Americas' SAP Users' Group

Leveraging SAP Analytics Cloud and Replication Technologies in a Multi-Tier ERP Landscape.

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Session ID 83363

About the Speakers

Mark Wheelock

- Topcon Positioning Systems
- Senior Manager, Information Systems
- 14+ years at Topcon. Responsible for SAP Basis & Infrastructure, BI, Compliance, and Security

Hau Ngo & Mark Stacy

- Summerlin Analytics
- Data & Reporting Architect
- Supply Chain Process Consultant
- Host privacy-minded alternatives to Twitter and Instagram

Key Outcomes/Objectives

1. Identify the infrastructure & integration challenges when deploying cloud and on-prem systems & applications.
2. Identify technical challenges in deploying replication technologies across a multi-tier ERP landscape.
3. Designing data models that consolidate data from multiple sources.
4. Defining a development & design strategy for SAP Analytics Cloud Dashboards.

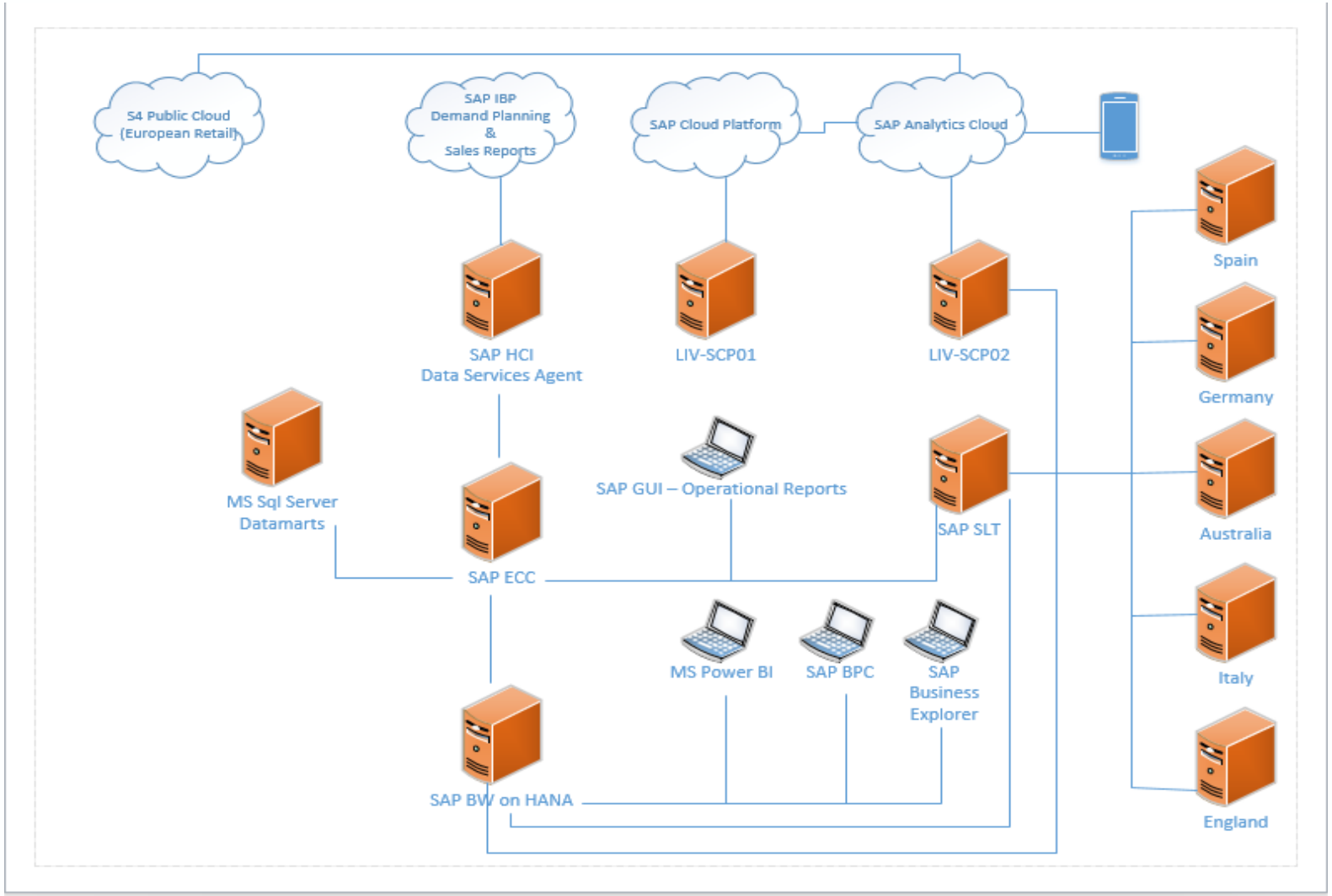
Agenda

- Overview of Topcon's Business Intelligence Initiative
  - Laying the foundation: Infrastructure & Integration
  - Acquiring the Data: Replication & Consolidation
  - Presenting the Data: SAP Analytics Cloud

Project Overview

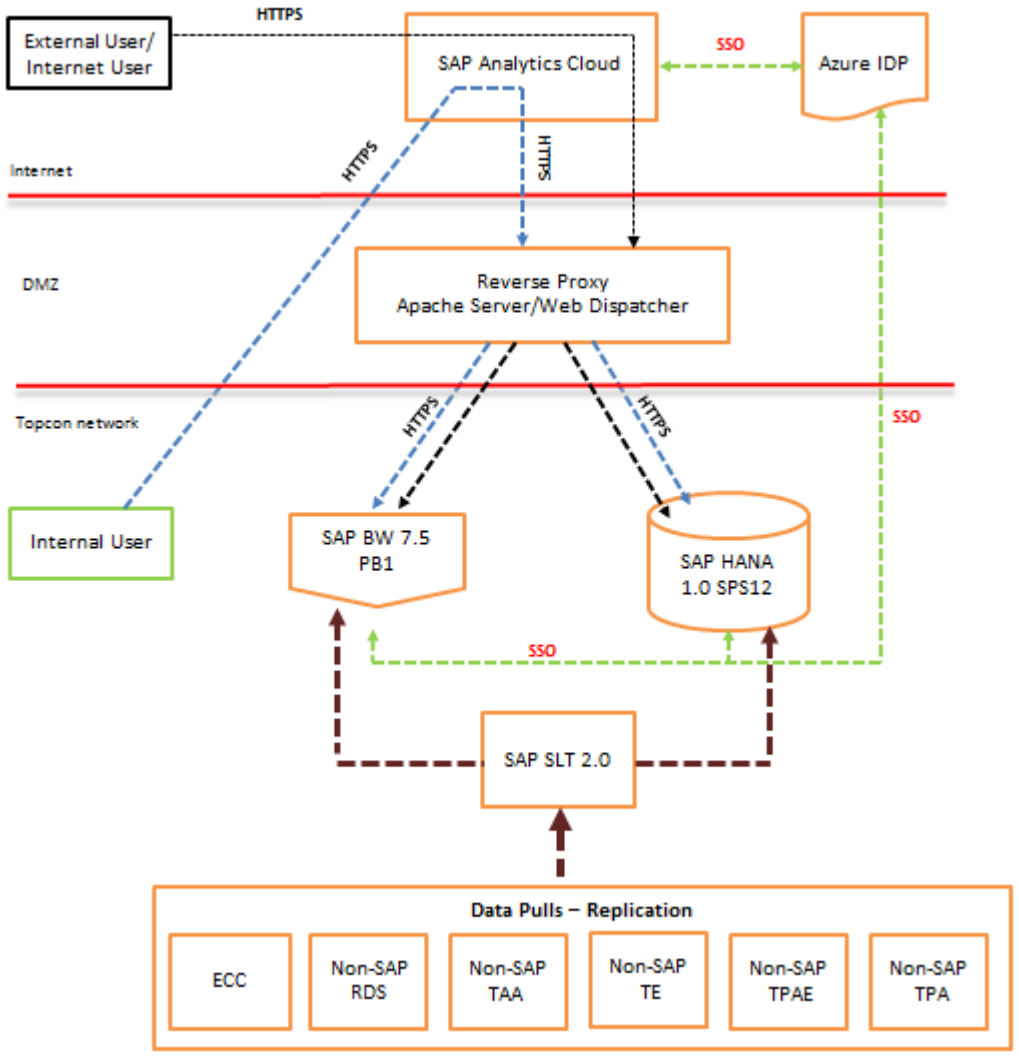
- Support the corporate strategic objective to enhance business intelligence and reporting services to improve operational and strategic decision making.
  - Enhance and optimize operational reports.
  - Deploy data replication technologies to optimize reporting in a multi-tier ERP landscape.
  - Deploy an enterprise report portal.
  - Evolve the landscape for IoT, Big Data, and Smart Manufacturing reporting\analytics scenarios

BI Landscape Overview: April 2019



Integrating SAC with On-Prem Systems

- Solutions implemented for both internal & external users using Live Direct connection
- The connection is SSO enabled with Azure as the identity provider
- Backend systems BW/HANA exposed using a reverse proxy in the DMZ
- Web dispatcher & Apache (HTTP & Tomcat) Reverse Proxy with trusted SSL certificates that meet Apple ATS requirements
- Data from ECC and other Non-SAP systems is replicated into BW and/or HANA using the SAP SLT application



Infrastructure & Integration: Technical Challenges

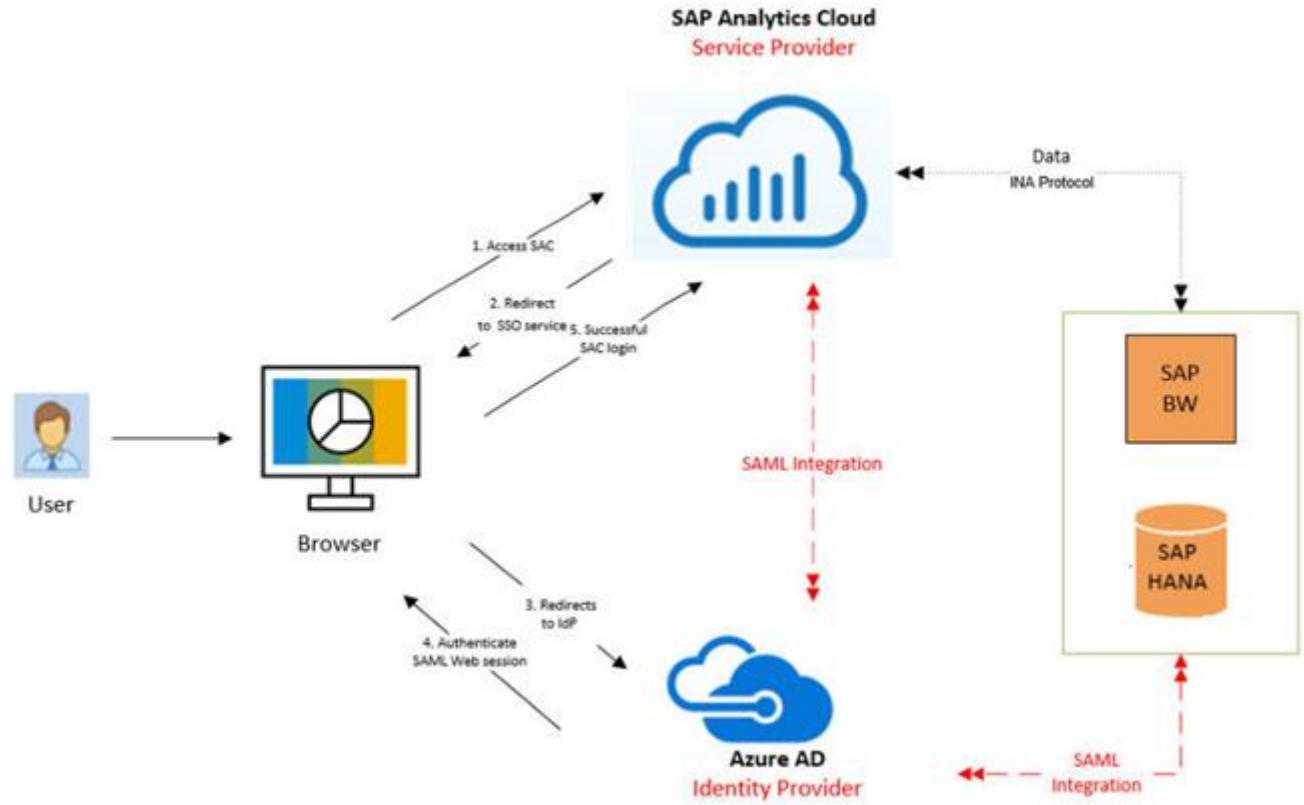
- Live connections via Direct with CORS approach is the recommended choice.
- Maintain Cross Origin Resource Sharing (CORS) settings on the reverse proxy if one is being used.
- Path connections with Azure IDP don’t work.
  - SAP has now removed the option to create Live connections via Path.
- HANA SAML and SAC user mapping is case-sensitive.
  - Custom mapping field available in SAC to map user attributes from Azure vs SAC
- Enabling SAML is all or nothing option for ABAP system.
  - Once enabled SICF applications will use SAML authentication.
- HANA 1.0 systems might encounter issues with SAML login timeouts.
  - Make sure the assertion_timeout property is updated accordingly.

Infrastructure & Integration: Live Connections

- Connect to a remote system without replicating data to the cloud.
- Requires a reverse proxy if not exposing backend systems directly.
- This connection supports SAML based SSO.
- By using SSO data within stories using the live connection and model will be limited to the authorizations in the data source to which the SAC user has access.
- CORS (Cross-origin resource sharing) needs to be setup so that restricted resources on a web page can be requested from another domain outside the domain from which the first resource was served.

Deploying Single Sign-On with Azure

- Topcon uses Azure AD subscription
- SAC and the backend SAP systems (BW & HANA database) are enabled for SAML based SSO using Azure IDP
- Once user logs into SAC, further authentication is not needed when viewing data based on BW/HANA live connections



Acquiring the Data: Replication

- Objectives:
  - Deploy replication technologies in order to acquire data from tier 2 ERP systems.
  - Stage and store acquired data in consolidated HANA data models.
  - Provide consolidated global views of sales across business units that include invoiced sales, sales backlog, and budgeted/forecasted sales.
  - Report in multiple currencies with currency translations into a local entity currency as well as global currency (USD).
  - Integrate the data with global Customer and Product Master data for a consistent Customer/Product hierarchical view.

Acquiring the Data: Source Data Systems

- SAP ECC
- SAGE ERP on MS Sql Server
- JD Edwards on DB2
- MS Dynamics on MS Sql Server
- Pronto Xi on Informix
- MS COBOL 64
- SAP BW on SAP HANA
- S4 HANA Cloud

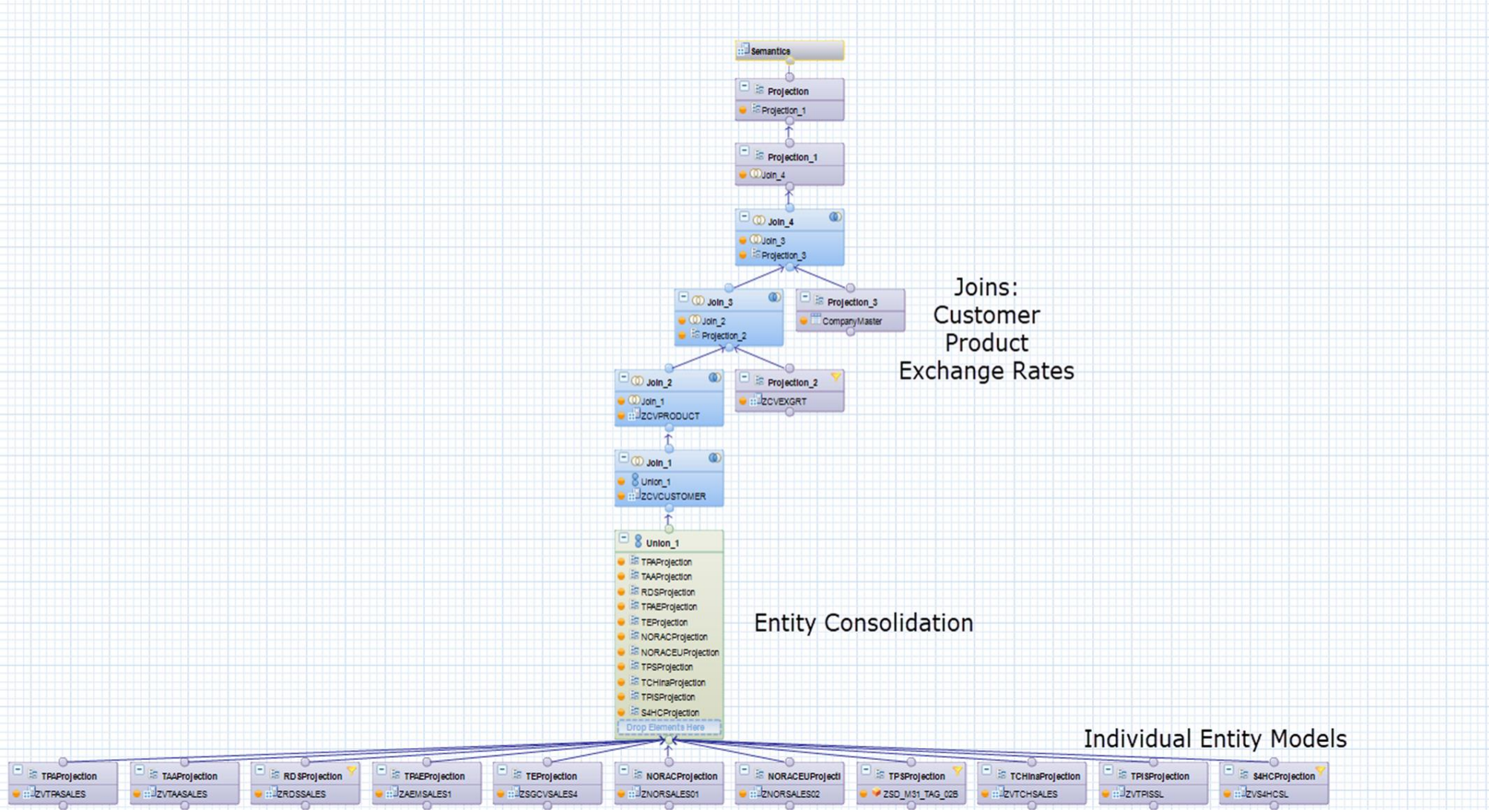
Acquiring the Data: Challenges

- Long table names handling in SLT
- CCSID encoding 65535 in JDE
- ODBC Driver 13 incompatible with SQL 2000
- Connecting to legacy RDBMS
- SLT created database triggers

Data Model Design Philosophy

- SAP BW as primary staging layer.
- ETL via SLT when possible, otherwise SQL Server SSIS.
- SAP HANA as the business layer.
- Expose BW ADSO's as HANA views to create individual Calculation Views per entity.
- Consolidated Reporting Calc View in HANA.
- Consolidated model joined with Customer and Product Masters and Currency Translation for custom reporting hierarchies.
- Presentation layer using a SAC Live Connection to HANA, or BEx Query on HANA View.

Design: Consolidated Data Model

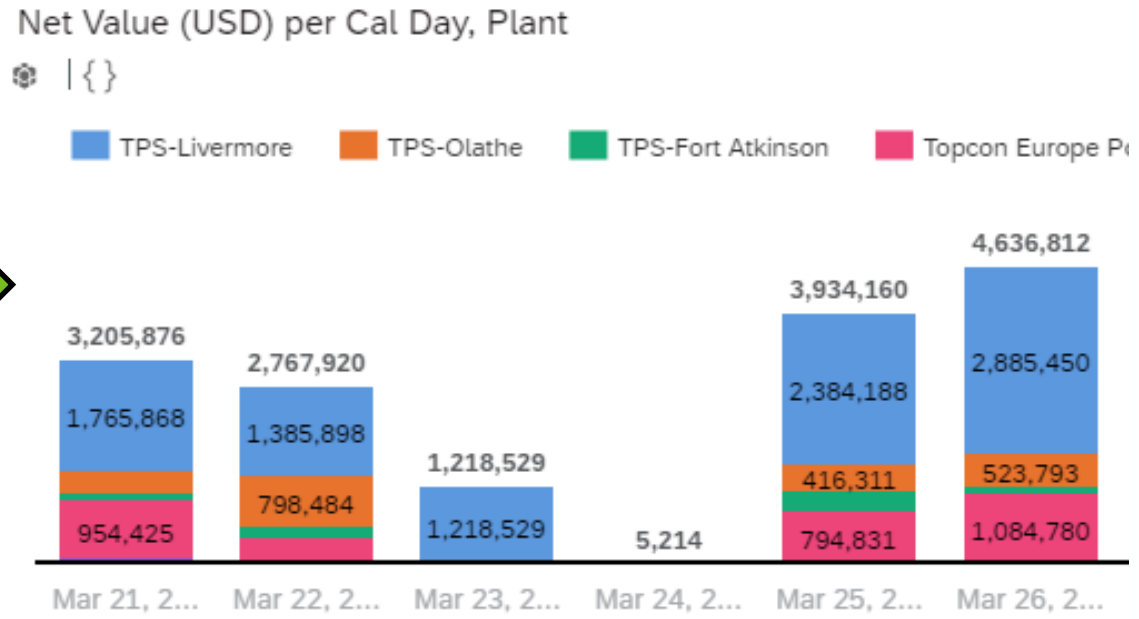


Challenges of moving from Excel

1. Business Explorer vs. SAP Analytics Cloud
2. From data tables to visual charts
3. Design principles (vs. tabular layout)

From Excel to SAP Analytics Cloud

	A	B	D	L	M	N	O	R
1	INVOICE #	PART #	BRANCH	CURRENCY	INVOICE DATE	QUANTITY	UNIT PRICE	EXTENDED PRICE
2	CRINV11505	44696REV-A	300	EUR	3/31/2016	-1	682.59	-682.59
3	CRINV11535	43210-15REV-A	300	EUR	4/19/2016	-1	67.6	-67.6
4	CRINV11535	43210-15REV-A	300	EUR	4/19/2016	-1	67.6	-67.6
5	CRINV11535	44658-112REV-B	300	EUR	4/19/2016	-1	136.5	-136.5
6	CRINV11535	44658-42REV-A	300	EUR	4/19/2016	-1	143	-143
7	CRINV11535	44658-60REV-C	300	EUR	4/19/2016	-1	119.6	-119.6
8	CRINV11542		300	EUR	4/22/2016	-1	35	-35
9	CRINV11546	43750	300	EUR	4/25/2016	-1	715	
10	CRINV11557	5465BC-JD-LPREV-A	300	EUR	4/29/2016	-1	1900	
11	CRINV11570	106034	300	EUR	5/3/2016	-4	8	-22.4
12	CRINV11570	106602	300	EUR	5/3/2016	-1	11	-7.7
13	CRINV11570	43220-03REV-A	300	EUR	5/3/2016	-4	44	-123.2
14	CRINV11570	43220-10REV-A	300	EUR	5/3/2016	-1	99	-69.3
15	CRINV11570	43230-14REV-B	300	EUR	5/3/2016	-4	37	-103.6
16	CRINV11570	43240-17REV-C	300	EUR	5/3/2016	-1	45	-31.5
17	CRINV11570	43240-18REV-D	300	EUR	5/3/2016	-1	55	-38.5
18	CRINV11570	43710REV-D	300	EUR	5/3/2016	-1	1195	-836.5
19	CRINV11570	43720REV-B	300	EUR	5/3/2016	-1	770	-539
20	CRINV11570	43732REV-B	300	EUR	5/3/2016	-1	675	-472.5
21	CRINV11580		300	EUR	5/10/2016	-1	2990.4	-2990.4



Design Principles

- Story/Page layout
- Interaction
- Chart types

Story & Page Layout

1. Provide an overview
2. Lead into the details
3. Establish consistency
   - Placement
   - Interaction

Story & Page Example

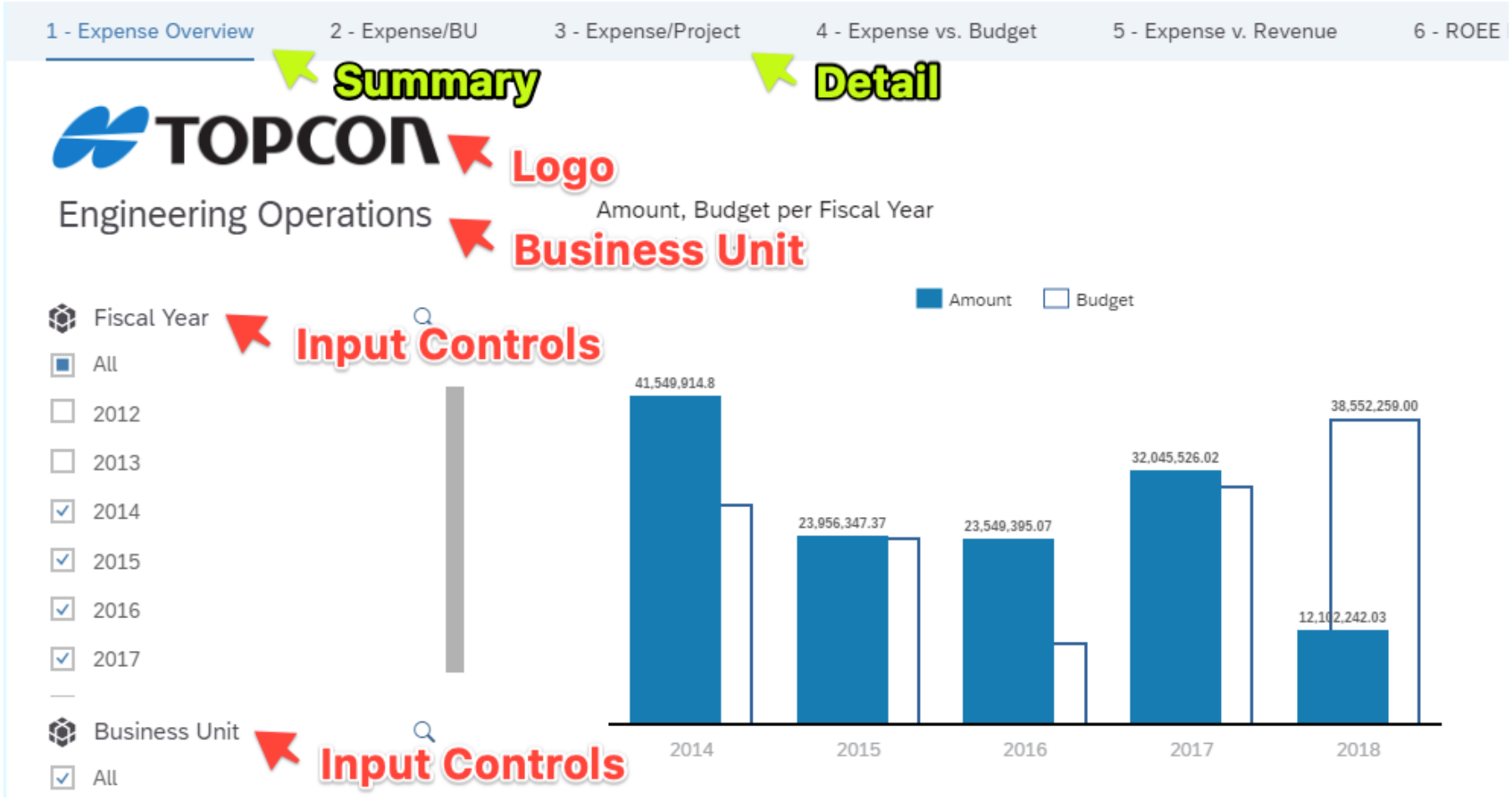
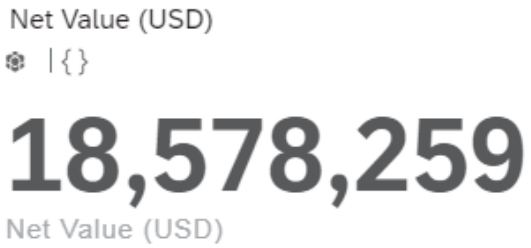
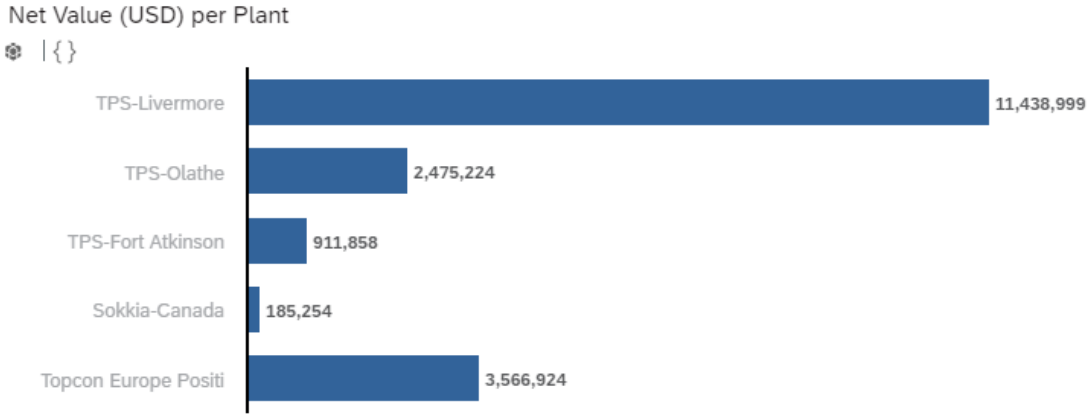


Chart Types

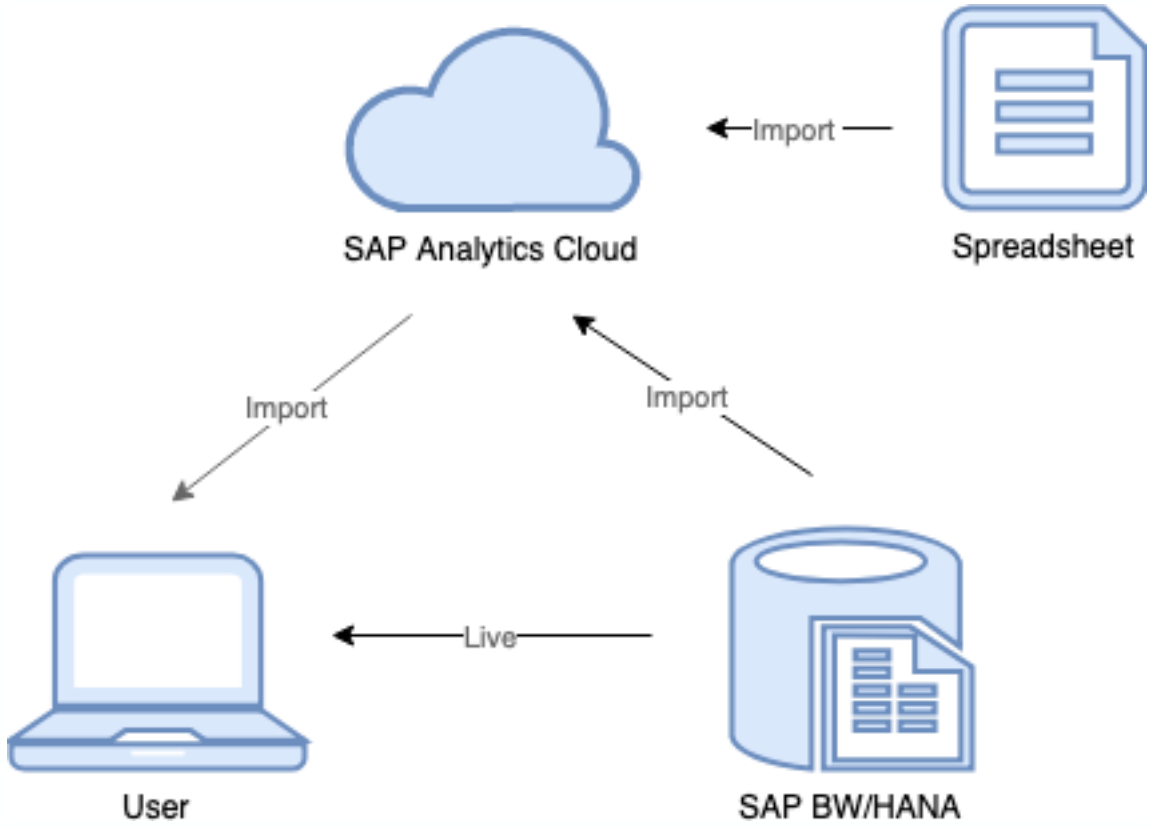
- Indicators
  - Numeric Point
- Comparisons
  - Bar, Column, Line
- Trends
  - Line, Area, Time





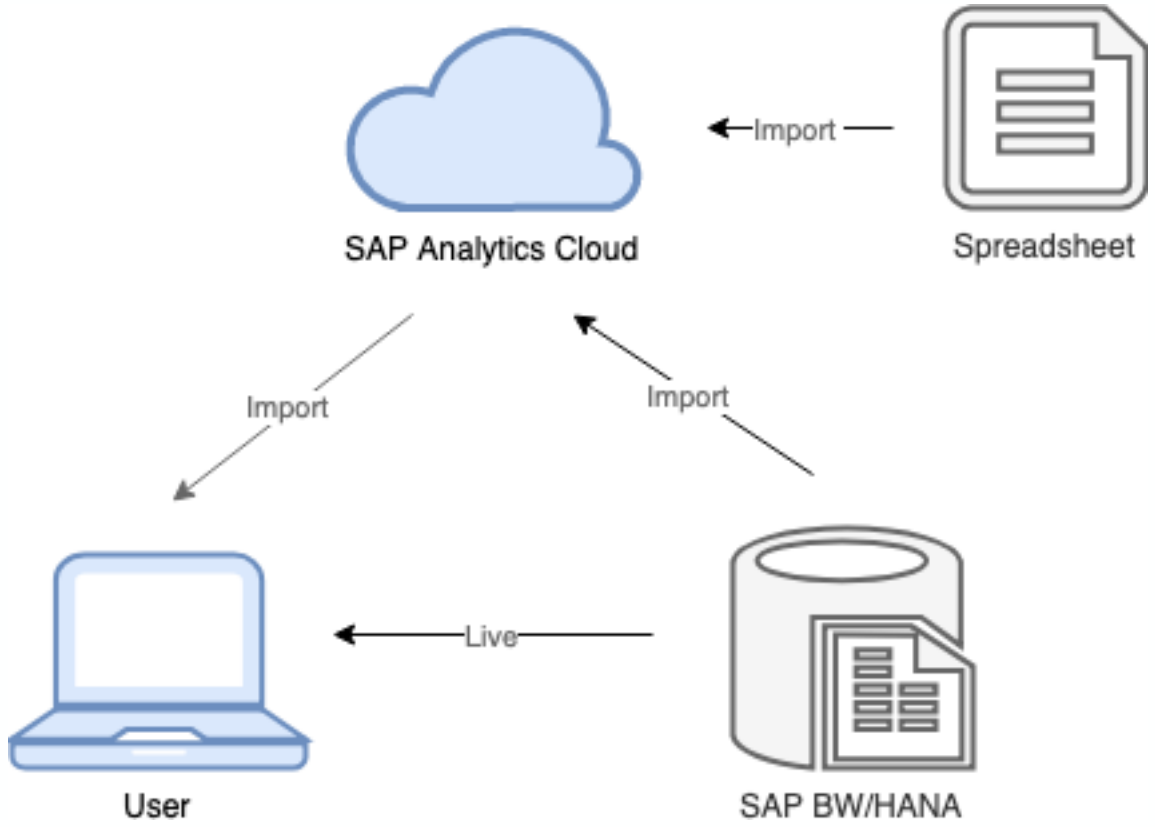
Data Modeling

- Acquired
- Live
  - BW
  - HANA



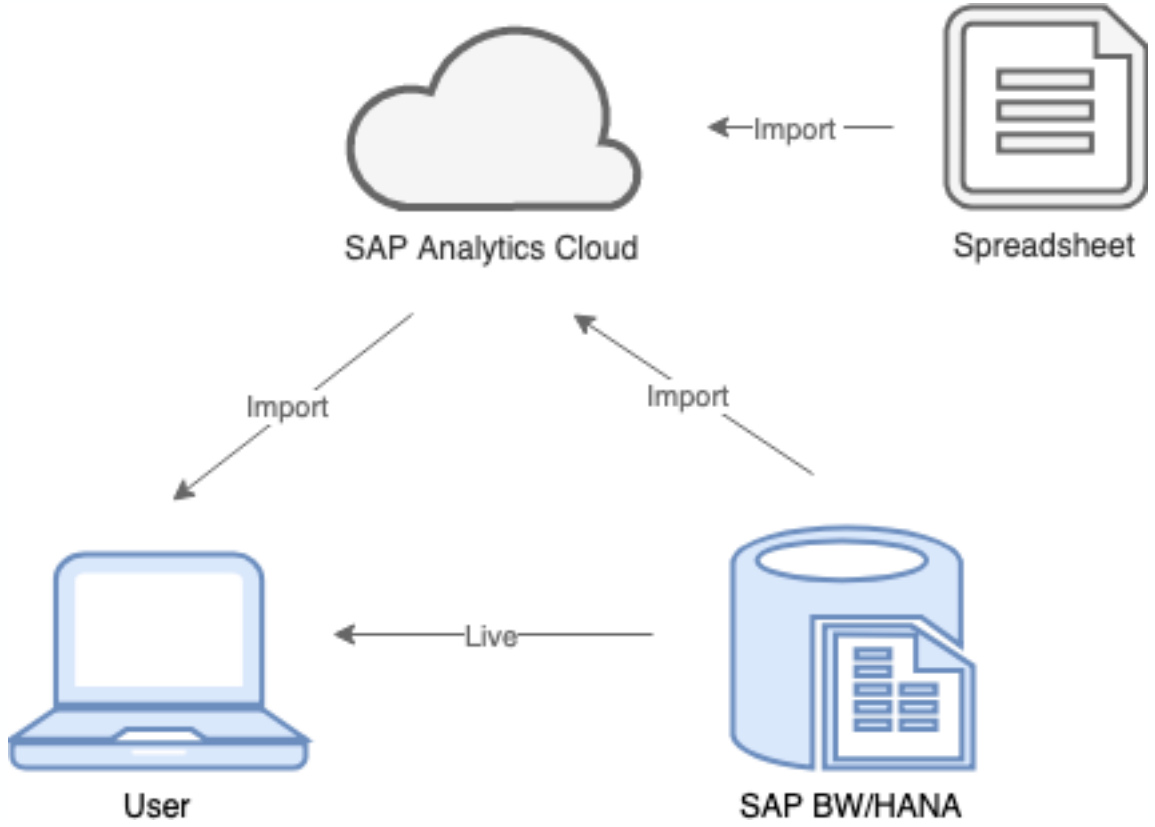
Acquired Data (Import Connection)

- Use-case
  - Mockup
  - External data
- Limitations
  - Data Blending
  - Scheduling
- Tip
  - Import Support Matrix (BW)



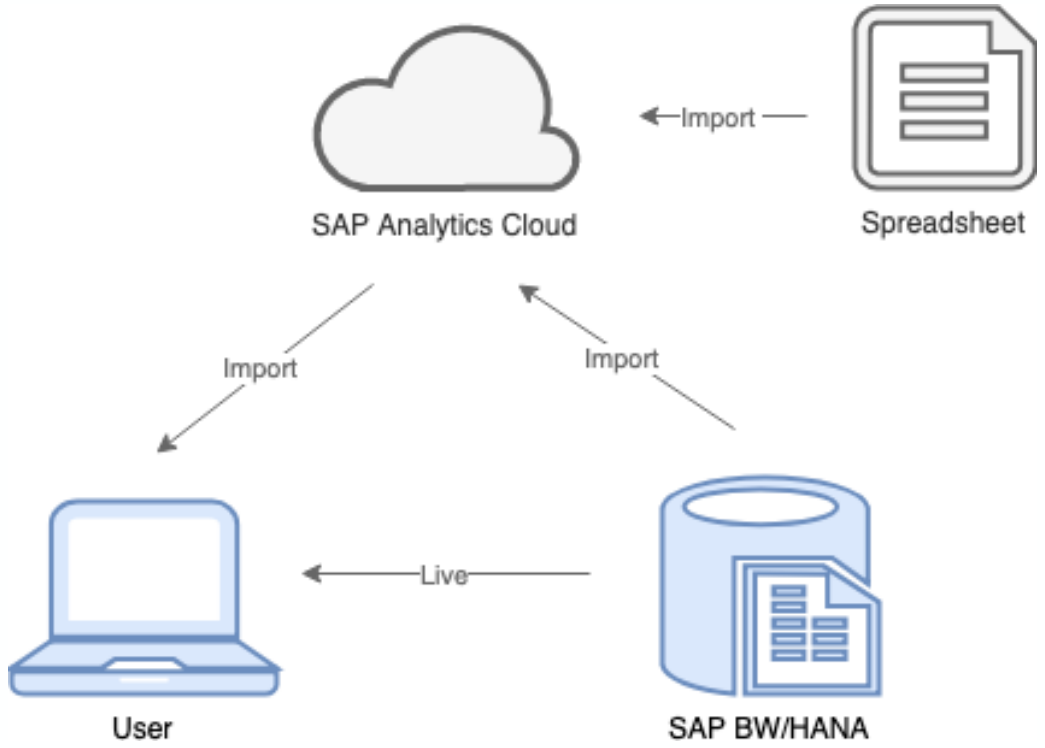
BW Live Connection

- Use-case
  - Existing development
- Challenges
  - Features limited to BW version and DB
  - SAP Note 2715030
- Tips
  - Live Support Matrix (BW)



HANA Live Connection

- Use-case
  - More features supported
- Tips
  - Support Matrix
  - Limitations (HANA)



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Q&A

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