and Hidden Inactive Members

Complex hierarchies (multiple levels deep) now load faster as children are loaded on demand when the parent node is expanded. Hierarchy members that would result in no data due to other story or page filters being applied, are now hidden by default.

### Benefits

- It provides better discoverability of the active members. Inactive members can still be loaded on demand.



# Hierarchy Improvements (2/2)

## The New Experience

### Dynamic Scrolling and Sticky Parent Node in Hierarchies

Hierarchal input controls will now automatically shift left and right when a viewer navigates through the input control. The corresponding parent node of a hierarchy will now display at the top as the viewer scrolls.

#### Benefits

- It improves overall readability and navigation as we maximize displaying members under the corresponding parent node and provide a quick and easy way to collapse hierarchy nodes.

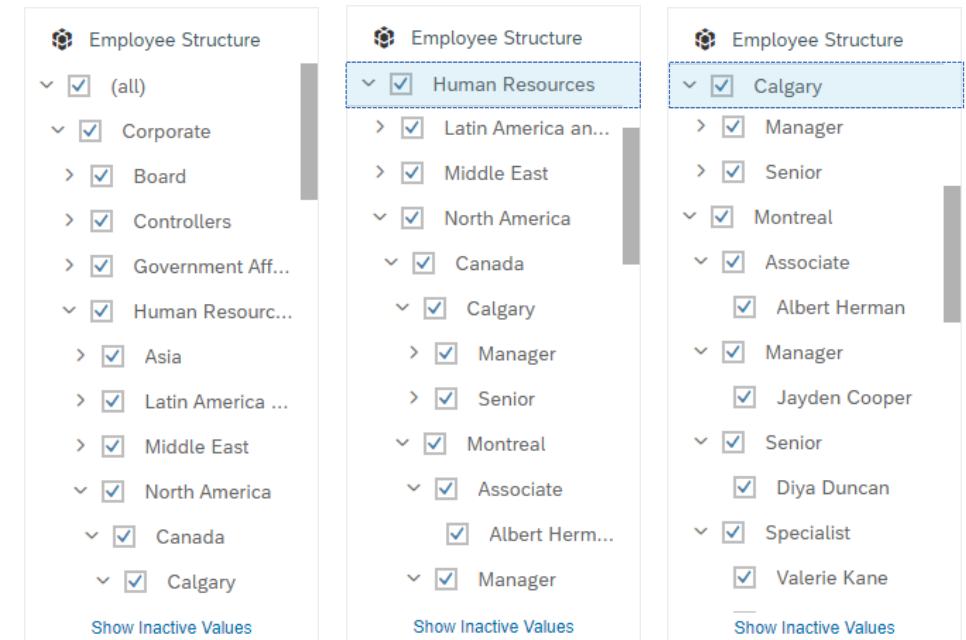
### Level-Based Navigation with Data Path Tooltip

A data path tooltip is available for hierarchal input controls.

#### Benefits

- It provides the viewer context into the drill path that is taken and a quick way to navigate to any parent part of the drill path.

## OPTIMIZED VIEW MODE





# Behavior Improvements in Optimized View Mode

# Chart Drilling

## Problem Statement

Customers provided various feedback on the drilling behavior within charts. Example include: inconsistent with table, drill up would not return the correct data, and more.

## Proposed Design

There are multiple improvements that we made to the drilling capabilities in charts which include:

1. Drill up will return the results prior to the drill down
2. Expands and collapses are maintained during drill up and drill down
3. Hierarchy drill level menu only changes for drill level changes - it is no longer reactive to non-drill level changes.
4. Reset drill in view mode is now aligned with reset drill in edit mode
5. Exclude rest node filter will not be removed when the option show leaves flat is disabled
6. Account drills are removed when any measure is removed from the chart or when switching to a chart type that does not support them

# Variance Waterfall Chart

## Problem Statement

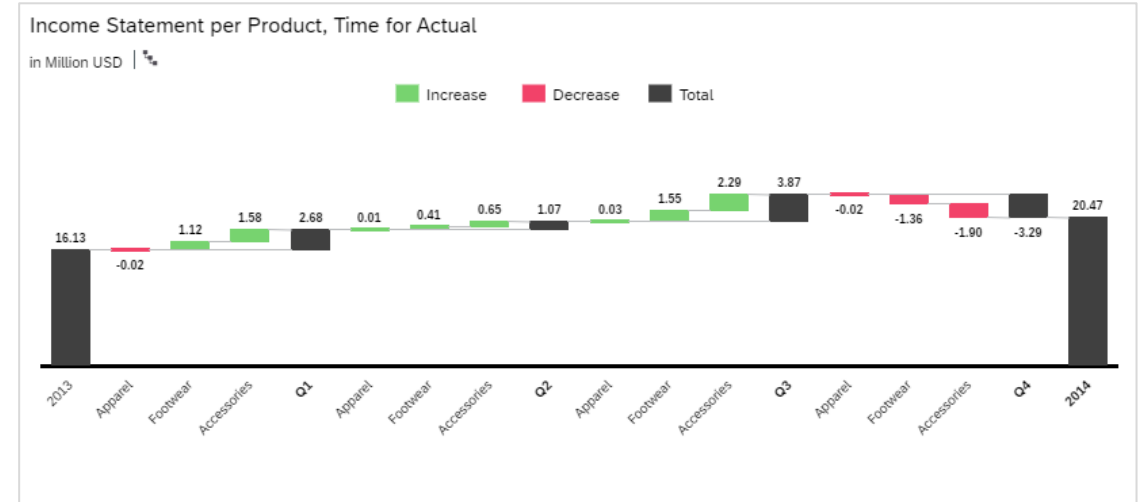
With a Variance Waterfall Chart there are delta's that are based on unbooked data. It is inconsistent with the behavior that exists within Tables.

## Proposed Design

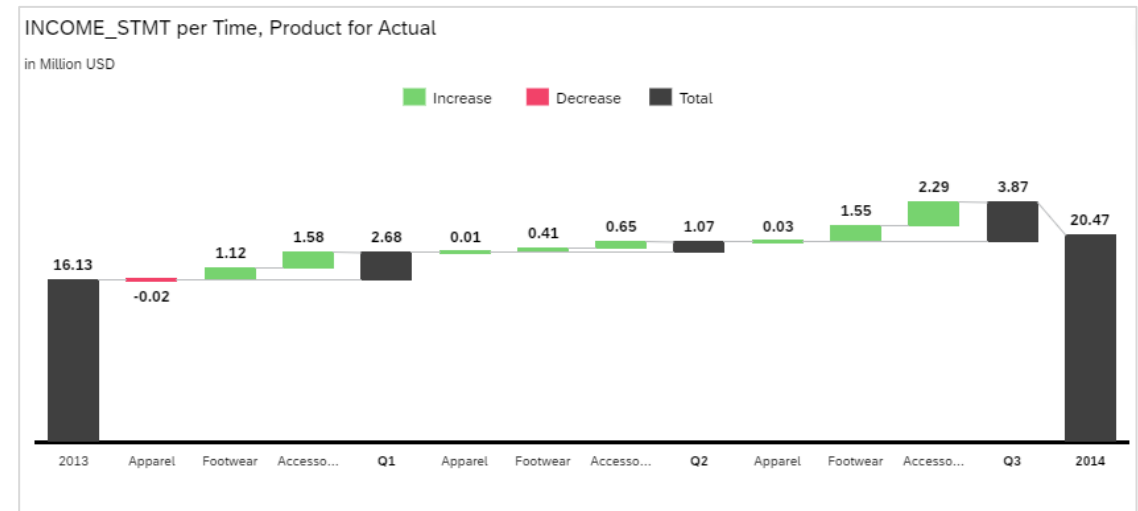
Within Optimized View Mode a Variance Waterfall Chart will:

- Display **booked data** resulting in no empty gaps between nodes
- Delta will only exist for booked nodes where the delta will begin with the first booked root node

### REGULAR VIEW MODE



### OPTIMIZED VIEW MODE



# Timeseries Chart

## Problem Statement

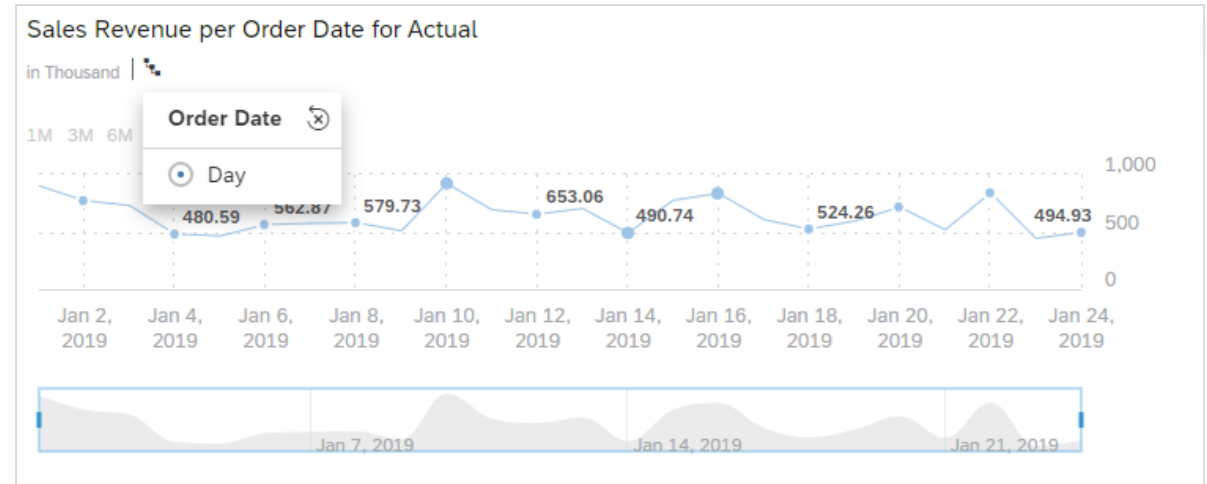
In the Timeseries Chart when a non-hierarchical time dimension is used, the hierarchy button shows up in the subtitle. Clicking on the hierarchy icon displays the one corresponding time granularity.

## Proposed Design

There are two improvements within Optimized View Mode:

- The granularity option is merged into the drill workflow and is added to the context menu
- The drill menu is hidden when the time dimension is a non-hierarchical dimension

## REGULAR VIEW MODE



## OPTIMIZED VIEW MODE



# Heatmap Chart

## Problem Statement

With a Heatmap that contains unbooked data (nulls) and you try to sort the heatmap, the heatmap sort is not respected.

## Proposed Design

In Optimized View Mode the Heatmap will **respect** the sort applied even though unbooked data (nulls) is present

REGULAR VIEW MODE

OPTIMIZED VIEW MODE

Edit Member Order

Custom Order Name

Sales Manager Categorization

Sales Manager Categorization

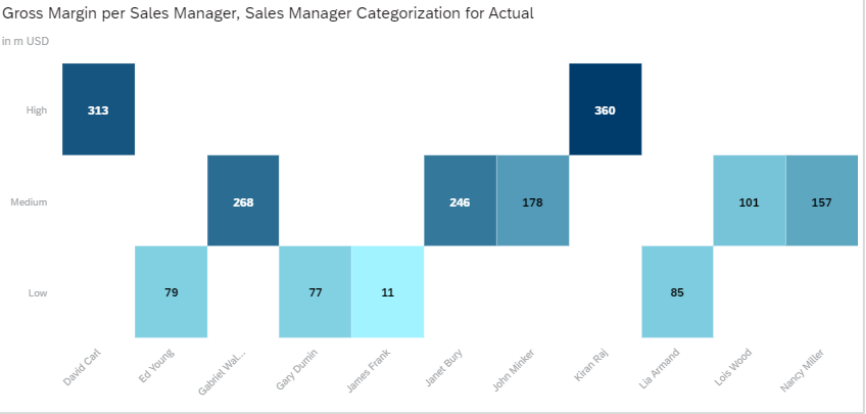
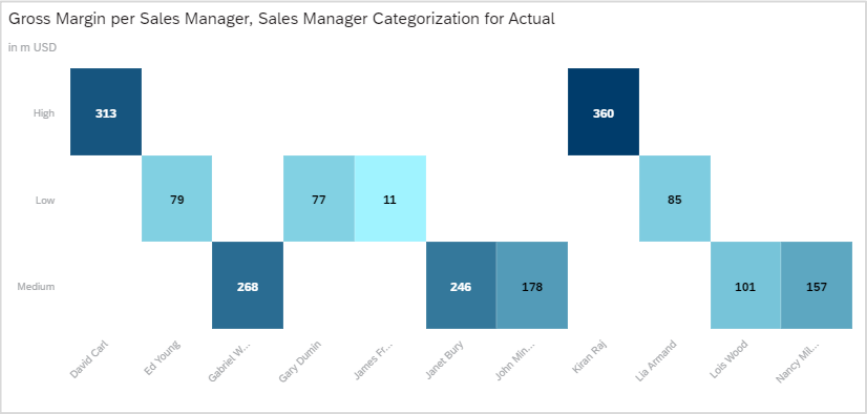
Search member

AllVisible

High

Medium

Low



# Widget Level and Version Filter

## Problem Statement

There has been feedback from customers that the version filter and exclude all data points options can be misleading.

## Proposed Design

### 1. Version in Auto Generated Titles

The version will be removed from auto generated titles (i.e. “for Actuals” is removed)

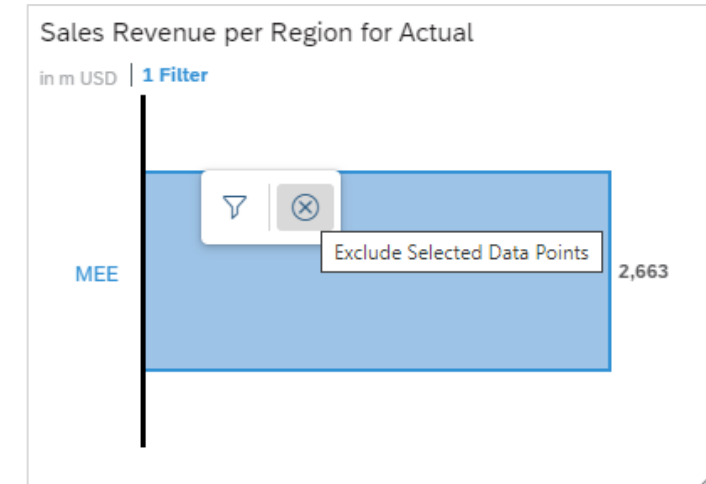
### 2. Version in Chart Details

The version filter will be displayed the same as other widget level filters **except** it cannot be deleted

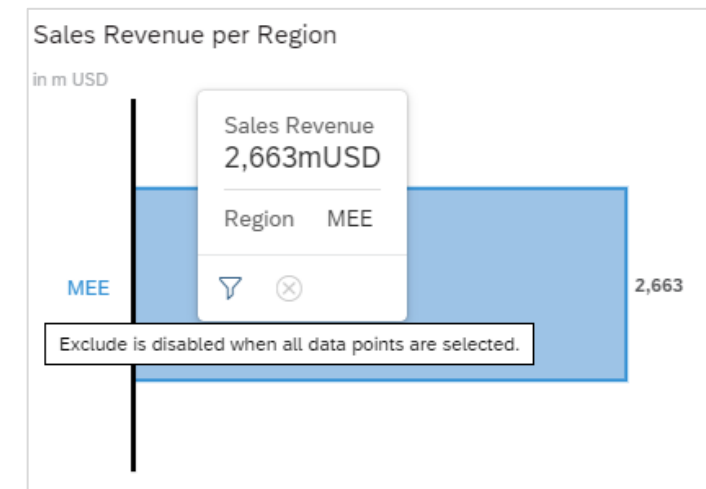
### 3. Filtering on All Data Points via Interaction

When attempted to exclude all data points in a chart, the exclude button is disabled with a helper tooltip

## REGULAR VIEW MODE



## OPTIMIZED VIEW MODE



# Axis Alignment

## Problem Statement

With Axis Alignment, the visualization often “flickers” or the axis “jumps” into position which is unpleasant experience.

## Proposed Design

### 1. Axis Alignment Rendering

Axis remain aligned when one or more participating charts is interacted with (i.e. Drill, Filtered, etc.). The rendering behavior has been improved to render the chart with the correct axis position.

### 2. Axis Click Options

The viewer is limited to reset a charts axis position (if moved) back to the default position. Locking and unlocking an axis is now limited to an edit time option.

# Dimension Tooltip

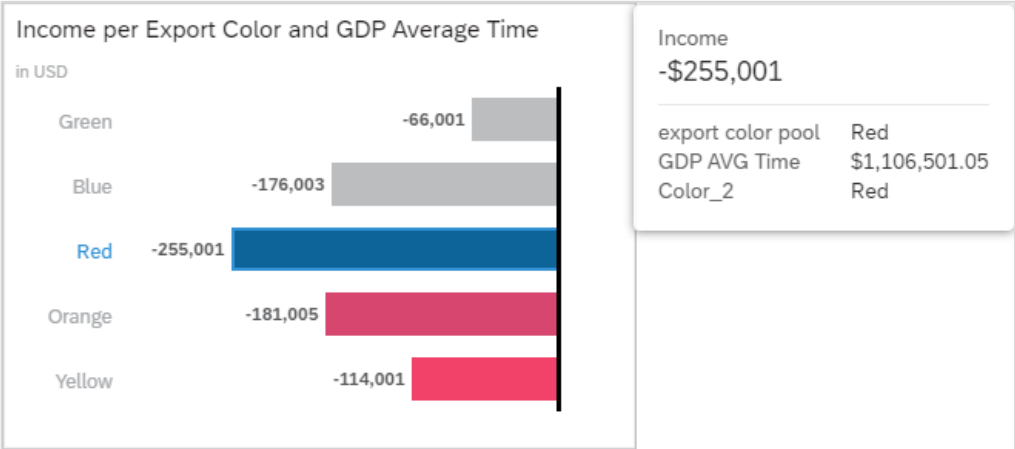
## Problem Statement

With a Tooltip Dimension, there would be times where the tooltip dimension would ignore respective members that were corresponding to a specific data value.

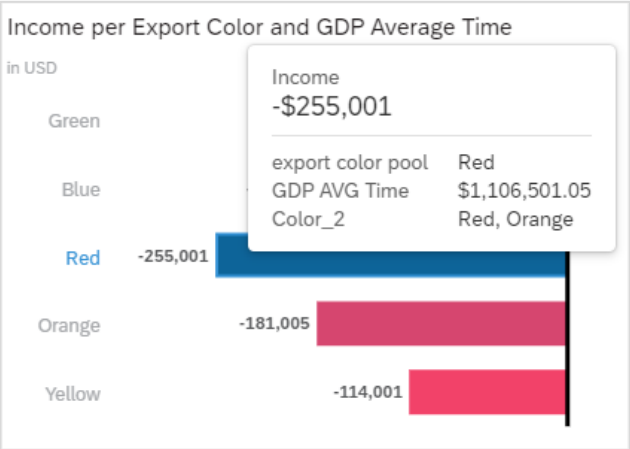
## Proposed Design

The measures sent in the tooltip dimension will only be the measures associated to the data point that is clicked / hovered on. It will include the color measure if there is one.

REGULAR VIEW MODE



OPTIMIZED VIEW MODE





# Rank with Version

## Problem Statement

Within the Rank (Top N Options) menu, the version dropdown menu appears even though Version (Category) is not within the color binding. Hence, there is no value of having the dropdown menu as it only displays the Version that is applied to the chart.

## Proposed Design

The Version (Category) dropdown menu will no longer be visible unless Version (Category) is within the color binding of the visualization.

### REGULAR VIEW MODE

Mode

Top

Value:

5

Measure

Sales Revenue

Cross Calculation

Measure Values

Version

Actual

Apply

Cancel

### OPTIMIZED VIEW MODE WITHOUT VERSION IN COLOR

Top N Options

Mode

Top

Bottom

Value:

5

Measure

Sales Revenue

Apply

### WITH VERSION IN COLOR

Top N Options

Mode

Top

Bottom

Value:

5

Measure

Sales Revenue

Version

Actual

Apply



## Filtering Across Models (1/2)

With Optimized View Mode we've improved the overall accuracy of filtering across models which may result in data differences between a Non-Optimized versus Optimized story. The Optimized View Mode story will display the more accurate results. These issues previously existed within SAP Analytics Cloud but were not fixed within a Non-Optimized story due to existing limitations.

- **Indirect Time Links involving Fiscal Time**

Indirect time filters will function like direct time filters on how they find a match on secondary model. This will ensure higher accuracy of data as fiscal time is mapped directly to calendar time.

- **Indirect Multi Dimension Links involving a Level Based Hierarchy to a non-Level Based Hierarchy**

Indirect multi dimension links involving LBH and non-LBH increases the number of links which results in more accurate matched

- **Direct Filter Excludes with Link on Description**

Improves generation of target filters and accuracy of data.

## Filtering Across Models (2/2)

With Optimized View Mode we've improved the overall accuracy of filtering across models which may result in data differences between a Non-Optimized versus Optimized story. The Optimized View Mode story will display the more accurate results. These issues previously existed within SAP Analytics Cloud but were not fixed within a Non-Optimized story due to existing limitations.

- **Exclude Children and Multiple Selection Hierarchy with Parent Child Hierarchies**

Exclude Children Setting is now default on. The default on configuration is recommended as it improves performance and accuracy of data.

- **BW Link Remapping**

OVM will always check for active hierarchy of the model before mapping to a secondary model to ensure it reflects the actual state of model in all cases.

- **BW Time Links**

BW Time Links are improved for more accurate matches.

# Performance **Best Practices**

# SAP Analytics Cloud Performance Best Practices

## [Customer Facing Information on Performance Best Practices](#)

### General Performance Improvements

- Limit the Number of Charts and Elements per Page (i.e. 6 per Page)
- Drill to Detail with Hierarchies and Hyperlinks

### Images

- Compress Images for Web
- Use SVG over PNG or JPEG
- Leverage Header Images in Responsive Pages

### Visualizations

- Limit Results with Top-N (Avoid Auto Top-N)
- Clustering and Choropleth for Geo
- Trellis or Heatmap Instead of Multiple Charts
- Optimize Table Format (BETA)

### Story

- Use Responsive Layouts over Canvas
- Lazy Loading of Stories

### Filters and Input Controls

- [Understanding Linked Analysis and Filtering Across Models](#)
- Use Story Filters over Multiple Page or Visualization Filters
- Disable Unneeded Cascading Filters
- Collapse Page Input Controls
- Enable Unrestricted Drilling on Visualization that Consume a Time Filter

### Explorer

- Leverage Explorer Instead of Large Tables
- Disable Auto-Synchronize
- Enable Explorer for Viewers

### System

- Enable Chart Progressive Rendering (Administrative Page)

### Model

- Turn on Optimized Story Building Performance
- Reduce Model Metadata by Hiding Unnecessary Dimension & Measures

# What Performance Improvements are Delivered in SAP Analytics Cloud?

## Prioritize Loading of Visible Data Elements

- Lazy Loading of Story Content in View Mode
- Delay queries for collapsed input control's List of Values and Cascading Effect queries as well as queries for Inactive Values until user interacts with the input control
- Reduce the amount of queries for min/max of bubble size and min/max of bubble color for the Bubble Geo Map legend from four queries to one query per geo bubble layer when clustering is enabled. Remove legend queries completely when clusters are being displayed.
- Optimize the timing of queries that determine the endpoints of open-ended and dynamic time filters.
- Batching of similar queries

## Reduce Content Retrieved from Server

- Support Browser caching of story definition and model metadata
- Reduce geo chart's content stored in story metadata
- Improved App Start Performance by Reducing Code Download size by >25%
- Submitting Persisted Queries during App startup sequence

View mode optimizations for initialization, rendering and processing of charts esp. numeric points, page filters, toolbar & side panels.

# Thank you.

Contact Information:

**Christina Obry, SAP**

**Tunir Kapil, SAP**



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