SAP Analytics Cloud, Analytics Designer

Best Practices for Performance

Jie Deng, Bob Pfeiffer, SAP
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Public

THE BEST RUN SAP

Agenda

Overview

Architecture

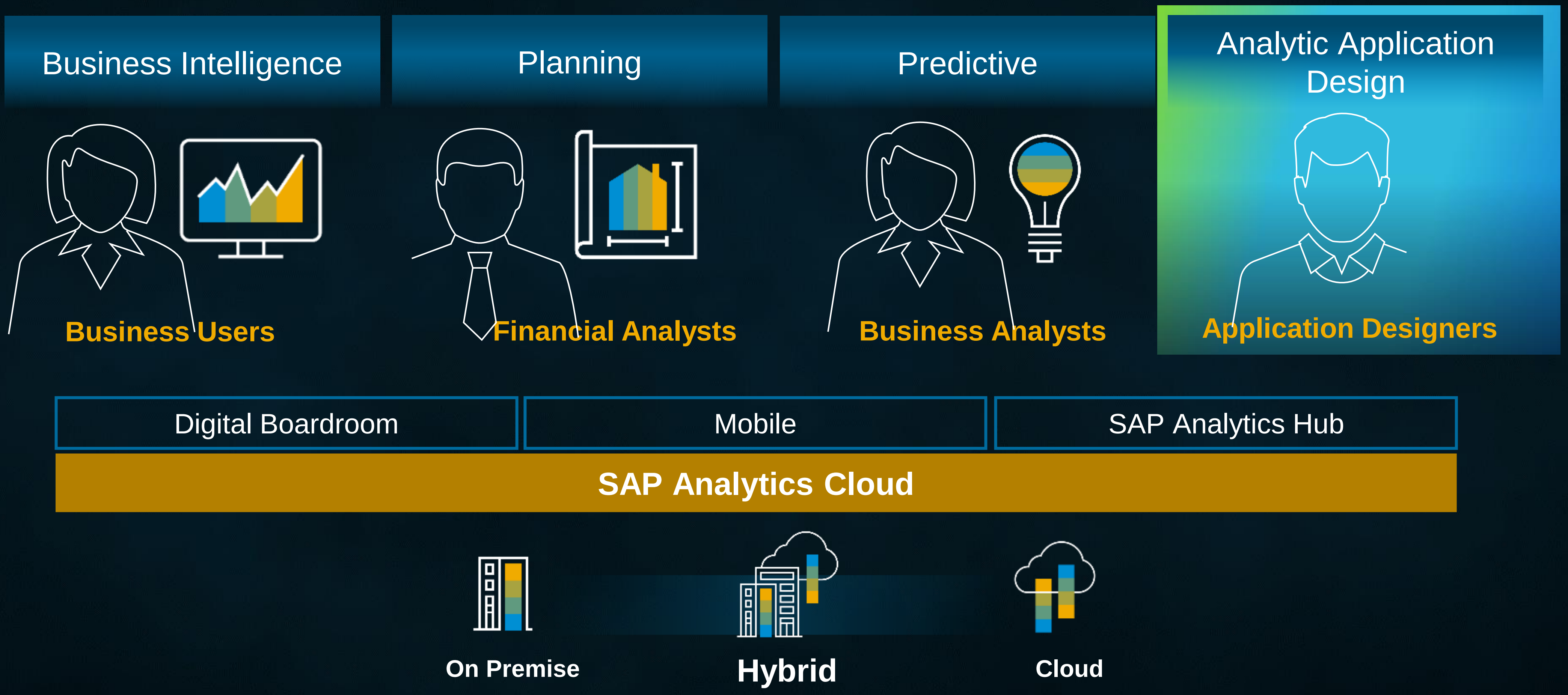
Best Practices

Demo

Q&A

SAP Analytics Cloud: One analytics platform for all users

All analytic capabilities into one analytics platform, used by a range of users



Business Intelligence

Business Users

Planning

Financial Analysts

Predictive

Business Analysts

Analytic Application Design

Application Designers

Digital Boardroom

Mobile

SAP Analytics Hub

SAP Analytics Cloud

On Premise

Hybrid

Cloud

Analytics Designer completes SAP Analytics Cloud

One Analytics Platform

Develop analytic applications that bring together BI, Planning, and Predictive capabilities

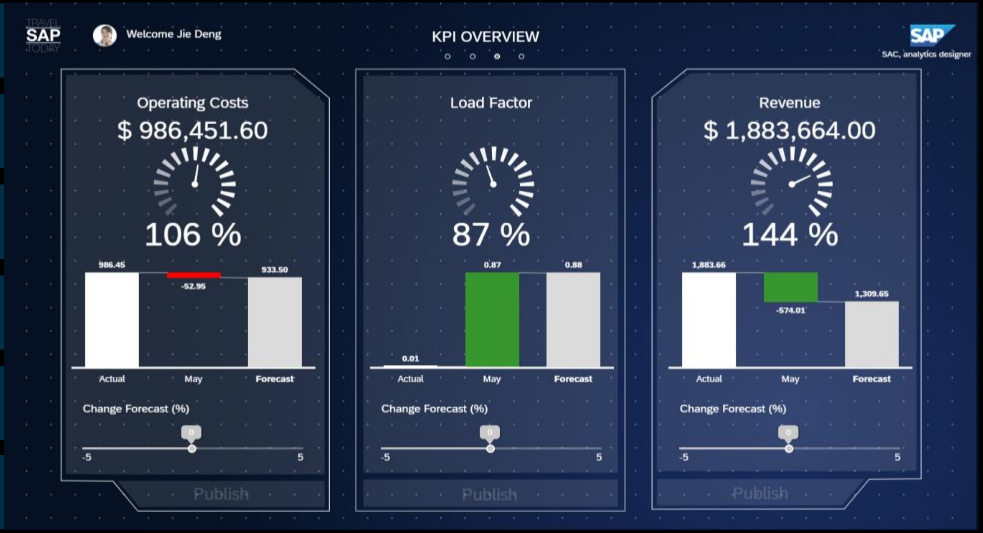
Agile Development

Start from existing content, templates* or user stories, and customize, integrate and extend

Delight your users

Guide the users and adjust the widgets behavior based on their expectations

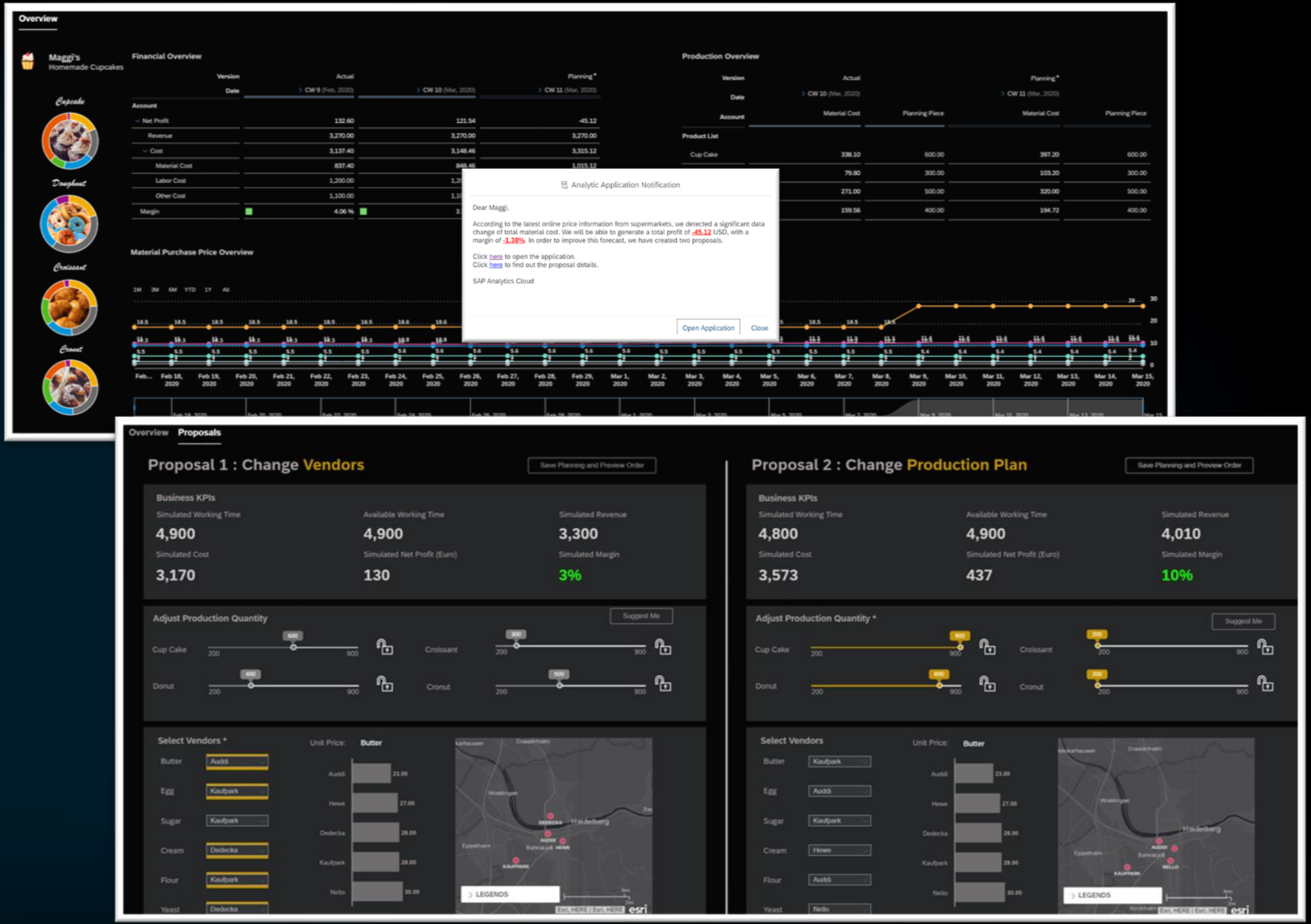
- Customize
- Integrate/Embed
- Extend
- Reuse
- Content Network
- Mobile Ready



Developer Handbook: https://www.sapanalytics.cloud/analytics-designer-handbook/
API Reference Documentation: https://help.sap.com/doc/958d4c11261f42e992e8d01a4c0dde25/latest/en-US/index.html

Analytics Designer

- Mobile Support
  - Support of running applications in safari browser on iPad within embedded use cases
  - Native mobile browser support for Microsoft Edge on windows surface tablet (Controlled Release)
- Scheduling and Publication : Auto/manual generating PDF, Distributing PDFs with different bookmarks and script variables, BW Prompt support, Sending notification or email via scripting API
- Integration with SAP Data Warehouse Cloud: Creating applications within DWC space
- Copy widgets from story to app and across browser tabs at application design time
- Scripting API Enhancements: Remove/Copy Variable, Remove and Range support for Filter API and Scripting API for instantly loading bookmark, Table property APIs: show and hide attributes, zero suppression and compact display
- Dynamic layout enhancement by changing parent widget at runtime
- Tab strip enhancements: rename, re-order and synchronize with outline
- OData Enhancements



Financial Overview

Version	Actual		Planning*
Date	CW 9 (Feb, 2020)	CW 10 (Mar, 2020)	CW 11 (Mar, 2020)
Account			
Net Profit	132.60	121.54	-45.12
Revenue	3,270.00	3,270.00	3,270.00
Cost	3,137.40	3,148.46	3,315.12
Material Cost	837.40	848.46	1,015.12
Labor Cost	1,200.00		
Other Cost	1,100.00		
Margin	4.06 %		

Analytic Application Notification

Dear Maggi,

According to the latest online price information from supermarkets, we detected a significant data change of total material cost. We will be able to generate a total profit of -45.12 USD, with a margin of -1.38%. In order to improve this forecast, we have created two proposals.

Click here to open the application.
Click here to find out the proposal details.

SAP Analytics Cloud

Proposal 1 : Change Vendors

Business KPIs

Simulated Working Time 4,900
Available Working Time 4,900
Simulated Revenue 3,300
Simulated Cost 3,170
Simulated Net Profit (Euro) 130
Simulated Margin 3%

Adjust Production Quantity

Cup Cake 600 · Croissant 300 · Donut 400 · Cronut 500

Select Vendors *

Butter: Auddi
Egg: Kaufpark
Sugar: Kaufpark
Cream: Dedecka
Flour: Kaufpark
Yeast: Dedecka

Unit Price: Butter

Proposal 2 : Change Production Plan

Business KPIs

Simulated Working Time 4,800
Available Working Time 4,900
Simulated Revenue 4,010
Simulated Cost 3,573
Simulated Net Profit (Euro) 437
Simulated Margin 10%

Adjust Production Quantity *

Cup Cake 900 · Croissant 200 · Donut 800 · Cronut 200

Select Vendors

Butter: Kaufpark
Egg: Auddi
Sugar: Kaufpark
Cream: Hewe
Flour: Auddi
Yeast: Nello

Unit Price: Butter

Recent Performance Improvements

Q4/2019 QRC Release

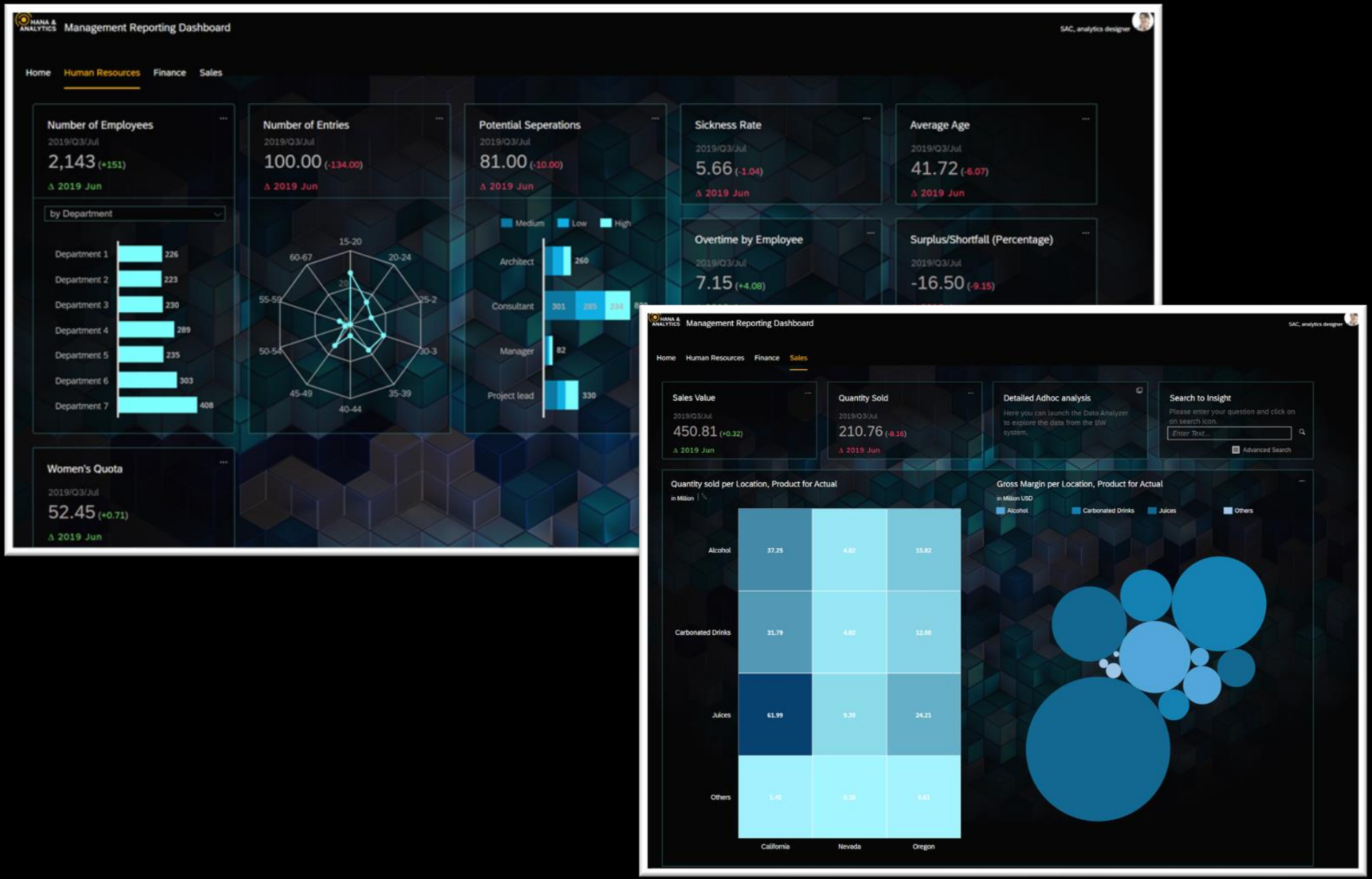
- Saving bookmarks
- Dynamic Layout
- Lazy loading of Widgets (Beta)

Q1/2020 QRC Release

- Panel
- Tab strip
- Smart Query Merge
- Type Library optimization for design time

Q2/2020 QRC Release

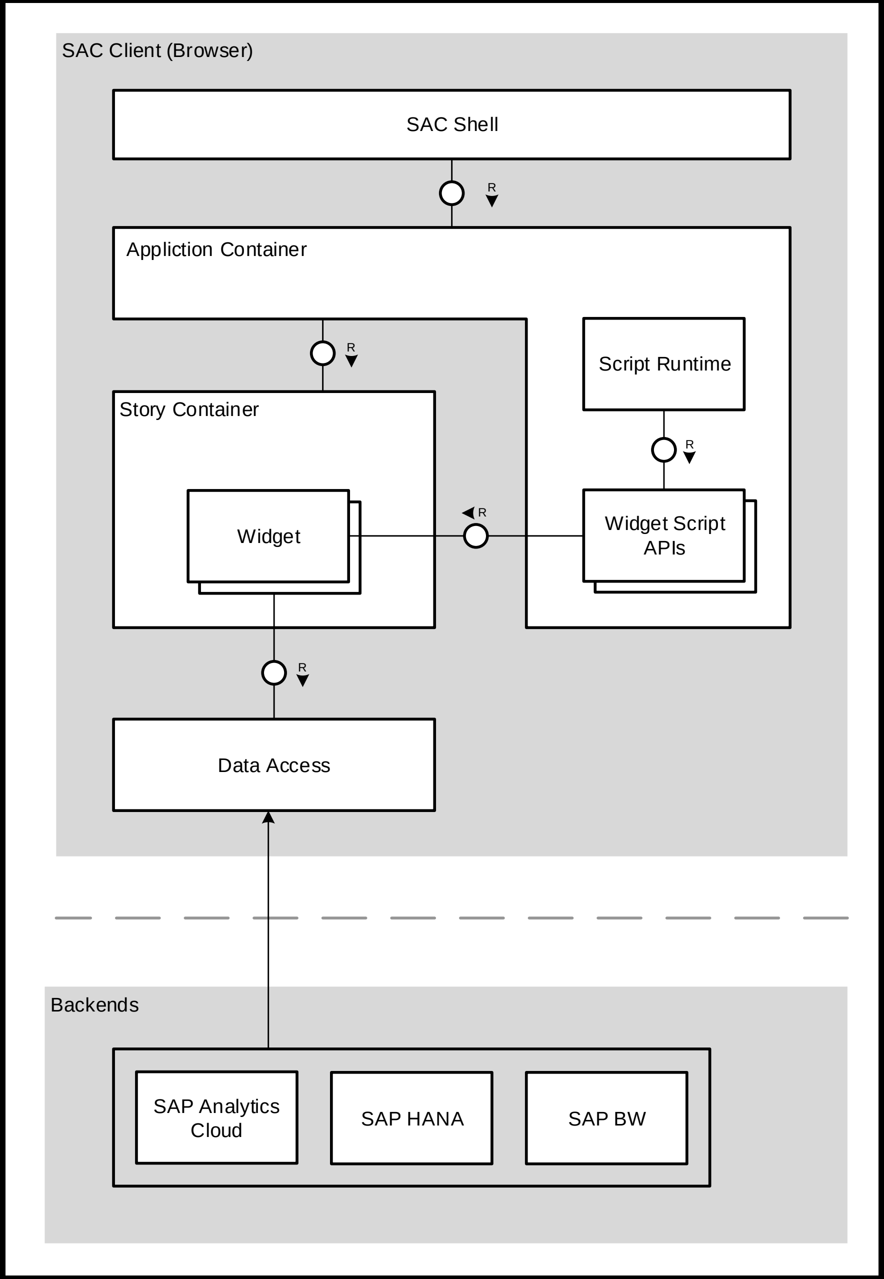
- Browser caching for application definition
- Reducing the amount of code to be loaded on start up



Architecture

Architecture

Analytics Designer is based on Story architecture, adding script runtime and APIs



Best Practices

Analytics Designer Applications

Browser

- Always try to use Chrome as browser
- take advantage of improved performance with browser caching of apps. This is particularly important for apps with multiple charts or models. Cache is valid as long as there are no structural changes made in the app. Note that this performance improvement is only available for Chrome users in a non-incognito mode.

Application Design

- Try to avoid building one complex application containing many data sources
  - Build multiple applications and use application URL to navigate one application to the other
  - Try to divide one application to multiple tabs, panels etc.
- In case you have multiple numeric chart widgets and they are coming from different data models, you can consider to use getData API to get the data from table widgets and display these value as the text widget. This will speed up the performance to avoid multiple request going to backend.

Mobile

- Number of charts, table and timeseries impact the runtime memory
- Device specification: at least 2GB RAM, better perform with 3GB and up RAM

Application start up mode

- Prefer embed mode in case the toolbar is not necessary

Analytics Designer Widgets

Chart

- Display with unbooked Data
- Prefer to use restricted measures or calculation instead of defining exception aggregation
- Lowering the number of individual data points

Table

- limit your tables to a maximum of 500 rows and 60 columns

Image

- images are sized for web and are smaller than 1MB
- The sequence of the optimized format is SVG, PNG and JPG

Geo Map

- Bubble Layer: switch on Location Clustering and choose 1,000 for the maximum number of display points
- using the choropleth layer if you are working with thousands of locations

Avoid duplicating widgets unnecessary

- Try to leverage Move Widgets API to reuse widgets (Q2/2020)
- Try to leverage Set Style API to change the font color, background color of widgets (Q3/2020)

Analytics Designer Scripts

Using „setVariableValue“ against BW Live connections

- When setting several variable values with „setVariableValue“ script method, write these commands in one direct sequence, one after the other, without any other script methods in between. This sequence is folded into a single backend call to submit variable values instead of multiple ones, improving application performance.

Prefer setFilter over setvariable against BW Live connections

- If a variable is affecting a dimension, please consider using “setFilter” method instead of "setVariableValue" as it avoids roundtrips to the BW backend server. However variables are also used for other purposes than filtering. In such cases the usage of variables is still necessary.

Use getResultSet rather than getMembers

- Currently getMembers method reads all members from master data, which might be expensive. In case you are only interested in members from the current result set , please consider use getResultSet instead. This works without an additional roundtrip.

Avoid Set Filter in OnResultSetChanged event

- Try not to change own data source directly or indirectly to avoid the endless loop

Modifying DataSources or Widgets at Application Startup

- To define the initial filter, feeding, variable values etc. prefer configuring them at design time rather than using script methods during onInitialization event. The onInitialization event is executed after widgets are loaded initially. Changing the DataSouce or Widget during this event will result in another refresh which may involve requests to the backend server.

Avoid repetition in loops

- Avoid repeating instructions in loops (e.g. for or while). If possible to move these instructions before the loop. Even for calls which seems to be cheap such as Table_1.getDataSource().

Example:

```
// Prefer:
var ds = Table_1.getDataSource();
for (var i = 0; i < dimensions; i++) {
ds.setFilter(dimensions[i], value);
 }
 // Instead of:
for (var i = 0; i < dimensions; i++) {
Table_1.getDataSource().setFilter(dimensions[i], value);
 }
```

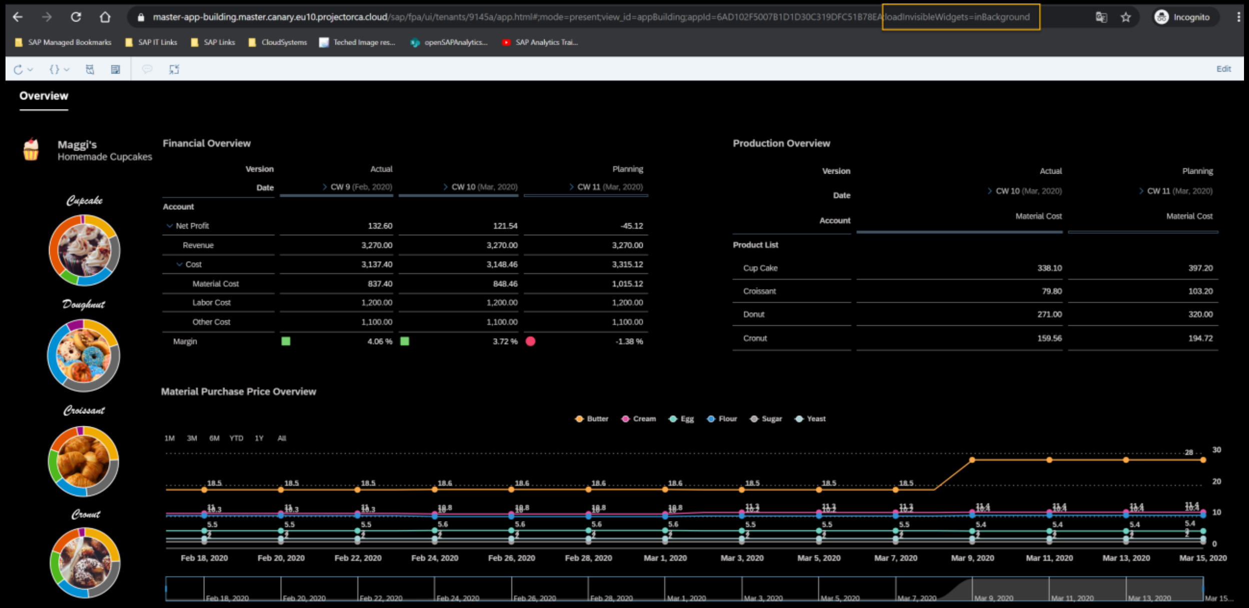
Analytics Designer Loading Widgets

Minimize the Number of Data Sources loaded at application startup

- reduce the number of data sources that are loaded at application startup.

Loading invisible widgets in background

- This new functionality will be available with Q3/2020 QRC Release.
- The application initialization time can be speeded up especially if
  - Application are divided into different pages/tab strips .
  - The first page or tab strip of the application does not contain a lot of widgets
- All the invisible widgets will be loaded in background automatically if the option is set to Loading in background:
  - Scripts that are related to initial invisible widgets
  - Widgets or containers that defined within the invisible containers
  - Invisible tab strips
- You can set application to be loaded in background via
  - Analytic application setting dialog
  - Application URL parameter: **loadInvisibleWidgets=inBackground**



master-app-building.master.canary.eu10.projectorca.cloud/sap/fpa/ui/tenants/9145a/app.html#;mode=present;view_id=appBuilding;appId=6AD102F5007B1D1D30C319DFC51B78EAloadInvisibleWidgets=inBackground

Overview

Maggi's Homemade Cupcakes

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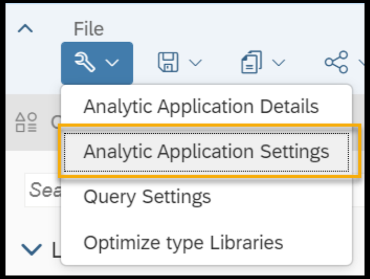
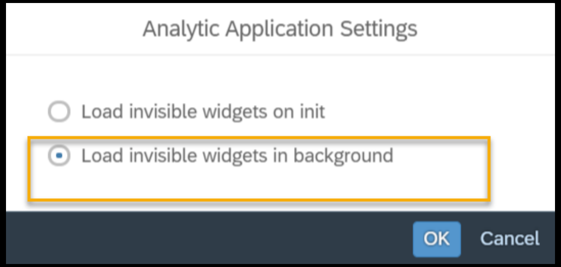
Material Cost	837.40	848.46	1,015.12
Labor Cost	1,200.00	1,200.00	1,200.00
Other Cost	1,100.00	1,100.00	1,100.00
Margin	🟩 4.06 %	🟩 3.72 %	● -1.38 %

Production Overview

Version	Actual	Planning
Date	CW 10 (Mar, 2020)	CW 11 (Mar, 2020)
Account	Material Cost	Material Cost
Product List		
Cup Cake	338.10	397.20
Croissant	79.80	103.20
Donut	271.00	320.00
Cronut	159.56	194.72

Material Purchase Price Overview





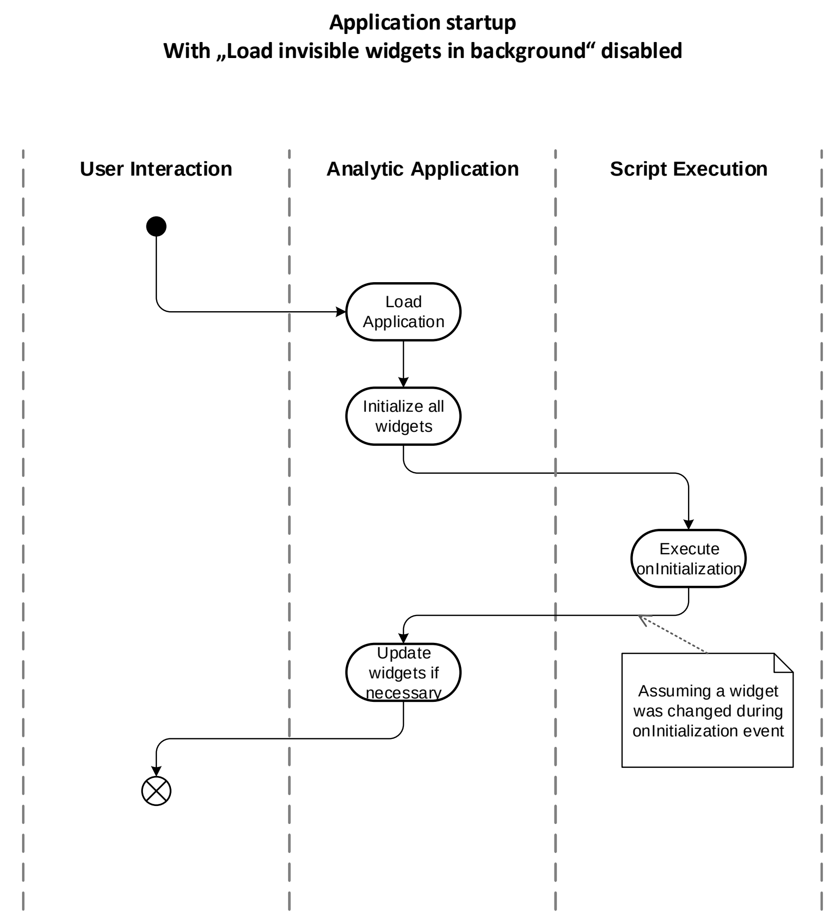
Analytic Application Settings

○ Load invisible widgets on init

● Load invisible widgets in background

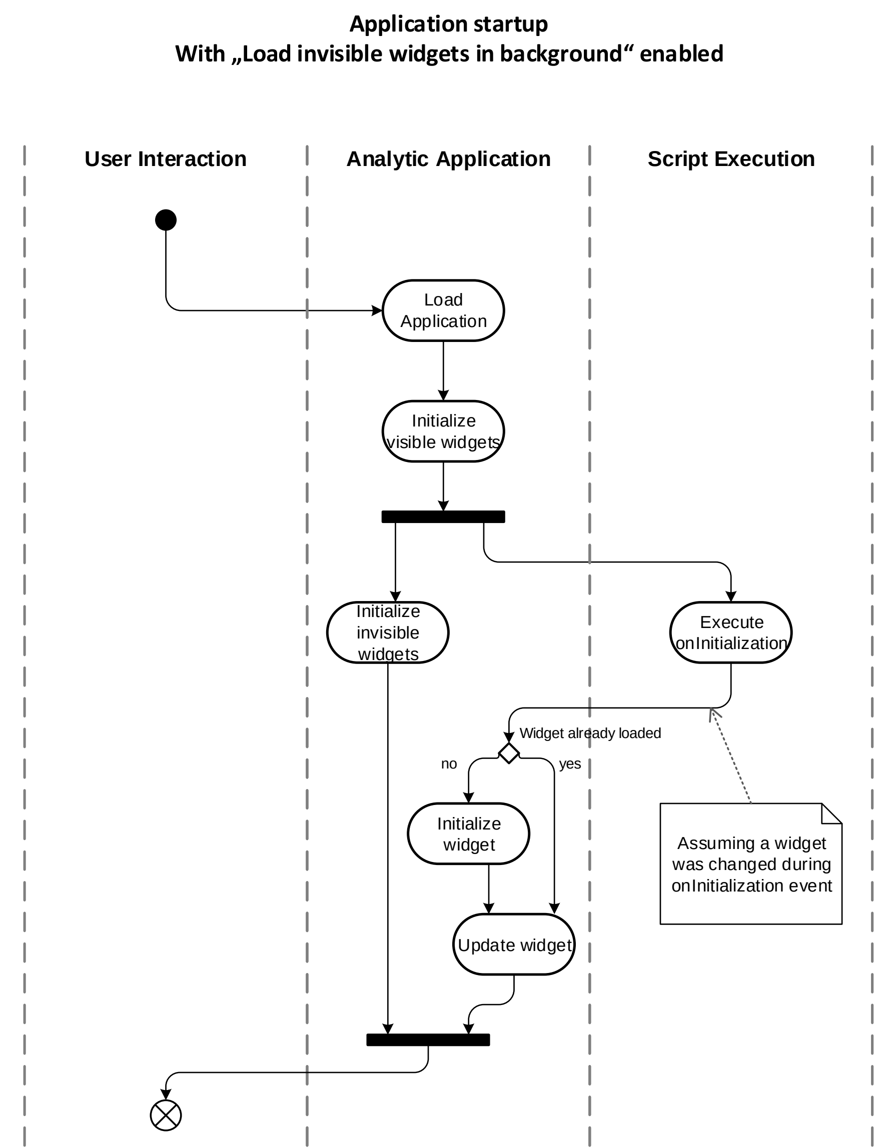
SAP LAB PREVIEW

Loading widgets



Application startup
With „Load invisible widgets in background“ disabled
User Interaction
Analytic Application
Script Execution
Load Application
Initialize all widgets
Execute onInitialization
Update widgets if necessary
Assuming a widget was changed during onInitialization event

Default mode



Loading invisible widgets in background

In order to achieve the best performance by leveraging loading invisible widgets in background

- keep the scripts for onInitialization Event as less as possible
- Don’t access invisible widgets for onInitialization event if possible
- Try not to set variable value in onInitialization event, rather try to set variable value in application design time.
- Don’t prepare the invisible widgets (layout, filter etc.) in onInitialization event. Try to prepare the invisible widgets only if the widgets turn into visible.
- Don’t nest the invisible widgets too deep into container structure of you can’t avoid accessing invisible widgets during application onInitialization event.

Demo

Analytics Designer Performance Improvements

Q3/2020

Load invisible widgets in background

- Invisible widgets are loaded in background automatically
  - Set this option in application property
  - Set this option with URL parameter

Q4/2020

Load invisible widgets in background

- Manually configure the loading behavior for invisible widgets
  - Loading automatically in background
  - Loading during application on Startup

Set Variable Values per URL parameter

- Variable values can be set before application first rendering (and before onInitialization event)

Future Direction

Load invisible widgets in background

- Further improvements

Performance Measuring

- Performance data are collected and can be visualized in dashboard.

This is the current state of planning and may be changed by SAP at any time.

Thank you.

Contact information:

Jie.Deng@sap.com
Bob.Pfeiffer@sap.com