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Dev Team Insights on Oracle APEX Fusion Apps Extensions



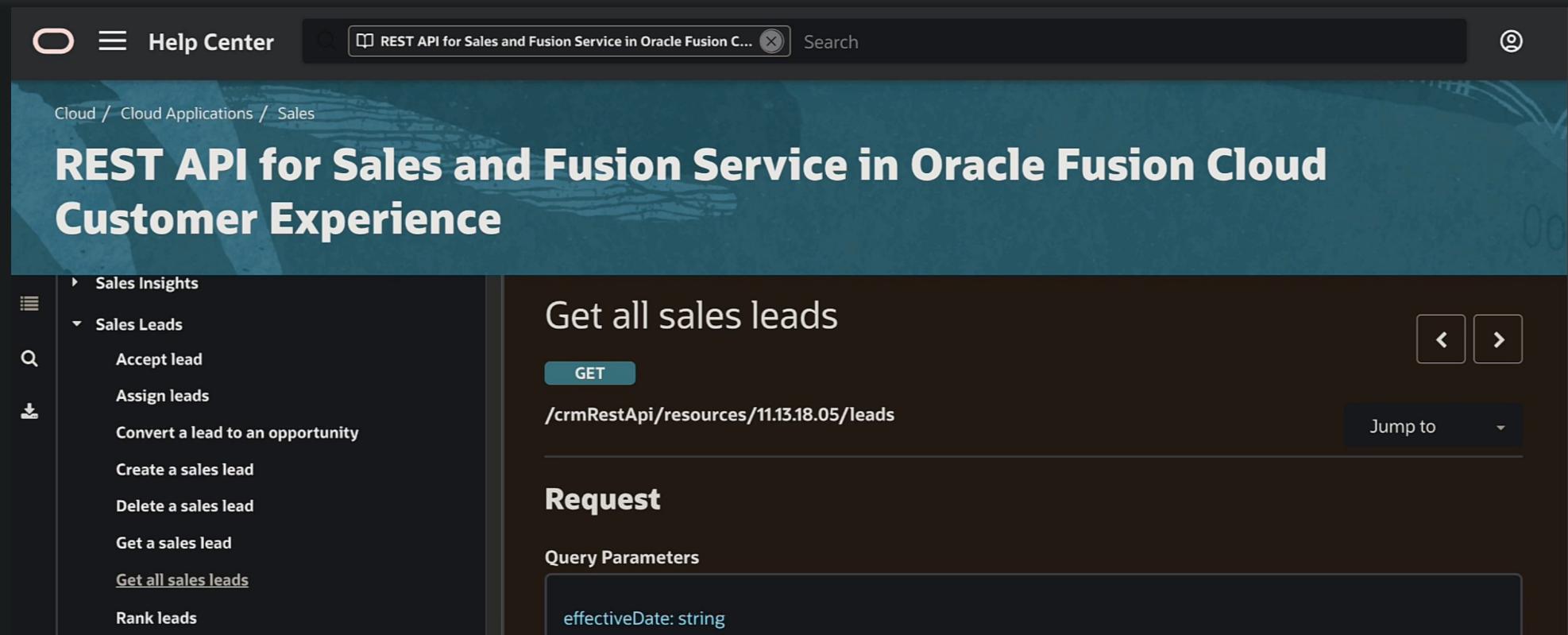
Oracle Applications Cloud

April 12th, 2024
Steve Muench,
Senior Architect, APEX Dev Team



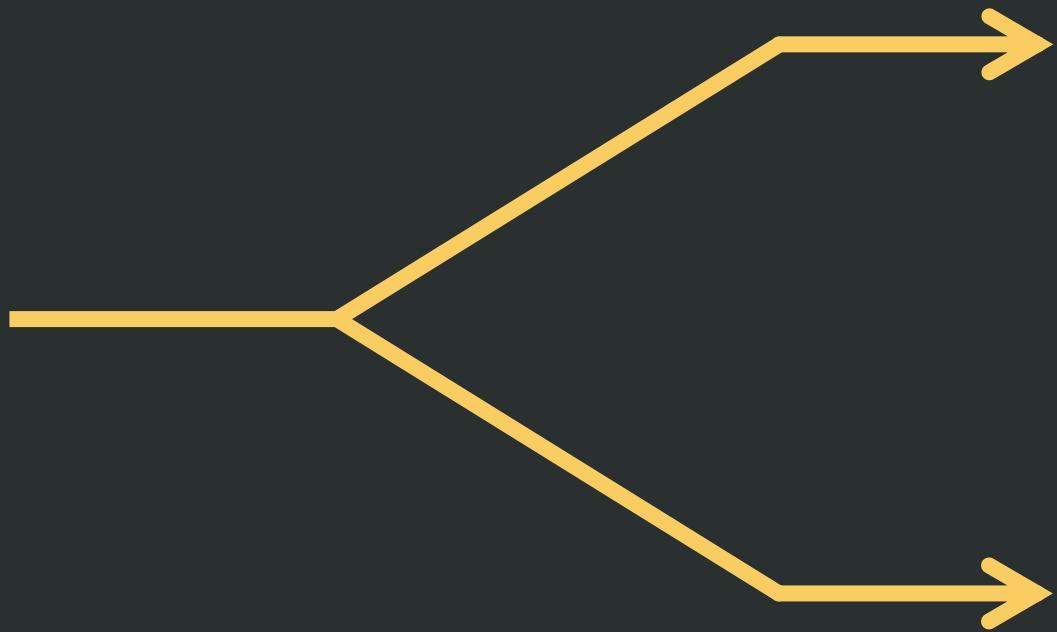
Background

- Fusion Applications (FA) exposes many documented REST APIs
- Before 23.2, APEX supported *read-only* pagination for FA data
- Customers with low-code, SQL-centric skills want to extend FA



The screenshot shows a dark-themed Help Center interface for the REST API. The top navigation bar includes a logo, a 'Help Center' link, a search bar containing 'REST API for Sales and Fusion Service in Oracle Fusion C...', and a user icon. The main content area has a teal header with the title 'REST API for Sales and Fusion Service in Oracle Fusion Cloud Customer Experience'. On the left, a sidebar menu is open, showing a tree structure with 'Sales Insights' and 'Sales Leads' expanded. Under 'Sales Leads', items like 'Accept lead', 'Assign leads', and 'Get all sales leads' are listed. The main content area displays a section titled 'Get all sales leads' with a 'GET' button, the URL '/crmRestApi/resources/11.13.18.05/leads', and a 'Request' section. The 'Request' section includes a 'Query Parameters' table with a single row: 'effectiveDate: string'. Navigation arrows and a 'Jump to' dropdown are also visible.

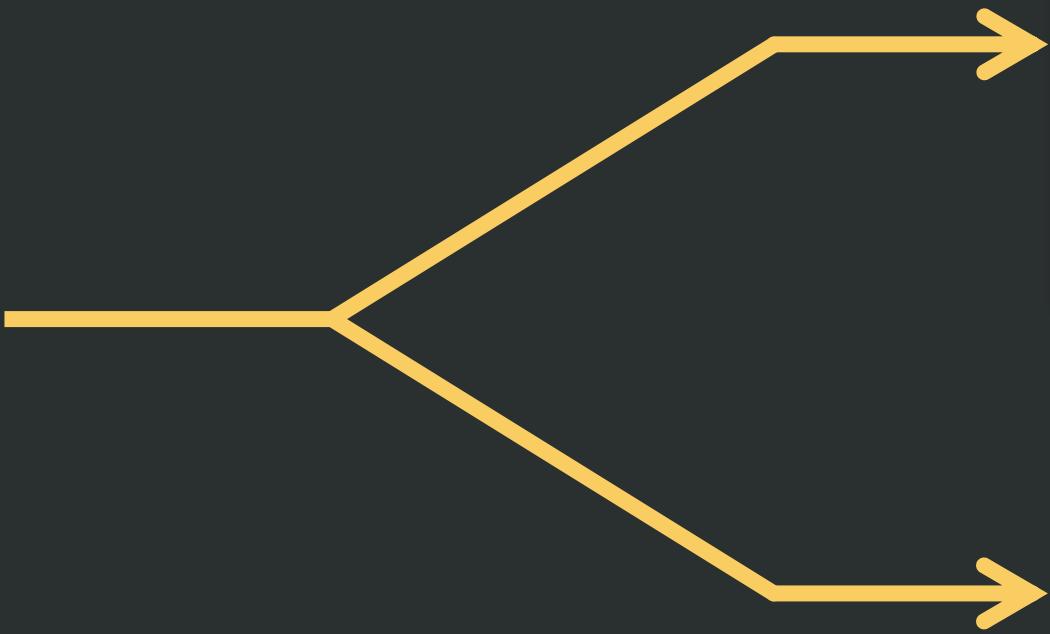
APEX Strategy to Simplify Low-Code FA Extensions



Simplify using sophisticated
read/write functionality of
FA REST APIs with any APEX region

Simplify using FA single sign-on (SSO) and
user identity propagation to FA REST API
calls to engage FA data security

APEX Strategy to Simplify Low-Code FA Extensions: Progress Update



APEX 23.2

Simplify using sophisticated
read/write functionality of
FA REST APIs with any APEX region

APEX 23.2

Simplify using FA single sign-on (SSO) and
user identity propagation to FA REST API
calls to engage FA data security

Recorded Video Demos of the Features in Action

APEX 23.2

Simplify using sophisticated
read/write functionality of
FA REST APIs with any APEX region



New Feature Overview



APEX Office Hours Demo

Goal: Self-Service Option for APEX in FA "Circle of Trust"



Oracle Applications Cloud

Oracle IDCS "Stripe"

Simplify using FA single sign-on (SSO) and user identity propagation to FA REST API calls to engage FA data security

APEx and FAaaS teams are Actively Working on Delivering this in the Future

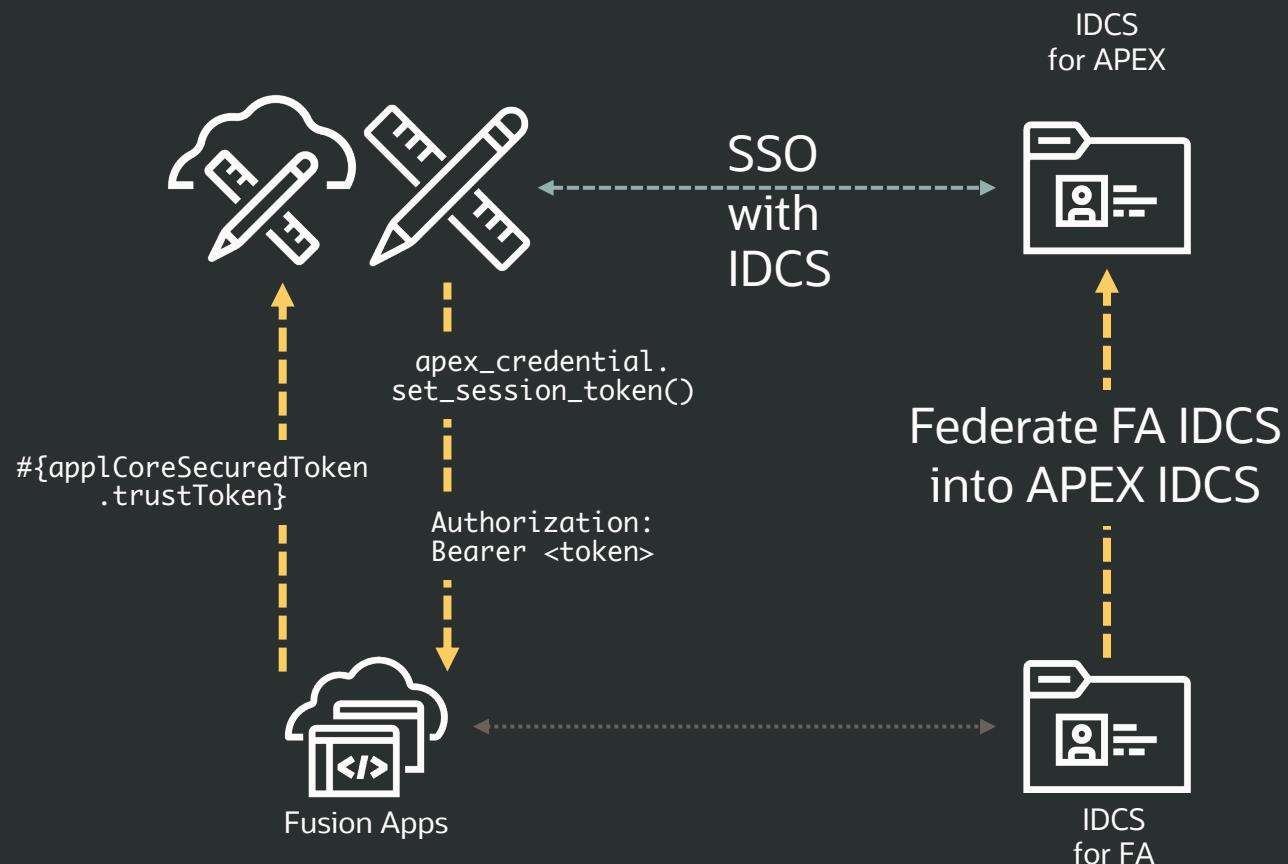
(Possible today by following instructions in technical papers, but not easy yet)



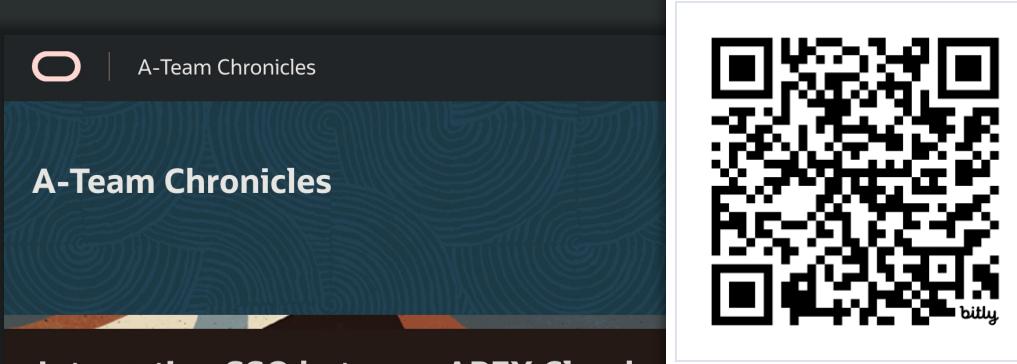
Safe Harbor Statement



Integrate Oracle APEX IDCS with Fusion Apps IDCS



Integrate Oracle APEX IDCS with Fusion Apps IDCS



A-Team Chronicles

Integrating SSO between APEX Cloud and Identity Cloud Service the Easy Way

August 5, 2019 | 9 minute read

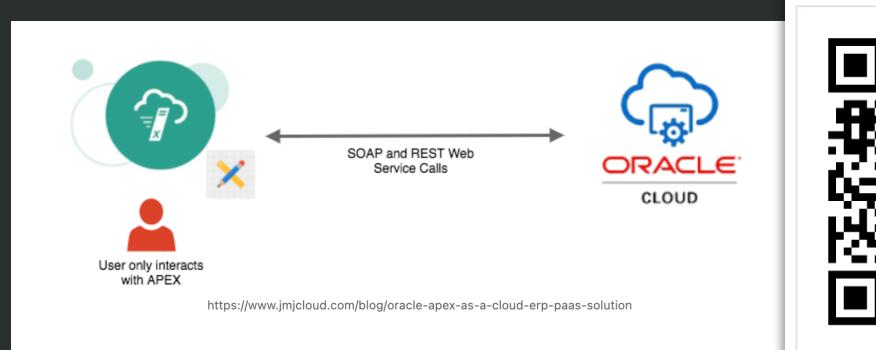
 Tim Melander
A-Team Cloud Solution Architect



Johannes Murmann wrote a great blog [Integrating APEX with Oracle Identity Cloud Service](#), but this integration is for APEX running on-premises. Fast forward, APEX has moved to the cloud like many other things, so I thought I should write an article on how to integrate the cloud version of APEX with Oracle Identity Cloud Service. The integration is quite different as it uses the OpenID Connect protocol, and should be possible with any APEX cloud application. As a bonus you can do this entire setup using a free trial APEX workspace at <https://apex.oracle.com> that takes about 2 minutes, install a sample application that comes with the APEX workspace in about 3 minutes, and complete the integration with Identity Cloud Service in about 15 minutes (Assuming you have an IDCS tenant and are an Administrator). In all, this entire setup from start to finish should only take about 30 minutes or less. So let's hit that timer and get started!

Install a Sample Application in APEX

This section assumes you can follow the simple steps to get your free trial APEX workspace, and then will step you through installing a sample Calendar application so that we have an example to configure OpenID Connect with Identity Cloud Service. This section should take about 5-7 minutes.



SOAP and REST Web Service Calls

<https://www.jmjcloud.com/blog/oracle-apex-as-a-cloud-erp-paas-solution>

Making Oracle APEX Roll for Fusion SaaS Application Extensions

 Bhavesh S.
Technical Architect at Oracle | Helping Customers Realize Goals with Oracle Cloud PaaS/SaaS | TOGAF® 9 Certified Enterprise Architect

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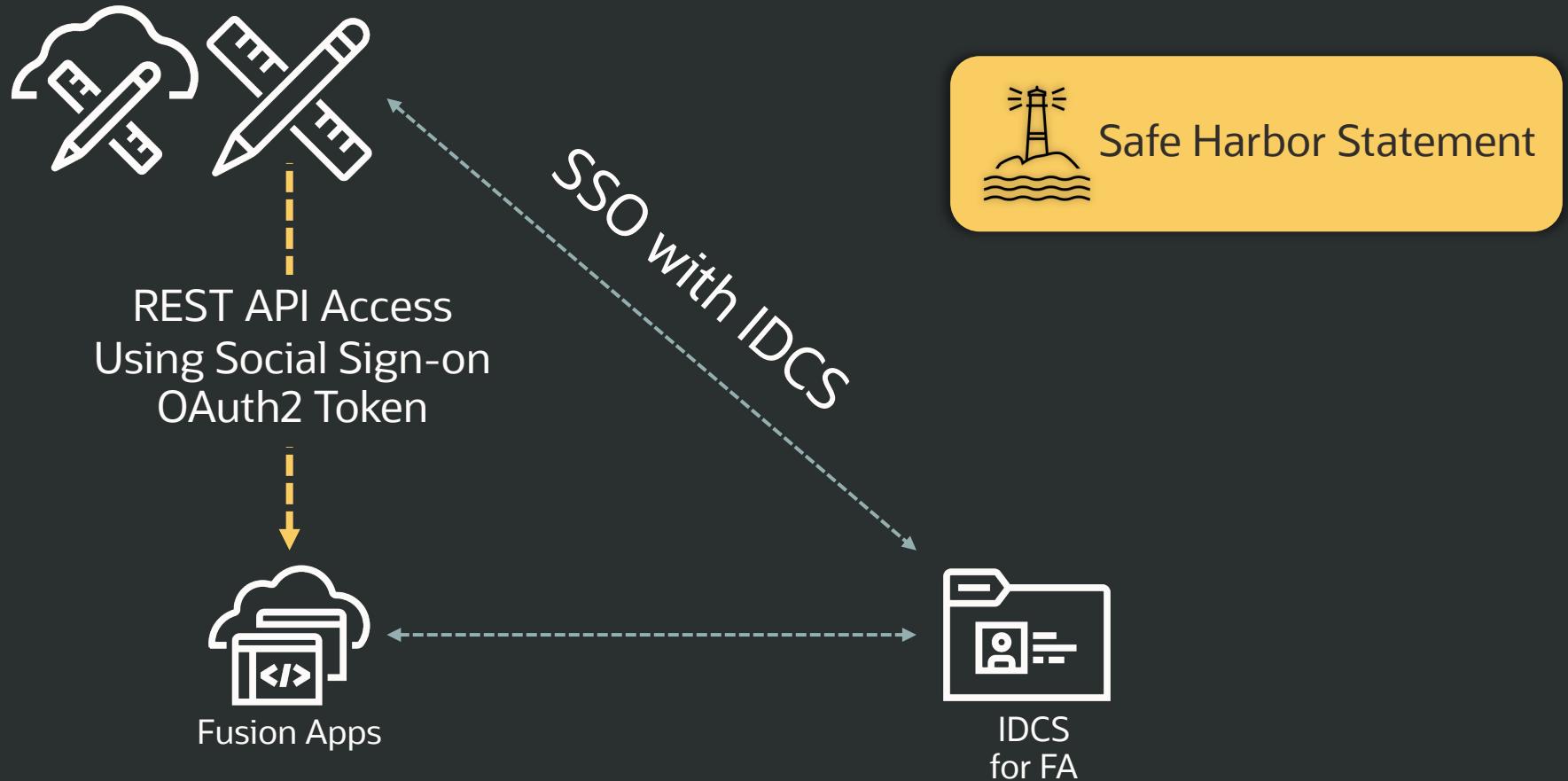
June 13, 2021

[Open Immersive Reader](#)

In a [previous article](#) I compared APEX and VBCS, two low code application platforms from Oracle. While VBCS is an obvious choice for many use-cases around extending Oracle Fusion SaaS applications, depending upon use-case there are a couple of things that weigh on VBCS. One is pricing and another is size of data persistence. APEX positions itself very well in both these areas and hence it makes absolute sense to consider it for SaaS extensions. Let us look at a few things to keep in mind while using APEX for this purpose.



Future Simplification (Joint FAaaS + APEX Effort)



APEX Now a *First Class* App Builder for FA Extensions

- Discover all query and CRUD operations and simplify data sources by hiding unused fields
- Use with all APEX regions: faceted search, maps, interactive reports/grids, forms, etc.

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 - Select only required data & get total row count without fetching all (e.g. 1-10 of 200)
- See validation errors from backend business objects like regular APEX validation errors

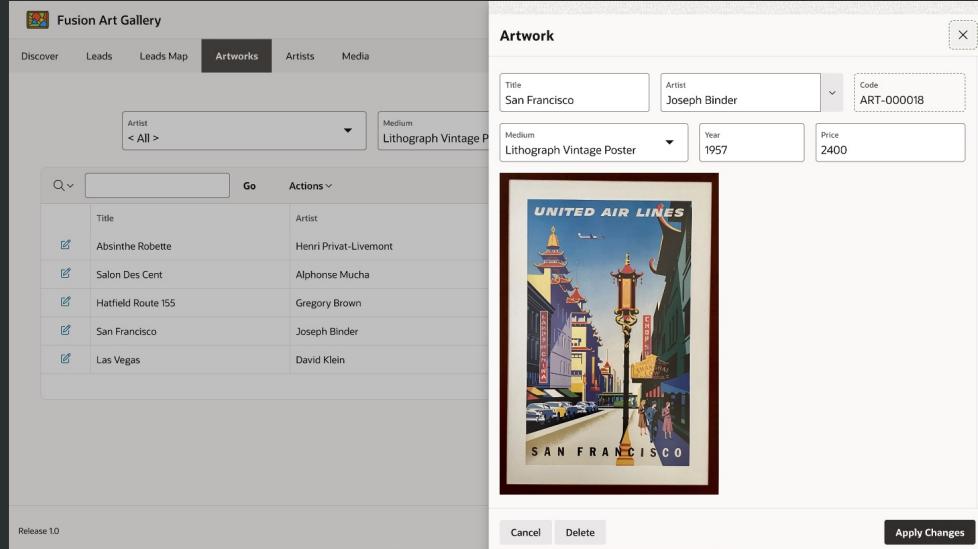
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- Build parent/child select lists, popup LOVs, all region types & QBE screens w/ filter params
- Work against a Fusion Apps sandbox to iterate APEX UI for pending data model extensions

APEX Now a *First Class* App Builder for FA Extensions

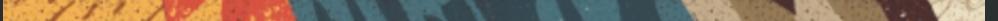


The screenshot shows the Fusion Art Gallery application built with Oracle APEX. The main interface is a list of artworks, with a modal dialog open showing a detailed view of a specific artwork. The modal contains fields for Title (San Francisco), Artist (Joseph Binder), Medium (Lithograph Vintage Poster), Year (1957), and Price (2400). Below the modal is a thumbnail image of a vintage poster for United Air Lines, featuring a San Francisco street scene. The application has a clean, modern design with a light gray background and white text.

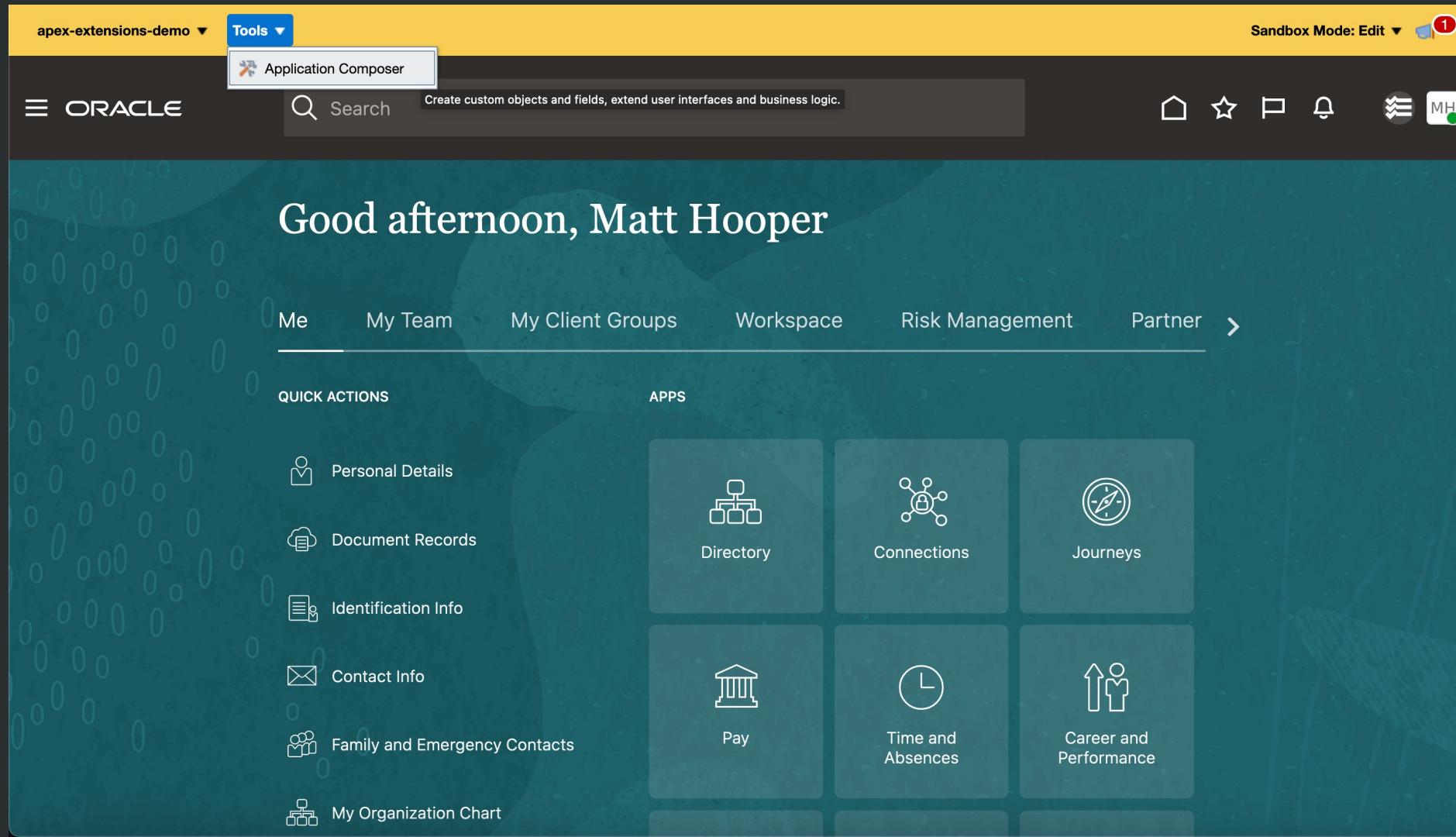
APEX

Oracle Cloud Apps (SaaS)
REST Data Sources

Oracle Applications Cloud



Fusion App Composer



The screenshot shows the Oracle Fusion App Composer interface. At the top, there is a yellow header bar with the text "apex-extensions-demo" and "Tools". On the right of the header is a "Sandbox Mode: Edit" button with a red notification badge showing "1". Below the header is a dark navigation bar with the "ORACLE" logo, a search bar, and several icons for navigation and notifications.

The main content area has a teal background with a binary code pattern. It features a greeting "Good afternoon, Matt Hooper". Below the greeting is a navigation bar with tabs: "Me" (which is selected), "My Team", "My Client Groups", "Workspace", "Risk Management", and "Partner".

On the left side, there is a "QUICK ACTIONS" section with five items: "Personal Details" (person icon), "Document Records" (cloud icon), "Identification Info" (document icon), "Contact Info" (envelope icon), and "Family and Emergency Contacts" (people icon).

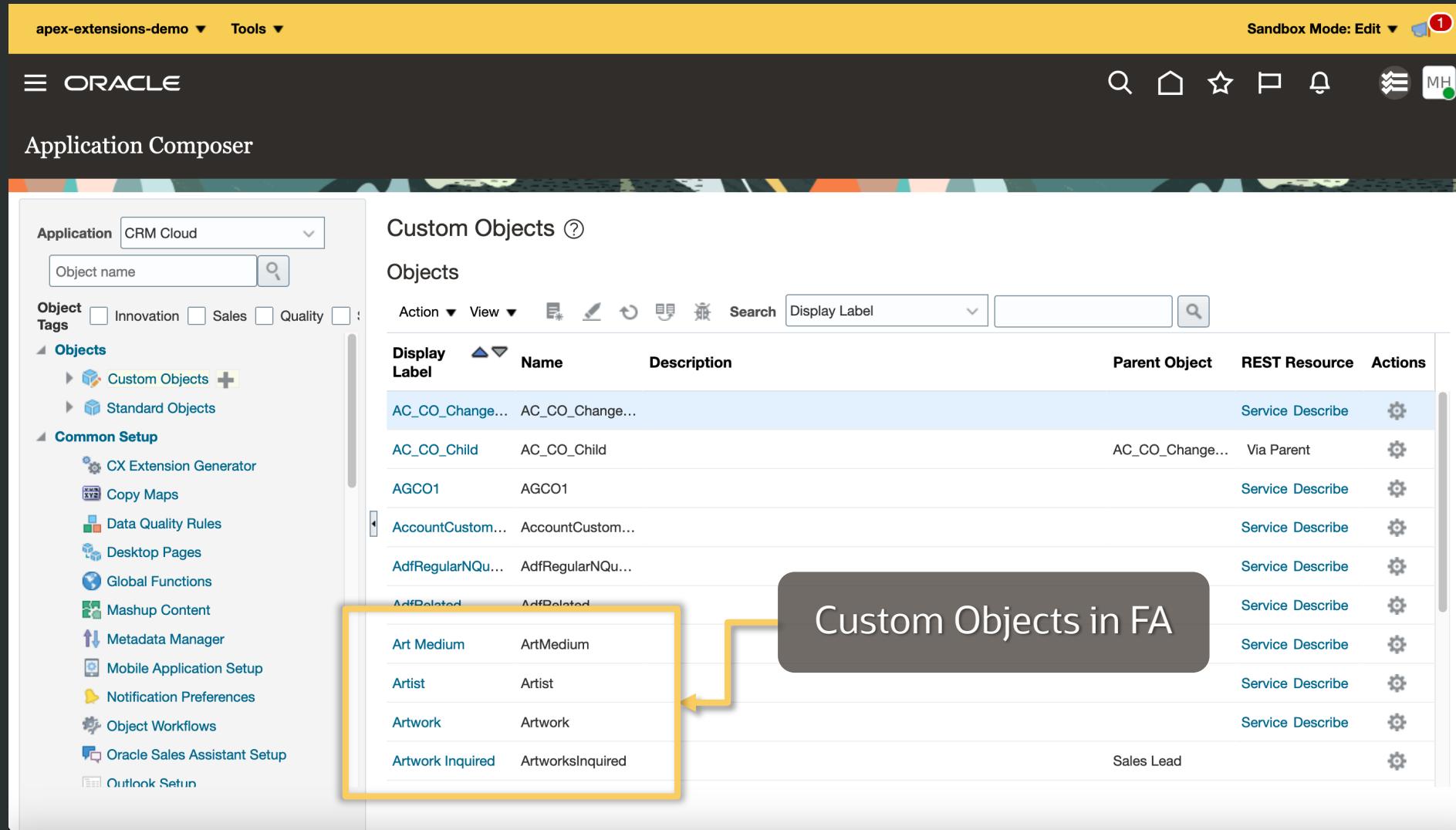
On the right side, there is a "APPS" section with six tiles arranged in a 2x3 grid:

- Top-left: "Directory" (server icon)
- Top-middle: "Connections" (network icon)
- Top-right: "Journeys" (compass icon)
- Bottom-left: "Pay" (building icon)
- Bottom-middle: "Time and Absences" (clock icon)
- Bottom-right: "Career and Performance" (upward arrow and person icon)

At the bottom of the main content area, there are three additional tiles that are partially visible:

- Left: "My Organization Chart" (organization chart icon)
- Middle: "..." (three dots icon)
- Right: "..." (three dots icon)

Custom Objects in Fusion App Composer



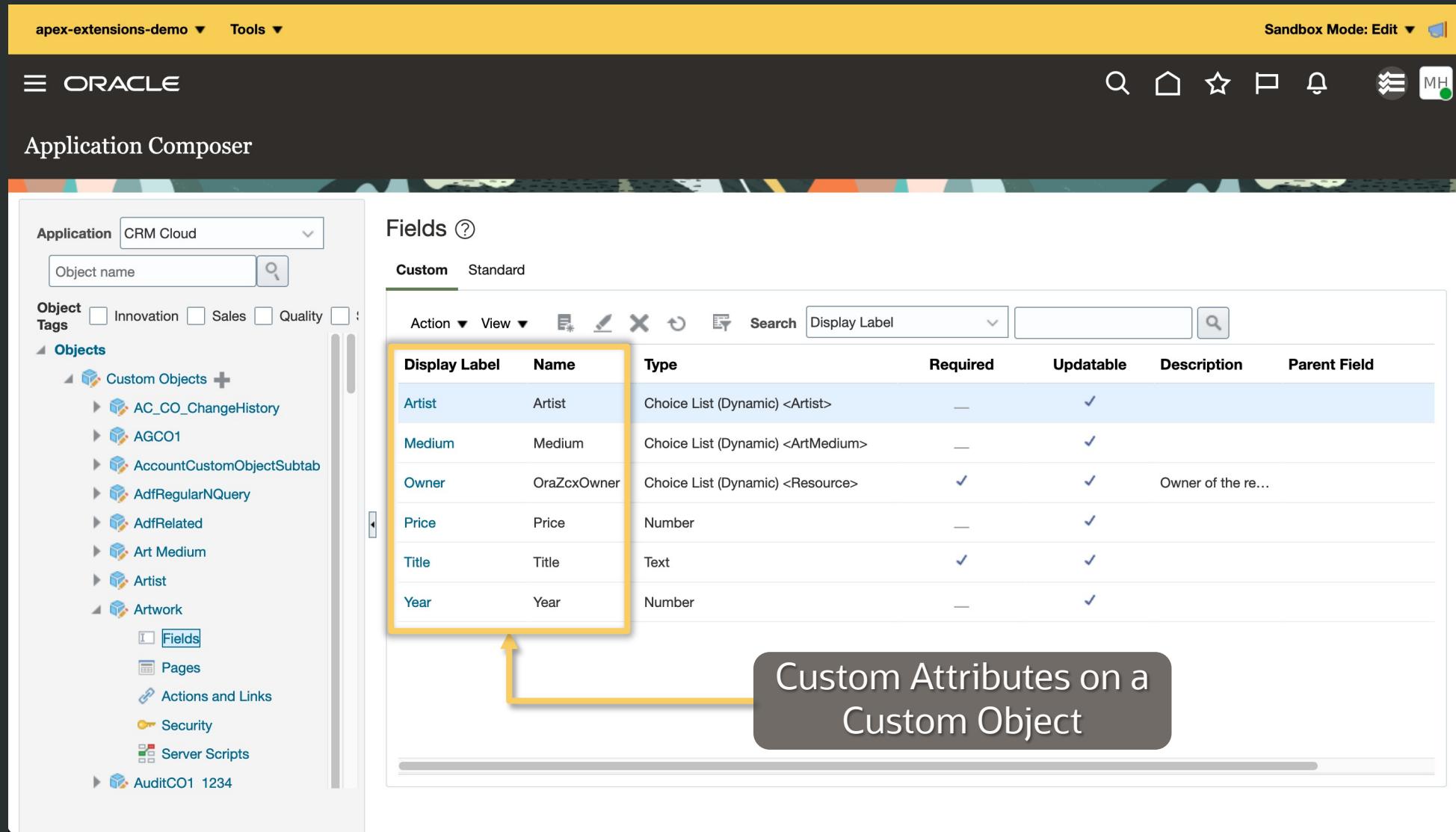
The screenshot shows the Oracle Fusion Application Composer interface. The top navigation bar includes 'apex-extensions-demo' and 'Tools' dropdowns, 'Sandbox Mode: Edit' with a notification icon, and standard navigation icons for search, home, and user profile.

The main content area is titled 'Custom Objects' and displays a table of objects. The table columns are: Display Label, Name, Description, Parent Object, REST Resource, and Actions. The table shows several entries, with the last four rows highlighted by a yellow box and a callout bubble pointing to it.

Display Label	Name	Description	Parent Object	REST Resource	Actions
AC_CO_Change...	AC_CO_Change...			Service Describe	
AC_CO_Child	AC_CO_Child		AC_CO_Change...	Via Parent	
AGCO1	AGCO1			Service Describe	
AccountCustom...	AccountCustom...			Service Describe	
AdfRegularNQu...	AdfRegularNQu...			Service Describe	
AdfRelated...	AdfRelated...			Service Describe	
Art Medium	ArtMedium			Service Describe	
Artist	Artist			Service Describe	
Artwork	Artwork			Service Describe	
Artwork Inquired	ArtworksInquired		Sales Lead	Service Describe	

A callout bubble with the text 'Custom Objects in FA' points to the highlighted row for 'Art Medium'.

Custom Attributes in Fusion App Composer



The screenshot shows the Oracle Fusion App Composer interface. The left sidebar displays the application as 'CRM Cloud' and lists various objects under 'Custom Objects' and 'Artwork'. The main area is titled 'Fields' and shows a table of custom attributes for a specific object. A callout box highlights the 'Custom' tab and the list of attributes, with the text 'Custom Attributes on a Custom Object'.

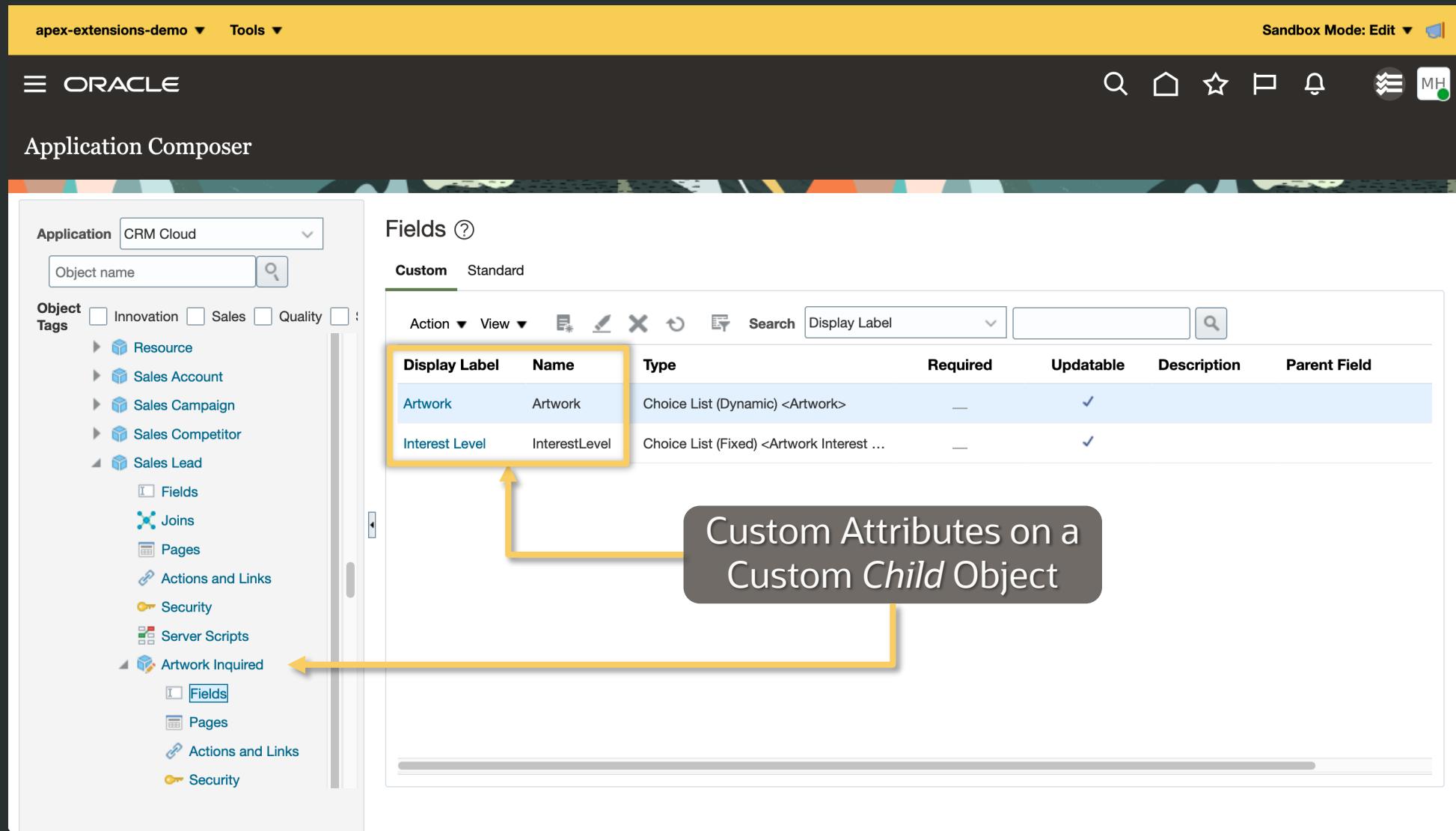
Fields

Custom Standard

Display Label	Name	Type	Required	Updatable	Description	Parent Field
Artist	Artist	Choice List (Dynamic) <Artist>	—	✓		
Medium	Medium	Choice List (Dynamic) <ArtMedium>	—	✓		
Owner	OraZcxOwner	Choice List (Dynamic) <Resource>	✓	✓	Owner of the re...	
Price	Price	Number	—	✓		
Title	Title	Text	✓	✓		
Year	Year	Number	—	✓		

Custom Attributes on a Custom Object

Custom Child Objects in Fusion App Composer

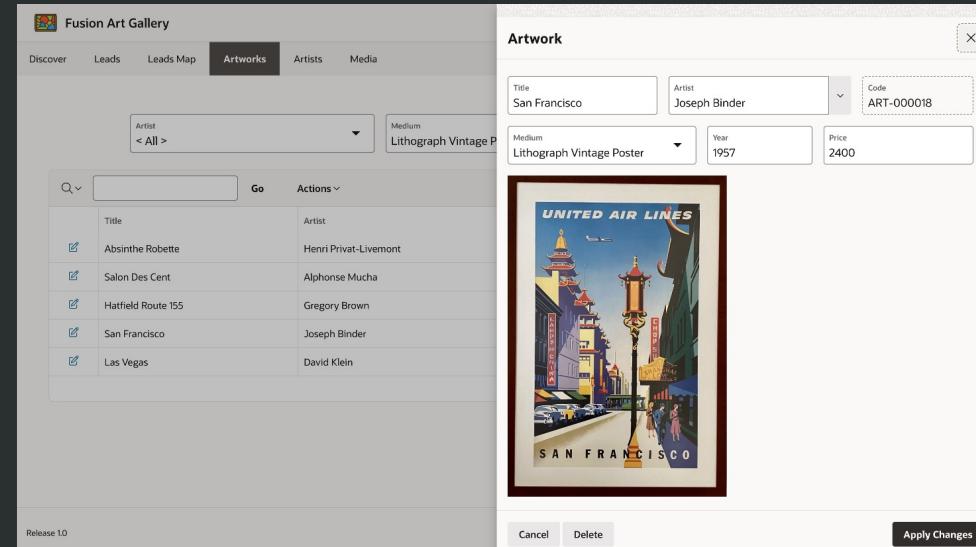


The screenshot shows the Oracle Fusion App Composer interface. The left sidebar is titled 'Application Composer' and shows the 'CRM Cloud' application selected. The 'Object name' search bar is empty. The 'Object Tags' sidebar lists various objects: Resource, Sales Account, Sales Campaign, Sales Competitor, Sales Lead, Fields, Joins, Pages, Actions and Links, Security, Server Scripts, and Artwork Inquired. The 'Artwork Inquired' section is expanded, showing Fields, Pages, Actions and Links, and Security. The main content area is titled 'Fields' and shows a table of custom fields for a 'Custom' object. The table has columns: Display Label, Name, Type, Required, Updatable, Description, and Parent Field. Two rows are listed: 'Artwork' (Name: Artwork, Type: Choice List (Dynamic) <Artwork>) and 'Interest Level' (Name: InterestLevel, Type: Choice List (Fixed) <Artwork Interest ...>). A callout box with a yellow border and arrow points to the 'Interest Level' row, containing the text 'Custom Attributes on a Custom Child Object'.

Display Label	Name	Type	Required	Updatable	Description	Parent Field
Artwork	Artwork	Choice List (Dynamic) <Artwork>	—	✓		
Interest Level	InterestLevel	Choice List (Fixed) <Artwork Interest ...>	—	✓		

Custom Attributes on a Custom Child Object

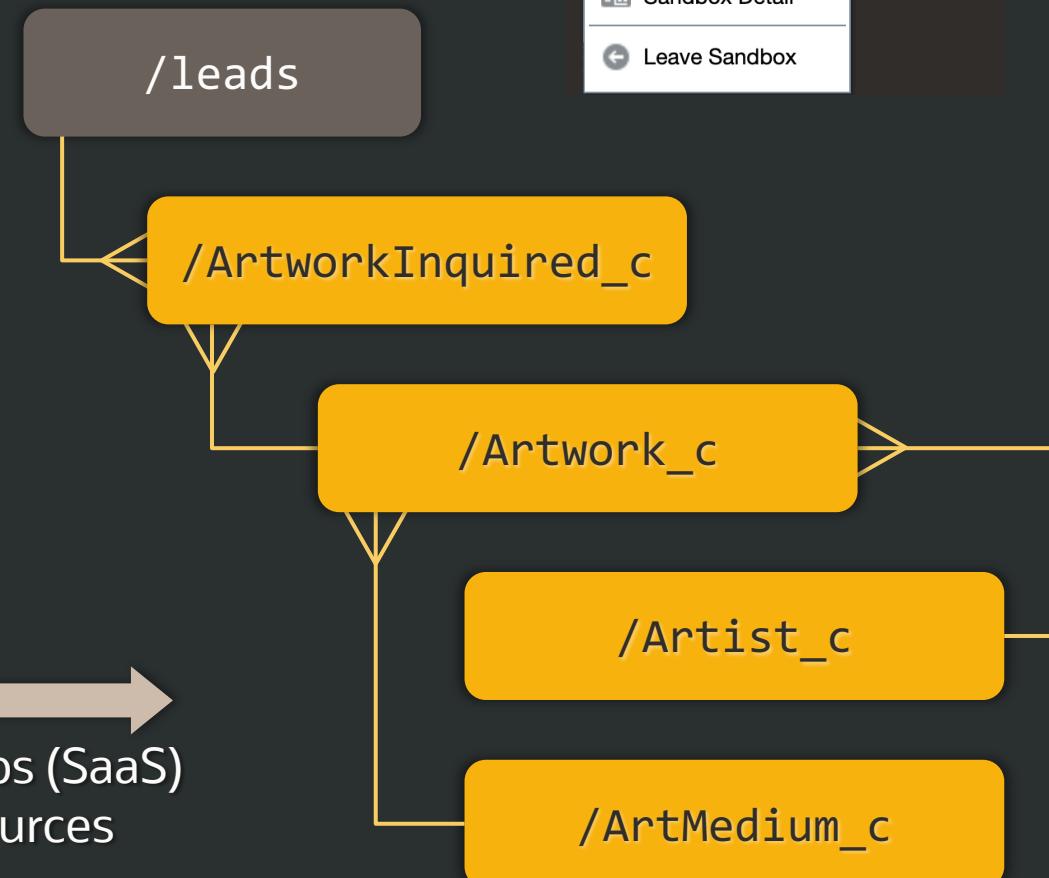
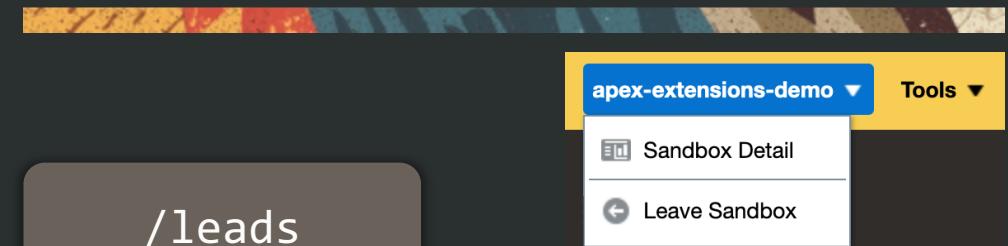
Combine Local Data with Custom Objects



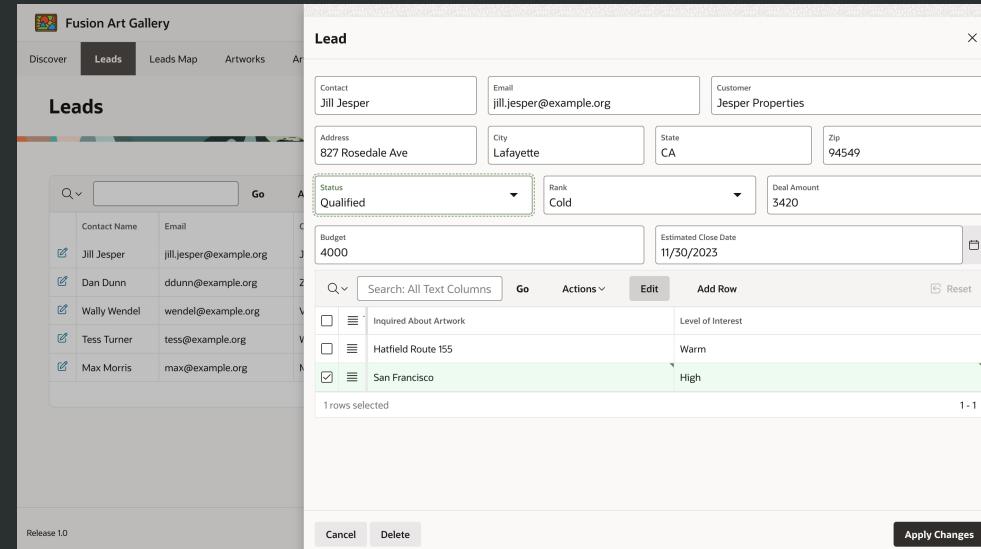
artwork_images

APEX

Oracle Applications Cloud



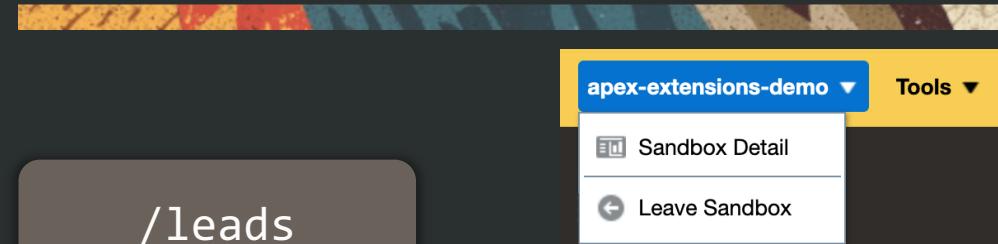
Combine Standard Objects with Custom Objects



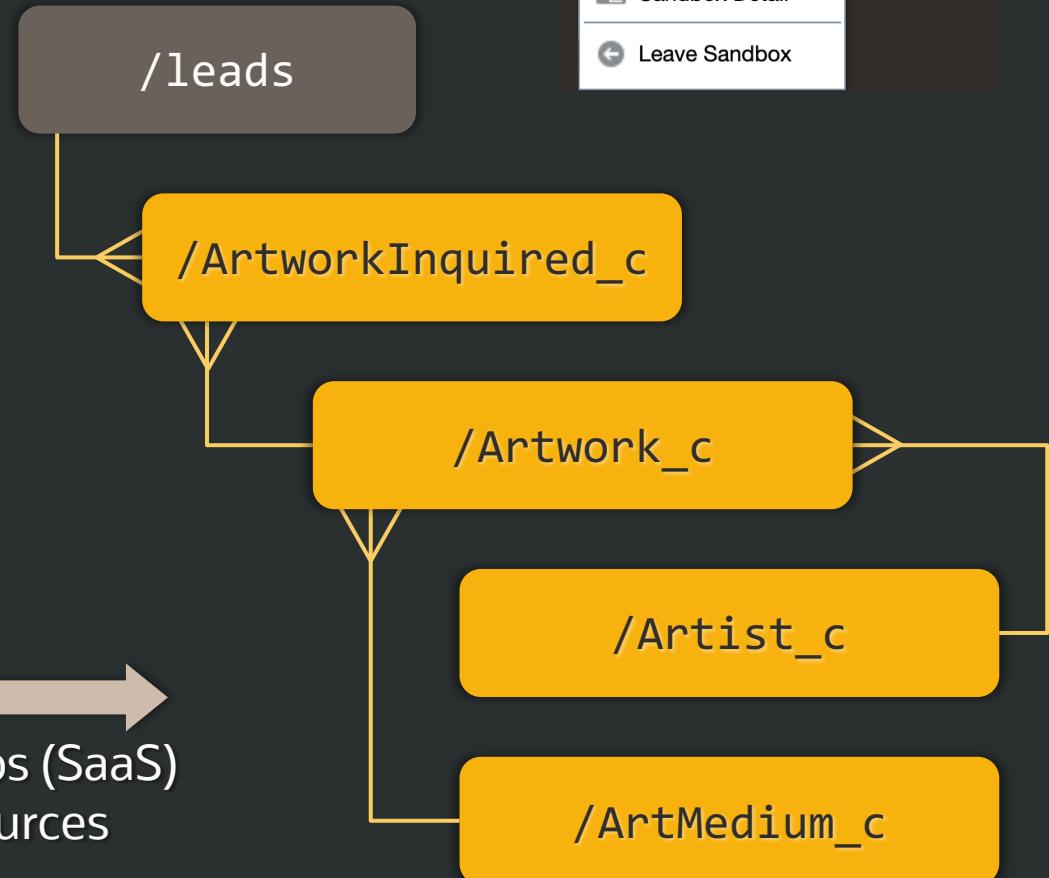
artwork_images

APEX

Oracle Applications Cloud



Oracle Cloud Apps (SaaS)
REST Data Sources

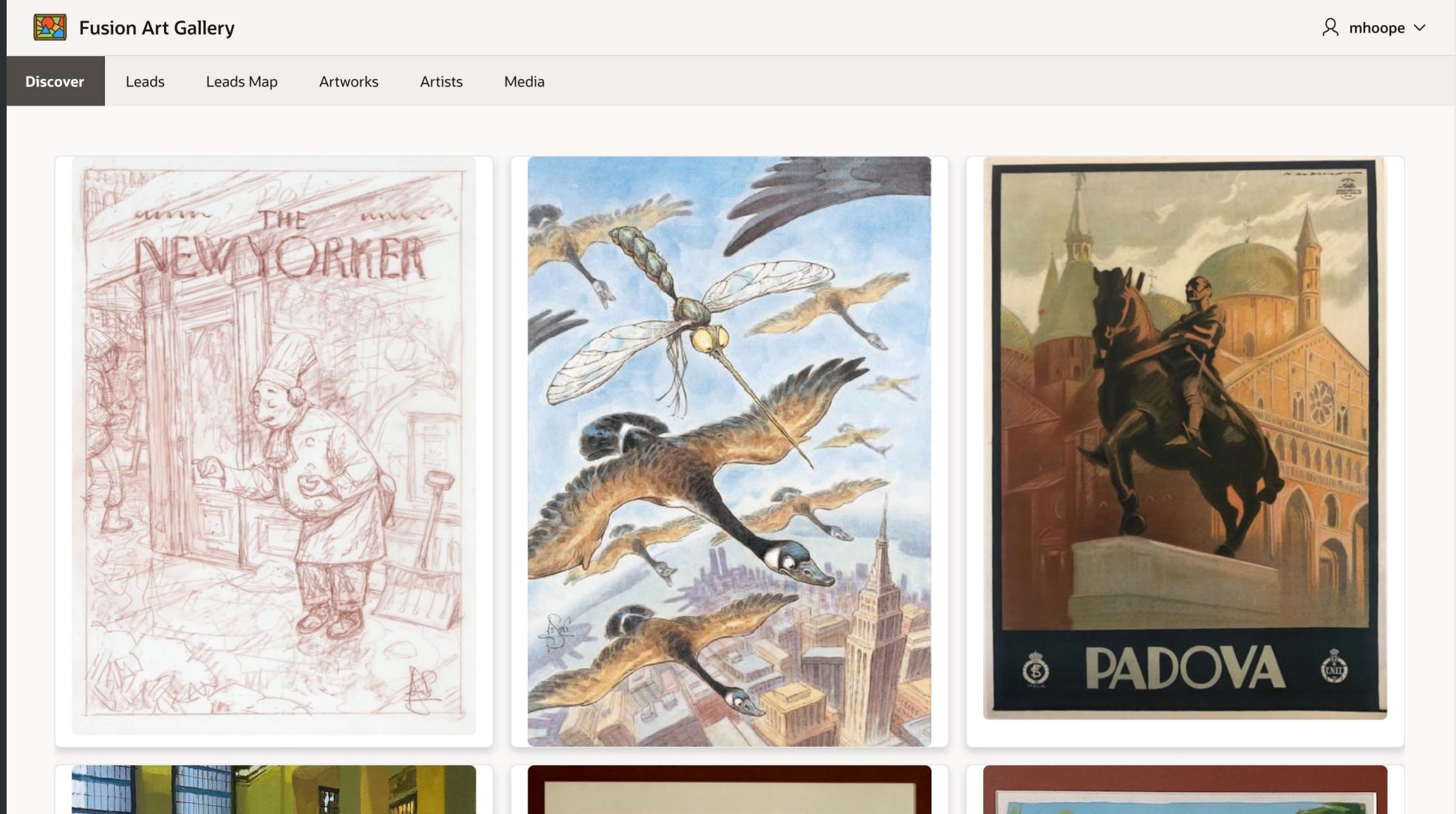


In 23.2 Use FA REST APIs as Easily as a Local Table...

Fusion Art Gallery

mhoope

Discover Leads Leads Map Artworks Artists Media



THE NEW YORKER

PADOVA

Use any Regions with Native Filtering & Sorting

 Fusion Art Gallery

Discover Leads Leads Map Artworks Artists Media

mhoope

Leads

Q ▾ Go Actions ▾ Create

	Contact Name	Email	Customer	Status	Rank	Budget	Close Date	Deal Amount	City	Post Code	State
	Jill Jesper	jill.jesper@example.org	Jesper Properties	UNQUALIFIED	COOL				Lafayette	94549	CA
	Dan Dunn	ddunn@example.org	Zenith Sounds	UNQUALIFIED	COOL				El Cerrito	94530	CA
	Wally Wendel	wendel@example.org	VocalEdge Communications	QUALIFIED	WARM	6000	11/10/2023	5505	Alameda	94501	CA
	Tess Turner	tess@example.org	Wavefront Innovations	QUALIFIED	COOL	3000	11/15/2023	1250	Walnut Creek	94598	CA
	Max Morris	max@example.org	Maximum Beats	QUALIFIED	HOT	6000	11/24/2023	5600	San Francisco	94114	CA

1 - 5 of 8 >

Release 1.0

Easily Use Maps and Faceted Search

 Fusion Art Gallery

 mhoope 

Discover Leads **Leads Map** Artworks Artists Media

Leads Map

Budget [Clear](#) 

Medium (4)

Small (1)

Status [Clear](#) 

Qualified (4)

Rank 

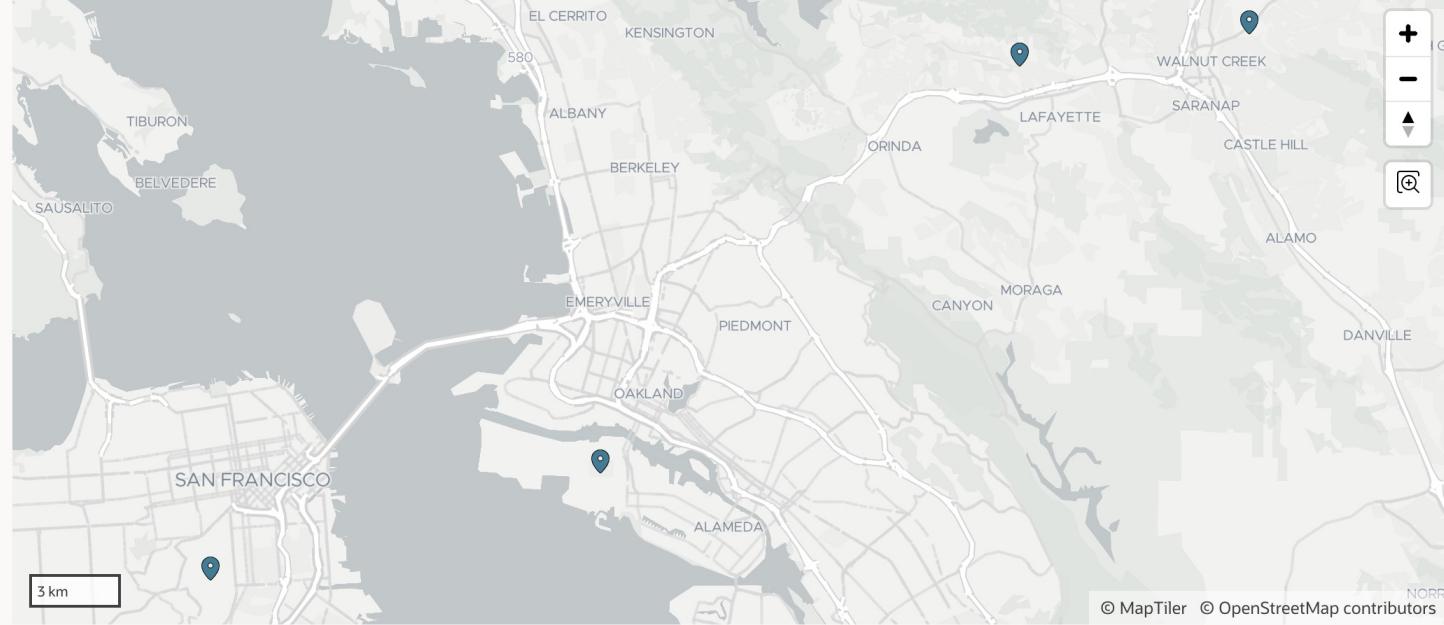
Hot (2)

Cold (1)

Warm (1)

Leads Shown 4

Budget **Medium**  Status **Qualified**  [Clear All](#)





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Easily Create Query by Example & Cascade Filters

 Fusion Art Gallery

 mhoope ▾

Discover Leads Leads Map **Artworks** Artists Media

Artist < All > Medium < Any > Created < Anytime > 

Q ▾	Go	Actions ▾	Create		
	Title	Artist	Medium	Year	Price
	Just a Pinch	Peter de Sève	Drawing on Paper	2014	1550
	The Bite of Spring	Peter de Sève	Watercolor Painting on Paper	2000	3500
	Padova	Marcello Dudovich	Seriograph Vintage Poster	1930	1100
	Grand Central Station	Michael John Ashcroft	Oil Painting on Canvas	2022	1300
	Afrique du Nord Air France	Bernard Villemot	Seriograph Vintage Poster	1948	1400

1 - 5 of 13 >

Release 1.0 



Easily Create Query by Example & Cascade Filters

Fusion Art Gallery

mhoope

Discover Leads Leads Map **Artworks** Artists Media

Artist < All > Medium Lithograph Vintage Poster Created Before 1960 

Q Go Actions Create

	Title	Artist	Medium	Year	Price
	Absinthe Robette	Henri Privat-Livemont	Lithograph Vintage Poster	1896	2100
	Salon Des Cent	Alphonse Mucha	Lithograph Vintage Poster	1897	3200
	Hatfield Route 155	Gregory Brown	Lithograph Vintage Poster	1916	1020
	San Francisco	Joseph Binder	Lithograph Vintage Poster	1957	2400
	Las Vegas	David Klein	Lithograph Vintage Poster	1958	1005

1 - 5 of 6 >

Release 1.0



Easily Integrate Data from Fusion Apps & Local APEX DB

Fusion Art Gallery

Discover Leads Leads Map **Artworks** Artists Media

Artist < All > Medium Lithograph Vintage P

Q Go Actions

	Title	Artist
	Absinthe Robette	Henri Privat-Livemont
	Salon Des Cent	Alphonse Mucha
	Hatfield Route 155	Gregory Brown
	San Francisco	Joseph Binder
	Las Vegas	David Klein

Release 1.0

Artwork

Title San Francisco Artist Joseph Binder Code ART-000018

Medium Lithograph Vintage Poster Year 1957 Price 2400



Cancel Delete **Apply Changes**

/leads

Easily Blend Parent/Child Data

/ArtworkInquired_c

Fusion Art Gallery

Discover Leads **Leads Map** Artworks

Leads Map

Search...

Budget

Status

- Qualified (5)
- Unqualified** (2)
- Converted (1)

Rank

- Cold (2)

Leads Shot

Status Unqualified

Contact Jill Jesper

Email jill.jesper@example.org

Customer Jesper Properties

Address 827 Rosedale Ave

City Lafayette

State CA

Zip 94549

Status Unqualified

Rank Hot

Budget 4000

Estimated Close Date 11/22/2023

Search: All Text Columns Go Actions ▾ Edit Add Row Reset

Inquired About Artwork	Level of Interest
Hatfield Route 155	High
San Francisco	High

1 rows selected

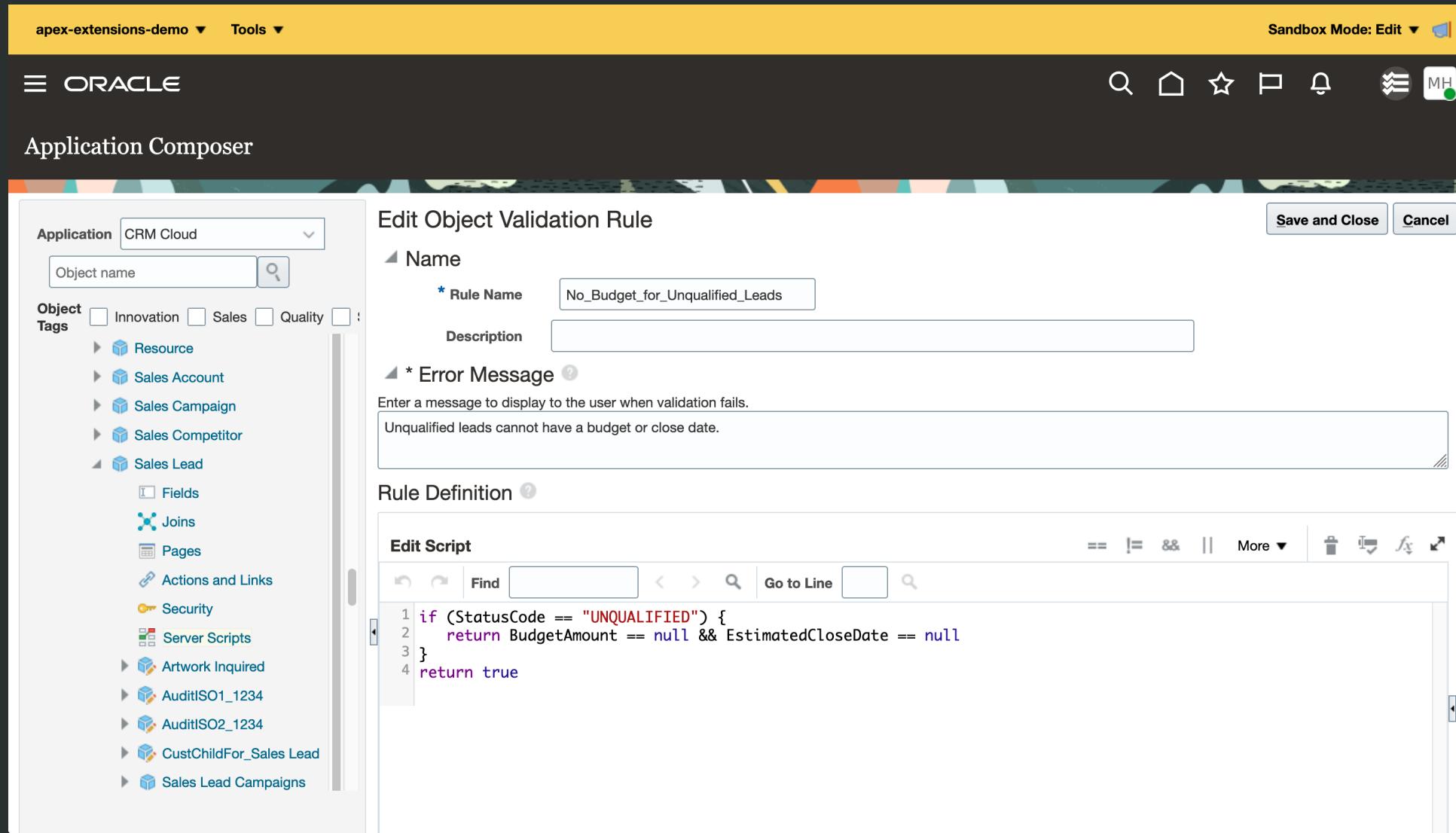
Cancel Delete

App 101 Page 10 Session Debug Quick Edit Customize

Apply Changes



Business Object Validation Rule in App Composer

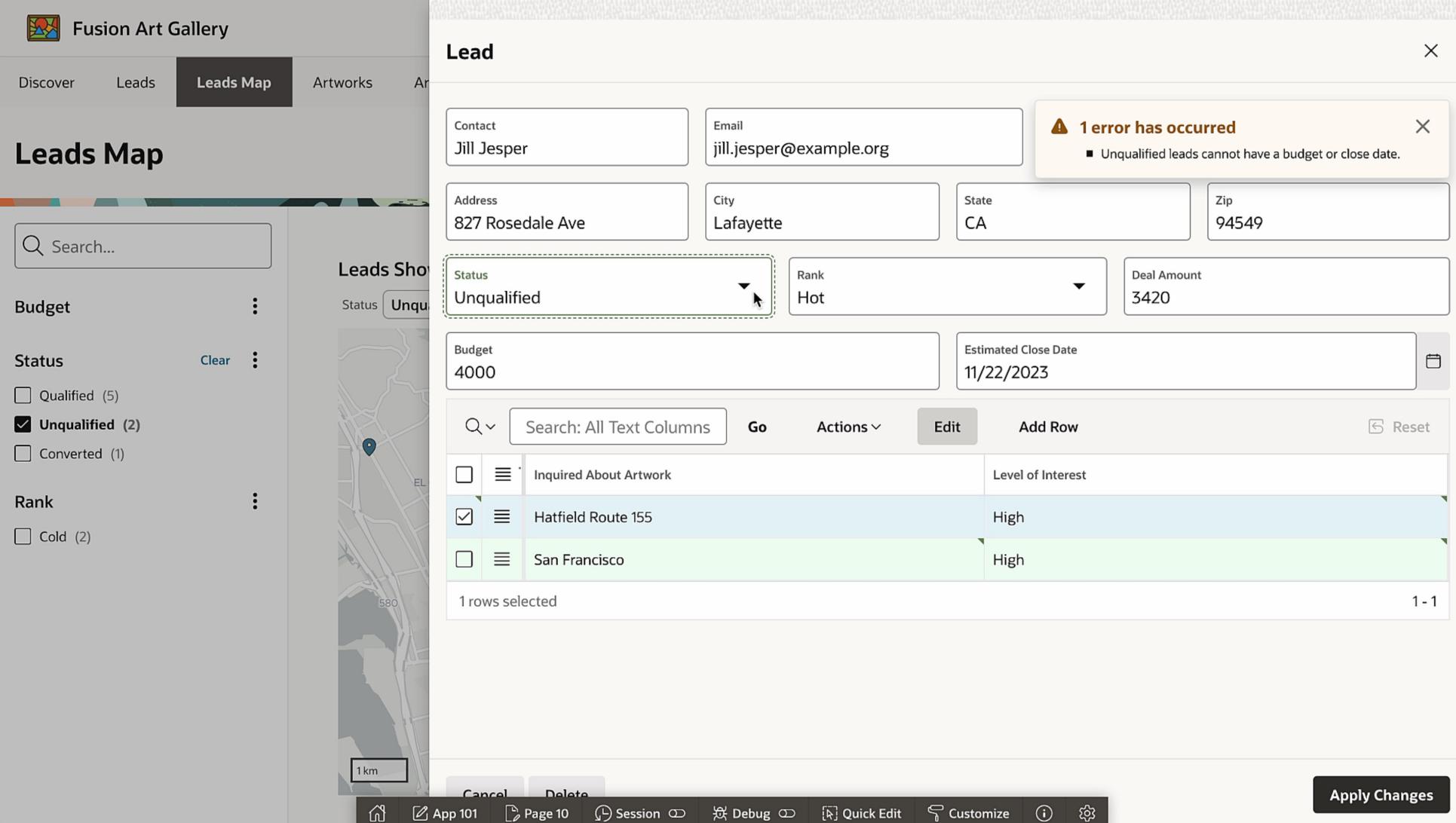


The screenshot shows the Oracle Application Composer interface with the following details:

- Header:** apex-extensions-demo ▾ Tools ▾, Sandbox Mode: Edit, MH.
- Left Sidebar:** Application (CRM Cloud), Object name (Search icon), Object Tags (Innovation, Sales, Quality, Resource, Sales Account, Sales Campaign, Sales Competitor, Sales Lead), Fields, Joins, Pages, Actions and Links, Security, Server Scripts, Artwork Inquired, AuditISO1_1234, AuditISO2_1234, CustChildFor_Sales Lead, Sales Lead Campaigns.
- Central Panel:**
 - Edit Object Validation Rule** dialog.
 - Name:** Rule Name: No_Budget_for_Unqualified_Leads, Description: (empty).
 - * Error Message:** Enter a message to display to the user when validation fails. Message: Unqualified leads cannot have a budget or close date.
 - Rule Definition:** Edit Script (language: JavaScript).

```
1 if (StatusCode == "UNQUALIFIED") {  
2     return BudgetAmount == null && EstimatedCloseDate == null  
3 }  
4 return true
```
- Bottom Right:** Orange button with a white 'O'.

Automatically See Business Object Errors



The screenshot shows a business application interface for 'Fusion Art Gallery'. The main navigation bar includes 'Discover', 'Leads', 'Leads Map', 'Artworks', and 'Artists'. The 'Leads Map' tab is active, displaying a map with a 1 km scale and a search bar. On the left, filters for 'Budget', 'Status' (with 'Unqualified' checked), and 'Rank' (with 'Cold' checked) are applied. The 'Leads Map' section also shows a 'Leads Shot' with a status dropdown set to 'Unqualified'.

The central 'Lead' detail view shows the following fields:

- Contact: Jill Jesper
- Email: jill.jesper@example.org
- Address: 827 Rosedale Ave
- City: Lafayette
- State: CA
- Zip: 94549
- Status: Unqualified (highlighted with a dashed box)
- Rank: Hot
- Budget: 4000
- Estimated Close Date: 11/22/2023
- Deal Amount: 3420

A modal message box indicates an error: **1 error has occurred** - Unqualified leads cannot have a budget or close date.

The bottom of the screen shows a table with the following data:

	Inquired About Artwork	Level of Interest
<input checked="" type="checkbox"/>	Hatfield Route 155	High
<input type="checkbox"/>	San Francisco	High

Table summary: 1 rows selected. Buttons at the bottom include 'Cancel', 'Delete', 'Apply Changes', and a red 'O' button in the bottom right corner.

Creating an FA REST Data Source

Create REST Data Source

General

REST Data Source Type: Oracle Cloud Applications (SaaS) REST Service

* Name: Books

* URL Endpoint: burn-1.ocp.oraclecloud.com/ic/builder/design/APEX_Testing/1.0/resources/data/Book

HTTPS Host Name:

Next >

Source type for FA REST

Creating an FA REST Data Source

Create REST Data Source - Settings

Settings

Use Batch DML? Yes 

Use Total Results? No 

Use Pagination? Yes 

Perform all data changes for a region in a single transaction (i.e. *single HTTP request*)

Next >

Creating an FA REST Data Source

Create REST Data Source - Settings

Settings

Use Batch DML? Yes ?

Use Total Results? No ?

Use Pagination? Yes ?

Return total number of results for pagination display

Next >

Creating an FA REST Data Source

Create REST Data Source - Settings

Settings

Use Batch DML? Yes ?

Use Total Results? No ?

Use Pagination? Yes ?

Disable when service does not support pagination

< Next >

Use Batch DML? Yes ?

Use Total Results? No ?

Use Pagination? Yes ?

Disable when service does not support pagination

< Next >

Creating an FA REST Data Source

Authentication



* Authentication Required [?](#)

Credentials [VB APEX](#) [?](#)

[Create REST Source Manually](#) [Advanced >](#) [Discover >](#)

Creating an FA REST Data Source

REST Data Source Discovery

Preview

Data Data Profile Response Body

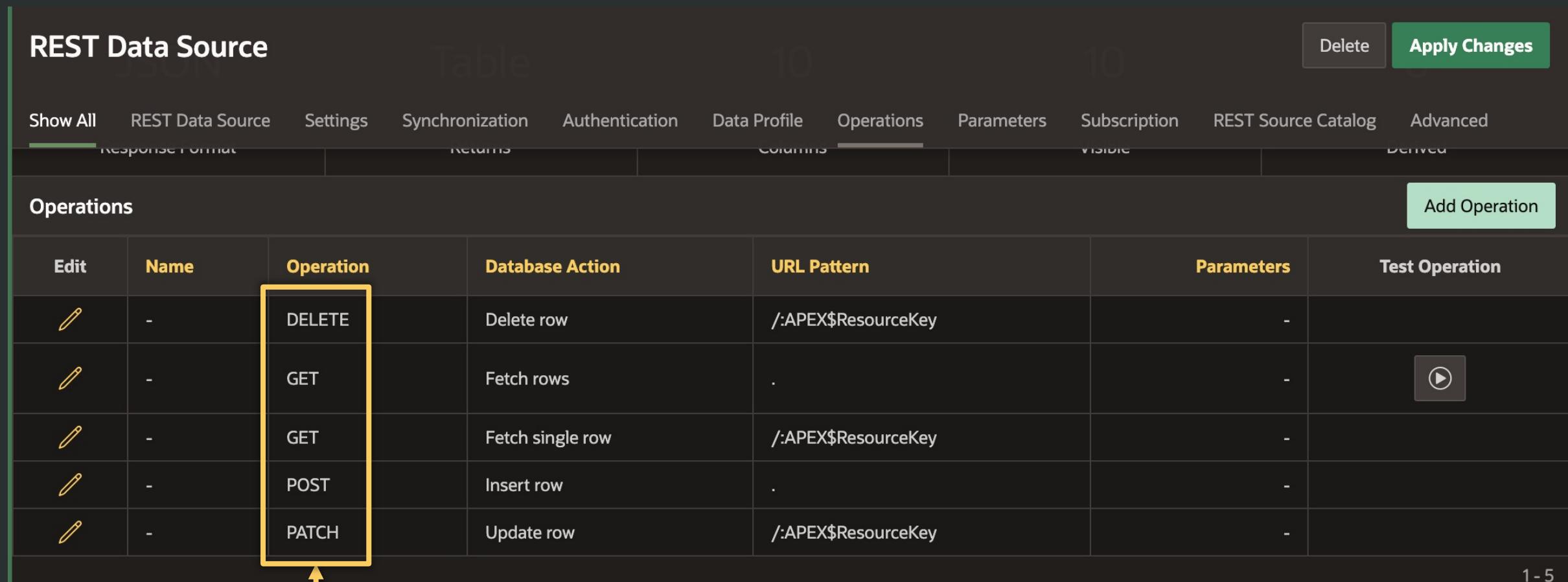
Apex\$Resourcekey	Id	Creationdate	Lastupdatedate	Createdby	Lastupdatedby	Title	Isbn	Publisheddate	Publisher
2	2	11-JUL-23 07:10:10.000000000 AM +00:00	11-JUL-23 07:10:10.003000000 AM +00:00	steve.muench@oracle.com	steve.muench@oracle.com	Oracle PL/SQL Programming: 6th Edition	978- 1449324452	01/23/2014	1
3	3	11-JUL-23 07:10:48.000000000 AM +00:00	30-JUL-23 03:28:41.000000000 PM +00:00	steve.muench@oracle.com	steve.muench@oracle.com	Modern Oracle Database Programming: Level Up Your Skill Set to Oracle's Latest and Most Powerful Features in SQL, PL/SQL, and JSON	978- 1484291658	07/31/2023	2
						Extending Oracle Application			

< More Detail Create REST Data Source

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All Supported Operations Automatically Configured



The screenshot shows the Oracle APEX REST Data Source configuration page. The 'Operations' tab is selected. The table lists five operations: DELETE, GET, GET, POST, and PATCH. Each operation is automatically mapped to a database action and a URL pattern. The 'Edit' column contains icons for modifying each row. The 'Test Operation' column contains a play button icon for each row. A green 'Add Operation' button is located in the top right of the operations table. The top navigation bar includes 'Delete' and 'Apply Changes' buttons. The bottom right corner of the page shows a page number '1 - 5'.

Edit	Name	Operation	Database Action	URL Pattern	Parameters	Test Operation
	-	DELETE	Delete row	/:APEX\$ResourceKey	-	
	-	GET	Fetch rows	.	-	
	-	GET	Fetch single row	/:APEX\$ResourceKey	-	
	-	POST	Insert row	.	-	
	-	PATCH	Update row	/:APEX\$ResourceKey	-	

All Query and CRUD operations "just work" with no fiddling

All FA REST Services Use APEX\$ResourceKey as PK

REST Data Source

Table

Show All REST Data Source Settings Synchronization Authentication Returns Subscription REST Source Catalog Advanced

Operations

Add Operation

Edit	Name	Operation	Database Action	URL Pattern	Parameters	Test Operation
	-	DELETE	Delete row	/:APEX\$ResourceKey	-	
	-	GET	Fetch rows	.	-	
	-	GET	Fetch single row	/:APEX\$ResourceKey	-	
	-	POST	Insert row	.	-	
	-	PATCH	Update row	/:APEX\$ResourceKey	-	

1 - 5

Consistent resource key for:

1. Single-attribute primary key
2. Multi-attribute primary key
3. Alternate unique key

O

All FA REST Services Use APEX\$ResourceKey as PK

Data Profile

Data Profiles describe how Data Source format are being parsed and converted to rows and columns. For XML or JSON data format, the **Row Selector** attribute stores an XML or JSON path expression pointing to the node containing the collection of rows. **Data Profile Columns** determine how one row is parsed and converted to multiple columns.

Name: Accounts

Format: JSON

Row Selector: items

Contains Single Row:

Always the first data profile column, mapped to selector @context.key

Sequence	Name	Column Type	Data Type	Selector	Primary Key	Visible
1	APEX\$RESOURCEKEY	Data	VARCHAR2	@context.key	Yes	Yes
2	PARTYID	Data	NUMBER	PartyId	No	Yes
3	PARTYNUMBER	Data	VARCHAR2	PartyNumber	No	Yes
4	SOURCESYSTEM	Data	VARCHAR2	SourceSystem	No	Yes
5	SOURCESYSTEMREF	Data	VARCHAR2	SourceSystemRef	No	Yes

Columns

Search: All Text Columns Go Edit Add Data Column

Resequence Columns Add Column >

Cancel Apply Changes

Note for FA REST Services with Over 150 Fields

Data Profile

Data Profiles describe how Data Source format are being parsed and converted to rows and columns. For XML or JSON data format, the **Row Selector** attribute stores an XML or JSON path expression pointing to the node containing the collection of rows. **Data Profile Columns** determine how one row is parsed and converted to multiple columns.

Data Profile

* Name: Accounts

* Format: JSON

Row Selector: items

Contains Single Row:

Max 150 data profile columns initially visible, others marked *Visible* = No

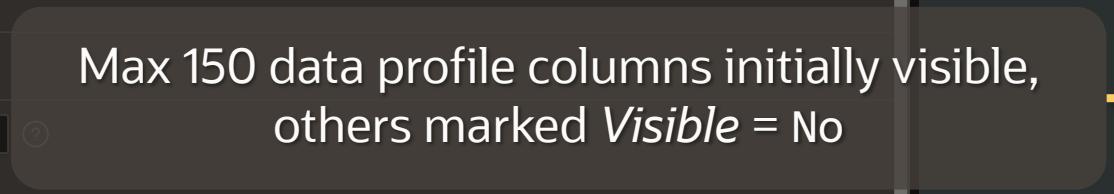
Columns

Resequence Columns | Add Column >

		Sequence ↑↓	Name	Column Type	Data Type	Selector	Primary Key	Visible
<input type="checkbox"/>	<input type="checkbox"/>	103	PARTYSTATUS	Data	VARCHAR2	PartyStatus	No	Yes
<input type="checkbox"/>	<input type="checkbox"/>	104	PARTYTYPENAME	Data	VARCHAR2	PartyType	No	Yes
<input type="checkbox"/>	<input type="checkbox"/>	105	CREATEDBYMODULE	Data	VARCHAR2	CreatedByModule	No	No
<input type="checkbox"/>	<input type="checkbox"/>	106	CREATEDBY	Data	VARCHAR2	CreatedBy	No	No
<input type="checkbox"/>	<input type="checkbox"/>	107	CREATIONDATE	Date	TIMESTAMPDATETIME	CreatedDate	No	No

Search: All Text Columns | Go | Edit | Add Data Column

Cancel | Apply Changes



Note for FA REST Services with Over 150 Fields

Data Profiles describe how Data Source format are being parsed and converted to rows and columns. For XML or JSON data format, the **Row Selector** attribute stores an XML or JSON path expression pointing to the node containing the collection of rows. **Data Profile Columns** determine how one row is parsed and converted to multiple columns.

Data Profile

* Name: Accounts

* Format: JSON

Row Selector: items

Contains Single Row:

Columns

Search: All Text Columns Go Edit Add Data Column

		Sequence ↑↓	Name	Column Type	Data Type	Selector	Primary Key	Visible
<input type="checkbox"/>	<input type="checkbox"/>	103	PARTYSTATUS	Data	VARCHAR2	PartyStatus	No	Yes
<input type="checkbox"/>	<input type="checkbox"/>	104	PARTYTYPENAME	Data	VARCHAR2	PartyType	No	Yes
<input type="checkbox"/>	<input type="checkbox"/>	105	CREATEDBYMODULE	Data	VARCHAR2	CreatedByModule	No	No
<input type="checkbox"/>	<input type="checkbox"/>	106	CREATEDBY	Data	VARCHAR2	CreatedBy	No	No
<input type="checkbox"/>	<input type="checkbox"/>	107	CREATIONDATE	Date	TIMESTAMPDATETIME	CreatedDate	No	No

Cancel Apply Changes

150 is not a hard limit, but avoids bad "out of box" experience for devs who take all the defaults

A region with 200+ fields from a REST service uses a SQL statement that can exceed 32k

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Note for FA REST Services with Over 150 Fields

Data Profiles describe how Data Source format are being parsed and converted to rows and columns. For XML or JSON data format, the **Row Selector** attribute stores an XML or JSON path expression pointing to the node containing the collection of rows. **Data Profile Columns** determine how one row is parsed and converted to multiple columns.

Data Profile

* Name: Accounts

* Format: JSON

Row Selector: items

Contains Single Row:

Columns

Search: All Text Columns Go Edit Add Data Column

		Sequence ↑↓	Name	Column Type	Data Type	Selector	Primary Key	Visible
	=	170	PROMOTEDACCOUNTID	Data	NUMBER	PROMOTEDACCOUNTID	Yes	No
	✎	197	PROMOTEDFLAG	Data	VARCHAR2	PromotedFlag	No	No
	✎	198	PROMOTEDPARTYNAME	Data	VARCHAR2	PromotedPartyName	No	No
	✎	199	PROMOTEDPARTYNUMBER	Data	VARCHAR2	PromotedPartyNu...	No	No
	✎	200	ORGANIZATIONDEO_CUSTOMERTYPE_C	Data	VARCHAR2	OrganizationDEO_...	No	Yes

Cancel Apply Changes

FA REST services prioritize custom fields whose names end with the _c suffix

Other REST service types pick the first 150

Note for FA REST Services with Over 150 Fields

Data Profile

Data Profiles describe how Data Source format are being parsed and converted to rows and columns. For XML or JSON data format, the **Row Selector** attribute stores an XML or JSON path expression pointing to the node containing the collection of rows. **Data Profile Columns** determine how one row is parsed and converted to multiple columns.

Data Profile

* Name: Accounts

* Format: JSON

Row Selector: items

Contains Single Row:

Use editable grid to quickly change the *Visible* setting of any data profile column(s)

Resequence Columns | Add Column >

Columns

Search: All Text Columns			Go	Edit	Add Data Column	Resequence Columns	Add Column >	
		Sequence ↑↓	Name	Column Type	Data Type	Selector	Primary Key	Visible
		190	PROMOTEDACCOUNTID	Data	NUMBER	PROMOTEDACCOUNTID	No	No
<input checked="" type="checkbox"/>		197	PROMOTEDFLAG	Data	VARCHAR2	PromotedFlag	No	<input checked="" type="checkbox"/>
		198	PROMOTEDPARTYNAME	Data	VARCHAR2	PromotedPartyName	No	No
		199	PROMOTEDPARTYNUMBER	Data	VARCHAR2	PromotedPartyNu...	No	No
		200	ORGANIZATIONDEO_CUSTOMERTYPE_C	Data	VARCHAR2	OrganizationDEO_...	No	Yes

Cancel | Apply Changes

The screenshot shows the Oracle APEX Page Designer interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and Gallery. The current page is 'Application 101 \ Page Designer'. The left sidebar shows the page structure: 'Page 1: Home' with sections for Pre-Rendering, Components, Body, and Leads. The 'Components' section is expanded, showing 'Breadcrumb Bar' and 'Body' components, each containing a 'Leads' item. The 'Body' component's 'Leads' item is selected. The main content area displays a wireframe of a page with a 'Breadcrumb Bar' and a 'BODY' section, both containing a 'Leads' item. A context menu is open over a list of columns in the 'Body' component's 'Leads' item. The menu items are: 'Expand All Below', 'Collapse All Below', 'Uncomment' (with a cursor icon), and 'Delete'. The 'Uncomment' option is highlighted with a yellow border. A yellow box highlights the 'Uncomment' option in the context menu. A yellow arrow points from the 'Uncomment' option in the context menu to the 'Comments' icon in the 'Components' palette at the bottom right.

APEX Only Retrieves Necessary Data!

New *Comment* and *Uncomment* feature makes it easy to quickly include only the columns required.

The screenshot shows the Oracle APEX App Builder Page Designer. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and Gallery. The current page is 'Application 101 \ Page Designer'. The left sidebar shows the page structure: 'Page 1: Home' with sections for Pre-Rendering, Components, Body, and Columns. Under Components, 'Breadcrumb Bar' and 'Leads' are listed. Under Body, 'Leads' is selected, showing columns for APEX\$RESOURCEKEY, OWNERPARTYNAME, STATUSCODE, CUSTOMERPARTYNAME, INVENTORYITEMDESCRIPTION, DEALAMOUNT, PRIMARYCONTACTID, PRIMARYCONTACTPARTYNAME, PRIMARYCONTACTADDRESS1, PRIMARYCONTACTCITY, PRIMARYCONTACTCOUNTRY, and PRIMARYCONTACTEMAILADDRESS. A context menu is open over the 'LATITUDE' column, with options: 'Expand All Below', 'Collapse All Below', 'Uncomment', and 'Delete'. The main content area displays a 'Home' page with a 'BREADCRUMB BAR' containing 'Leads' and a 'BODY' section also containing 'Leads'. A callout bubble points to the 'Leads' component in the body with the text: 'Keeps REST payloads small and performance fast.'

APEX Only Retrieves Necessary Data!

Keeps REST payloads small and performance fast.

APEX App Builder SQL Workshop Team Development Gallery

Application 101 \ Page Designer

Page 1: Home

Pre-Rendering

Components

- Breadcrumb Bar
- Leads
- Body
- Leads
- Columns
 - APEX\$RESOURCEKEY
 - OWNERPARTYNAME
 - STATUSCODE
 - CUSTOMERPARTYNAME
 - INVENTORYITEMDESCRIPTION
 - DEALAMOUNT
 - PRIMARYCONTACTID
 - PRIMARYCONTACTPARTYNAME
 - PRIMARYCONTACTADDRESS1
 - PRIMARYCONTACTCITY
 - PRIMARYCONTACTCOUNTRY
 - PRIMARYCONTACTEMAILADDRESS
 - LATITUDE
 - LONGITUDE
 - NAME
 - RECORDID
 - LEADNAME
 - RANK
 - SOURCECODE

Layout Page Search Help

Home

BREADCRUMB BAR

Leads

REGION CONTENT

BODY

Leads

REGION CONTENT

Regions Items Buttons

Avatar Badge

Breadcrumbs Calendar Cards

Chart Classic Report

Column Toggle Report

Comments Content Row

Dynamic Content Faceted Search

Form Help Text

Interactive Grid

Expand All Below

Collapse All Below

Uncomment

Delete

Could just delete the unused columns... but they'll come back on next Synchronize Columns!

APEX Only Retrieves Necessary Data!

The screenshot shows the Oracle APEX App Builder Page Designer interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and Gallery. The current page is 'Application 101 \ Page Designer'. The left sidebar shows the page structure: 'Page 1: Home' with sections for Pre-Rendering, Components, Body, and Leads. The 'Components' section is expanded, showing a 'Breadcrumb Bar' and a 'Body' section, both containing a 'Leads' component. The 'Body' section also contains a 'REGION CONTENT' placeholder. The main content area displays a dark-themed mobile-style page with a 'Home' header, a 'BREADCRUMB BAR' with a 'Leads' item, and a 'BODY' section with a 'Leads' component and a 'REGION CONTENT' placeholder. A context menu is open over the 'LATITUDE' column in the 'Body' section. The menu options are: 'Expand All Below', 'Collapse All Below', 'Uncomment' (with a cursor icon pointing to it), and 'Delete'. A yellow box highlights the 'Uncomment' option. A yellow arrow points from the 'Uncomment' option in the context menu to a callout box containing the text: 'Use a column again with an *Uncomment* operation.' The bottom right corner of the image has a red square with a white 'O' icon.

Use a column again with an *Uncomment* operation.

APEX Only Retrieves Necessary Data!

APEX App Builder SQL Workshop Team Development Gallery

Application 101 \ Page Designer

Page 1: Home

Pre-Rendering

Components

Breadcrumb Bar

Leads

Body

Leads

Columns

- APEX\$RESOURCEKEY
- OWNERPARTYNAME
- STATUSCODE
- CUSTOMERPARTYNAME
- INVENTORYITEMDESCRIPTION
- DEALAMOUNT
- PRIMARYCONTACTID
- PRIMARYCONTACTPARTYNAME
- PRIMARYCONTACTADDRESS1
- PRIMARYCONTACTCITY
- PRIMARYCONTACTCOUNTRY
- PRIMARYCONTACTEMAILADDRESS
- Latitude**
- Longitude
- Name
- Records
- Leadnum
- Rank
- Sourcecode

Regions Items Buttons

Avatar Badge Breadcrumbs

Chart Classic Report Column Toggle Report

Comments Content Row

Dynamic Content Faceted Search Form Help Text Interactive Grid

NOTE: Only *Visible = Yes* data profile columns show
Synchronize Columns after "unhiding" a profile column.

APEX Only Retrieves Necessary Data!

Simplify Parameterized Queries with Filter Params

Leads

Home Leads

Salesperson Will Mugatu

Only show the leads for selected salesperson

Lead

AccountPartyNumber = PartyNumber
CustomerId = PartyId

Account

Contact

PrimaryContactId = PartyNumber
CustomerId = PartyId

OwnerId = PartyNumber
CustomerId = PartyId

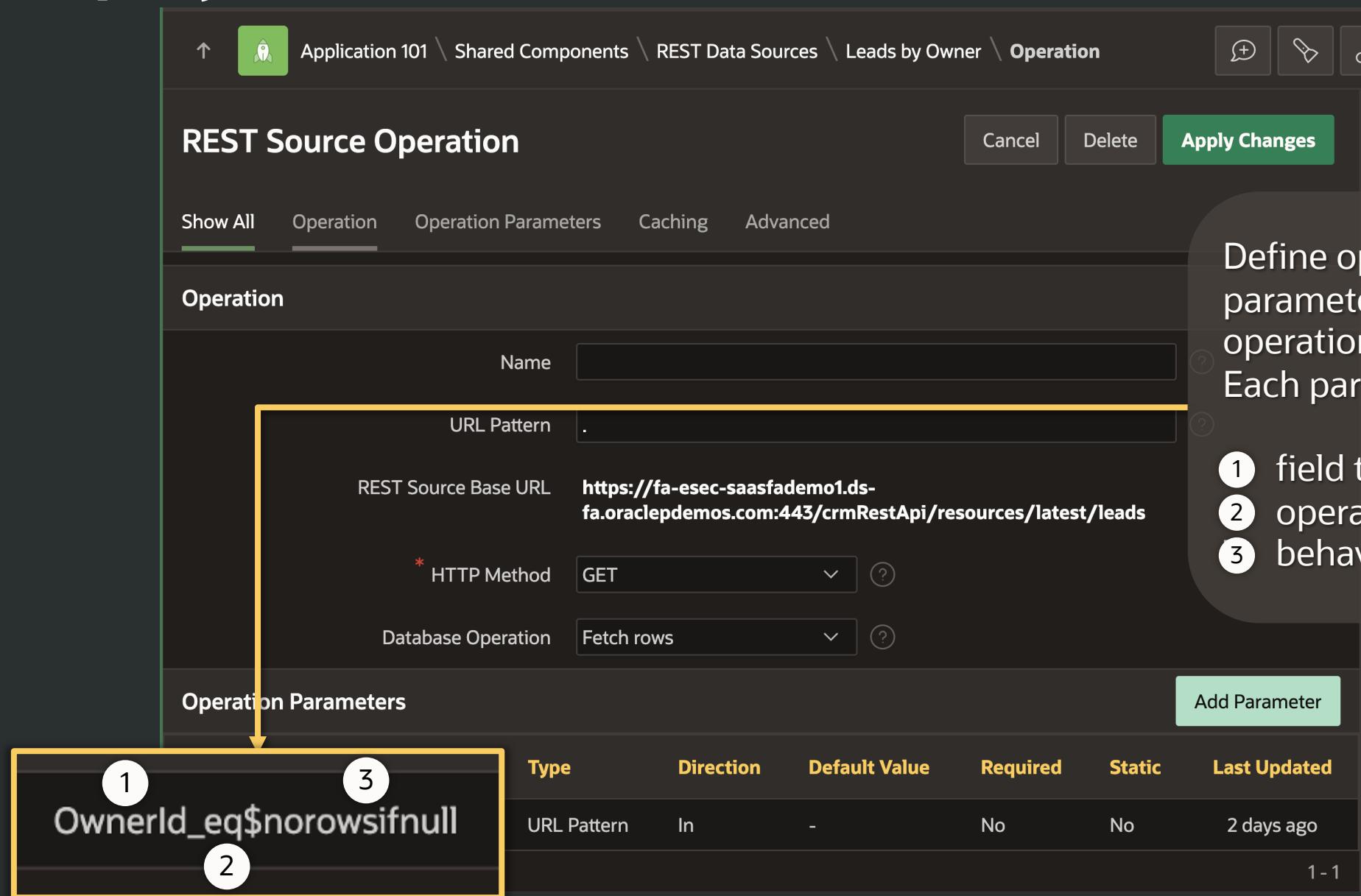
Resources

Product

PrimaryInventoryItemId = InventoryItemId

```
graph LR; Lead -- "AccountPartyNumber = PartyNumber  
CustomerId = PartyId" --> Account; Lead -- "PrimaryContactId = PartyNumber  
CustomerId = PartyId" --> Contact; Lead -- "OwnerId = PartyNumber  
CustomerId = PartyId" --> Resources; Lead -- "PrimaryInventoryItemId = InventoryItemId" --> Product
```

Simplify Parameterized Queries with Filter Params



Application 101 \ Shared Components \ REST Data Sources \ Leads by Owner \ Operation

REST Source Operation

Cancel Delete Apply Changes

Show All Operation Operation Parameters Caching Advanced

Operation

Name:

URL Pattern:

REST Source Base URL: <https://fa-esec-saasfademo1.ds-fa.oracledemos.com:443/crmRestApi/resources/latest/leads>

* HTTP Method:

Database Operation:

Operation Parameters

Add Parameter

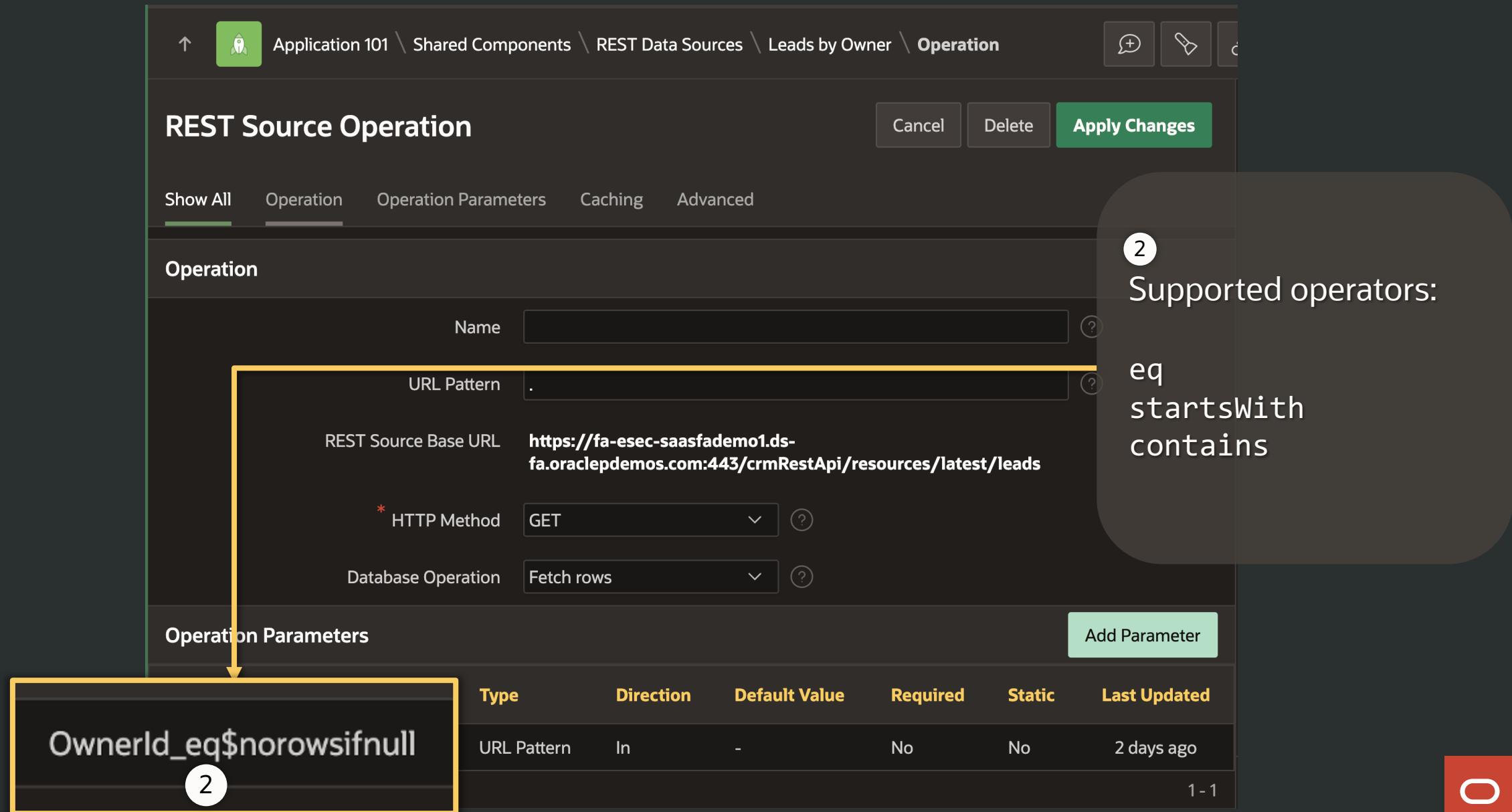
Type	Direction	Default Value	Required	Static	Last Updated
URL Pattern	In	-	No	No	2 days ago

OwnerId_eq\$norowsifnull

Define optional URL pattern parameters on **Fetch Rows** operation.
Each param name indicates:

- 1 field to constrain
- 2 operator to use, and
- 3 behavior when *null*

Simplify Parameterized Queries with Filter Params



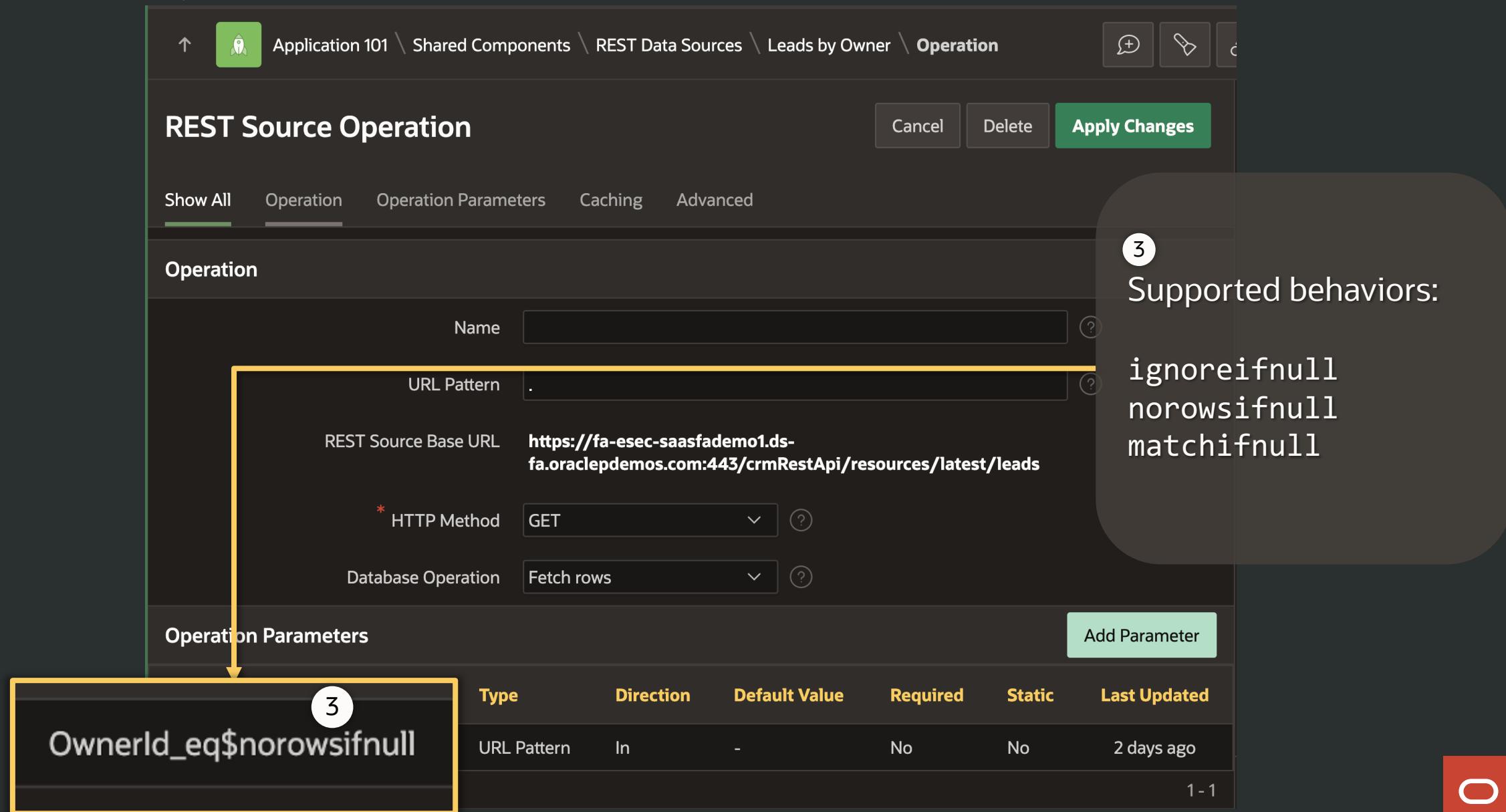
The screenshot shows the Oracle APEX REST Data Sources configuration for an operation named 'Leads by Owner'. The 'Operation' tab is selected. The 'URL Pattern' field contains a placeholder '.'. The 'REST Source Base URL' is set to <https://fa-esec-saasfademo1.ds-fa.oracledemos.com:443/crmRestApi/resources/latest/leads>. The 'HTTP Method' is set to 'GET' and the 'Database Operation' is 'Fetch rows'. In the 'Operation Parameters' section, there is a table with one row. The row is highlighted with a yellow box and has a yellow arrow pointing to it from the text '2'. The table has columns: Type, Direction, Default Value, Required, Static, and Last Updated. The row data is: URL Pattern, In, -, No, No, 2 days ago. The 'OwnerId_eq\$norowsifnull' parameter is highlighted with a yellow box and has a yellow arrow pointing to it from the text '2'.

② Supported operators:
eq
startsWith
contains

Type	Direction	Default Value	Required	Static	Last Updated
URL Pattern	In	-	No	No	2 days ago

②

Simplify Parameterized Queries with Filter Params



The screenshot shows the Oracle APEX REST Data Source configuration interface. The URL pattern for the operation is set to a placeholder dot ('.') and is highlighted with a yellow box. A tooltip is displayed, containing a circled '3' and the text 'Supported behaviors: ignoreifnull norowsifnull matchifnull'. An arrow points from the 'Operation Parameters' section to the 'OwnerId_eq\$norowsifnull' parameter entry in the table below.

REST Source Operation

Operation

Name:

URL Pattern:

REST Source Base URL: <https://fa-esec-saasfademo1.ds-fa.oracledemos.com:443/crmRestApi/resources/latest/leads>

* HTTP Method:

Database Operation:

Operation Parameters

Add Parameter

Type	Direction	Default Value	Required	Static	Last Updated
URL Pattern	In	-	No	No	2 days ago

OwnerId_eq\$norowsifnull

Simplify Parameterized Queries with Filter Params

The screenshot shows the Oracle APEX App Builder interface in the Page Designer mode. The page being edited is titled "Page 2: Leads Map by Salesperson".

The left sidebar shows the page structure:

- Pre-Rendering
- Components
 - Body
 - P2_SALESPERSON
 - Leads Map
 - Layers
 - Leads
 - Parameters
 - OwnerId_eq\$norowsifnull
 - Dynamic Actions
 - Post-Rendering

The central area shows the page layout with a region titled "Leads Map by Salesperson" containing a "Leads Map" component.

The right sidebar shows the "Parameter" section with the following configuration:

 - Filter: `OwnerId_eq$norowsifnull`
 - Identification
 - Name: `OwnerId_eq$norowsifnull`
 - Operation
 - Parameter
 - Value
 - Type: Item
 - Item: `P2_SALESPERSON`

A yellow box highlights the parameter name and value. A yellow line connects the parameter to the "OwnerId" field in the "Leads Map" region.

Simplify Query by Example Pages with Filter Params

≡  VB BugDB  smuench ▾

Product 

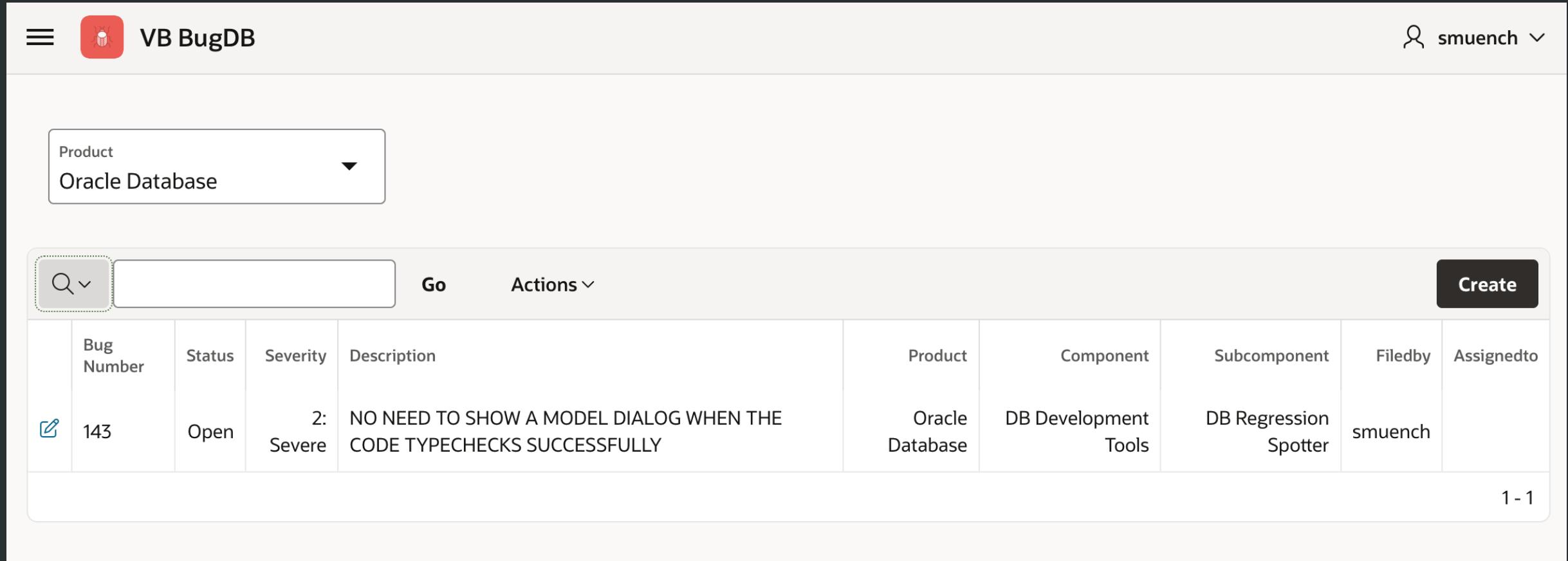
<Any Product>

Q  Go Actions ▾ Create

	Bug Number	Status	Severity	Description	Product	Component	Subcomponent	Filedby	Assignedto
	143	Open	2: Severe	NO NEED TO SHOW A MODEL DIALOG WHEN THE CODE TYPECHECKS SUCCESSFULLY	Oracle Database	DB Development Tools	DB Regression Spotter	smuench	
	144	Need More Info	2: Severe	NOT OBVIOUS THAT YOU CAN DRAG TO PAN/SCROLL ACTION CHAIN DIAGRAMMER CANVAS	Visual Builder Cloud Service	New VBCS Design Time	Actions	smuench	
	145	Open	2: Severe	COLUMN CONFLICTS NOT RESOLVED IF CONFLICTING COLUMNS ARE IN USE BY A SANDBOX	Oracle JDeveloper	Simplified Customization	Attribute Taskflows	smuench	jloropez

1 - 3

Simplify Query by Example Pages with Filter Params



The screenshot shows a web application interface for managing bugs. At the top, there is a navigation bar with a menu icon, a logo of a red bug, the text "VB BugDB", and a search bar with the placeholder "smuench".

On the left, a dropdown menu is open, showing "Product" and "Oracle Database" as the selected option. Below this is a search bar with a magnifying glass icon and a dropdown arrow, followed by a "Go" button and an "Actions" dropdown.

On the right, there is a "Create" button. The main content area displays a table with the following data:

	Bug Number	Status	Severity	Description	Product	Component	Subcomponent	Filedby	Assignedto
	143	Open	2: Severe	NO NEED TO SHOW A MODEL DIALOG WHEN THE CODE TYPECHECKS SUCCESSFULLY	Oracle Database	DB Development Tools	DB Regression Spotter	smuench	

At the bottom right of the table, there is a page number "1 - 1".



Simplify Cascading Select Lists with Filter Params

≡  VB BugDB Cancel Delete Apply Changes smuench

Bug Number 143	Description NO NEED TO SHOW A MODEL DIALOG WHEN THE CODE TYPECHECKS SUCCESSFULLY	Assigned			
Type Dev Bug	Severity 2: Severe	Status Open			
Product Oracle Database	Component DB Development	Subcomponent DB Regression S	Rel Status Beta	Platform macOS	Base Bug
Filed By smuench	Filed 5/14/2018	Updated By steve.muench@oracle.com	Updated 8/16/2023		
Tags REL13BLOCKER					
Add Comment					

Simplify Cascading Select Lists with Filter Params

VB BugDB

Bug Number: 143

Description: NO NEED TO SHOW A MODEL DIALOG

Type: Dev Bug

Product: Oracle Database

Component: DB Development

Filed By: smuench

Filed: 5/14/2018

Updated By: steve.muench@oracle.com

Updated: 8/16/2023

ESSFULLY

Assigned

Status: Open

Platform: macOS

Base Bug

DB BugBuddy Tool

DB Diag Score Tool

DB Kspare Tool

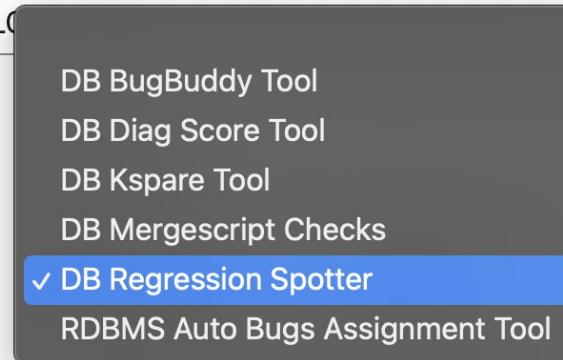
DB Mergescript Checks

✓ DB Regression Spotter

RDBMS Auto Bugs Assignment Tool

Add Comment

Cancel Delete Apply Changes smuench



Use External Filter for Powerful Where Clauses

The screenshot shows a user interface for a Fusion Art Gallery application. At the top, there is a navigation bar with links for Discover, Leads, Leads Map, Artworks (which is the active tab), Artists, and Media. The user is logged in as mhoope, with a profile icon and a dropdown menu. On the right, there is a sidebar with a user profile for smuensch, showing a release note and a 'Save' button.

The main content area features a search bar with dropdown filters for Artist (< All >), Medium (Lithograph Vintage Poster), and Created (Before 1960). A magnifying glass icon is positioned next to the Created filter. Below the filters is a table listing six artworks:

	Title	Artist	Medium	Year	Price
	Absinthe Robette	Henri Privat-Livemont	Lithograph Vintage Poster	1896	2100
	Salon Des Cent	Alphonse Mucha	Lithograph Vintage Poster	1897	3200
	Hatfield Route 155	Gregory Brown	Lithograph Vintage Poster	1916	1020
	San Francisco	Joseph Binder	Lithograph Vintage Poster	1957	2400
	Las Vegas	David Klein	Lithograph Vintage Poster	1958	1005

At the bottom of the table, there is a page navigation indicator showing '1 - 5 of 6 >'. The bottom right corner of the interface features a large orange button with a white 'O' icon.

On the right side of the interface, there is a dark sidebar with a list of filters: '3_MEDIUM,P3_BEFORE_YEAR' and 'By'. The 'By' section is highlighted with a yellow box. The bottom of the sidebar has a 'Type' dropdown and a 'Select' button.

Use External Filter for Powerful Where Clauses

The screenshot shows the Oracle APEX Page Designer interface for an application named "Fusion Art Gal". The page is titled "Page 3: Artworks".

Left Sidebar (Discover):

- Leads
- Application 103 \ Page Designer
- Page 3: Artworks
- Pre-Rendering
- Components
- Body
 - Filters
 - P3_ARTIST
 - P3_MEDIUM
 - P3_BEFORE_YEAR
 - Region Body
 - P3_ARTIST
 - P3_MEDIUM
 - P3_BEFORE_YEAR
 - Search
- Artworks
 - Columns
 - Column Groups
 - Saved Reports
 - Parameters
 - Dynamic Actions
 - Right of Interactive Report Search
 - CREATE
- Post-Rendering

Page Designer Area:

- Layout:** Shows the page structure with a "Filters" region and an "Artworks" region.
- Filters Region:** Contains three checkboxes: P3_ARTIST, P3_MEDIUM, and P3_BEFORE_YEAR.
- Artworks Region:** Contains a "CREATE" button.

Right Panel (Region):

- Identification:** Title: Artworks, Type: Interactive Report.
- Source:** Location: REST Source, REST Source: Artworks.
- Page Items to Submit:** P3_ARTIST, P3_MEDIUM, P3_BEFORE_YEAR.
- External Filter and Order By:** Enabled, Filter: Year_c < &P3_BEFORE_YEAR.
- Local Post Processing:** Type: - Select -.

Values Computed Server-Side Shown Automatically

≡ VB Things smuensch

Things Grid

Search: All Text Columns Go Actions ▾ Edit Save Add Row

Values updated by end-user

	Name	Description	Quantity	Datepurchased	PriceinUSD	Priceineur	Userkey
<input type="checkbox"/>	The Peasants	Based on Nobel-Prize...	9	6/30/2023	10	6.4	CHŁOPI
<input checked="" type="checkbox"/>	Quirky Fungus	Interesting vegan boyan	2	4/3/2023	28	16.47	FUNG3
<input type="checkbox"/>	Big Boy	Large able bodied per...	3	6/21/2023	18	16.47	XXXY
<input type="checkbox"/>	Theoretically	Tee One Plus	2	7/21/2023	123	112.51	xyz
<input type="checkbox"/>	Cowboy C4	Electric Bike	1	6/26/2023	300	274.43	BIKE0156
<input type="checkbox"/>	Something Very Exciting	by David Hockney	10	7/3/2023	1001	915.67	DH
<input type="checkbox"/>	Loving Vincent	First feature length oil...	1	6/26/2023	3354	3068.09	ZZZQQQ

1 rows selected 1 - 40

Values Computed Server-Side Shown Automatically

≡ VB Things

Changes saved

Things Grid

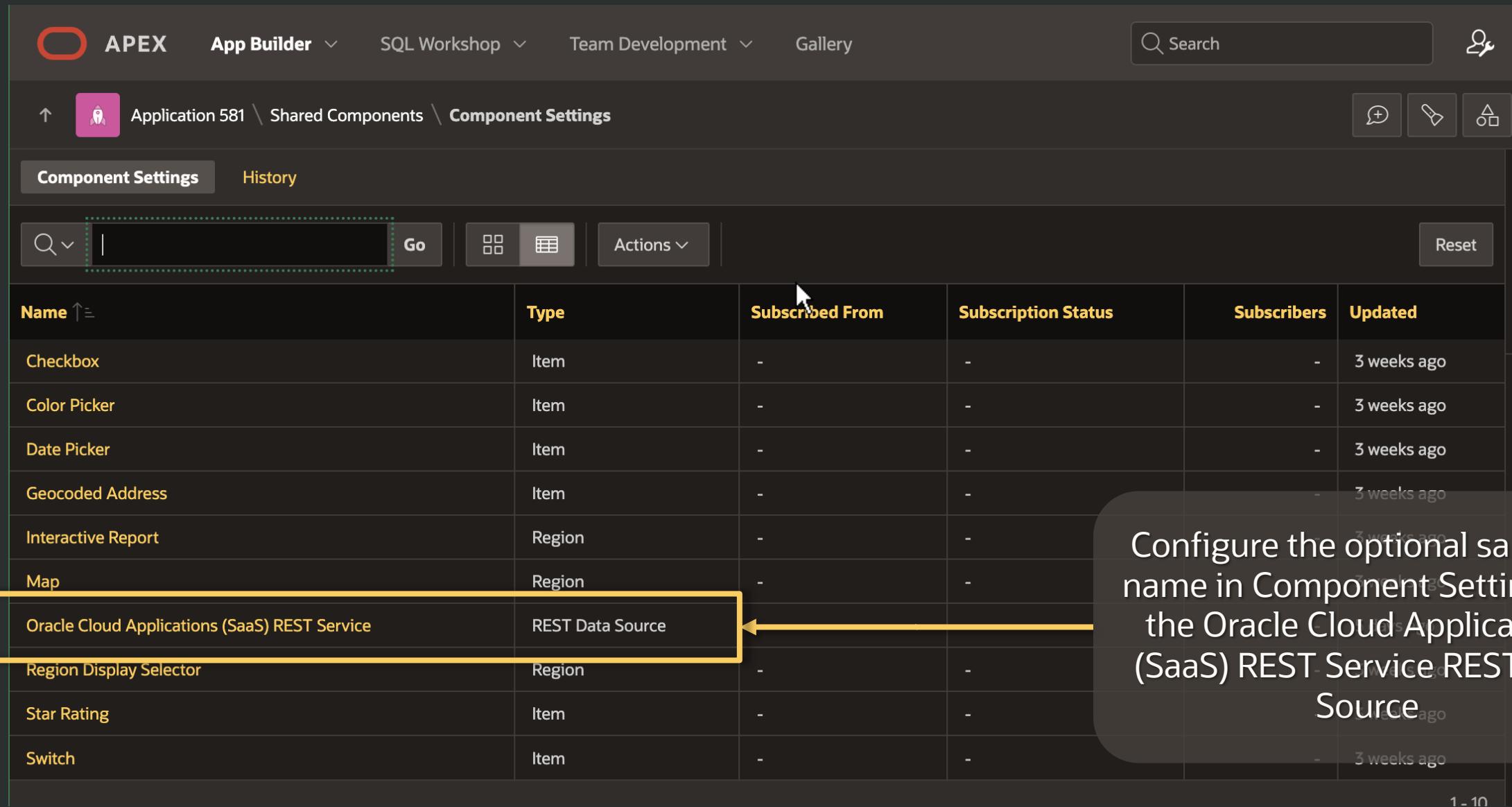
Search: All Text Columns Go Actions ▾ Edit Save Add Row

	Name	Description	Quantity	Datepurchased	Priceinusd ↑	Priceineur	Userkey
<input type="checkbox"/>	The Peasants	Based on Nobel-Prize...	9	6/30/2023	10	9.15	CHŁOPI
<input checked="" type="checkbox"/>	Quirky Fungus	Interesting vegan boyan	2	4/3/2023	28	25.61	FUNG3
<input type="checkbox"/>	Big Boy	Large able bodied per...	3	6/21/2023	18	16.47	XXXY
<input type="checkbox"/>	Theoretically	Tee One Plus	2	7/21/2023	123	112.51	xyz
<input type="checkbox"/>	Cowboy C4	Electric Bike	1	6/26/2023	300	274.43	BIKE0156
<input type="checkbox"/>	Something Very Exciting	by David Hockney	10	7/3/2023	1001	915.67	DH
<input type="checkbox"/>	Loving Vincent	First feature length oil...	1	6/26/2023	3354	3068.09	ZZZQQQ

1 rows selected 1 - 40

Values computed by
"Before Update" business
object triggers in the
REST API backend

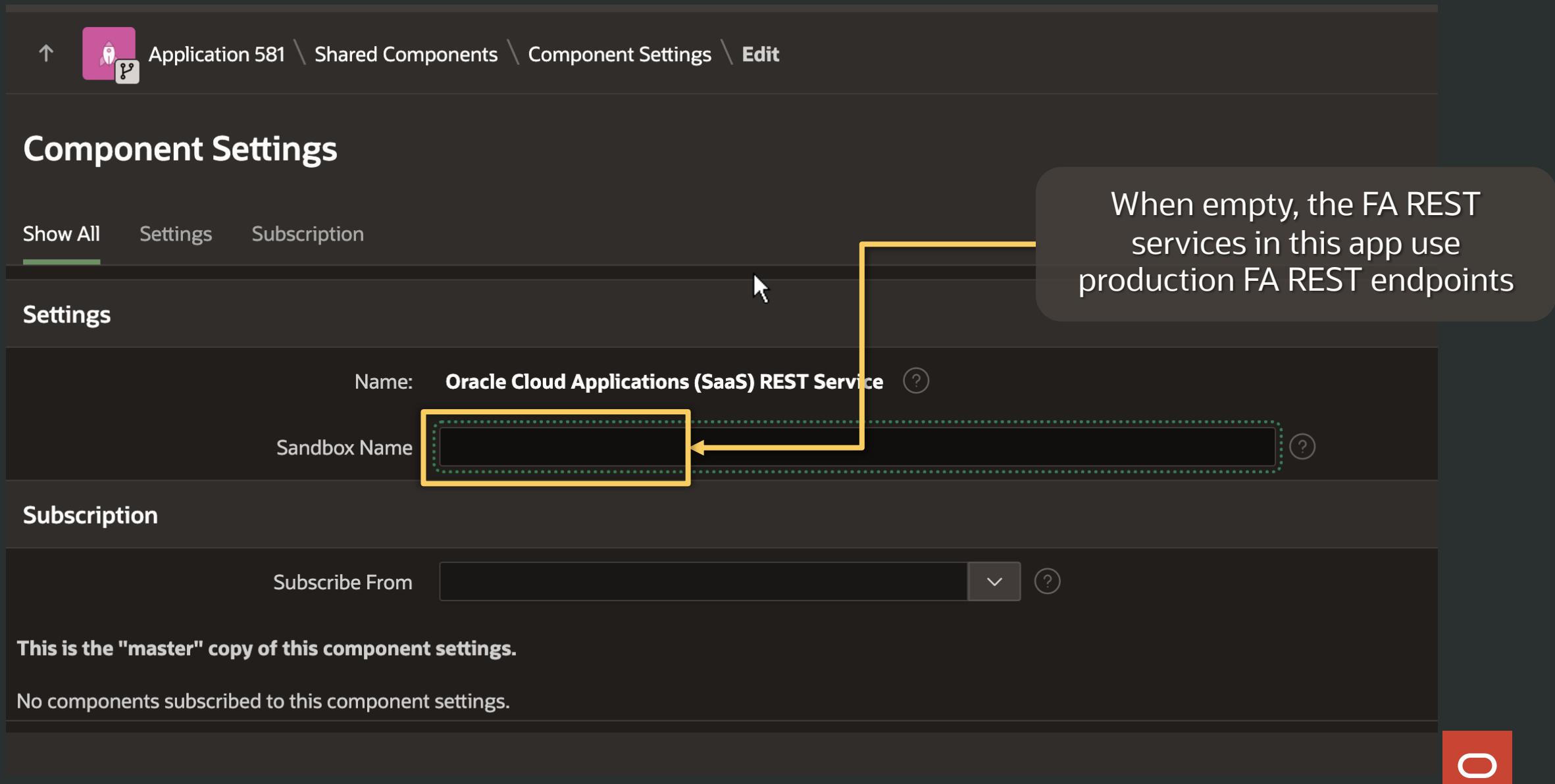
An APEX App Can Now Optionally Work with a Sandbox



The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and Gallery, along with a search bar and user profile icons. The current page is 'Component Settings' for 'Application 581 \ Shared Components \ Component Settings'. The page title is 'Component Settings' with a 'History' tab. The main content is a table of components, with the 'Oracle Cloud Applications (SaaS) REST Service' row highlighted by a yellow box and a callout bubble. The callout bubble contains the text: 'Configure the optional sandbox name in Component Settings for the Oracle Cloud Applications (SaaS) REST Service REST Data Source'. The table columns are: Name, Type, Subscribed From, Subscription Status, Subscribers, and Updated. The 'Oracle Cloud Applications (SaaS) REST Service' row has 'Region' in the Type column and 'REST Data Source' in the Subscribed From column.

Name	Type	Subscribed From	Subscription Status	Subscribers	Updated
Checkbox	Item	-	-	-	3 weeks ago
Color Picker	Item	-	-	-	3 weeks ago
Date Picker	Item	-	-	-	3 weeks ago
Geocoded Address	Item	-	-	-	3 weeks ago
Interactive Report	Region	-	-	-	3 weeks ago
Map	Region	-	-	-	3 weeks ago
Oracle Cloud Applications (SaaS) REST Service	REST Data Source	-	-	-	3 weeks ago
Region Display Selector	Region	-	-	-	3 weeks ago
Star Rating	Item	-	-	-	3 weeks ago
Switch	Item	-	-	-	3 weeks ago

An APEX App Can Now Optionally Work with a Sandbox



Application 581 \ Shared Components \ Component Settings \ Edit

Component Settings

Show All Settings Subscription

Settings

Name: **Oracle Cloud Applications (SaaS) REST Service** ?

Sandbox Name ?

Subscription

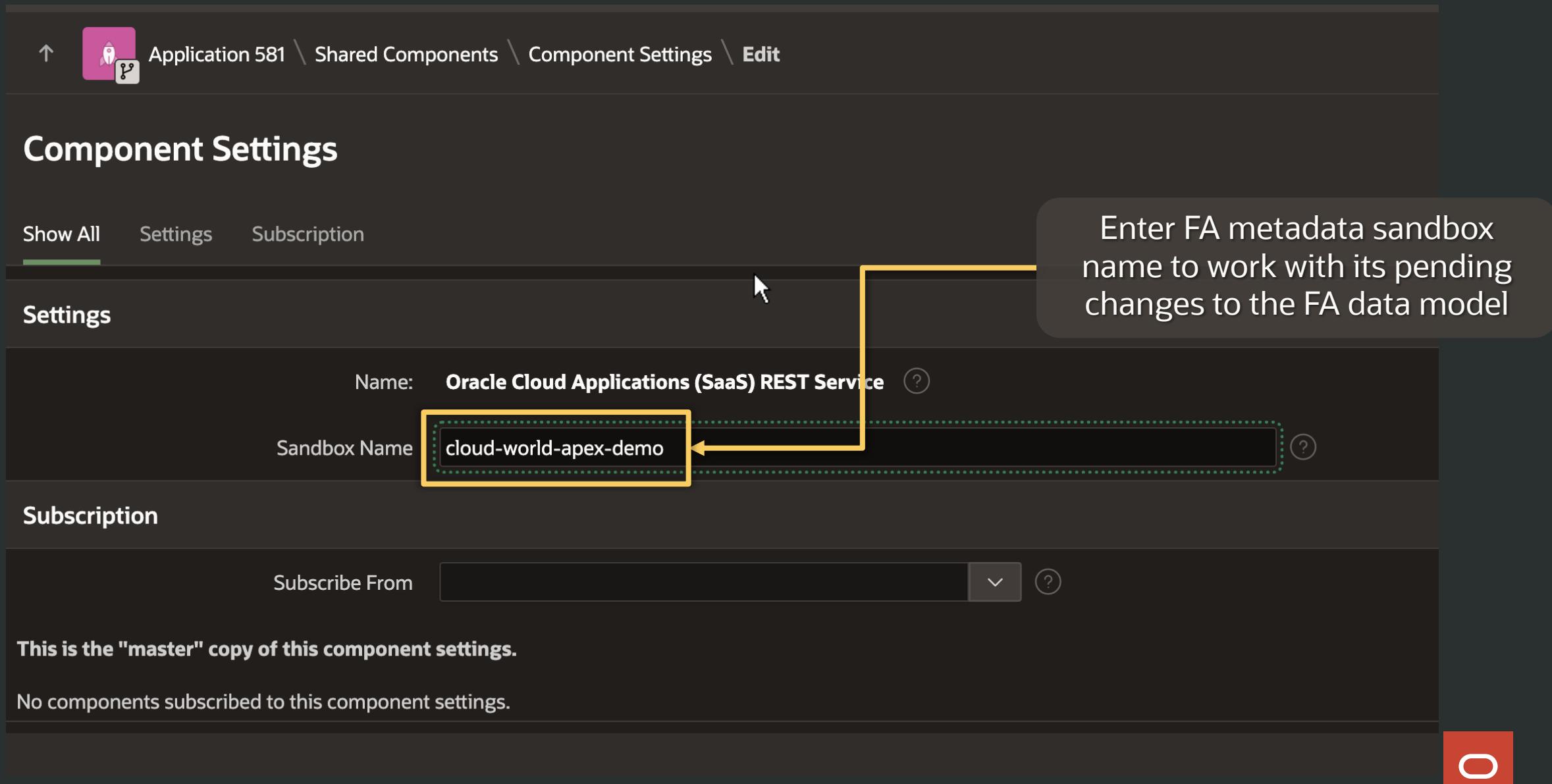
Subscribe From ?

This is the "master" copy of this component settings.

No components subscribed to this component settings.

When empty, the FA REST services in this app use production FA REST endpoints

An APEX App Can Now Optionally Work with a Sandbox



Application 581 \ Shared Components \ Component Settings \ Edit

Component Settings

Show All Settings Subscription

Settings

Name: Oracle Cloud Applications (SaaS) REST Service

Sandbox Name: **cloud-world-apex-demo**

Enter FA metadata sandbox name to work with its pending changes to the FA data model

Subscription

Subscribe From

This is the "master" copy of this component settings.

No components subscribed to this component settings.

Oracle Cloud Apps Data Source Explorer Utility App

The screenshot shows the Oracle Cloud Apps Data Source Explorer Utility App listed in the APEX Gallery. The app icon is a green square with a white magnifying glass and brackets symbol. The title is "Oracle Cloud Apps REST Data Source Explorer" by Oracle. The description text is: "This application shows all Oracle Cloud Applications REST Data Sources in the apps in your workspace and helps you retrieve useful, searchable reference info about them including business object attributes and child objects available. It also lets you discover what other REST endpoints are available for use. Easily copy REST endpoint URLs for List of Values, child objects, and other available services to the clipboard for use in the APEX Builder's Create REST Data Source wizard." The version is 23.2.0. There are "Install" and "More" buttons at the bottom. The "Utility Apps" tab in the navigation bar is highlighted with a yellow box and an arrow pointing to it from a callout bubble labeled "New gallery tab".

APEX App Builder SQL Workshop Team Development Gallery

Search Apps

Sample Apps Starter Apps Utility Apps Custom Apps

Utility Apps

Oracle Cloud Apps REST Data Source Explorer Oracle

This application shows all Oracle Cloud Applications REST Data Sources in the apps in your workspace and helps you retrieve useful, searchable reference info about them including business object attributes and child objects available. It also lets you discover what other REST endpoints are available for use. Easily copy REST endpoint URLs for List of Values, child objects, and other available services to the clipboard for use in the APEX Builder's Create REST Data Source wizard.

23.2.0

Install More

New gallery tab

Oracle Cloud Apps Data Source Explorer Utility App

FA REST Data Source Explorer - REST Data Sources

Install App smuench

(i) All the Oracle Cloud Application (SaaS) REST Service data sources in your workspace appear on the *Endpoints In Use* tab below. All endpoints available from the Fusion Apps pillars in use show on the *All Endpoints* tab. After downloading the description of an in-use data source, click its name to explore its attributes and child objects...

Endpoints In Use All Endpoints Background Progress

Go Actions

Action	Endpoint URL	REST Data Source Static Id ↑	Application
C	accounts		Leads (101)
C	contacts		Leads (101)
C	leads		Leads (101)
C	leads_by_owner		Leads (101)
C	products		Leads (101)
C	resources		Leads (101)

See all FA REST data sources in use in the apps in your workspace

1 - 6



Oracle Cloud Apps Data Source Explorer Utility App

FA REST Data Source Explorer - Service Details: Leads

Install App smuensch

Explore the Leads data source's attributes and child objects below. Click the application icon to return to the data source list...

Attributes Child Objects

Go 2. All Attributes Actions ▾

Alternative Default: All Attributes

Drill down for info about attributes and LOVs

Attribute Name	Type	Label	Description	LOV Endpoint	Preferred UI	Queryable?	Required?	Defaulted?	Editable?	Remote PK?	Custom?	Only Oper
Name	string(250)	Lead Name	Lead Name used for identifying the lead.			Y	Y	N	Y	N	N	
RecordSet	string	Record Set			Select List	Y	N	N	N	N	N	
LeadNumber	string(30)	Lead Number	User friendly unique identifier for a lead.			Y	N	Y	On Create	N	N	
OwnerPartyName	string(360)	Owner	Name associated with the owner of this sales lead.		Popup LOV	Y	N	N	Y	N	N	

Oracle Cloud Apps Data Source Explorer Utility App

FA REST Data Source Explorer - Service Details: Leads

Install App smuensch ▾

Explore the Leads data source's attributes and child objects below. Click the application icon to return to the data source list...

Attributes Child Objects

Go

Default

- 1. Primary Report
- 2. All Attributes
- 3. Attributes with LOV
- 4. Queriable Attributes
- 5. Updateable Attributes

Alternative Default: All Attributes

Pre-defined filters to narrow focus

Attribute Name	Type	Description	LOV Endpoint	Preferred UI	Queryable?	Required?	Defaulted?	Editable?	Remote PK?	Custom?	Only Open
Name	string(250)	Lead Name	Lead Name used for identifying the lead.		Y	Y	N	Y	N	N	
RecordSet	string	Record Set		Select List	Y	N	N	N	N	N	
LeadNumber	string(30)	Lead Number	User friendly unique identifier for a lead.		Y	N	Y	On Create	N	N	
OwnerPartyName	string(360)	Owner	Name associated with the owner of this sales lead.	Popup LOV	Y	N	N	Y	N	N	

Oracle Cloud Apps Data Source Explorer Utility App

FA REST Data Source Explorer - Service Details: Leads

Install App smuensch ▾

Explore the Leads data source's attributes and child objects below. Click the application icon to return to the data source list...

Attributes Child Objects

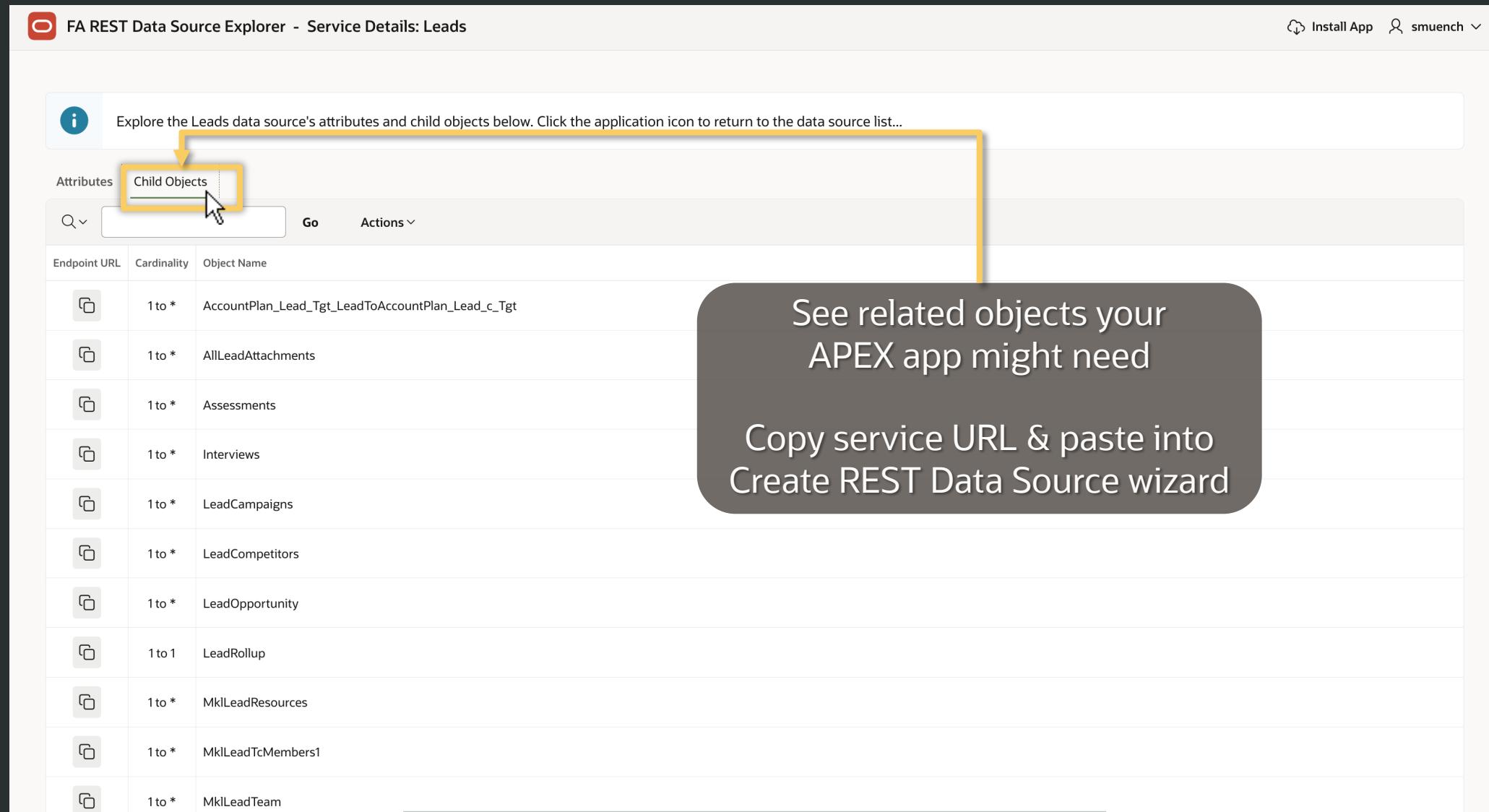
Q Go 5. Updateable Attributes Actions ▾

Alternative Default: Updateable Attributes Editable? != 'N'

Attribute Name	Type	Label	Description	LOV Endpoint	Preferred UI	Queryable?	Required?	Defaulted?	Editable?	Remote PK?	Custom?	Only Operators?
Name	string(250)	Lead Name	Lead Name used for identifying the lead.			Y	Y	N	Y	N	N	
LeadNumber	string(30)	Lead Number	User friendly unique identifier for a lead.			Y	N	Y	On Create	N	N	
OwnerPartyName	string(360)	Owner	Name associated with the owner of this sales lead.		Popup LOV	Y	N	N	Y	N	N	
StatusCode	string(30)	Status	Pre-defined code used to indicate the status of a lead.		Select List	Y	N	N	Y	N	N	
Rank	string(30)	Rank	Rank associated with this sales lead.		Select List	Y	N	N	Y	N	N	
SourceCode	string(30)	Source Code	Marketing source code associated with this sales lead.		Popup LOV	Y	N	N	Y	N	N	
CustomerPartyName	string(360)	Account Name	Name of the customer.			Y	N	N	Y	N	N	
ProductGroupName	string(250)	Product Group	Name of the product group associated with a lead.		Popup LOV	Y	N	N	Y	N	N	
InventoryItemDescription	string(240)	Product Item	The description of the product added to a lead.		Popup LOV	N	N	N	Y	N	N	
RegistrationNumber	string(120)	Registration Number	Registration number of the sales lead. This unique identifier is generated when the sales lead is approved. This is a deal specific attribute.			Y	N	N	Y	N	N	



Oracle Cloud Apps Data Source Explorer Utility App



FA REST Data Source Explorer - Service Details: Leads

Install App

smuensch

Explore the Leads data source's attributes and child objects below. Click the application icon to return to the data source list...

Attributes Child Objects

Q v Go Actions v

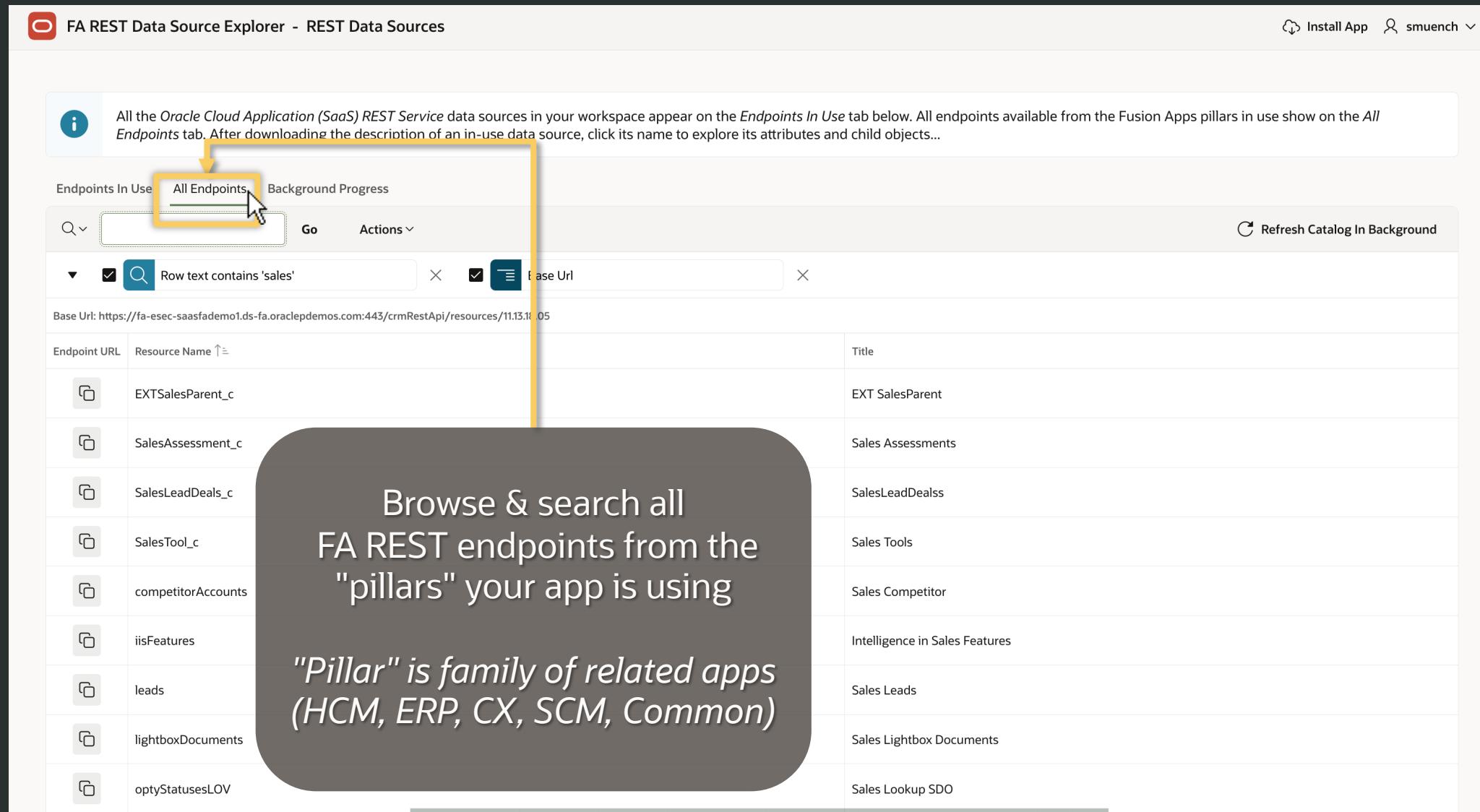
Endpoint URL	Cardinality	Object Name
	1 to *	AccountPlan_Lead_Tgt_LeadToAccountPlan_Lead_c_Tgt
	1 to *	AllLeadAttachments
	1 to *	Assessments
	1 to *	Interviews
	1 to *	LeadCampaigns
	1 to *	LeadCompetitors
	1 to *	LeadOpportunity
	1 to 1	LeadRollup
	1 to *	MklLeadResources
	1 to *	MklLeadTcMembers1
	1 to *	MklLeadTeam

See related objects your APEX app might need

Copy service URL & paste into Create REST Data Source wizard



Oracle Cloud Apps Data Source Explorer Utility App



FA REST Data Source Explorer - REST Data Sources

All the Oracle Cloud Application (SaaS) REST Service data sources in your workspace appear on the *Endpoints In Use* tab below. All endpoints available from the Fusion Apps pillars in use show on the *All Endpoints* tab. After downloading the description of an in-use data source, click its name to explore its attributes and child objects...

Endpoints In Use All Endpoints Background Progress

Q Row text contains 'sales' Go Actions ▾ Refresh Catalog In Background

Base Url: <https://fa-esec-saasfademo1.ds-fa.oraclepdemos.com:443/crmRestApi/resources/11.15.10.05>

Endpoint URL	Resource Name ↑	Title
EXTSalesParent_c		EXT SalesParent
SalesAssessment_c		Sales Assessments
SalesLeadDeals_c		SalesLeadDeals
SalesTool_c		Sales Tools
competitorAccounts		Sales Competitor
iisFeatures		Intelligence in Sales Features
leads		Sales Leads
lightboxDocuments		Sales Lightbox Documents
otypyStatusesLOV		Sales Lookup SDO

Browse & search all FA REST endpoints from the "pillars" your app is using

"Pillar" is family of related apps (HCM, ERP, CX, SCM, Common)

Use Case: Retrieve Only Leads for Logged in User

Oracle Cloud Apps Data Source Explorer - Service Details: Leads

Show Only Visible Attributes smuensch

Attributes Child Objects

Search: Go 4. Queryable Actions

Queryable owner Queryable?

Attribute Name	Type	Label	Description	LOV Endpoint	Preferred UI	Queryable?	Required?	Defaulted?	Editable?	Remote PK?	Custom?	Only Operators?
OwnerPartyName	string(360)	Owner	Name associated with the owner of this sales lead.		Popup LOV	Y	N	N	Y	N	N	
OwnerId	integer(18)	Owner ID	Party identifier associated with the owner of this sales lead.			Y	N	Y	Y	N	N	
OwnerPartyNumber	string(30)	Owner Number				Y	Y	N	N	N	N	

1 - 3

Who owns the Lead?

Use Case: Retrieve Only Leads for Logged in User

Id of the Resource (Salesperson in this case)

Use Case: Retrieve Only Leads for Logged in User

Application Process

Cancel Delete **Apply Changes**

Show All Name Subscription Source Conditions Authorization Configuration Comments

Name

Application **10001 Leads**

* Sequence **1**

* Process Point **After Authentication**

* Name **SET_SESSION_INFO_FOR_USER**

Type **Execute Code**

Subscription

Subscribe From

This is the "master" copy of this application process.

No application process subscribed to this process.

Source

Language **PL/SQL**

* Code

```
leads_app.set_session_info_for_user;
```

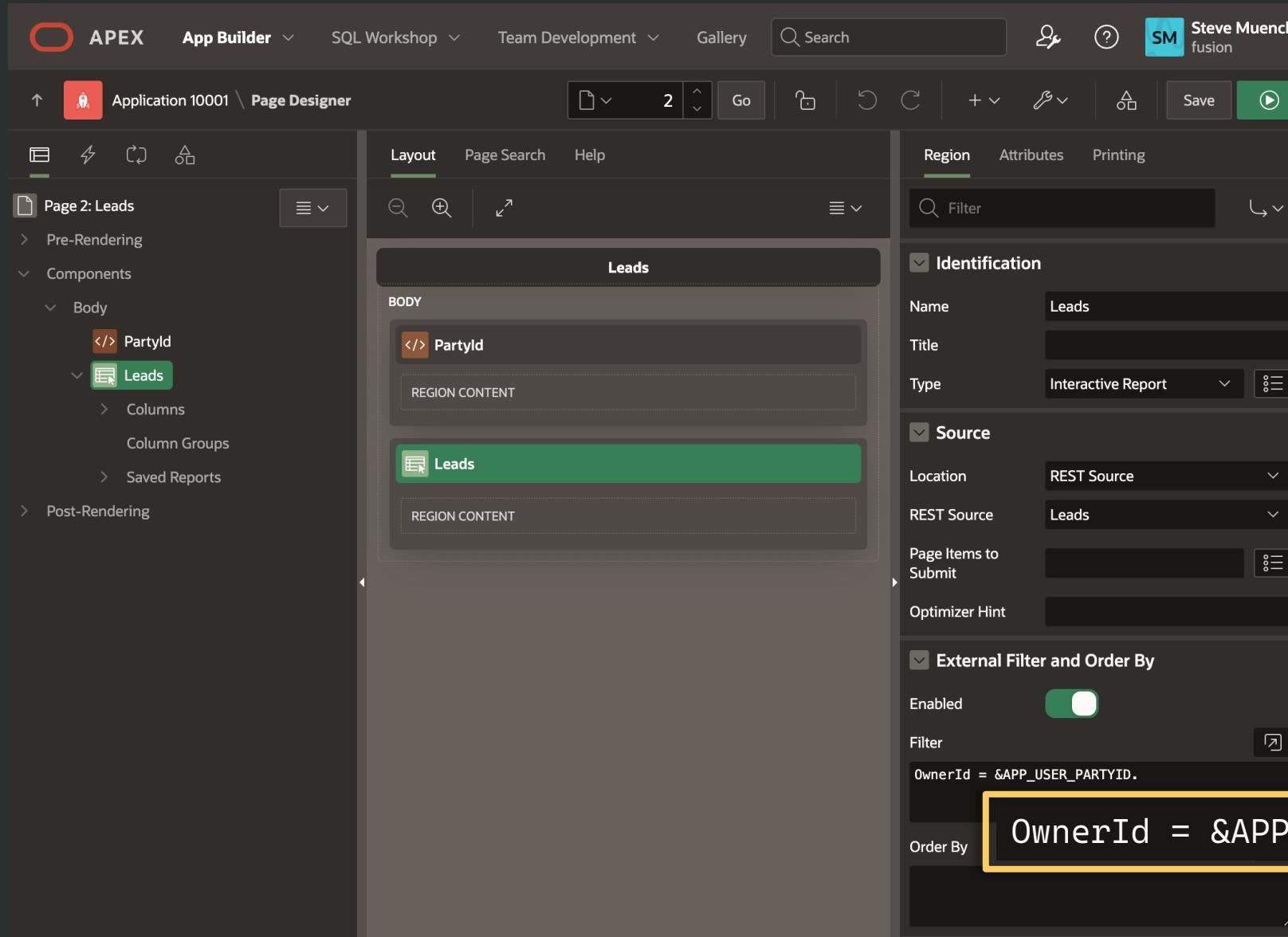
Get the numeric PartyId
and user full name from
the logged-in session
username



Use Case: Retrieve Only Leads for Logged in User

```
procedure set_session_info_for_user
is
    l_ctx apex_exec.t_context;
    l_ret number;
begin
    l_ctx := oca_ds.open_query(
        p_select => 'PartyId,PartyName',
        p_from   => 'resources',
        p_where  => 'upper.Username) = '||apex_exec.enquote_literal(
                                         get_session_username));
    if apex_exec.next_row(l_ctx) then
        apex_session_state.set_value('APP_USER_FULLNAME',
                                      oca_ds.get_varchar2(l_ctx,'PartyName'));
        apex_session_state.set_value('APP_USER_PARTYID',
                                      oca_ds.get_number(l_ctx,'PartyId'));
    end if;
    oca_ds.close(l_ctx);
end set_session_info_for_user;
```

Use Case: Retrieve Only Leads for Logged in User



The screenshot shows the Oracle APEX App Builder Page Designer. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and Gallery. A search bar and user profile for Steve Muench are also present. The main area shows a page titled "Page 2: Leads" under "Application 10001 \ Page Designer". The left sidebar lists page components: Body (PartyId, Leads), Pre-Rendering, Components, and Post-Rendering. The "Leads" component is highlighted with a green box. The right sidebar shows the "Region" configuration, including "Identification" (Name: Leads, Title: , Type: Interactive Report), "Source" (Location: REST Source, REST Source: Leads), and "External Filter and Order By" (Enabled: Yes, Filter: `OwnerId = &APP_USER_PARTYID.`). A yellow box highlights the filter condition `OwnerId = &APP_USER_PARTYID.`

Show only leads owned by the currently logged-in user

Use Case: Retrieve Only Leads for Logged in User

Leads

APP_USER_USERNAME: MHoope, APP_USER_PARTYID: 100010037456865

OwnerId = &APP_USER_PARTYID.

Name	Ownerpartyname	Statuscode	Rank	Customerpartyname	Createdate	Score
DF Lead for Layout Issue CCUT-TEST 19012018_2304	Matt Hooper	UNQUALIFIED	COOL	BIQA_R13_AccountStandalone1 (USA Fulfillment, US)	1/19/2018	789
sfsfs role_UserMgr_test5@oracle.com 9/6/18 6:43 PM	Matt Hooper	UNQUALIFIED		CSS Automation Test9 US)	9/6/2018	sfsfs role_UserMgr_test5@oracle.com
BIQA_LEAD_TO_DR_01	Matt Hooper	CONVERTED			4/26/2021	
BIQA_LEAD_TO_DR_02	Matt Hooper	CONVERTED		BIQA B2C Healthcare (Moen, NO)	4/26/2021	BIQA_SER_CONTACT BIQA_SER_CONTACT
BIQA_LEAD_TO_DR_04	Matt Hooper	CONVERTED		BIQA B2C Healthcare (Moen, NO)	4/26/2021	BIQA_SER_CONTACT BIQA_SER_CONTACT
BIQA_LEAD_TO_DR_05	Matt Hooper	CONVERTED			4/26/2021	BIQACMN_HH_CONTACT_DEL BIQACMN
Daniel Bakery	Matt Hooper	QUALIFIED		Sun Microsystems US (Delaware, US)	1/6/2023	
Coffee Shop Redwood	Matt Hooper	UNQUALIFIED		Sun Microsystems US (Delaware, US)	1/6/2023	
Golden Pipes	Matt Hooper	QUALIFIED		Siebel Systems US (SAN MATEO, US)	1/6/2023	
Finland Cars	Matt Hooper	QUALIFIED		Oracle Corporation Subsidiaries (DELAWARE, US)	1/6/2023	
Siebel Bakery	Matt Hooper	UNQUALIFIED		Siebel Technology Company (REDWOOD CITY, US)	1/6/2023	
MKLENGSALES_2112303447	Matt Hooper	UNQUALIFIED			4/20/2023	
MKLENGSALES_2112303447MKTLEAD	Matt Hooper	UNQUALIFIED			4/20/2023	
MKLENGSALES_2112303447MKTLEAD	Matt Hooper	UNQUALIFIED			4/20/2023	

APEX Now a *First Class* App Builder for FA Extensions

- Discover all query and CRUD operations and simplify data sources by hiding unused fields
- Use with all APEX regions: faceted search, maps, interactive reports/grids, forms, etc.
- Work against a Fusion Apps sandbox to iterate APEX UI for pending data model extensions
- Delegate filtering, sorting, and bulk operations to FA REST endpoint
 - Select only required data & get total row count without fetching all (e.g. 1-10 of 200)
- See validation errors from backend business objects like regular APEX validation errors
- Build parent/child select lists, popup LOVs, all region types & QBE screens w/ filter params

Caveats & Other Tips

- Faceted Search
 - Works well, but the APEX engine still computes the ***filtered counts***
 - Requires fetching all matching rows from FA REST to the APEX database
 - Most effective when use case lets initial data to filter be a reasonable set of rows
- Credentials Tip
 - Create the REST DS using basic auth and prime the explorer
 - Then switch credential to OAuth-based credential for runtime use

ā'pěks alpe adria

Thank You! Questions?



steve.muench@oracle.com

diveintoapex.com



@stevemuench



@stevemuench@mastodon.online