



Rittman Analytics



Democratize your Data Analytics with Looker and Oracle Autonomous Data Warehouse

Mark Rittman, CEO, Rittman Analytics
Oracle User Group BI Modernization Summit, October 2019



Stack of books and papers on the right side of the desk, including a blue folder and a white container.

Introducing Rittman Analytics

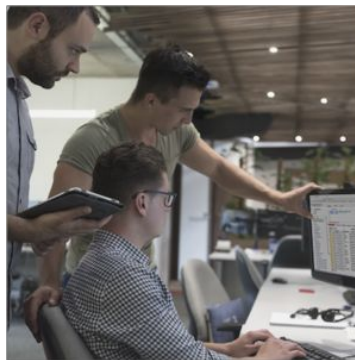
We provide consulting, training, strategy and support services to help our clients increase sales, understand their customers and run their business more efficiently .

We also present and sponsor the [Drill to Detail Podcast](#), a series about innovation in the big data analytics industry, tweet at [@rittmananalytic](#) and blog at <https://rittmananalytics.com/blog>





**Data Analytics Consulting,
Training and Support**



**Data Engineering and Data
Warehouse Modernisation**



**Data Strategy and Driving
Analytics Adoption**

Rittman Analytics works in-partnership with the following technology vendors



Oracle Autonomous Data Warehouse

- Fully-managed DW Platform-as-a-Service
- Based on Oracle Exadata Database technology
- Near-instant provisioning
- Elastic scaling and pricing
- Simplified column-store table creation
- Automated provisioning, patching and upgrades
- Automated backups
- Includes data visualization + notebook apps



We're big fans of Oracle ADW

Data Warehouse Like a Tech Startup with Oracle Autonomous Data Warehouse Cloud [BUS3194]

Mark Rittman, Founder, MJR Analytics
Oracle Open World 2018, San Francisco

- No DBAs
- No servers to manage
- No patches to apply or upgrades to appl
- No sizing the cluster for peak loads
- No indexing or database optimization



Mark Rittman



“If companies want to compete with startups, they need to move at the same speed. Oracle Autonomous Data Warehouse completely removes the friction for people in the organization who want to think up ideas and do data analysis, particularly people leading innovation projects and doing data science work.”

—Mark Rittman, CEO, MJR Analytics

Overworked DBAs can't always find time to architect and deploy a new data warehouse. Oracle Autonomous Database handles these essential tasks in seconds, in response to a few simple prompts. To use Oracle Autonomous Data Warehouse, an analyst simply specifies the size, name, and use of the database. A complete Oracle database will be provisioned within a minute, optimized for data warehousing. A pay-as-you-go pricing model makes enterprise-scale analytics capabilities available to all types and sizes of businesses, from startup ventures to Fortune companies.

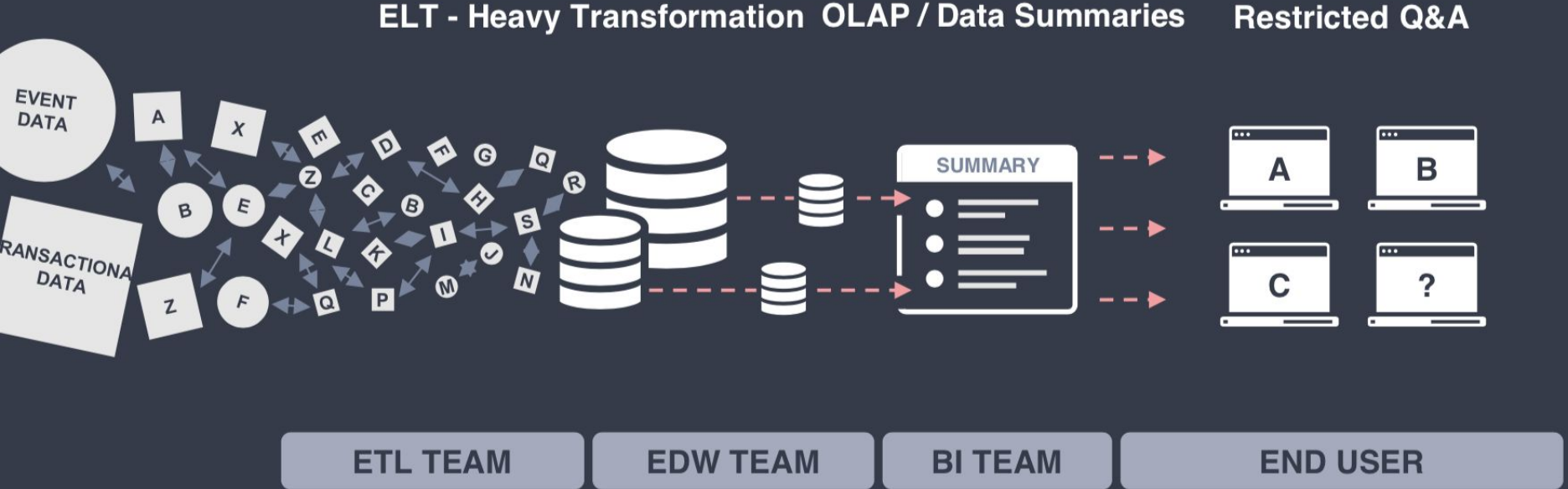
As Mark Rittman points out, Oracle's new database gives these organizations the scale, security, and predictability they're used to, but without needing to involve a DBA for the basic repeatable stuff. However, these technology professionals still have an important role to play by helping business professionals discern trends and patterns, bringing in public data or data from a data-as-a-service company, as well as connecting outside analytics tools. “It just gets out of the way and lets you work immediately,” Rittman says. “It's about agility, grabbing cloud-based resources and analytical tools, and scaling up without having to build database architectures or maintain hardware.”

Read the complete article, “How a Big Business Can Use an Autonomous Database to Move Like a Startup.” →



... if only enterprise BI had kept up.

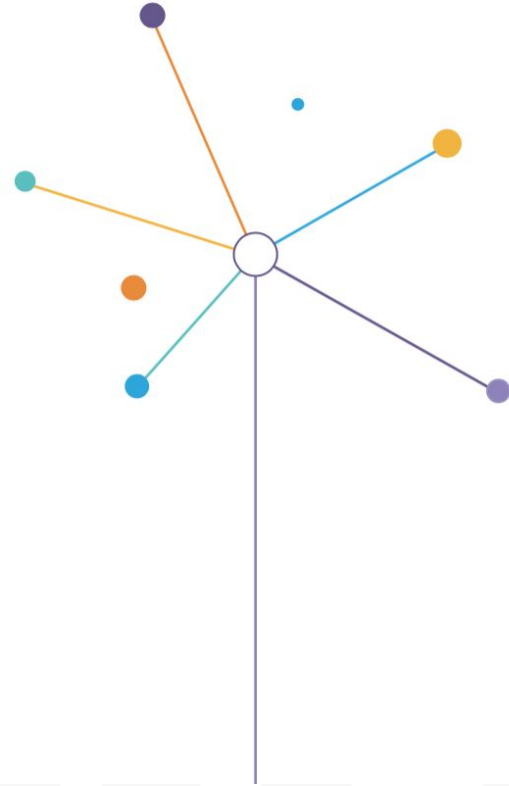
The reality of most enterprise BI projects



Meet Looker.

A Data Analytics platform that...

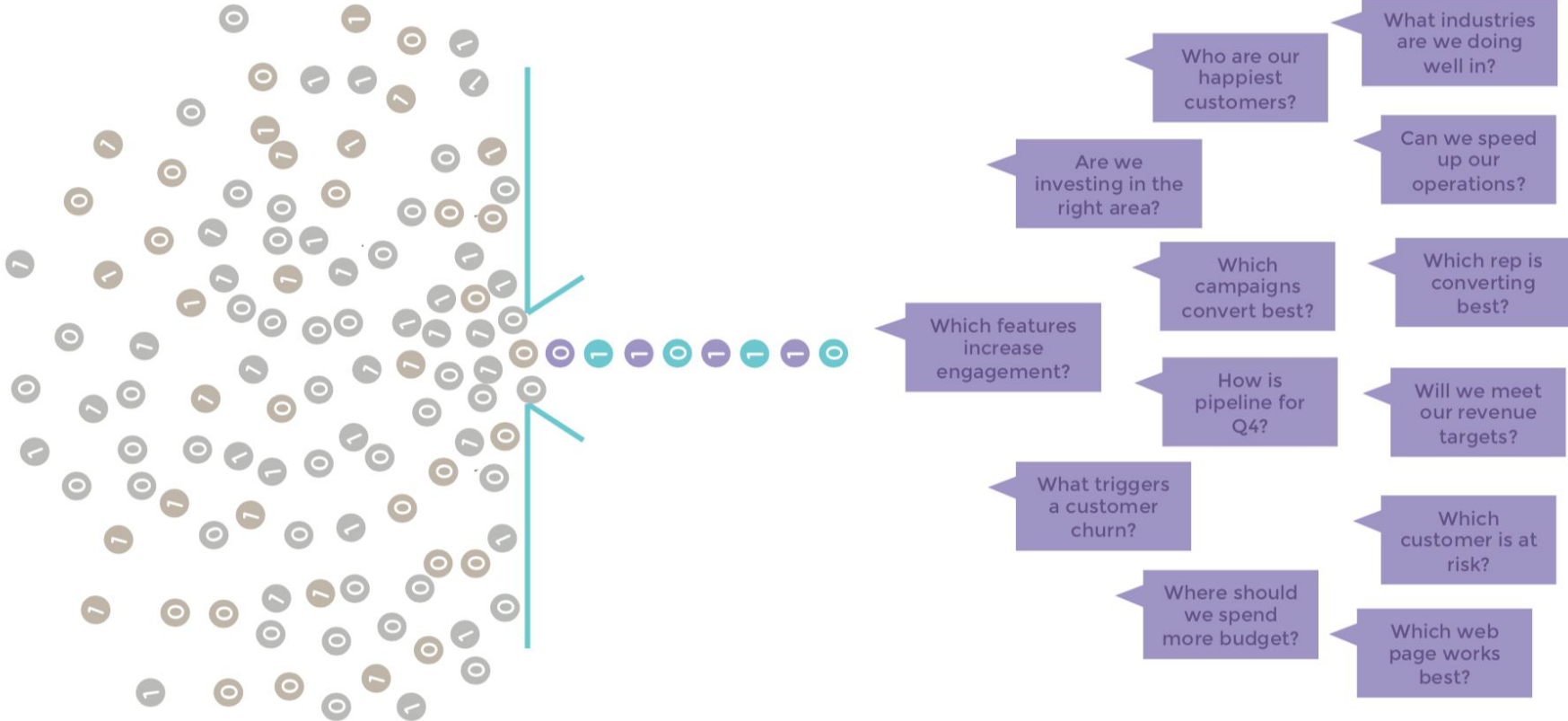
Makes it easy for everyone
to **find**, **explore** and
understand
the data that drives your
business.



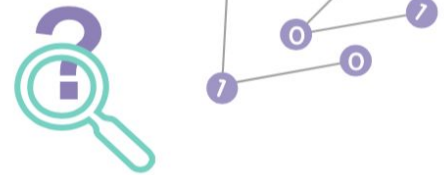
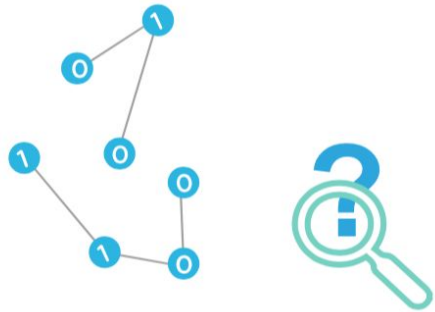
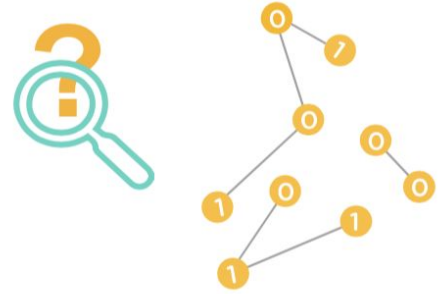
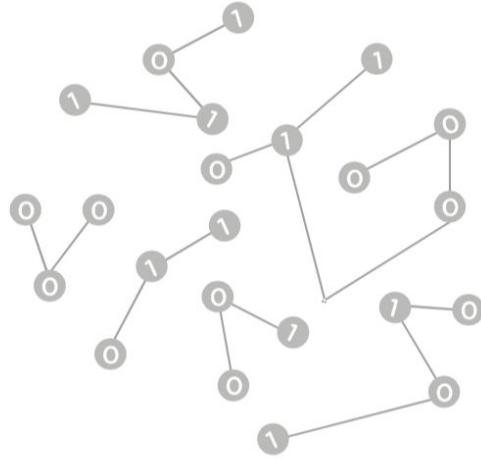
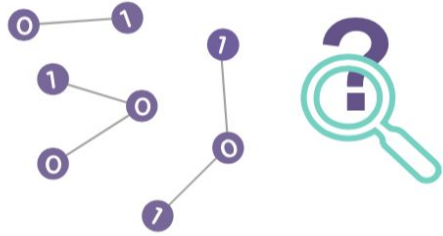
Opening Keynote



DATA BOTTLENECK



DATA CHAOS



IS THERE A WAY TO FIND BALANCE?

Standards
Scalability
Governance



Self-Service
Agility
Flexibility

THE TECHNICAL PILLARS THAT MAKE IT POSSIBLE



100% In Database

Leverage all your data
Avoid summarizing or
moving it



LookML Intelligent Modeling Layer

Describe the data
Create reusable and
shareable business logic

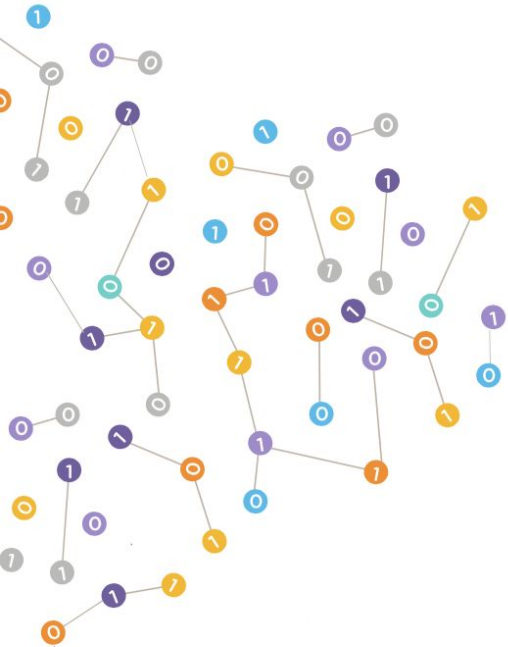


Modern Web Architecture

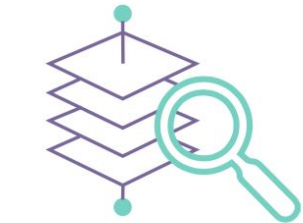
Access from anywhere
Share and collaborate
Extend to anyone

LOOKER: A DATA PLATFORM

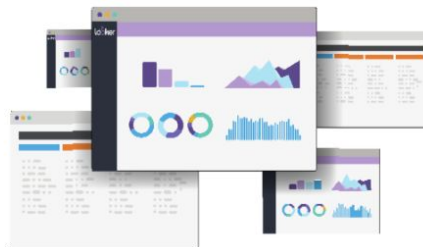
Find, explore and understand all the data



Any SQL Database
Analyze all of your data
where it is stored



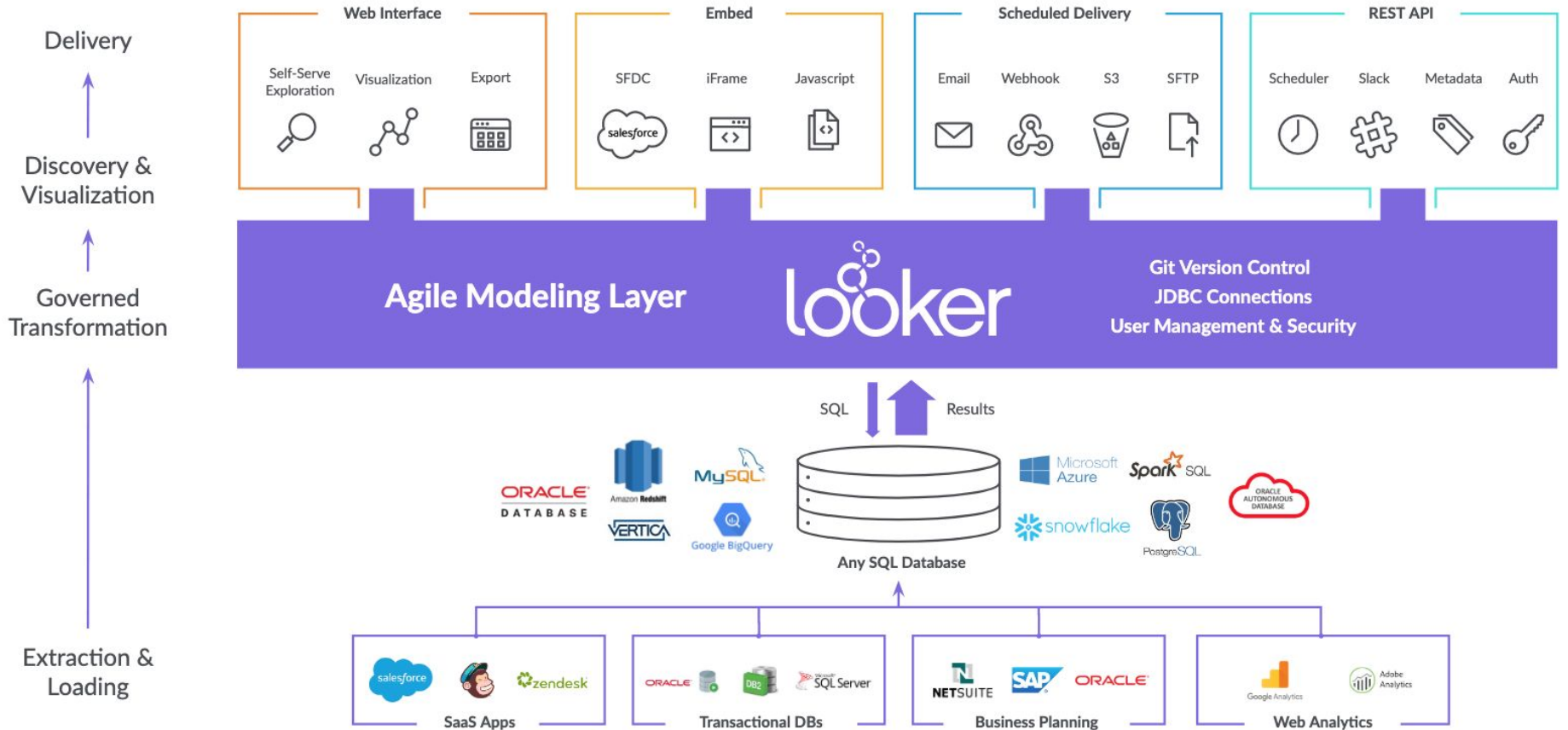
Create Standards
Define your data and
business metrics



Explore Everything
Find, explore and
understand all the data

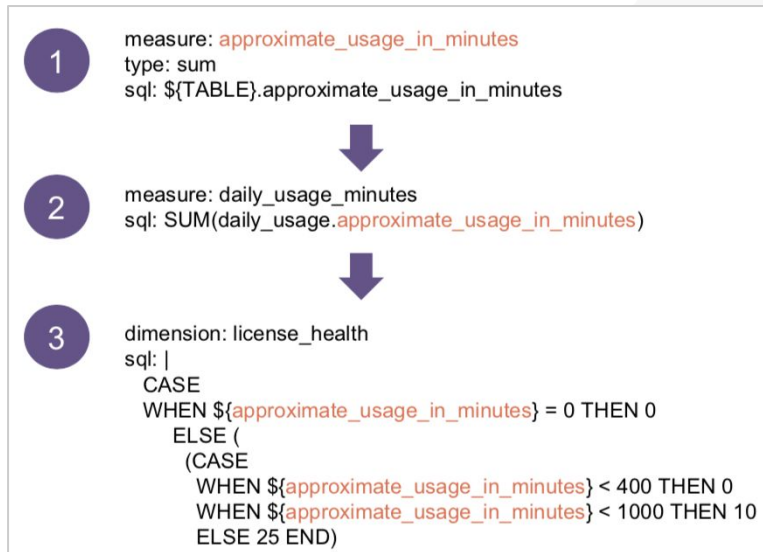
- Can we speed up our operations?
- Which campaigns convert best?
- How is pipeline for Q4?
- Which rep is converting best?
- Will we meet our revenue targets?
- Which customer is at risk?

Build a Data Culture
Anyone can ask and
answer questions



LookML - Looker's “Secret Sauce”

- Informs Looker in abstracting SQL
- Creates the modeling and presentation layer between the database and the user
- Defines:
 - Join logic between tables (Views)
 - Custom tables (Derived Tables) defined by Looker
 - Fields taken directly from the database
 - Custom fields defined in Looker



“There’s a multitude of reasons why complex pieces of software are not developed using drag and drop tools: it’s that ultimately code is the best abstraction there is for software.

Code allows for arbitrary levels of abstractions, allows for all logical operation in a familiar way, integrates well with source control, is easy to version and to collaborate on.”

Maxime Beauchemin, [“The Rise of the Data Engineer”](#)



thelook

Your Personal Branch
dev-veronica-phillips-fnwg

You've edited this project.
Commit your changes before pushing.

Commit Changes ▾

Project has changed, errors are out of
date.

Validate Again

Add... +

Project

manifest

Models

thelook 3

thelook_events

thelook_information

thelook_users

Dashboards

abbreviate_order_data

business_overview_by_date

customer_overview

dashboard_tooltip_test

erin_docs_lookml_dashboard

fromlookml_business_overview

Views

bqml_test

thelook ▾

```

1 connection: "thelook_ev
i 2 include: "*.view.lkml"
i 3 include: "*.dashboard.
4
5 label: "eCommerce"
6
7 # testing commit/revert
8
9 fiscal_month_offset:
10 datagroup: orders
11 max_cache_age: "24 h
12 sql_trigger: select max(id) from order_items ;;
13 }
14
15 explore: order_items {
16 label: "Order Item Information"
17 description: "Based on the individual items that comprise customer orders"
18 join: order_facts {
19 view_label: "Orders and more"
20 relationship: many_to_one
21 sql_on: ${order_facts.order_id} = ${order_items.order_id} ;;
22 }
23
24 join: inventory_items {
25 view_label: "Inventory Items"
26 type: full_outer
27 relationship: one_to_many
28 sql_on: ${inventory_items.id} = ${order_items.inventory_item_id} ;;
29 }
30
31 join: users {
32 relationship: many_to_one
33 sql_on: ${order_items.user_id} = ${users.id} ;;
34 }
35
36 join: user_order_facts {
37 view_label: "Users"
38 relationship: many_to_one
39 sql_on: ${user_order_facts.user_id} = ${order_items.user_id} ;;
40 }
41

```

Development Mode

ON

SQL Runner

Content Validator

Manage LookML Projects

e_flights

imdb

intro_to_looker

thelook

Find & Replace in Project

Go

Saved

Save

⚙️

Quick Help

→

A `model` references a combination of related explores. Unlike other LookML elements, a model is not declared explicitly with the `model` keyword.

```

model: {
  access_grant: identifier
  case_sensitive: yes or no
  connection: "string"
  datagroup: identifier
  explore: identifier
  fiscal_month_offset: number
  include: "string"
  label:
    possibly-localized-string
  map_layer: identifier
  named_value_format:
    identifier
  persist_for: "string"
  persist_with: datagroup-re
  view: identifier
  week_start_day:
    monday or ...
}

```

So how does it work?

Top Data Warehouse Cloud Use Cases

1



New Analytical Data Marts

- For LoB & IT struggling to meet tight business deadlines, lack of IT resources
- Enables LOB to drive innovation & competitive advantage with minimal IT resources
- Empowering the business with real-time data and advanced analytics to speed up actionable insights

2

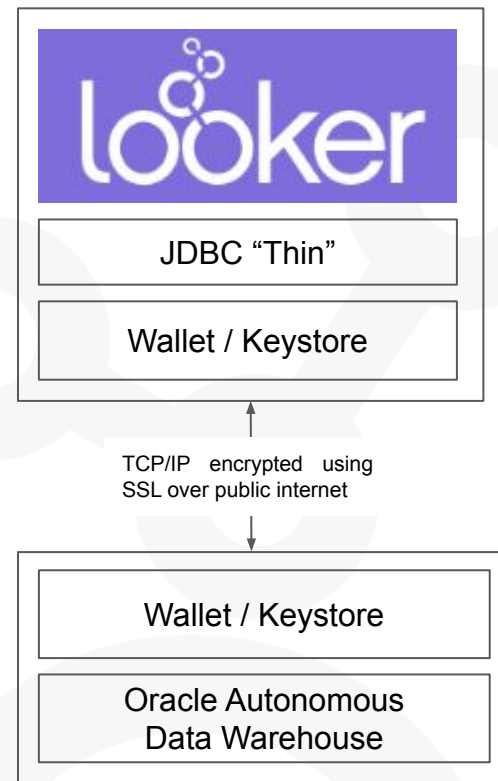


Move Data Warehouse / Data Marts to the Cloud

- IT struggling with cost of ongoing maintenance, data sprawl & lack of resources
- Enable IT to meet the demands of business while reducing cost
- Focus staff on strategic projects, rather than ongoing maintenance

Looker Connectivity to Oracle ADW

- Connection authentication requires an encrypted key stored in wallet on both client and server
 - Contains a collection of files, including key and other information needed to connect to your ADB
 - Hosted Looker customers need Looker Support to install your wallet zip file on the Looker server filesystem
- Looker connects to ADW using secure connections
 - Communications between Looker and server fully encrypted, cannot be intercepted or altered
 - ADW uses certificate authentication and SSL
 - Ensures no unauthorized access to the ADB



Connection Settings

Name * rittman_adw
The name you use to refer to this connection in models.

Dialect * Oracle ADWC

Use TNS

Host:Port * orc1_medium 1522

Service Name vomlcukwpyshmjy_rittmanadwc_medium.adwc.oraclecloud.com

Username * LOOKER

Password *****
[Change Password](#)

Persistent Derived Tables

Temp Database * LOOKER
The SCHEMA or DATABASE (depending on your dialect) in which Looker will write persistent derived tables.

Additional Params /home/lookerops/looker/credentials

PDT Overrides

Name orc1_medium

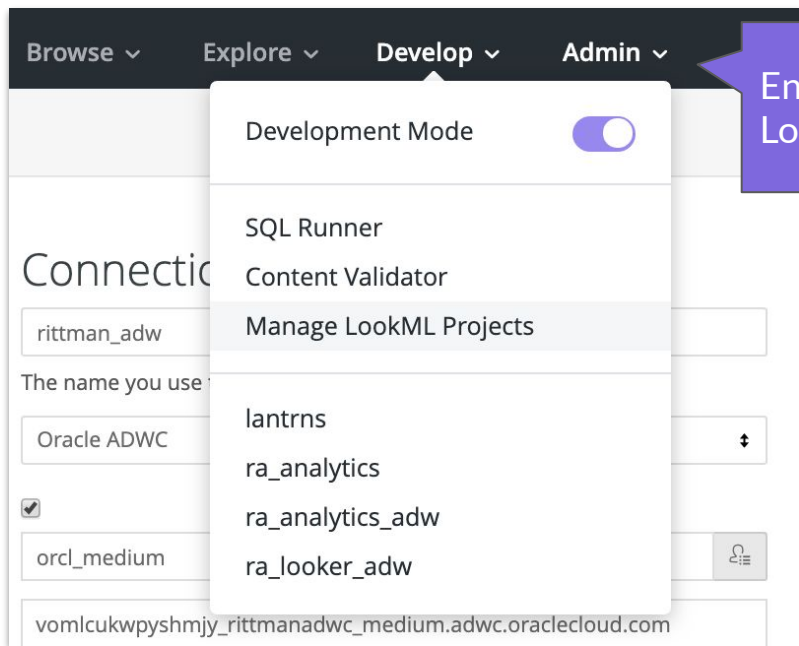
Username LOOKER

Password *****
[Change PDT Password](#)

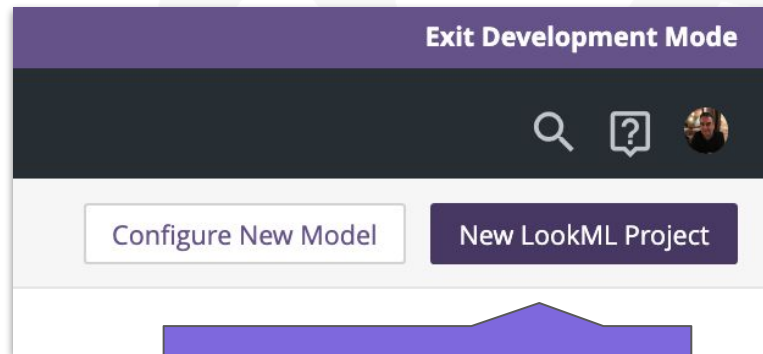
Database user (e.g. LOOKER) needs to be created, and scripts run, to configure Oracle Database for use with Looker (kill jobs, identify running queries etc)

Looker Support will need to copy wallet.zip file to Looker server filesystem for hosted instances; note that your file location may be different

Creating a New LookML Project

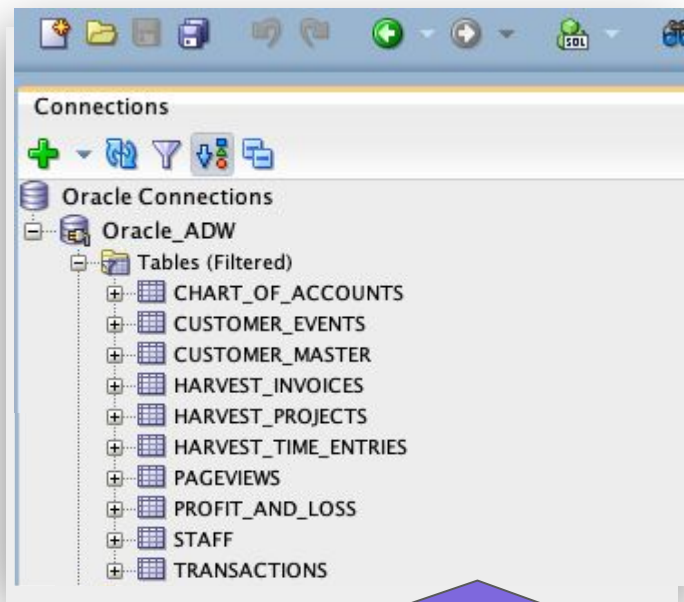


Enable development mode for Looker instance

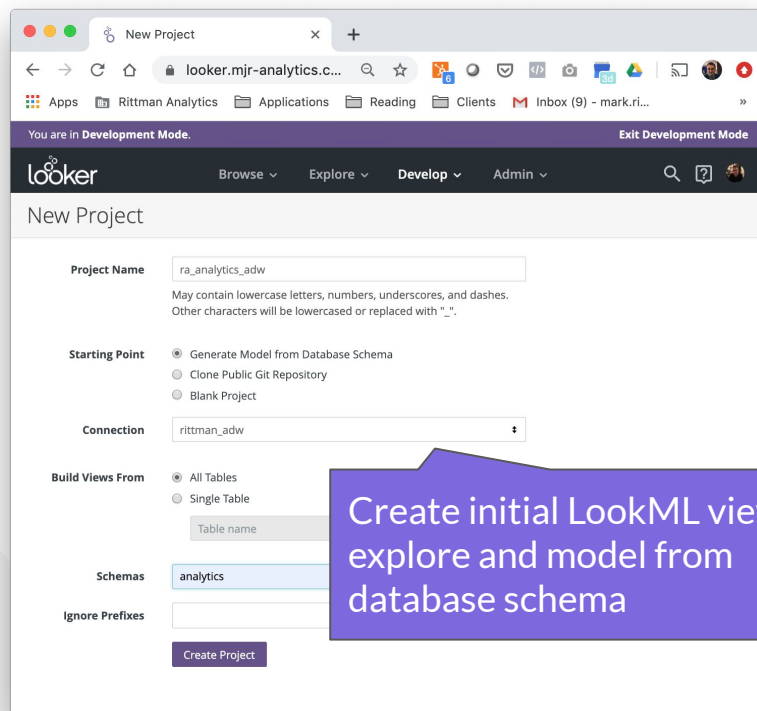


Create new LookML project

Generate Initial LookML Project from Schema



Replicate data for analysis
into Oracle ADW schema

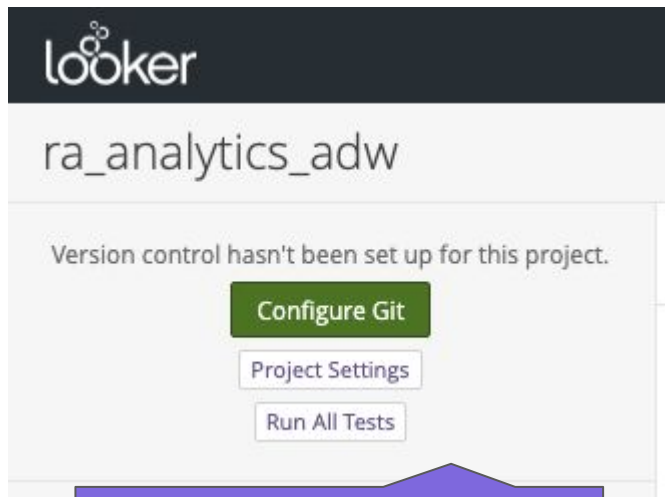


Create initial LookML views,
explore and model from
database schema

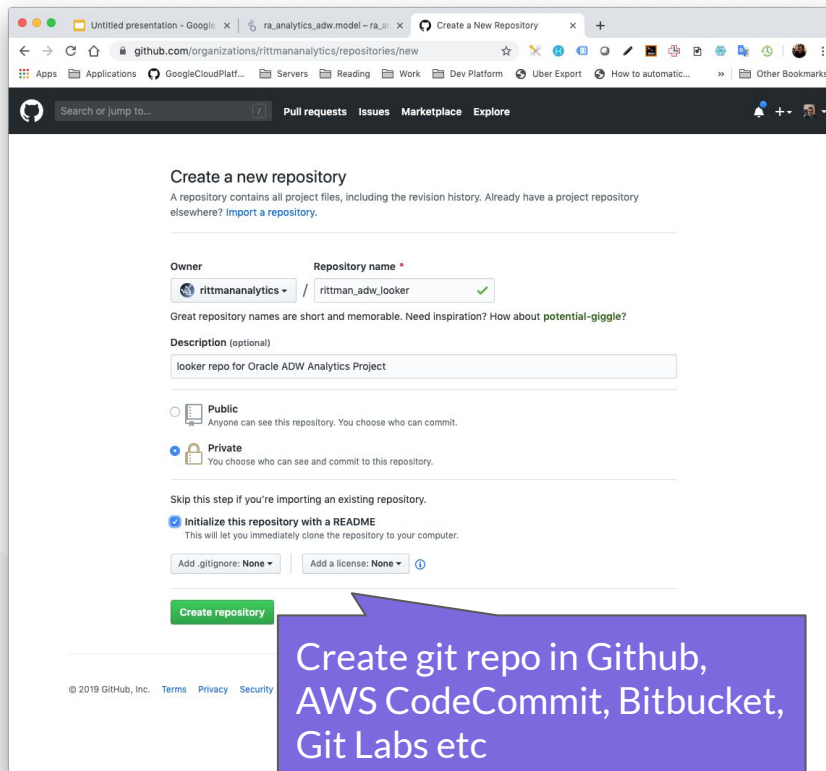
Review Initial LookML Views, Explore and Model

The screenshot displays the Looker web interface in 'Development Mode'. The main window shows the configuration for the 'ra_analytics_ad.model'. The configuration includes a connection to 'rittman_adw', an include for all views, and a datagroup named 'ra_analytics_ad_default_datagroup' with a specific SQL trigger and a cache age of 1 hour. A list of views is shown, including 'chart_of_accounts.view', 'customer_events.view', 'customer_master.view', and 'harvest_projects.view'. A purple callout box at the bottom left states: 'One explore (subject area) for each modeled view (table)'. A second browser window in the foreground shows the 'harvest_projects.view' configuration, which includes a 'dimension: starts_on' and a 'dimension_group: updated' with various timeframes. A purple callout box at the top right of this window states: 'Automatic creation of time dimension levels, drill from dimension groups to detail'. The right sidebar shows the model definition for 'ra_analytics_ad' with fields like 'access_grant', 'case_sensitive', 'connection', 'datagroup', 'explore', 'fiscal_month_offset', 'include', 'label', 'possibly-localized-string', 'map_layer', 'named_value_format', 'persist_for', 'persist_with', 'test', and 'view'.

Configure LookML Project for Git Version Control

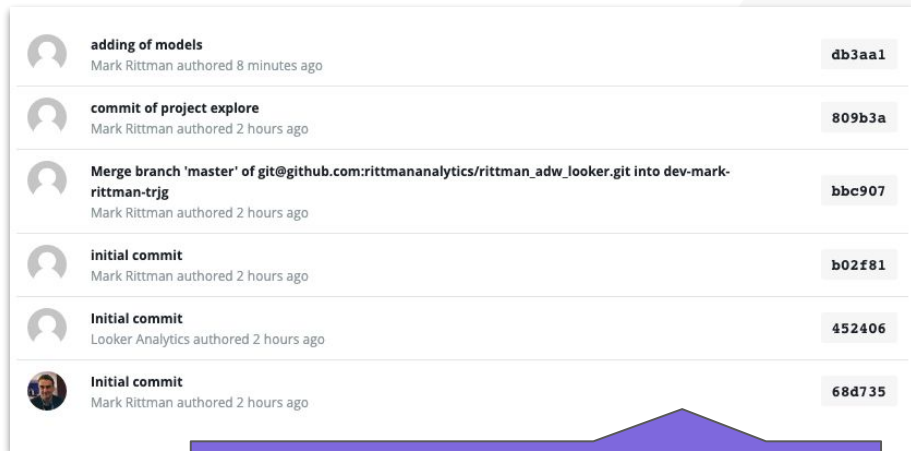
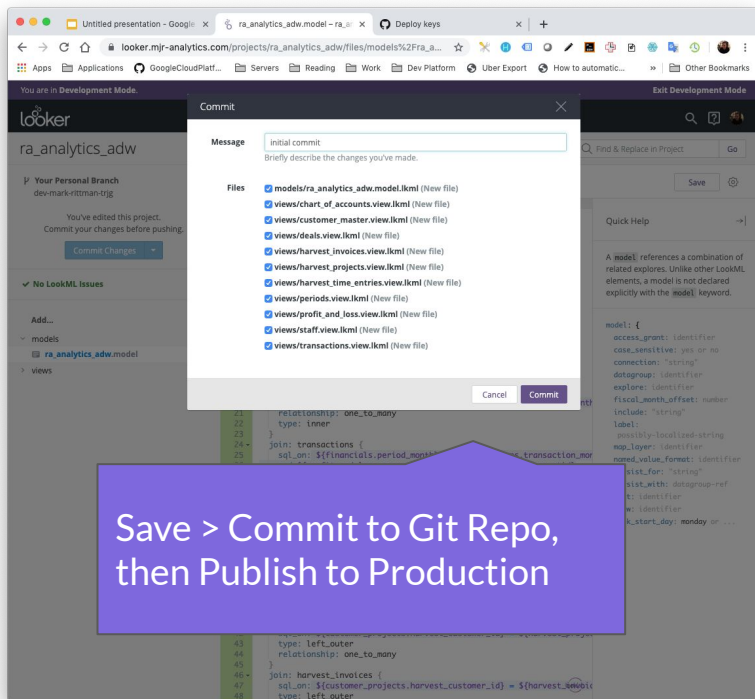


Configure LookML project for version control via git repo



Create git repo in Github, AWS CodeCommit, Bitbucket, Git Labs etc

Commit Initial Version of LookML Project to Git



Explore

12 rows · 0.5s · 1m ago Run

FILTERS (2)

- Projects Customer Name is not equal to ECOMMERCE Customer
- Timesheets Timesheet Billed On Date is in the past 12 complete months

VISUALIZATION

Billed Hours

Timesheet Billed On Month

COMPUTER_SOFTWARE Customer
GOVERNMENT_ADMINISTRATION Customer
HIGHER_EDUCATION Customer
SPORTS Customer
TELECOMMUNICATIONS Customer

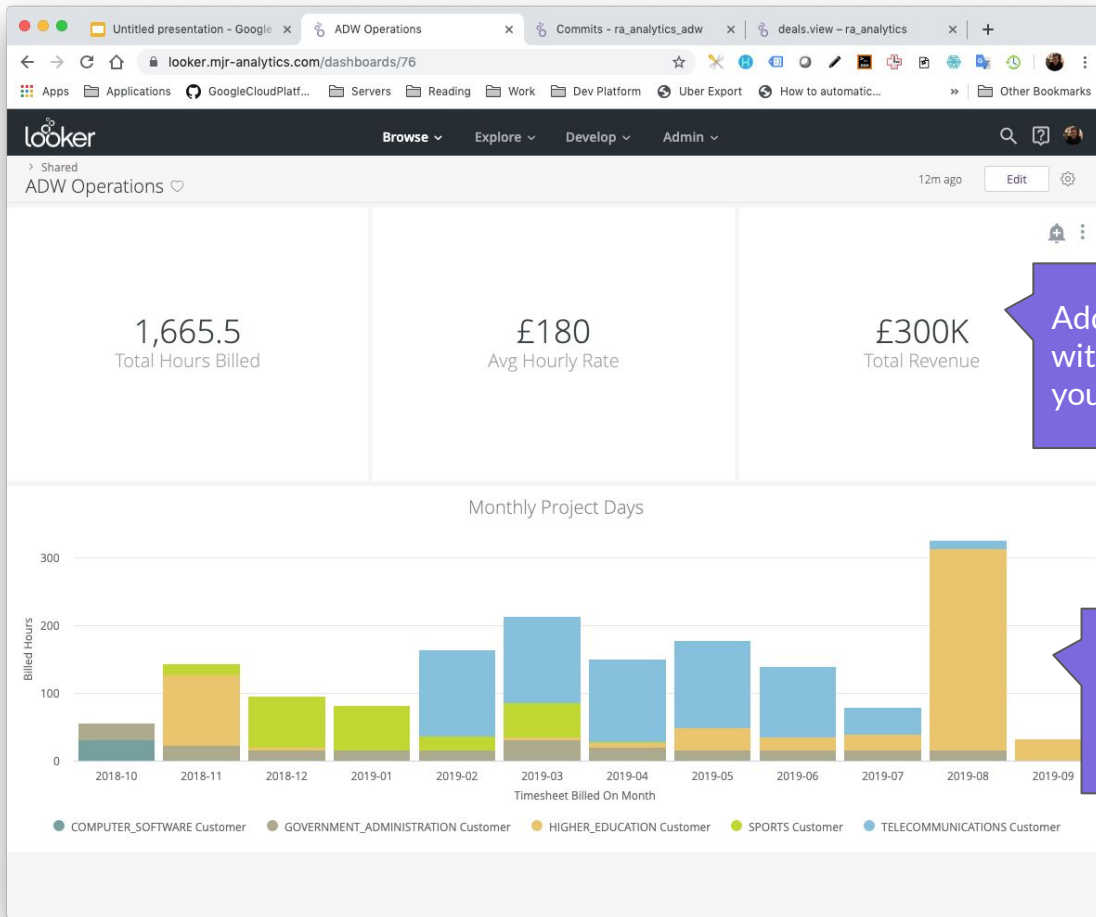
DATA RESULTS SQL

Projects Customer Name	COMPUTER_SOFTWARE Customer	GOVERNMENT_ADMINISTRATION Customer	HIGHER_EDUCATION Customer	TELECOMMUNICATIONS Customer
4	£1,800.00	24		
4	£1,800.00	48	104	£20,800.00
4	£1,200.00	64	4	£800.00
6	£1,200.00	80	108	£10,800.00
6	£1,200.00	96	108	£450.00
7	£2,400.00	128	4	£0.00
7	£2,400.00	112	50.5	£9,000.00

Filter, save to dashboard, drill from summary data down to granular detail

Click on dimensions or measures to add to look (report)

Full range of predefined and custom visualizations



Add looks to dashboards, view within Looker or embedded in your web app

Alerts, scheduled reports, link to external applications, deliver as insights to Slack etc

```
explore: customer_projects {
  from: customer_master
  join: harvest_projects {
    sql_on: ${customer_projects.harvest_customer_id} = ${harvest_projects.harvest_customer_id}
    type: inner
    relationship: one_to_one
  }
  join: harvest_invoicing {
    sql_on: ${customer_projects.harvest_customer_id} = ${harvest_invoicing.harvest_customer_id}
    type: left_outer
    relationship: one_to_one
  }
  join: harvest_time_entries {
    sql_on: ${customer_projects.harvest_customer_id} = ${harvest_time_entries.harvest_customer_id}
    and ${harvest_projects.id} = ${harvest_time_entries.project_id}
    type: left_outer
    relationship: many_to_one
  }
  join: hubspot_deals {
    sql_on: ${customer_projects.hubspot_company_id} = ${hubspot_deals.hubspot_company_id}
    type: left_outer
    relationship: one_to_many
  }
}
```

LookML views join together to create an enterprise-wide, lightweight business model that's easy and simple to extend

Customer Projects

All Fields | Dimensions | Measures

- ▶ Projects 1
- ▶ Timesheets 1
- ▶ Invoicing 1
- ▼ New Business

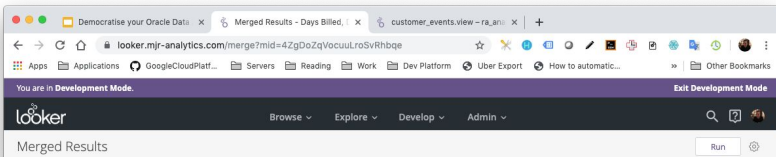
DIMENSIONS

- Closed Lost Reason
- ▶ Deal Closed Date
- ▶ Deal Created Date
- Deal Name
- Deal Stage
- Deal Type

MEASURES

- Count
- Deal Amount

FILTER



Create looks with source data spanning multiple subject areas

MERGE RULES

Days Billed PRIMARY

Timesheets Timesheet Billed On Mo merge by New Business Deal Created Month

Projects Customer Name merge by Projects Customer Name

Deals Registered

Days Billed PRIMARY

Timesheets Timesheet Billed On Mo merge by New Business Deal Closed Month

Projects Customer Name merge by Projects Customer Name

Deals Won

Days Billed PRIMARY

Timesheets Timesheet Billed On Mo merge by Invoicing Project Invoice Month

Projects Customer Name merge by Projects Customer Name

Invoices Issued

Create looks that merge data from multiple queries or explores into one dataset e.g. for customer journeys

Explore

Customer Projects

FILTERS

VISUALIZATION

TELECOMMUNICATIONS Customer

HIGHER_EDUCATION Customer

COMPUTER_SOFTWARE Customer

ECOMMERCE Customer

SPORTS Customer

COSMETICS Customer

GOVERNMENT_ADMINISTRATION Customer

Legend: Original Opportunity Amount (Blue), Billed Revenue (Black)

DATA RESULTS SQL Calculations Row Limit 500 Totals

Projects Customer Name	New Business Deal Amount	Timesheets Billed Revenue	Invoicing Project Invoice Gross Amount	Original Opportunity Amount	
1 TELECOMMUNICATIONS Customer	251,200	£146,025.00	£170,430	£105,175	
2 HIGHER_EDUCATION Customer	216,000	£96,612.50	£78,380	£119,388	
3 COMPUTER_SOFTWARE Customer	154,800	£25,600.00	£30,720	£129,200	
4 ECOMMERCE Customer	122,600	£125,050.00	£131,429	£0	
5 SPORTS Customer	53,400	£36,000.00	£43,200	£17,400	
6 COSMETICS Customer	0	£30,000.00	£30,000	£0	
7 GOVERNMENT_ADMINISTRATION Customer	0	£25,900.00	£31,080	£0	

BizOps KPI Framework

Business Objective	Type	Key Performance Indicator	Tags
Increase Sales	Primary KPI	Revenue to Target	Sales KPI
Increase Sales	Secondary Measure	Weighted Opportunity Pipeline	Sales Marketing Partners
Increase Sales	Secondary Measure	Deal Win Rate %	Sales Delivery
Increase Profitability	Primary		
Increase Profitability	Sec		
Increase Profitability	Sec		
Increase Profitability	Sec		
Increase Efficiency	Prim		
Increase Efficiency	Sec		
Increase Efficiency	Sec		
Increase Client Retention	Prim		
Increase Client Retention	Sec		

- Scale-out your analytics with a modern, lightweight delivery approach
- Deliver on your objective of becoming a more data-driven business
- Modernise and Democratise your Oracle data analytics



A modern analytics workflow

Single Sign-On



SIGN IN WITH GOOGLE

SaaS App
Data Sources



CRM & Sales



Timesheets
& Forecasting



Accounting

Extract & Load



Data Pipeline
-as-a-Service

Staging



Raw, Untransformed
API Data

Transform



SQL-based
ELT Steps

Data Warehouse



Transformed &
Integrated Data

Analytics



Dashboards,
Reporting &
Business Metadata

Versioning & Remote Dev



GitHub

Single Sign-On



SIGN IN TO
ORACLE CLOUD

SaaS App
Data Sources

ORACLE
E-BUSINESS SUITE



salesforce

Extract & Load



Data Pipeline
-as-a-Service

Staging



Raw, Untransformed
API Data

Transform



SQL-based
ELT Steps

Data Warehouse



Transformed &
Integrated Data

Analytics



Dashboards,
Reporting &
Business Metadata

Versioning & Remote Dev



GitHub

The screenshot shows the Looker SQL Runner interface. A modal window titled "Get Derived Table LookML" is open, displaying the following SQL query:

```

view: sql_runner_query {
  derived_table: {
    sql: SELECT
      hubspot_company_id,
      closed_lost_reason,
      dealname,
      dealstage,
      dealstage_sortindex,
      deadstage_id,
      dealtype,
      closedate,
      createdate,
      amount
    FROM
      "analytics"."DEALS"
  ;;
}

```

Below the SQL query, the LookML definition is shown:

```

measure: count {
  type: count
  drill_fields: [detail*]
}

dimension: hubspot_company_id {
  type: number
  sql: ${TABLE}.HUBSPOT_COMPANY_ID ;;
}

dimension: closed_lost_reason {

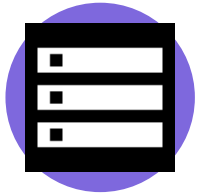
```

The background shows the SQL Runner interface with a "Run" button and a "RESULT" section displaying a table of data.

Query Oracle ADW using built-in SQL Query Runner, then use results to define a new "derived table" view to add sales opportunities view to base LookML project

Wt **looker** or Oracle Autonomous Data Warehouse?

In-Database & ELT Architecture



Leverages Oracle SQL including OLAP, Analytic Views, ELT Transformations and MVs

Agile, Modern BI Development



Modern analytics engineering workflow, native git integration and part of a modular BI architecture

Supports a Multi-Cloud Strategy



Access to capabilities, avoiding vendor lock-in, cost mitigation and simpler deployment

Interested?

Book your Looker and Oracle test-drive now

 info@rittmananalytics.com

 +44 7866 568246

 <https://rittmananalytics.com>



Democratize your Data Analytics with Looker and Oracle Autonomous Data Warehouse

Mark Rittman, CEO, Rittman Analytics
Oracle User Group BI Modernization Summit, October 2019