Dezember 2021, Edition #27

# ORAWORLD

e-Magazine for Oracle Users published by the EOUC

# GET SMART WITH APEX 21.2

SMART FILTERS, PWA, AND OTHER NEW FEATURES.


› **What's Your Passion?**
Debra Lilley about Scuba Diving

› **Got BOTS?**
Begin your Oracle Automation Journey

› **Back to Normal Times?**
EMEA User Groups Reflecting on 2021


EOUC

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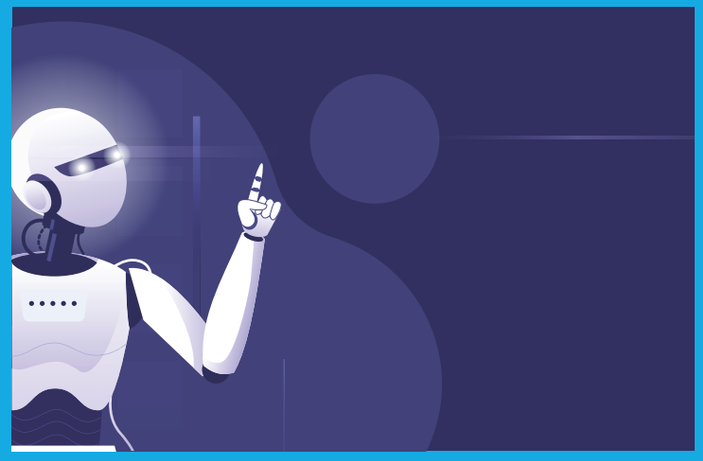

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Have a comment? Suggestion? Want to submit an article proposal? **Here’s how to do it.**

# Editorial

Dear ORAWORLD Readers,

To me this issue of ORAWORLD is even more interesting than usually! I cannot imagine any other magazine offering interesting information about diving, COVID-19 and the struggle it has caused to user groups, as well as deep dives to converged databases, APEX, and hybrid partitioned tables, all in just one issue of a magazine! Not to mention an interesting article about BOTs and automation, the story behind an APEX Course in Italy, and a nice story about a career to become Oracle ACE.

I hope you enjoy reading it as much as I did! Please remember to submit your content for the upcoming issues online on our website: **www.ORAWORLD.org**! As a reader, it is fascinating to read articles by so many different experts from around the world.

I hope you have been nice, and not naughty! Greetings from Korvatunturi, Finland from Joulupukki, the one and only Santa!

Happy Holidays and a Wonderful New Year 2022! “Hyvää joulua ja onnellista uutta vuotta”, as Santa would say. Ho, ho, ho.

Yours,
Heli Helskyaho

# Submit Your Article!

You have an interesting topic to publish in ORAWORLD Magazine? Then submit your article and be part of it!

Please e-mail us your article via the online form at **www.oraworld.org**.

# „Call the Police“

*www.commitstrip.com*

CommitStrip is a daily strip recounting funny anecdotes of life as a coder mixed up with a dash of topical tech news. Find more comics here: ***www.commitstrip.com***

*Oliver Pyka*

# "Honey, You've Always Been an Ace for Me!"

Still sitting in the home office, I received great news a few weeks ago: Welcome as ACE! After six years as an ACE Associate, finally without the “Associate”.

What is this about? Surely, the readers of these lines have already heard of this secret league of so-called Oracle experts. The ACE title is often used to advertise speakers at conferences, because it is supposed to show: They are the experts! This qualification can even be read in some job listings or project inquiries.

However, if someone took the effort to take a look behind the scenes of this program, which was launched by Oracle itself, it would quickly become clear that not everyone is necessarily a top expert. You just have to meet the conditions required by Oracle.

Sure, I can't judge someone else's profession, but for mine I can. But why did I get into the program in the first place? Well, on the one hand, someone suggested me who was no stranger to Oracle (headquarters) and, on the other hand, I had been active at DOAG for a long time. Nobody asked me about my qualifications or my skills. But since I haven't written books or blogs on the Internet, I was only able to become an ACE Associate. I was happy anyway, because from now on I was invited to the regulars' tables and added to the corresponding e-mail distribution lists.

Of course, I have also pimped up my XING profile accordingly. Obviously, I tried to get rid of the Associate myself by trying to make up ground in a tough points program every year in order to get to the next level – without success. But since I still didn't have a blog and no interest in giving lectures at international conferences – what about anyway, given my level of knowledge – I remained an Associate. Until that day in home office – just like that, one level further. The question now is whether I can and will keep it - the ACE Director is a long way off anyway. No matter how these lines come across. A big thank you goes to Jennifer Nicholson from Oracle, who led the program in an exemplary manner until the summer. In the meantime, Scott Burnell has taken over, the footsteps are very big and the program is currently undergoing a relaunch.

Oh - something else from my private life: Of course, I ran straight to my wife because I was really happy, but she just looked at me and said:" Honey, you've always been an ace for me!"

This article by Oliver Pyka was originally published in German language at doag.org. Translation: Oraworld.

## About Oliver Pyka

Oliver, born in 1969 in Bad Kissingen, Germany, is a solution-oriented quick thinker with a constant focus on the essentials and the goals of his fellow human beings, and thus also of his clients. The Database Consultant (DV-Kaufmann) has been supporting companies such as Rhein Energie, Fujitsu and Scout24 as an internationally active freelance IT consultant since 1995 and has been certified as a data protection officer according to GDPR since 2019.

The heart of his social commitment is the Herzgold Foundation, which he founded and which is committed to a 'golden future' for young people in group homes in Germany.

*Interview by Christian Luda*

# What's your Passion?

## Debra Lilley: "Diving is not just a Hobby It has an Impact on Everything that I do"

***In on our "What's your Passion?" series we ask people from the Oracle community about their passions aside from work. This time we had the pleasure to talk to Oracle ACE Director Debra Lilley who is the past President of UKOUG and will join the board of ODTUG in January 2022. In our interview Debra shares her passion for scuba diving.***

***How did you get into scuba diving?***

Actually, because of user groups. I was presenting at an event by RMOUG, the Rocky Mountain Oracle user group, in Denver. I was with a group of friends who were also presenting and trying to decide how to celebrate my 50th birthday, which was the following year. I'll be 60 in February, so this was ten years ago. One of the speakers, Dan Norris, had been running the RAC SIG and now was working for Oracle. Dan was also a scuba instructor and he suggested that I joined him and his club on a boat trip the following year and celebrate my 50th birthday. I said: 'Well, that sounds lovely. There's only one problem: I can't dive.' And he said: 'You have 15 months to learn.' So, I then went with him. I was staying at his house the following week and he took me for a trial lesson in a pool in Chicago. Then, when I came home to the UK, I went and learned to dive so that I could go on that trip. And from the moment I started I was totally hooked on it.

***How long does it take to learn it?***

About four days, if you do it all together, which I did in Gran Canaria. I went onto a website, and I said: 'I can do it this week and I don't mind where I go in Europe. Who can teach me?' The first people to come back was a dive school in Gran Canaria. And interestingly, since then I've dived with lots of user group people because once you start doing it, you find other people that do it as well and you will go with them. At many user groups we have these so-called deep dive sessions, for example a deep dive session on the database. So, one year I was at Kscope in Florida where I hired a boat and arranged for everybody to have a really deep dive.

***You're not just diving for fun. Your passion for diving has led to your involvement in an interesting program named Seasearch. How did that come out?***

A lot of people learn to dive where it's nice and warm and then they only dive where it's nice and warm. But I live near the sea, a very cold sea, and I always wanted to get involved locally. Somebody suggested Seasearch to me because it was a cheap way of diving in the UK. It's a citizen science project subsidized by the Marine Conservation Society. You go diving and you record what you see and then they can use that data. For instance, we would look at fish population in a particular area which looked bad. So, the Marine Conservation Society sent professionals to do the survey, agreed with what the citizen scientists had found and then got a fisheries protection, a legislation for fishing in that particular area. I love that I've met other people who've got the same sort of interests, and I feel that it's combining my passion with something that's worthwhile for my local environment.

***Also, since 2019, you are the president of a charity called Deptherapy. How did you get involved with that?***

I'm from a military background and at dive show I learned about Deptherapy using scuba diving as therapy for veterans. At the time it was mainly with physically injured veterans, so people who had lost arms or legs in Afghanistan. When you're in water, you're weightless and those problems don't go away but get much easier. These people have already got real strength in the limbs that they've got left because they are overcoming those problems every day. So, it's amazing how they can still dive even though many have lost 2 and some even 3 limbs. I started supporting them and then became very interested in the mental health side of it, because many of those veterans have mental health issues. And in fact, we have more now with mental health issues than with physical injuries. So, I trained to be a mental health first aid as well to be part of that. It was one of the things they won't let you work with them until you've done that training. I'm just amazed by what is possible. Again, it's taking my passion for diving with caring for other people and giving something

back. And now they're giving back as well, so they're now doing ecological starts to surveys. We just won a research fund in the last few weeks to work with the university on the impacts of scuba diving on mental health and as a recovery program for PTSD. Diving is not just a hobby that I do once a week. It's something that has an impact on everything that I do.

***How much awareness is there for veterans with mental health issues in the UK?***

When I first got involved, it was a very hot topic. But at the time there were still troops in Afghanistan. Until Afghanistan finished, which was six years ago, we had never not been at war. Apart from world wars, we had Iraq, we had the Falklands, and we had Northern Ireland. There was always something. So, soldiers were always in the news with high public profile. Since Afghanistan is not in the news every day, it has sort of been pushed under the carpet. And now with Covid, if somebody wants to raise money for something, they probably will raise it for the health service. So, in the last two years people have been very generous with their money. But it's for different kinds of charities. Most military charities have really struggled the last few years because they're not related to Covid. But the problems haven't gone away. There are still as many people with PTSD as there were before.

***It must be great to have a passion that you can combine with doing something good...***

Yes, but at the same time though, it's helped me. I now teach mental health at work as well. And these last two years, lock down has been a problem for everyone's mental health. So, for me it has come full circle: I've even given mental health presentations at user groups.

***So, when you dive, do you prefer to do it alone or in a group?***

You can never do it alone. It's dangerous to dive on your own, so a team is

always there. I regularly would dive at home with just say three or four people. Then, I do the Seasearches on a boat once a month. But I also would have two or three holidays a year where I will go on a boat for a week. Just dive every day four times a day for a week. I just came home from the Maldives on Sunday – my first liveaboard for two years. I just love it: you go on a boat; you sleep on that boat and you dive four times a day. All you do is eat, sleep and dive.

***In your ten years of diving, do you have one memorable moment where you encountered something underwater that stuck out the most?***

The very first time that I saw a manta ray was probably the most exciting. I was with SQL Maria and we went

straight to Hawaii after OpenWorld. I really wanted to see a manta ray and the first time I saw one of those was really special. But, I love everything, whether really tiny or really big.

***What aspect do you enjoy most about diving – like the sport of it or more the experience underwater? Are you also interested in discovering shipwrecks?***

I love wrecks. What I love about wrecks is how the sea takes over, how corals grow on it, how it becomes part of the landscape underwater. Overall, I enjoy the diversity of the landscape underwater rather than specific animals. What's under the sea is what is really amazes me. And I'm very privileged. It's a small percentage of the world population that really get to see everything underwater. If you go snorkeling, you see beautiful things but that's only touching the surface. If you go further down, there's just so much more.

***I always think it's crazy that we know so much about everything above water and then we know so little about the 71 % that's underwater…***

Exactly. They say we know more about the moon than we do about the oceans.

***Why is that?***

Accessibility, I think. Even if you take something like 'The Blue Planet' and you look at the amazing information that they give you about the oceans, there's such an amount of work required to get that information. For example, we don't know where some species of whales have their offspring. There's so much that we don't know yet because it's very difficult to observe. We can go and visit, but we can't observe it over a long period of time.

***If more people would be diving, do you think, there would be more awareness of the sea's importance for our ecosystem?***

I'd like to think so, but I don't know. We all can see land and we've still managed to screw that up. If more people went underwater, they might screw that up too. However, it makes a difference to experience the effects firsthand. We're all aware of plastics in our ocean. But when you're underwater and you actually see it, it's quite a stark reminder of what we're doing. Also, I think, if more people went diving, we would all be calmer. It has an amazing calming effect for people. It's a fantastic experience that I would recommend to anybody.

***What is the maximum time that you are underwater in one dive?***

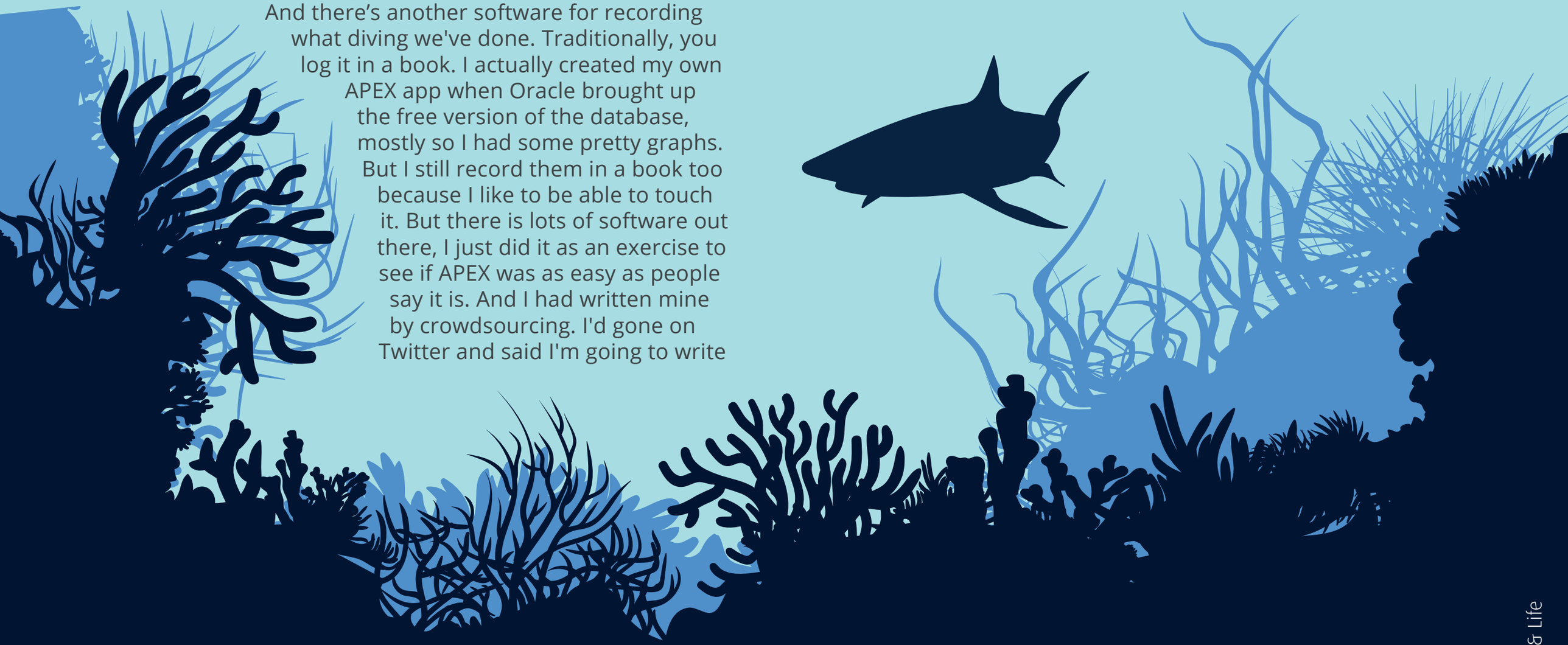
I do what's called recreational diving and a dive is generally about an hour long. You can spend longer if you do technical diving, but I don't do that.

Recreational divers have two kinds of breathing gases: one general mix which is where people start and a different mix of air, called Nitrox which allows us to spend more time at depth. Because of the pressure on you, for safety reasons, you can only stay at depth for a certain amount of time, and if you have this different mix, you can stay down a bit longer. Not a lot, but a bit longer.

***And what is the downside of Nitrox?***
Cost. But also, there's an education aspect: you have to understand the impact that it has on your body. You can't just jump out of a boat, go as deep as you like and everything will be ok. You've got to understand how long you can spend and you can't just come back to surface. You have to spend time at different depths, so your body isn't going to be affected by what you've done, so it's quite scientific. Although, we have computers now to help us, you have to understand the effects of what you're doing to your body.

***So, you also use software for logging or for planning your dive?***
There are two. One software that helps us with planning and understanding where we are. So, there are computers connected to our tanks. They have to understand how deep you've been, how long you can stay, where you are, and how much air you've got left. They are pretty standard. And there's another software for recording what diving we've done. Traditionally, you log it in a book. I actually created my own APEX app when Oracle brought up the free version of the database, mostly so I had some pretty graphs. But I still record them in a book too because I like to be able to touch it. But there is lots of software out there, I just did it as an exercise to see if APEX was as easy as people say it is. And I had written mine by crowdsourcing. I'd gone on Twitter and said I'm going to write this. I don't know how it works. Where do I start? The APEX community helped me write it up, and Oracle even did a **Forbes Magazine** article about it.

***Did you ever encounter any risky situations while diving?***
It's two I can think of. The first was, when I was swimming with sharks in Egypt. One of them was between me and my boat. I needed to get back on the boat because I didn't have a lot more air. So, when that shark was between me and the boat, that was a shocking moment. It was a shark that could have attacked a person, so you rather keep a certain distance from them which meant I had to swim a long way around it. But I was fine. And then the second time was with a fish called Remora which is quite a big fish you see under whales and sharks. Remoras attach themselves to large marine animals – it works like a suction pad. The top of their head looks like a trainer, like the bottom of your shoe. When I was diving with a user group friend, Holger Friedrich, one Remora tried to attach itself to Holger. We spent about half an hour kicking and taking the air from our mouths and pushing air at this Remora to get it away from us. That was quite scary. It wouldn't have killed him, but it would have been very painful. We both must have looked like whales (laughs).



***Do you have a favorite place for diving, a place where you say that was the greatest experience?***
Oh gosh. We're spoilt in Europe that Egypt is so close. The Red Sea is fantastic. But my actual favorite would be the Maldives. I've been there four times to dive. So, I've spent four weeks diving four times a day. And that's because my favorite is the manta ray.

***Is there a special place that you haven't been yet somewhere in the world where you wish you'll dive one day?***
I would love to go to the Great Barrier Reef in Australia. As an ACE director, I have got to travel the world a lot and I've always tried to dive when I've gone somewhere. I've dived in Latin America. I've dived in Australia and in the Philippines, lots of places. But yeah, the Great Barrier Reef.

***You have this big passion for diving and then of course, you're also pretty busy at work. How do you find the time for everything? How much planning does it involve?***
One time, I attended a presentation by a juggler at Collaborate and he was talking about multitasking. He said that we don't really multitask, we find gaps between the things that we do and make the most of those gaps. So, as I mentioned, I would travel a lot with the ACE program. Say we were in Latin America for a week, I would go the weekend before and I would arrange to dive while I was there, so I'm using that gap. Also, I live on my own so I don't have to worry about what anybody else thinks, I can spend all of my vacation time doing that. And for instance, I do a lot of work in London. But I try not to be in London on a Monday because if I dive on a Sunday, you can't fly for 24 hours. So, it's a combination of good time management and not having anybody else to worry about.

***What would your life be without this passion?***
Incredibly boring. I don't know what I would do with my time because it's the only exciting thing that I do.

***Debra, thanks a lot for taking your time.***

## About Debra Lilley

Debra is an Oracle ACE Director and recognized Fusion Applications and Applications Technology expert. She has 25 years experience with Oracle applications and led the global user group input into Fusion Applications. She is past President of UKOUG and joins the board of ODTUG in January 2022. Debra has been involved in over 100 implementations of Oracle ERP & HCM SaaS, advising customers on their application and implementation strategy. She has spoken at over 300 events worldwide, and is a VP with Inoapps, an Oracle Partner but also end user of Oracle Applications.

*Valentin Leonard Tabacaru*

# Simplify Development with Oracle Converged Database

***Developers face new challenges when building modern applications because these operate on diverse data types: relational, documents, location, sensors, images, blockchain, etc. Usually, these requirements are not specified from the beginning: they always happen mid-project when unforeseen business needs are received.***

As the requirements are not known at the beginning of a project, starting with a single purpose 'best-of-breed' database platform may look like the best idea. It ends up with adding more single purpose 'specialized' databases as new data types and workloads are needed, increasing the complexity and data fragmentation.

This situation becomes critical when these developers start speaking many proprietary APIs and programming languages or writing complex application code to propagate and integrate data from one purpose-built data store to another. This data movement across multiple purpose-built databases affects also DBAs because they require ongoing tuning, securing, scaling, troubleshooting, patching using unique management tools for each system.

Both developers and DBAs require specialized skills, enduring a steep learning curve with these single-purpose databases. The effort is overwhelming, even though your team can handle it, there is not enough energy and time left for innovation.

## How can you fix this matter?

Oracle can eliminate data fragmentation and complexity introduced by multiple single-purpose databases by offering support for all data types and workloads in a single converged database. Development methodologies and data technologies natively supported by Oracle Database are synergistic: they interact and cooperate to produce a combined value that is greater than the sum of their individual capabilities.

We can make the life of developers and DBAs easier, giving them the advantage of using and maintaining all data types and data models inside the same database, and providing a uniform API in the form of SQL and REST for all data sets and workloads. This doesn't mean we have to go back to the monolithic database deployment approach, as Oracle Database is multitenant, and each data model and workload can have a separate data store container.

New development methodologies that simplify and accelerate data-driven modern applications include low-code development, microservices, REST APIs, events, continuous deployment, cloud services ***(Figure 1)***.

Oracle Application Express (APEX) is a low-code development platform that enables you to build scalable and secure enterprise web-based applications in minutes directly on top of the Oracle Database, providing immediate value for your data. New applications can be created using pre-built components in a graphical user interface instead of hand-written programming code.

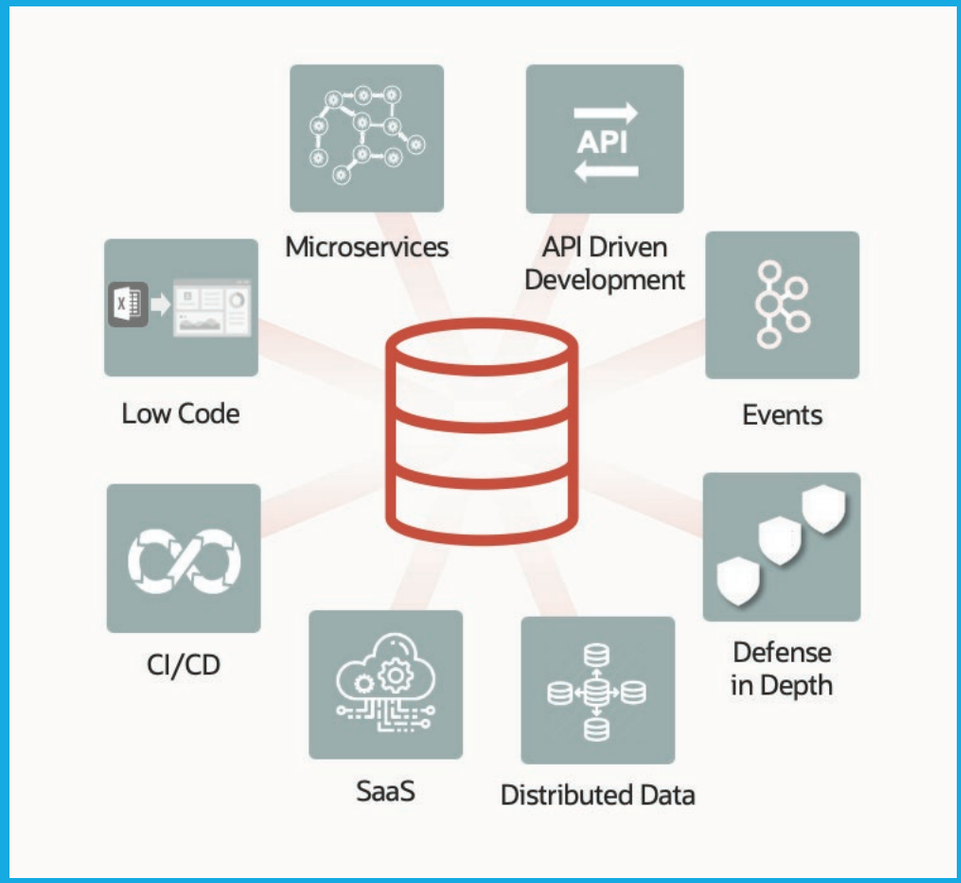



*Figure 1: Development Methodologies*

Microservices can be deployed efficiently on Oracle Database, either on-premises or in the cloud, due to isolation and scalability advantages offered by Oracle Multitenant architecture, which stores data in logically separated data containers called pluggable databases. These applications are suitable for both desktop and mobile devices using just a web browser.

RESTful API is a new architectural approach to access and use data and stored procedures via HTTP(S) requests, with standard GET, PUT, POST, and DELETE methods. Oracle REST Data Services (ORDS) is a mid-tier Java Enterprise Edition (java EE) based application that provides a RESTful API for Oracle Database, adding enhanced security, file caching features, and increased flexibility.

Apache Kafka is probably the most popular distributed data streaming platform for capturing, communicating, and processing events. Oracle Database can query real-time events directly from Kafka, and Oracle Database Queues support events inside the database, having the advantage of powerful SQL queries over events, with ACID transactions. The other way round, Oracle GoldenGate replication can stream database changes back into Kafka.

Continuous Integration and Continuous Delivery (CI/CD) refers to the practice of frequently merging new software

using a single line of code called 'master branch', and at the same time releasing packaged software, or new modules and features. These frequent cycles cannot wait for your database maintenance windows to apply required changes to data and structure. Oracle Database makes it incredibly simple to take advantage of the CI/CD methodologies, providing complete support for schema and data evolution online. Edition-Based Redefinition (EBR) supports online application upgrades by allowing two completely different consecutive versions of the application code to be active simultaneously. Oracle Database allows all schema changes to happen online, including adding or removing columns from a table, partitioning or repartitioning a table, creating or refreshment of materialized views, etc.

Oracle Database is available everywhere, on-premises, and as a cloud service in multiple shapes and configurations, bare metal or virtual machines. Oracle Autonomous Database is a fully managed, preconfigured database environment, available as a service on Oracle Cloud Infrastructure, that benefits from machine learning-based automation of the full lifecycle management, to eliminate cyberattack vulnerabilities, protect from system failures, and deliver 99.995% availability. Oracle Autonomous Database is available for users of both paid and free Oracle Cloud Infrastructure accounts, as part of Oracle Cloud Infrastructure's suite of Always Free resources.

Modern data-driven applications developed on Oracle Converged Database create value from all types of data ***(Figure 2)***, including structured business data, relational transactions, graph vertices and edges, documents and collections, free text, spatial information, blockchain, IoT sensor readings.

Machine Learning runs directly on structured business data stored in Oracle Converged Database, bringing the algorithms to the data. You can build, train, and execute machine learning models using over 30 algorithms via straightforward declarative SQL or well-integrated Python and R interfaces.

You can leverage relational transaction processing databases to run real-time analytics to provide instant data insights by storing data in memory in a columnar compressed format and running automatic parallel processing. The same data can be placed in memory in both row (transactions) and column (analytics) format simultaneously, transparent to the application.

Over 50 in-memory parallel analytic graph functions enable Oracle Converged Database users to discover dependencies, communities, ranking, customer 360 view, or any graph pattern that is matched against your graph data vertices and edges. Implementation is effortless with declarative SQL-like queries or through open-source Graph Query Language (PGQL).

Oracle Converged Database offers support for native JavaScript Object Notation (JSON) data type. Simple Oracle Document Access (SODA) is a set of NoSQL-style APIs that let you develop applications using JSON document collections without knowing Structured Query Language (SQL) or how the documents are stored in the database.

Oracle Text is the technology that makes it simple for applications to index, search, classify and analyze text documents. You can search text using keywords, context queries, pattern matching, or fuzzy operators. Additionally, semantic analysis on text data enables you to classify customer feedback as positive, negative, or neutral using sentiment analysis.

Applications can use different types of geospatial data, perform hundreds of spatial analytic operations, and use interactive map visualization features with the Spatial technology available in Oracle Converged Database. More than 60 Spatial functions and procedures for the topology data model and over 125 for the network data model contribute to developing modules that can compute distances between coordinates, calculate routes between locations, analyze utility networks, or evaluate sales territories.

Blockchain tables give you the power to identify and prevent fraud. Blockchain tables are append-only database tables

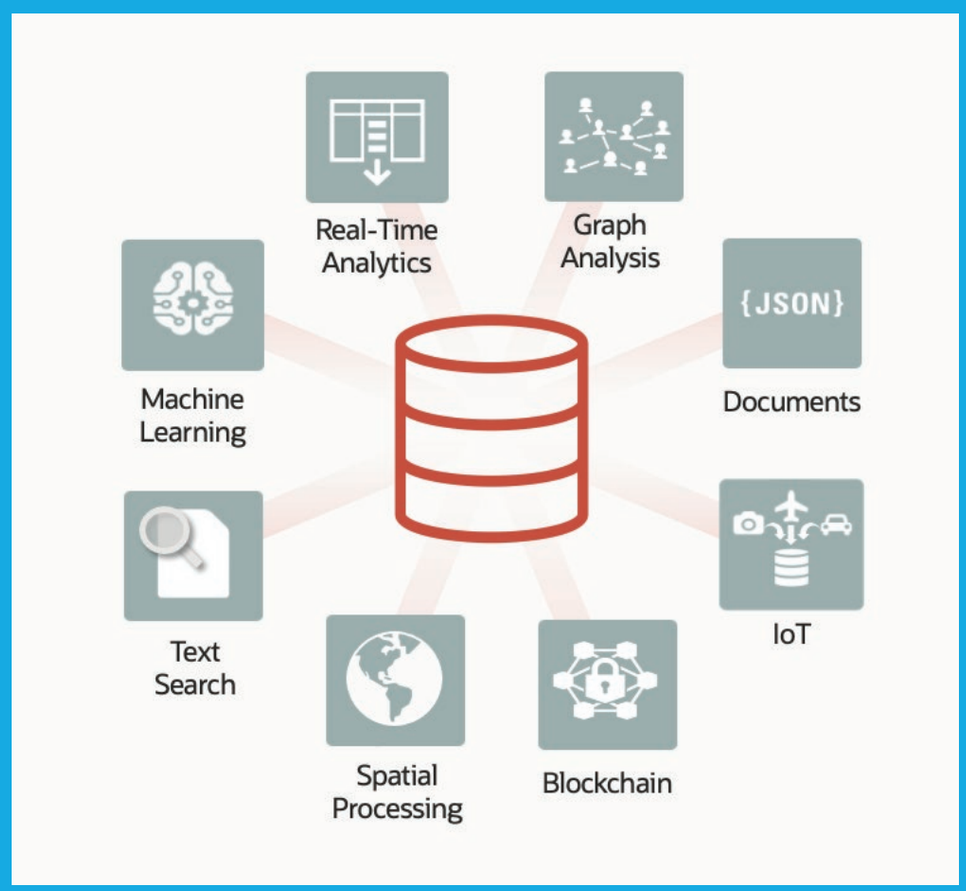



*Figure 2: Creating value from all types of data*

that cryptographically chain new rows to existing rows. Newly inserted rows have a cryptographic hash computed that is based on the new row's content plus the hash from the previous row. Any data deletion or modification breaks the cryptographic chain, and it is detected immediately.

Oracle Converged Database helps you stream and analyze IoT sensor data using memory buffers. This Fast Ingest technique can achieve up to 20 million inserts per second on a two-socket server, bypassing Oracle standard transaction mechanisms and periodically writing to disk the ingested rows from the temporary buffer in the Large Pool via a deferred, asynchronous process.

In conclusion, Oracle Converged Database eliminates application complexity and accelerates application development, driving innovation. Automation and consolidation eliminate repetitive maintenance tasks, e.g., secure the database once, you secure it for all applications.

In the end, I would like to finish with a real example. Recently I was asked by my friends, professional developers, if Oracle Converged Database was suitable to develop mobile applications or at least modules that can run on mobile devices for a big enterprise application. My answer was: 'Yes, Oracle Database platform is more than capable of supporting developers write native mobile applications'.

It is extremely easy to provision an Autonomous Database on Oracle Cloud Infrastructure, even free of charge using the Always Free resources, in just minutes. Once available, use the web-based interface set of tools called Database Actions for development or the low-code development platform APEX to create your data-driven application.

From the native mobile application code, you can make REST calls to the database via ORDS, and let the database manage data processing. This saves you from building complex database adapters into the application, managing connections or complicated transactions, and manually coding all inbound and outbound data transfers. ORDS API can also solve the data type concerns because it uses JSON documents to parse data between the mobile device and database server.

By default, on database cloud services, ORDS endpoints are protected by Secure Sockets Layer (SSL) certificates and Transport Layer Security (TLS) encryption via HTTPS communication protocol. Your REST API running on the Autonomous Database is protected by a two-legged OAuth flow with client credentials, used to obtain and refresh a token, to extend the life of your user session.

If you want to know more about this example and test it yourself, please visit **dbnotify.oraclexp.com**.

I look forward to hearing from you about development experiences and database platforms, single-purpose or convergent data stores. Please send me your feedback or comments, if any, to **valentin.tabacaru@oracle.com**; I'll be more than happy to read them.

## About Valentin Leonard Tabacaru

Valentin Leonard is a Principal Product Manager at Oracle. He supports Oracle Database server technology programs to drive the adoption of products and cloud services, maintains and develops exchanges with Product Management teams, helps partners validate and certify their applications, delivers briefings, webcasts, and hands-on workshops. Valentin also helps strategic partners and customers by handling technical request assignments in his area of expertise.

Carsten Czarski

# Oracle Application Express (Part 10): Get Smart with APEX 21.2:

## Smart Filters, PWA, Geocoding, and more…

## Introduction

APEX 21.2 is available since November 2021. Marquee features are initial support for *Progressive Web Apps* (PWA), Geocoding, or the new *Smart Filters* region type. In addition, the release contains several small improvements across application builder and the various components of an APEX application. Examples are the new *Environment Banners*, improvements to *Email Templates* or the new *Static File Editor*. This article provides a brief overview of the new additions and improvements.

## Smart Filters

The *Smart Filters* feature allows users to quickly narrow data down with filter suggestions or search terms. Smart filters concentrate on a search field, which is typically shown above the data. When users start typing, Smart Filter functionality kicks in and guides the user with *Filter Suggestions*. ***Figure 1*** shows a typical Smart Filters page.

Although a Smart Filters page looks like simple text-based search, it's way more powerful: Users are guided with data-driven suggestions, based on filters defined by the application developer.

- **Checkbox Group** filters allow to pick one or multiple options.
- **Radio Group** only allows to pick one option.
- **Range Filters** allow to filter on non-discrete values (price, salary, age).
- **Input Field** and **Search** filters allow text-based searching.

Filters are mapped to database columns. Checkbox, Radio Group, and Range filters contain a List of Values (LOV) definition to derive the possible options from. This is very similar to Faceted Search, which Smart Filters indeed share a lot of infrastructure with.

As F***igure 1*** illustrates, a list of *Suggestion Chips* is shown below the search field. The developer configures the number of chips, and potential filter options to show within a chip. At runtime, suggestion chips will be shown based on the order of filters within the Smart Filters region, and on the actual occurrence of a filter option within the data.

Once the user starts typing, a list of matching filters or filter options displays. Users can pick one of the suggestions or continue typing. The latter will finally lead to performing a text-based search.

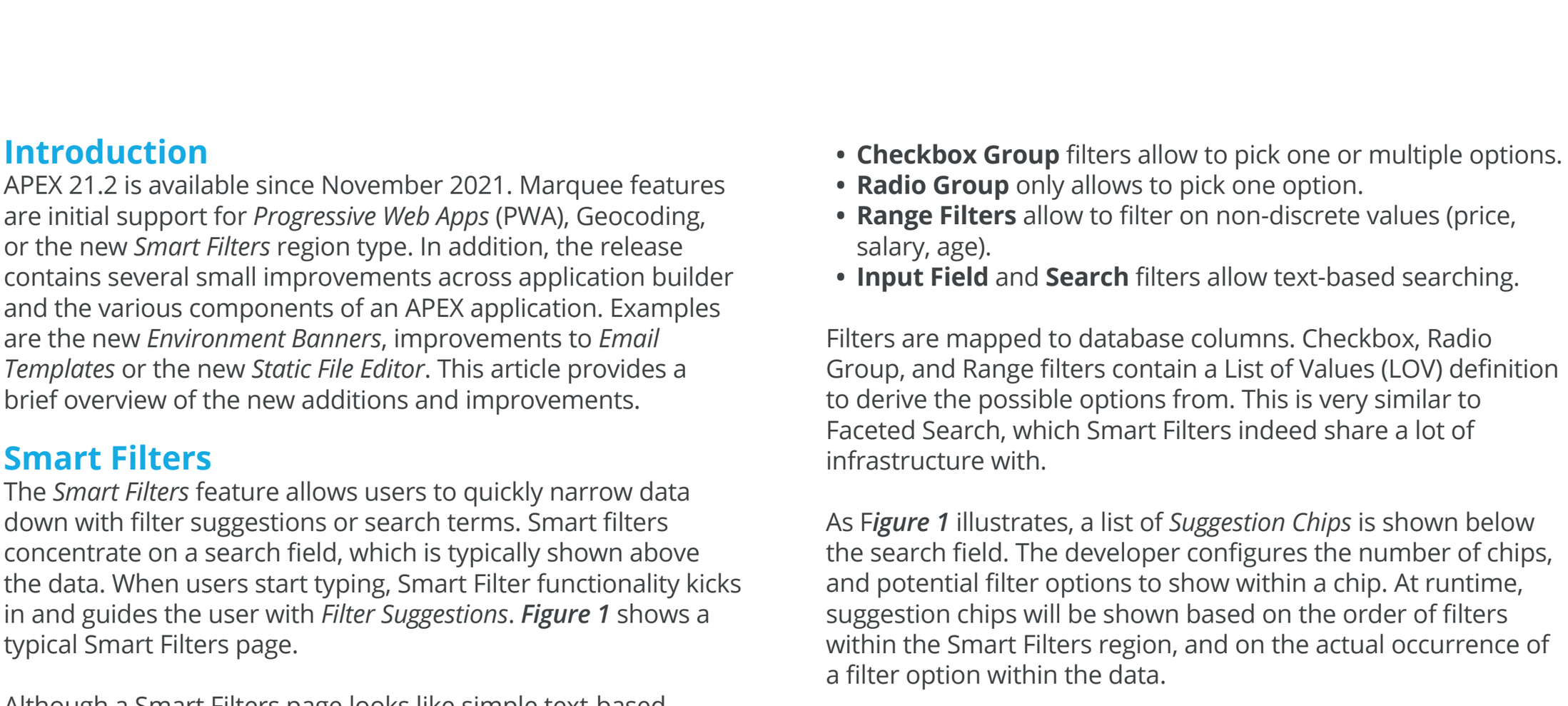



*Figure 1: Smart Filters guide users with Suggestions.*

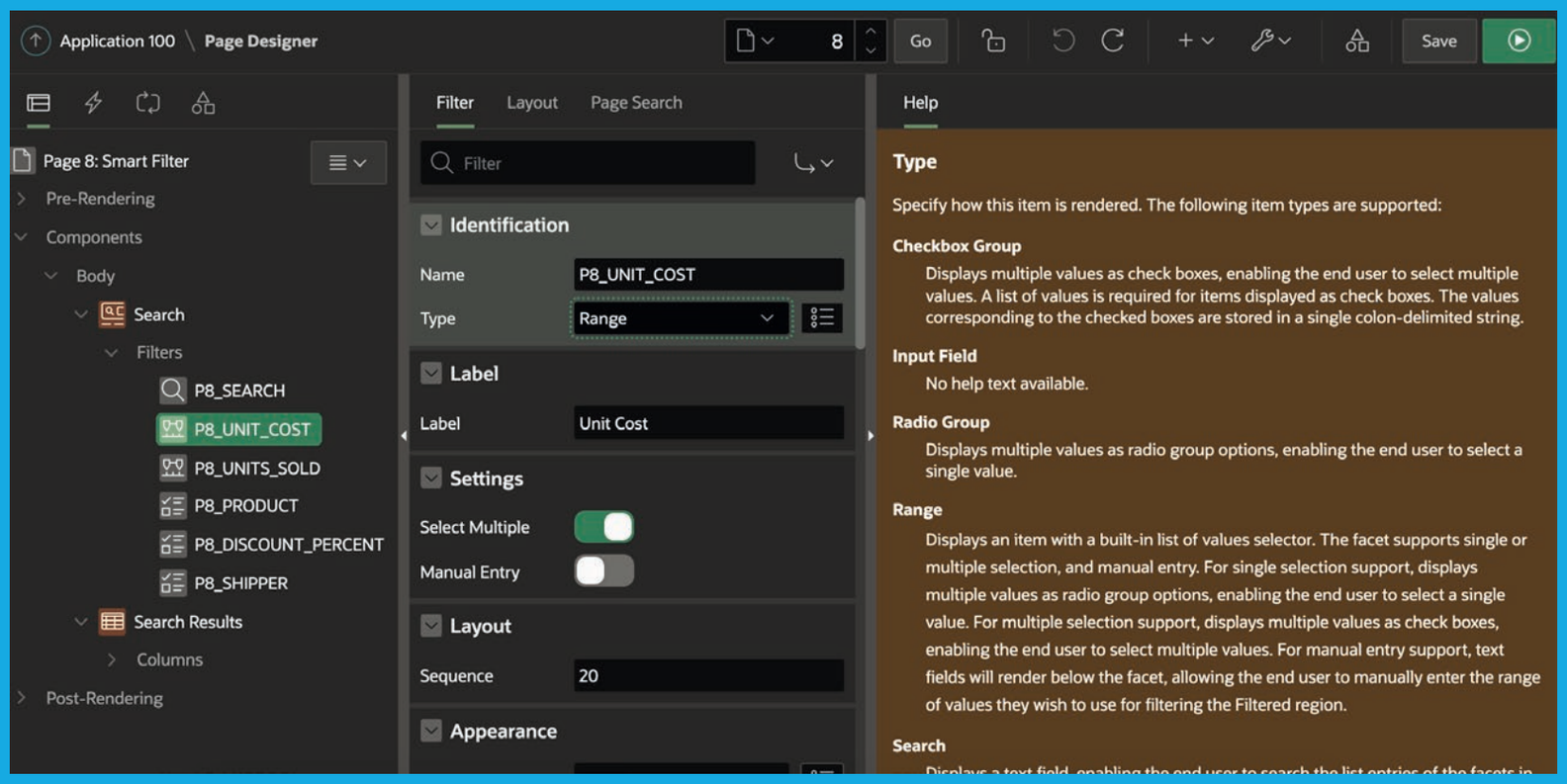



*Figure 2: Configure Smart Filters in Page Designer.*

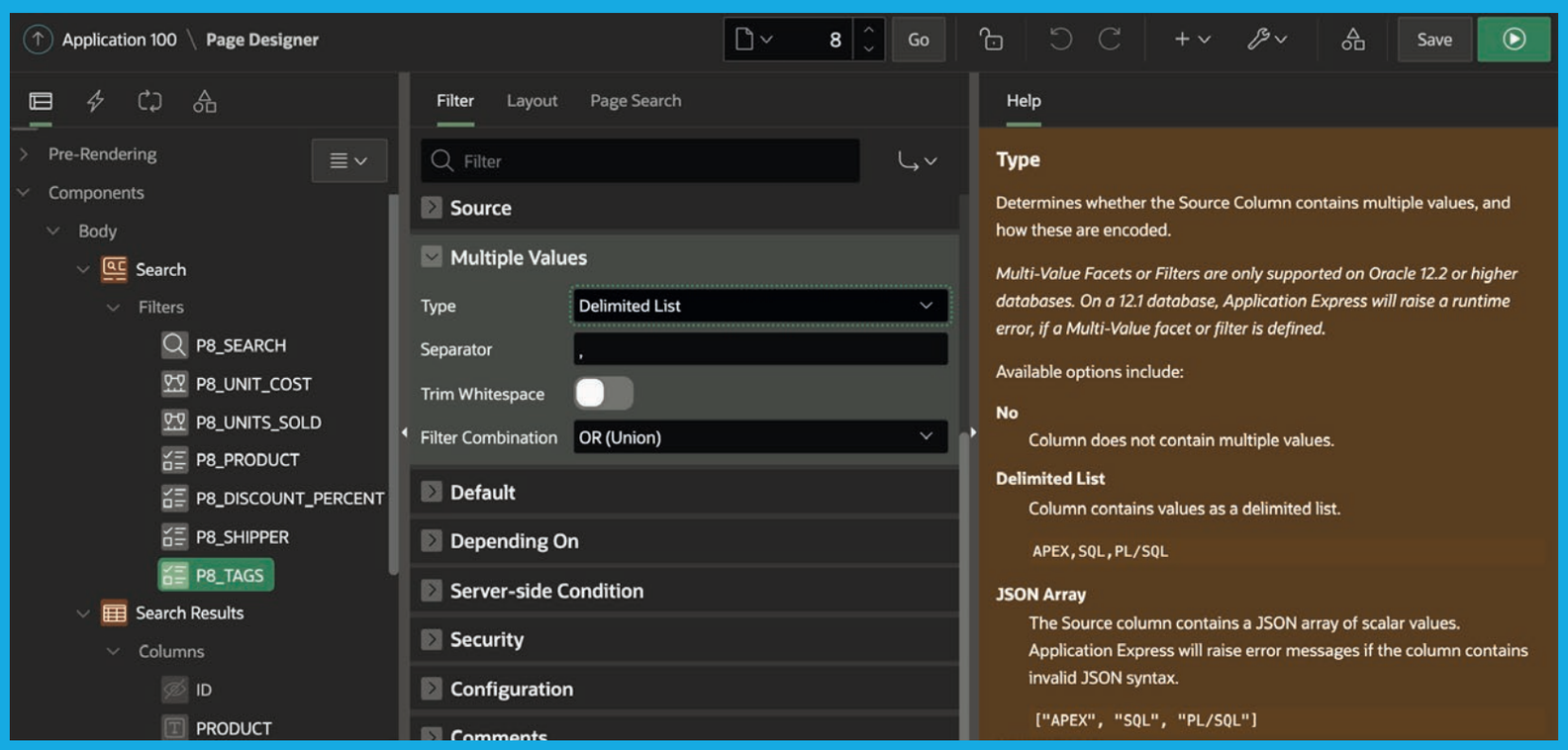



*Figure 3: Configure Multi-Value support for a Facet or Smart Filter.*

Smart Filters use the same internal infrastructure as faceted search, so filtering and count computation behavior is the same. Key differences are how filters are displayed, and how the end user interacts with the filters.

- On a *Faceted Search* page, all the Facets and their filter options are directly visible on the page: users see immediately, what they can filter for. On the other hand, this consumes more real estate on the screen: Faceted Search pages can be hard to use on a small screen, for instance on a phone.
- *Smart Filters* only require real estate for the search field and the suggestion chips, all the rest can be used to display search results. When users start typing, only matching filters are shown, which is better suited for small screens. On the other hand, besides the visible suggestion chips, end users need to start typing, to see filtering options.

So Smart Filters and Faceted Search are similar, but with different user interfaces. The best alternative depends on the actual requirements for a given application.

A related new feature in APEX 21.2 is support for multiple values, which is available for both Faceted Search and Smart Filters. Tables or query results often contain "tag" columns with delimited values, like "**PROMO_A,PROMO_B,LAST_ORDERS**" or similar.

With APEX 21.2, developers can simply create a Facet or a Smart filter on such columns and enable **Multi-Value Support**. No coding is required to handle the multi-value column ***(Figure 3)***. Smart Filters or Facets will then display the individual, split values as it were plain column contents. All required processing is done by APEX.

## Progressive Web Applications (PWA)

APEX 21.2 takes the first step towards applications being available as *Progressive Web Apps (PWA)*. A PWA can be "installed" on the end user's device ***(Figure 4)*** and has typically more access to device capabilities.

A PWA is still a web application, which requires a network connection to APEX. However, it benefits from advanced caching techniques and will thus provide better loading performance than a plain web application.

PWA settings are configured as Application Attributes within Shared Components. For new applications, basic PWA support is always enabled, but can be turned off. Basic PWA support means that the application will benefit from advanced caching in the end user's web browser.

In addition to that, developers can make the application *installable* ***(Figure 5)***, which also allows to configure a theme, an icon and (if needed) a custom *PWA Manifest*. The application will then render an install button which allows the end user to "install" the application on their device.

## Geocoding and Address Normalization

¬Support for spatial data and maps was already introduced with the new Map Region in APEX 21.1. APEX 21.2 rounds this area out by introducing new page item types for map display and geocoding.

- **Geocoded Address** allows to turn a postal address into a coordinate.
- **Display Map** allows easy single coordinate visualization within a form.
- -The **Mini Map** JavaScript widget allows to visualize a single coordinate on a small map almost everywhere within an application.

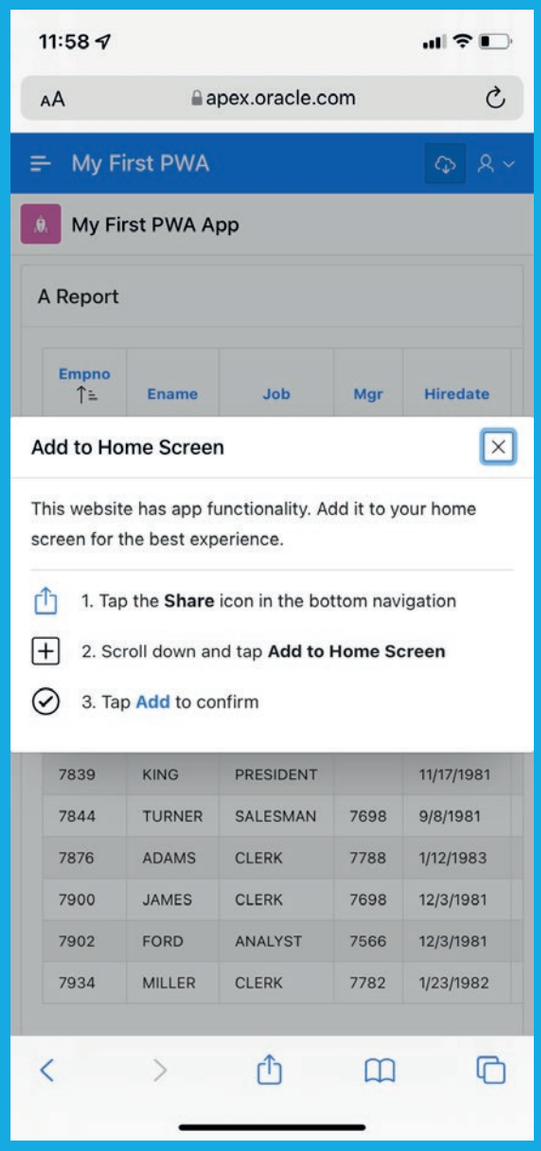



*Figure 4: Installing a PWA on a mobile device.*

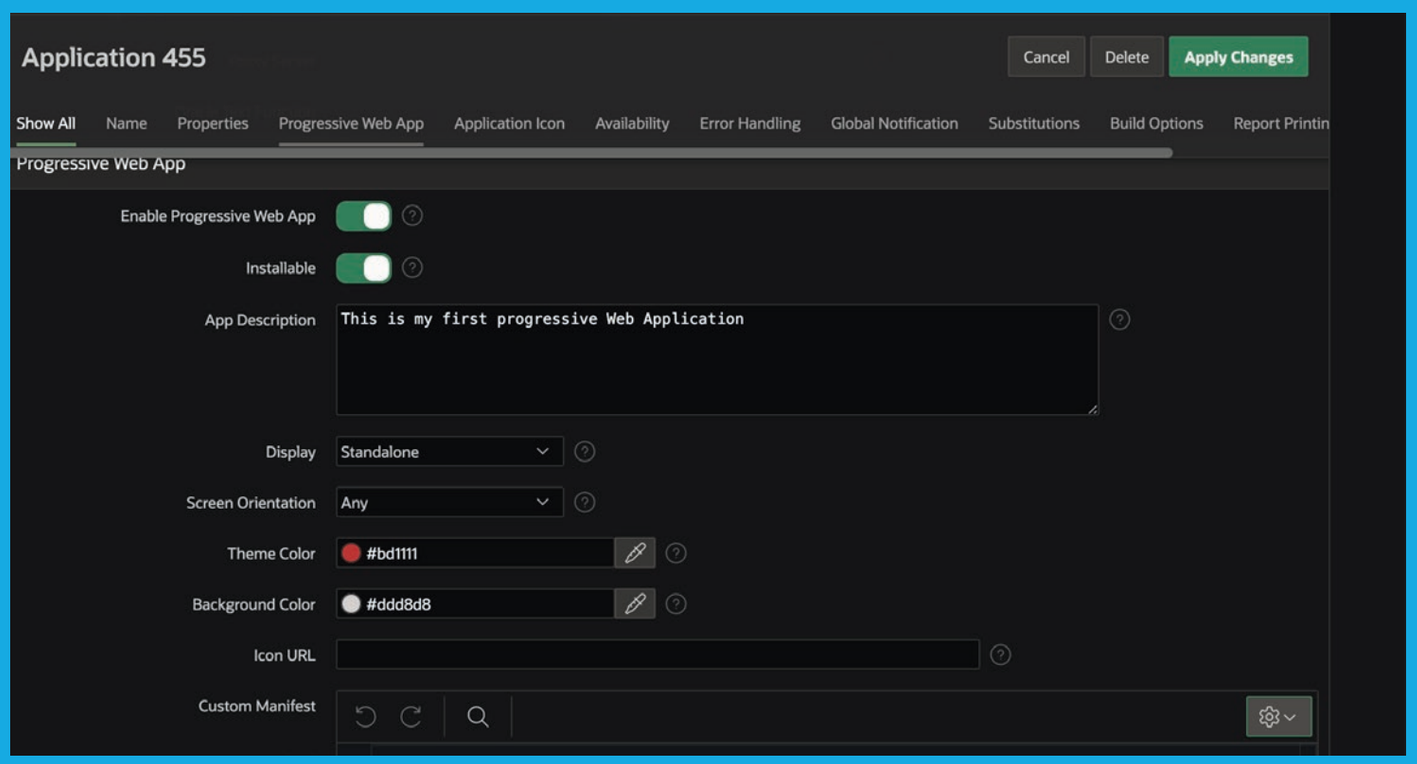



*Figure 5: Configure PWA Settings in Application Attributes.*

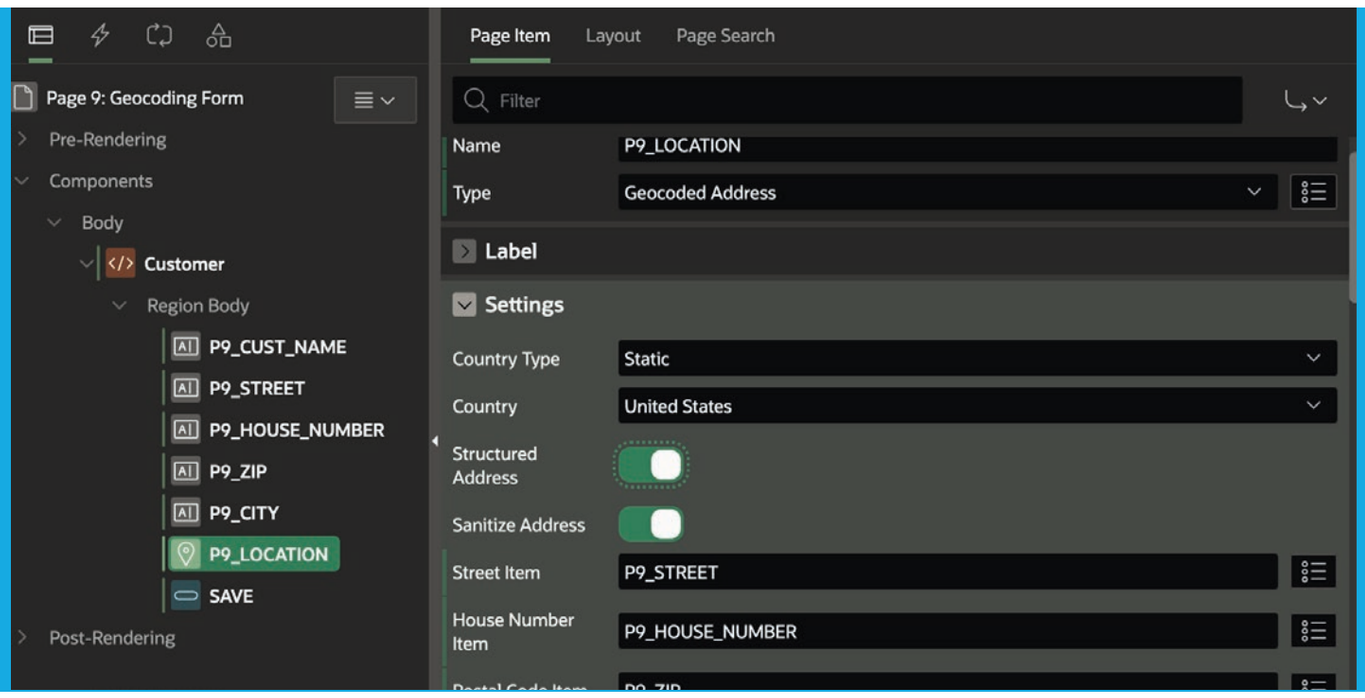



*Figure 6: Configure the Geocoded Address item in Page Designer*

APEX developers are often in the situation that a postal address is available, but not the coordinate to display on a map. The new **Geocoded Address** page item type allows to easily integrate the geocoding process (turn an address to a coordinate) into a new or existing form page.

The item supports two geocoding modes: **Structured Geocoding** requires the developer to map page items for individual address parts, like *Street*, *House Number* or *City*. This typically leads to very good geocoding results, as the geocoder knows how to interpret each address part. Also, the geocoder returns a corrected address, which can be fed back to the page items. That allows to use the Geocoder not only to get a coordinate, but also to sanitize or complement address input.

**Unstructured Geocoding** requires to only map one *single* page item, where end users can enter a postal address in free form. The geocoder will determine a matching coordinate, but the results cannot be returned to the input item, as the address input has no structure. Unstructured mode is best suited for simple search requirements, where storing and correcting the entered address is not required.

***Figure 6*** shows how structured geocoding is configured in Page Designer: Page items are used to enter address parts, and these are mapped to the according attributes of the Geocoded Address item.

By default, Geocoding is performed, just before the APEX page is submitted, no additional buttons are required on the page. The geocoding item intercepts page submit and executes the geocoding request first. As an entered postal address might be ambiguous or even wrong, a results popup is shown first. The user accepts one of the geocoding results, which leads to the item showing the position on the map ***(Figure 7)***. Data is saved by submitting the page again.

Developers can choose a different method to trigger geocoding in Page Designer: Alternatives are to use a custom dynamic action, or to trigger geocoding when a specific item on the page has changed.

The value of the Geocoded Address item is the received coordinate, in GeoJSON format. For the coordinate shown in ***Figure 7*** this would be **{"type": "Point", "coordinates": [-122.26226, 37.53087]}**.

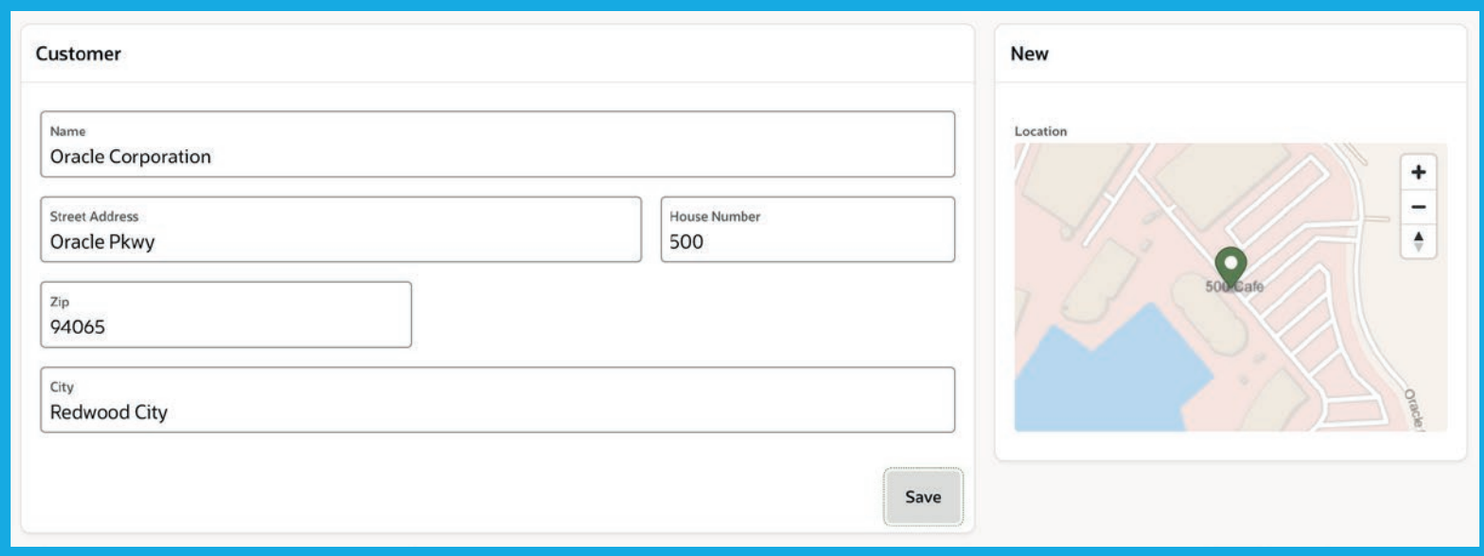



*Figure 7: Address input was successfully geocoded.*

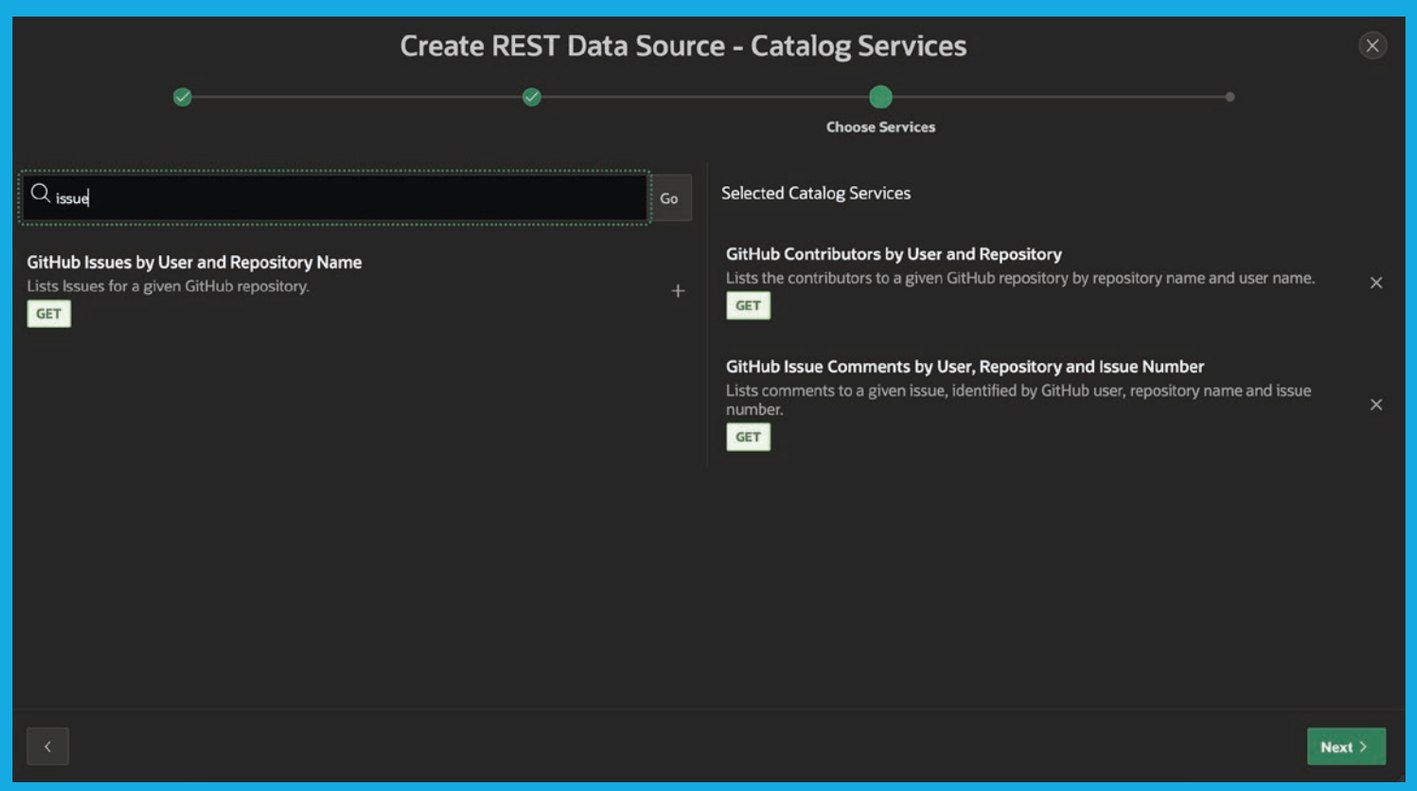



*Figure 8: Create a new REST Source from a Catalog.*

Geocoding is performed by using the *Oracle eLocation Cloud Service* (elocation.oracle.com). The Map Region uses the same service to display background maps. APEX customers are licensed to use that service, additional API keys or authentication is not required. The concrete HTTP request to elocation.oracle.com is done by the browser, and not by the APEX database.

## New features for REST Data Sources

APEX 21.2 also contains new features for REST Data Sources: The new REST Source Catalogs drastically change the experience when creating new REST Data Sources for an APEX application.

Although the wizard to create a new REST Data Source is rather simple, and APEX does most of the discovery automatically, developers often need to manually adjust the REST Source afterwards.

- **Data Profile** discovery detects unneeded attributes, or attributes are missing.
- Not all **Operations** are detected.
- **Parameters** (HTTP Headers, URL Query Strings, or others) must always be manually configured, as there is no discovery for those.

A REST Catalog is a collection of "templates" for REST Data Sources, which can be exported and imported independent of the application. A catalog exists as a workspace object and can thus be used by all applications within the workspace.

New REST Sources can be created *from a catalog*: The service definition in the catalog includes all operations, parameters, and a complete data profile, so that the result is a ready-to-use REST Data Source. ***Figure 8*** shows how a to pick a REST Service definition from a catalog when creating a new REST Data Source.

Another important new feature is **Pagination Support** for **Simple HTTP** REST Data Sources. Many REST APIs return their data in pages, and one must execute multiple HTTP requests to get all data. Before APEX 21.2, such Pagination was only supported for **ORDS** REST Services - for other REST Service types, authoring a *REST Source Plug-In* was required.

APEX 21.2 supports three typical REST Pagination styles declaratively. If the REST API uses one of these, no custom code or Plug-In is required. Pagination can simply be configured within REST Source Attributes ***(Figure 9)***.

## Theme, Layout and UI Enhancements

APEX 21.2 introduces quite a few changes to page layout and Universal Theme. The most important change is the new ability to position components anywhere on a page: Templates are no longer limited to the display positions provided by the APEX engine; they can now define *their own position placeholders* and thus build much more powerful page layouts.

Universal Theme contains a new page template for modal pages: The **Drawer** page template lets the modal page slide in from either the left or the right ***(Figure 10)***.

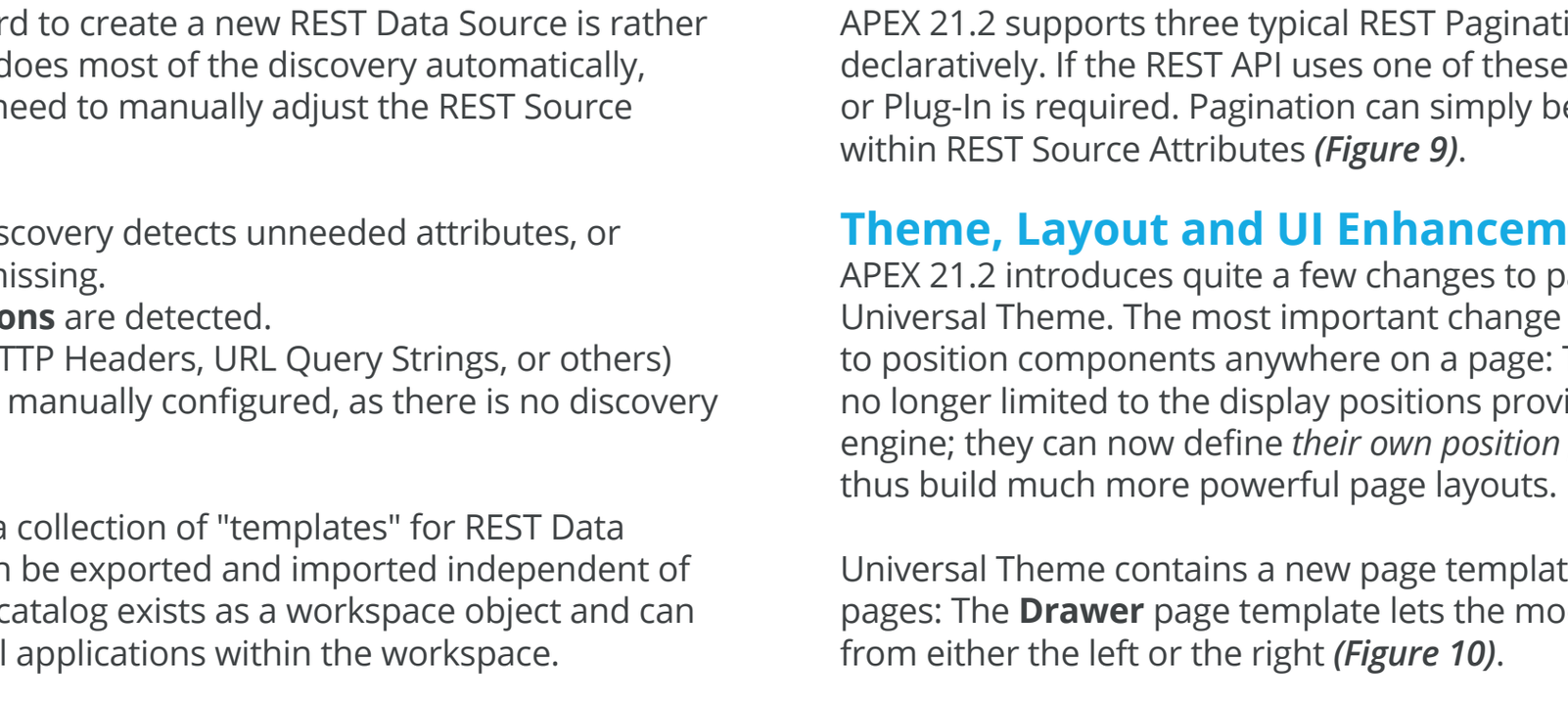



*Figure 9: Declarative Pagination support for REST Sources.*

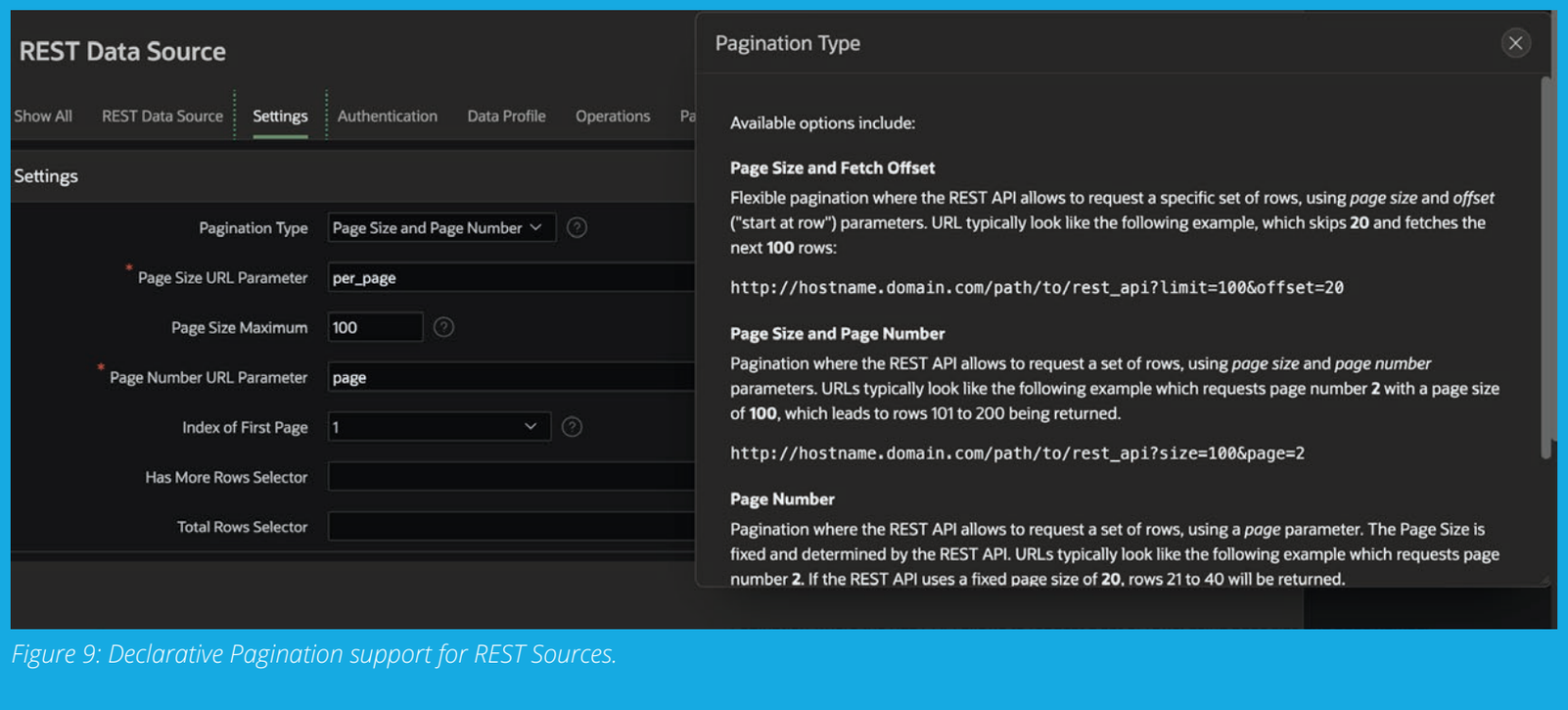



*Figure 10: "Drawer" template for modal pages.*

To use the new Custom Region Positions or the Drawer page template, applications must refresh their Universal Theme to the latest version.

Alert and Confirm Dialogs, which are typically shown using Dynamic Actions, now allow more declarative customization. Title, icons, and styles for dialog and buttons can be configured in Page Designer, no custom CSS is needed.

When the requirement is only to have a confirmation dialog on button click (often used to protect DELETE buttons from being clicked accidentally), things become even more easy: Instead of having to create a separate dynamic action, details about the confirmation dialog can be directly configured in button attributes.

## Sending Emails

A collection of small, but very useful Enhancements has been added within the area of sending emails.

Email Templates are available in APEX since version 18.1. However, using an Email Template was only possible with custom PL/SQL code and the **APEX_MAIL** package. Starting with APEX 21.2, the declarative **Send Email** process supports email templates as well. The mapping of page items to template placeholders is done directly in Page Designer ***(Figure 11)***.

**Send Email** is now also available as an **Automation Action** type. Thus, sending out an email as part of an automation does not require PL/SQL code anymore. Picking the Email Template and assigning template placeholders to automation query columns works like in Page Designer.

Being able to **Copy an Email Template** was frequently requested by the developer community and arrived with APEX 21.2.

Finally, APEX 21.2 allows developers to send out emails with *inline attachments*. That is a very useful technique to embed images into an email: the images are attached to the message and referenced in the message body. The recipient's email client can render the message, including all the images, but without having to fetch them from a remote server.

## Daily developer work

APEX 21.2 also contains some new features to make working with the Application Builder easier. A long-standing community request was the introduction of **Environment Banners** ***(Figure 12)***. These allow to configure a banner, which is visible in Application Builder, on the top or on the left. That immediately tells developers, in which environment they are.

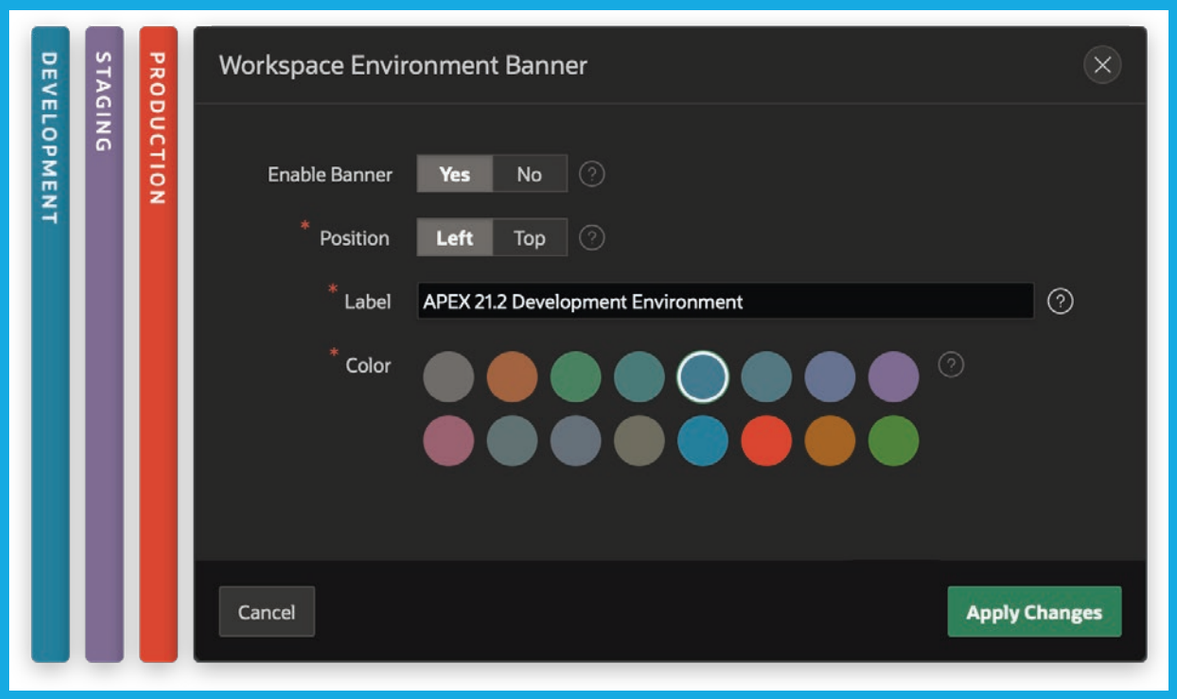



*Figure 11: Email Template Support for the Send Email Process Type.*

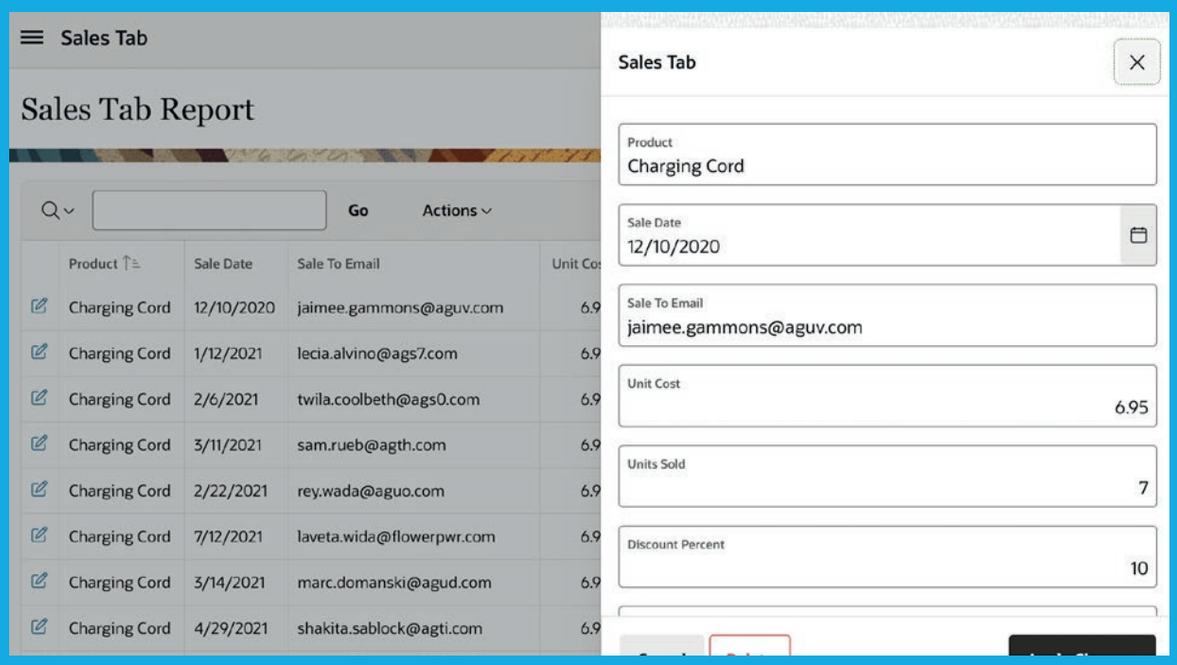



*Figure 12: Environment Banner in APEX 21.2.*

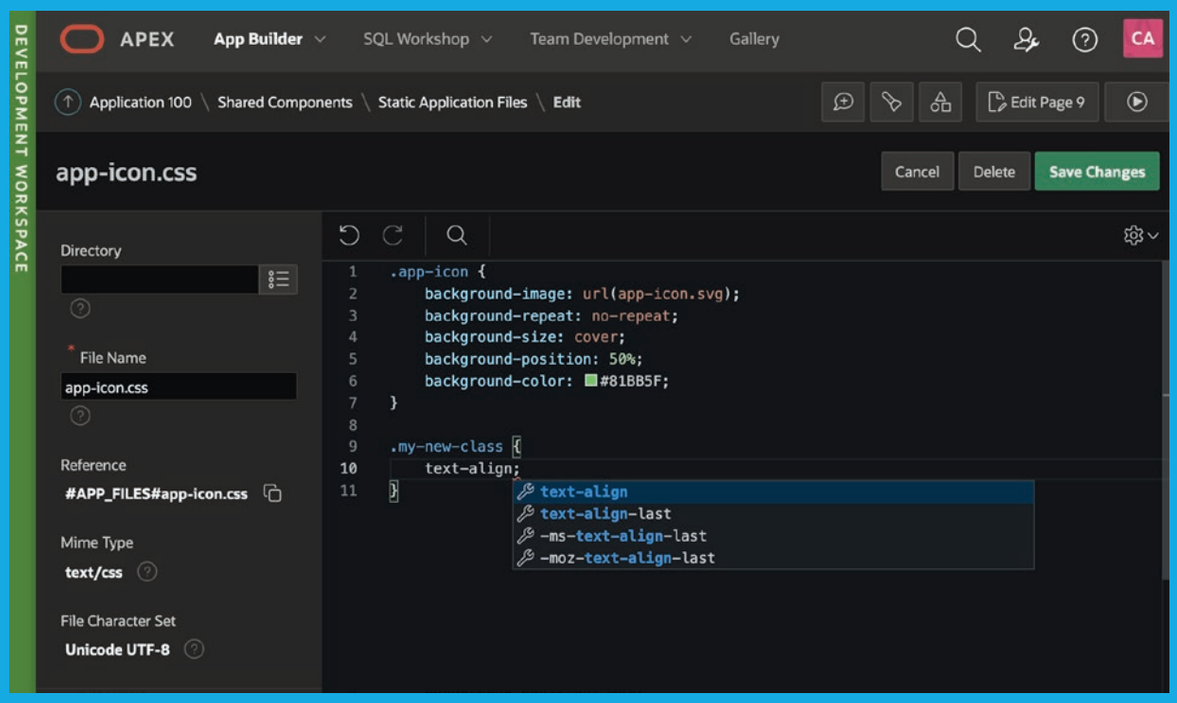



*Figure 13: Edit JavaScript or CSS files directly in Application Builder*

Static files can now be directly edited in Shared Components, which is very useful when dealing with JavaScript, CSS, or HTML files. For JavaScript or CSS, a minified version of the file will be maintained automatically ***(Figure 13)***.

## Summary

APEX 21.2 contains several new features and enhancements. Besides the new marquee features like Smart Filters, Geocoding or support for Progressive Web Apps, this release contains many smaller new features to complement already existing functionality.

The new Smart Filters feature and Faceted Search are closely related and share a lot of internal infrastructure. Developers now have the choice on how to implement their search pages: guide the end users with Smart Filters and *Search Suggestions* or present all the options as a Faceted Search page.

The new support for PWA, with "installable" applications and advanced caching, is APEX' first step towards tighter integration with end user devices. Developers can expect more PWA functionality in future APEX releases.

Across application builder and the various APEX components, developers will find lots of improvements and refinements - the best way to find out about everything is to get a subscription to Oracle Cloud "Always Free" Services, configure the APEX workspace and start developing.

## More Information

- Information and environment to test-drive APEX:
  **http://apex.oracle.com/en**

- Oracle Application Express Blog:
  **http://blogs.oracle.com/apex**

## About Carsten Czarski

**Carsten** works for Oracle in Germany since 2001. He started in the Presales organization helping customers and partners regarding database-centric application development. Since March 2016, Carsten is a member of the Application Express development team. Focus of his work is on the new support for REST services in APEX – beyond that Carsten looks after the Calendar component and the Data Loading facility. He is a frequent speaker at international user group conferences.

*Ulrike Schwinn*

# Hybrid Partitioned Tables — Lifecycle Management Made Easy

***With Oracle Database version 19c a new concept called Hybrid Partitioned Tables is being introduced. As the name implies the partitions of hybrid partitioned tables can exist in both – inside the Oracle database in tablespaces and outside in external sources, such as Linux files, files on Hadoop Distributed File System (HDFS), and files in Cloud Object Storage. Hybrid Partitioned Tables enhance the functionality of partitioning for mixed Big Data scenarios where large portions of a table can reside in external partitions. With this, partitions that are no longer frequently queried – also called non-active partitions – can be easily moved to external files for a more cost-effective storage solution.***

The Hybrid Partitioned Tables feature extends Oracle partitioning by enabling partitions to reside in both – in Oracle database segments and in external files and sources. To accomplish this, the two concepts – external table function and partitioning – have been integrated.

Hybrid partitioned tables support all existing external table driver types for external partitions including ORACLE_DATAPUMP, ORACLE_LOADER, ORACLE_HDFS and ORACLE_HIVE. ORACLE_LOADER is the default external tables access driver to read data from flat files, ORACLE_DATAPUMP access driver however can write data to a dump file in a binary format that can only be read by the ORACLE_DATAPUMP access driver. With ORACLE_HDFS and ORACLE_HIVE data stored in HDFS and Hive tables on Hadoop and Hive clients can be accessed as if that data was stored in tables in an Oracle database. As a prerequisite you need to have access to a directory object in the database to access the external sources.

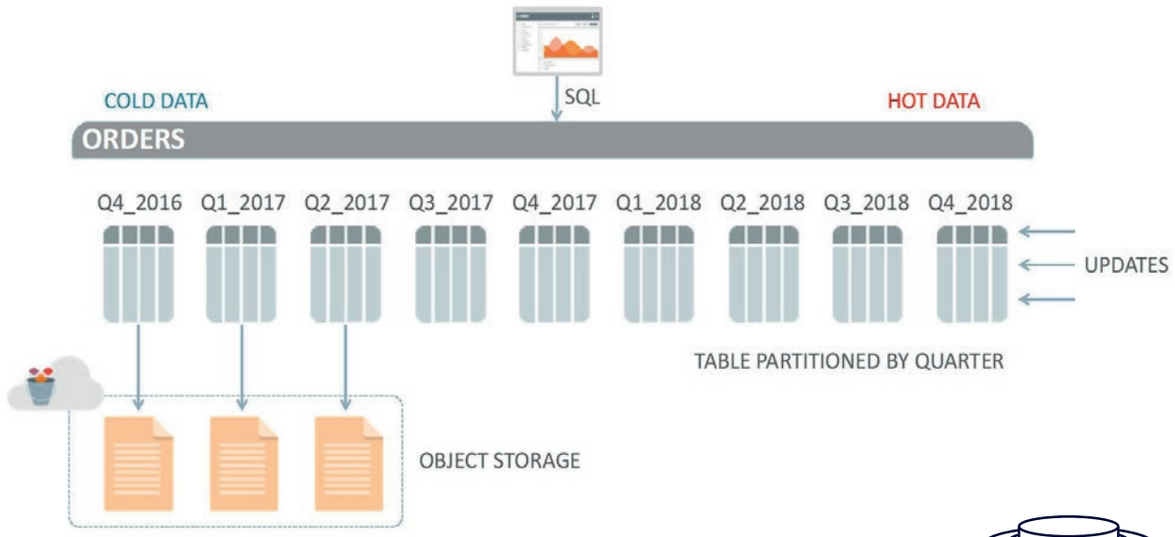



*Figure 1: Partitions can reside inside and outside the database (source: oracle.com)*

## Creating Hybrid Partitioned Tables

The following example creates a hybrid partitioned table. Let's assume we have generated the following data stored in the flat file "emp_dept_20.csv".

```
"JONES";"RESEARCH";20
"SCOTT";"RESEARCH";20
"FORD";"RESEARCH";20
"SMITH";"RESEARCH";20
"ADAMS";"RESEARCH";20
```

```
CREATE TABLE scott.emp_dept_hybrid_1
 (
   ename varchar2(10),
   dname varchar2(14),
   deptno number
 )
 EXTERNAL PARTITION ATTRIBUTES
 (
   TYPE oracle_loader
   DEFAULT DIRECTORY emp_dept_dir
   REJECT LIMIT UNLIMITED
 )
 PARTITION BY LIST (deptno)
 (
   PARTITION deptno_10 VALUES (10),
   PARTITION deptno_20 VALUES (20) EXTERNAL LOCATION ('emp_dept_20.csv')
 )
/
```

In general, you can use single level RANGE and LIST partitioning methods when creating a hybrid partitioned table. In the example, a hybrid partitioned table with LIST partitions on the column DEPTNO is created.

The partition DEPTNO_10 is an internal partition, DEPTNO_20 an external partition. The clause EXTERNAL PARTITION ATTRIBUTES specifies the external table driver ORACLE_LOADER and the default directory to set the location for the

external partition(s). The flat file “emp_dept_20.csv” stores the data of the partition DEPTNO_20.

With an *ALTER TABLE* command, the partitioned table can be subsequently enriched with external partitions. In the example, the external partition DEPTNO_30 is added.

```
ALTER TABLE scott.emp_dept_hybrid_1
  ADD PARTITION deptno_30 VALUES (30)
    EXTERNAL DEFAULT DIRECTORY emp_dept_dir LOCATION ('emp_dept_30.csv');
```

You can read data from the external table partition DEPTNO_10 and insert (also update or delete) data on the internal partition. Remember, you can only use DML operations on internal partitions of a hybrid partitioned table because external partitions are treated as read-only partitions.

Partition operations such as adding and dropping partitions is possible in a normal manner. From a performance perspective, hybrid partitioned tables can make use of partition-based access optimizations e.g. partition pruning across internal and external partitions.

## Altering Partitioned Tables to Hybrid Partitioned Tables

You can convert a "normal" LIST partitioned table with only internal partitions to a hybrid partitioned table containing both internal and external partitions. In the next example, the internal LIST partitioned table EMP_DEPT_HYBRID_2 is converted. Note that at least one partition must be an internal partition.

First the clause EXTERNAL PARTITION ATTRIBUTES must be added to the existing table.
Then external partitions can be added. The external partition

```
CREATE TABLE scott.emp_dept_hybrid_2
  (
    ename varchar2(10),
    dname varchar2(14),
    deptno number
  )
  PARTITION BY LIST (deptno)
  (
    PARTITION deptno_10 VALUES (10)
  )
/
```

```
CREATE TABLE scott.emp_dept_hybrid_2
ADD EXTERNAL PARTITION ATTRIBUTES
  (
    TYPE oracle_loader
    DEFAULt DIRECTORY emp_dept_dir
    REJECT LIMIT UNLIMITED
  )
/
```

DEPTNO_20_30 is added with data from the flat files “emp_dept_20.csv” and “emp_dept_30.csv”.

```
ALTER TABLE scott.emp_dept_hybrid_2
  ADD PARTITION deptno_20_30 VALUES (20,30)
    EXTERNAL LOCATION ('emp_dept_20.csv', 'emp_dept_30.csv')
/
```

## Administration and Monitoring

Hybrid Partitioned Tables support many partition level operations, including

- Adding, dropping and renaming partitions
- Modifying the location of the external data sources at the partition level

- Creating global partial non-unique indexes on internal partitions
- Creating materialized views that include external partitions in QUERY_REWRITE_INTEGRITY stale tolerated mode only
- DML trigger operations on a hybrid partitioned table on internal partitions

However, there are also limitations on hybrid Partitioned Tables. The following list gives a few examples:

- Only single level LIST and RANGE partitioning are supported.
- No unique indexes or global unique indexes. (Partial indexes are allowed.)
- SPLIT, MERGE, and MOVE operations are not allowed on external partitions.
- LOB, LONG, and ADT types are not allowed.

To work around the LOB limitation a two table solution – internal and external using the technique described in section “Moving data to external partitions” – can be easily implemented.
The complete list of supported operations and current limitations can be found in VLDB and Partitioning Guide chapter **2.1.10 Hybrid Partitioned Tables**.

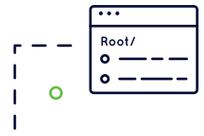
```
SQL> SELECT table_name, owner
  FROM all_tables WHERE hybrid = 'YES';

TABLE_NAME                OWNER
------------------------- --------
EMP_DEPT_HYBRID_RANGE     SCOTT
EMP_DEPT_HYBRID_LIST      SCOTT
EMP_DEPT_HYBRID_1         SCOTT
EMP_DEPT_HYBRID_2         SCOTT
EMP_DEPT_HYBRID_3         SCOTT
ORDERS_H                     OT
HYPT_TO_INT_TABLE            US
```

As usual you can display information about hybrid partitioned tables in Oracle database views. If you only want to find out whether a table is hybrid partitioned, you can look it up in the data dictionary view ALL_TABLES and filter on the new column HYBRID.

Hybrid partitioned tables can be also found in the data dictionary views such as ALL_XTERNAL_PART_TABLES, ALL_XTERNAL_TAB_PARTITIONS etc. introduced with external partitioned tables.

## Moving data to external partitions

However, what do you have to do to move the data to external partitions?
Let’s start with the table EMPLOYEES_HYBRID which consists of 4 internal range partitions: salary_4000, salary_10000, salary_30000 and a partition for MAXVALUE. The requirement is to move the partition with the lowest salaries – meaning SALARY_4000 - to an external partition.




```
CREATE TABLE hr.employees_hybrid
  (  EMPLOYEE_ID varchar2(10),
     SALARY      number,
     JOB_TITLE   varchar2 (35))
     PARTITION BY RANGE (salary)
  ( PARTITION salary_4000 VALUES less than (4000),    -- internal
     PARTITION salary_10000 VALUES less than (10000), -- internal
     PARTITION salary_30000 VALUES less than (30000), -- internal
     PARTITION salary_max values less than (MAXVALUE))
/
```

To move the data to an external source you need to use an auxiliary external table with external table driver ORACLE_DATAPUMP. The corresponding subquery selects the from the internal partition SALARY_4000.

```
CREATE TABLE ext_help
ORGANIZATION EXTERNAL
  (
     TYPE oracle_datapump
     DEFAULT DIRECTORY home
     LOCATION ('salaryless4000.dmp')
  )
  REJECT LIMIT UNLIMITED
AS SELECT employee_id, salary, job_title FROM hr.employees_hybrid
partition(SALARY_4000);
```

To swap the data finally, you can simply use the EXCHANGE PARTITION command.

```
ALTER TABLE hr.employees_hybrid
EXCHANGE PARTITION(salary_4000) WITH TABLE ext_help;
```

The reverse method also works: You can also swap external data to an internal partition in this way. This enables a flexible lifecycle management scheme.

## Hybrid Partitioned Tables and Cloud Object Storage

With the PL/SQL package DBMS_CLOUD and the procedure **CREATE_HYBRID_PART_TABLE** you can create an external partitioned table with files residing in the cloud. The procedure supports external partitioned files in the supported cloud object storage services, including Oracle Cloud Infrastructure (OCI) Object Storage, Azure Blob Storage, Amazon S3 and Amazon S3-Compatible Object Storage. This allows to run queries on external data from Oracle Autonomous Databases and also from On-Premises installations (from 19c on). However, this package is not pre-installed with 19c on-premises databases. You need to manually install DBMS_CLOUD and also configure users or roles to use it. For information on how to install and configure the package refer to the MOS-NOTE with Doc ID **2748362.1**.

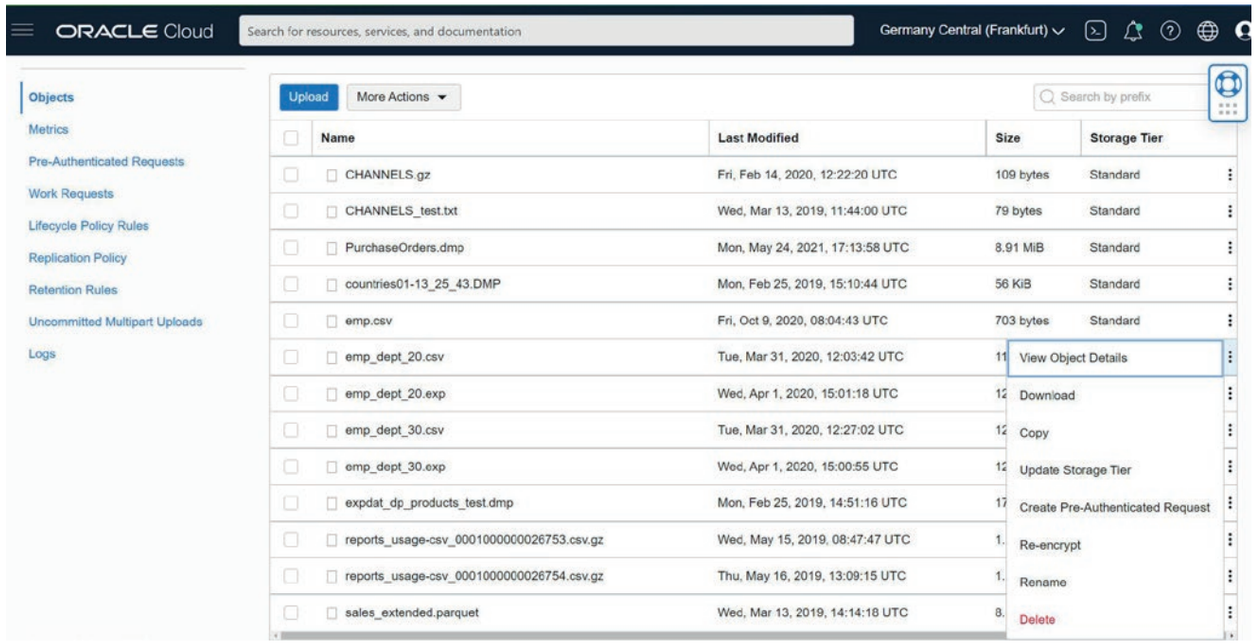



*Figure 2: Console view of Oracle Cloud Infrastructure Object Storage (source: Ulrike Schwinn)*

The following example creates a hybrid partitioned table EMP_DEPT_HYBRID_AUTO with two external partitions DEPTNO_30 and DEPTNO_20 and one internal LIST partition DEPTNO_10. The flat files “emp_dept_30.csv” and “emp_dept_20.csv” stored in Cloud Object Storage are used. To refer to objects in Cloud Object Storage a full storage URI is necessary. The URI has a format that depends on the cloud provider. If the source files reside on the Oracle Cloud Infrastructure Object Storage you can use Oracle Cloud Infrastructure native URIs, with the format:
*https://objectstorage.region.oraclecloud.com/n/namespace-string/b/bucket/o/filename*

```
BEGIN
DBMS_CLOUD.CREATE_HYBRID_PART_TABLE
  (
    table_name       => 'EMP_DEPT_HYBRID_AUTO',
    credential_name  => 'CREDENTIAL_US1',
    format           => json_object('type' VALUE 'CSV'),
    column_list      => 'ename varchar2(10), dname varchar2(14), deptno number',
    partitioning_clause => 'partition by list (deptno)
      ( partition deptno_30 values (30) external location
      (''https://objectstorage…/b/USBUCKET/o/emp_dept_30.csv''),
    partition deptno_20 values (20) external location
      (''https://objectstorage…/b USBUCKET/o/emp_dept_20.csv''),
    partition deptno_10 values (10)
      )'
  );
END;
/
```

The following information is required: the table name, the credential name, a file format description, the list of columns, and the partitioning clause to specify the partitions including the location information for the external partitions. In general, the files can be in different heterogeneous formats such as CSV, JSON but also compressed formats and AVRO and Parquet formats.

## Conclusion

Oracle Hybrid Partitioned Tables integrate internal partitions and external partitions into a single partitioned table. Classical internal partitioned tables in combination with Oracle external partitioned tables form a new table partitioning concept called hybrid partitioned tables. Appealing scenarios especially with lifecycle management and the usage of cheaper storage solutions such as cloud object storages can be achieved. As an example, CERN used this technology to leverage 1 PB of data with Oracle Autonomous Database. If you want to learn more about this use case, you can watch **Oracle Global Leaders Webcast: Managing 1 PB of data with Oracle Autonomous DW**.

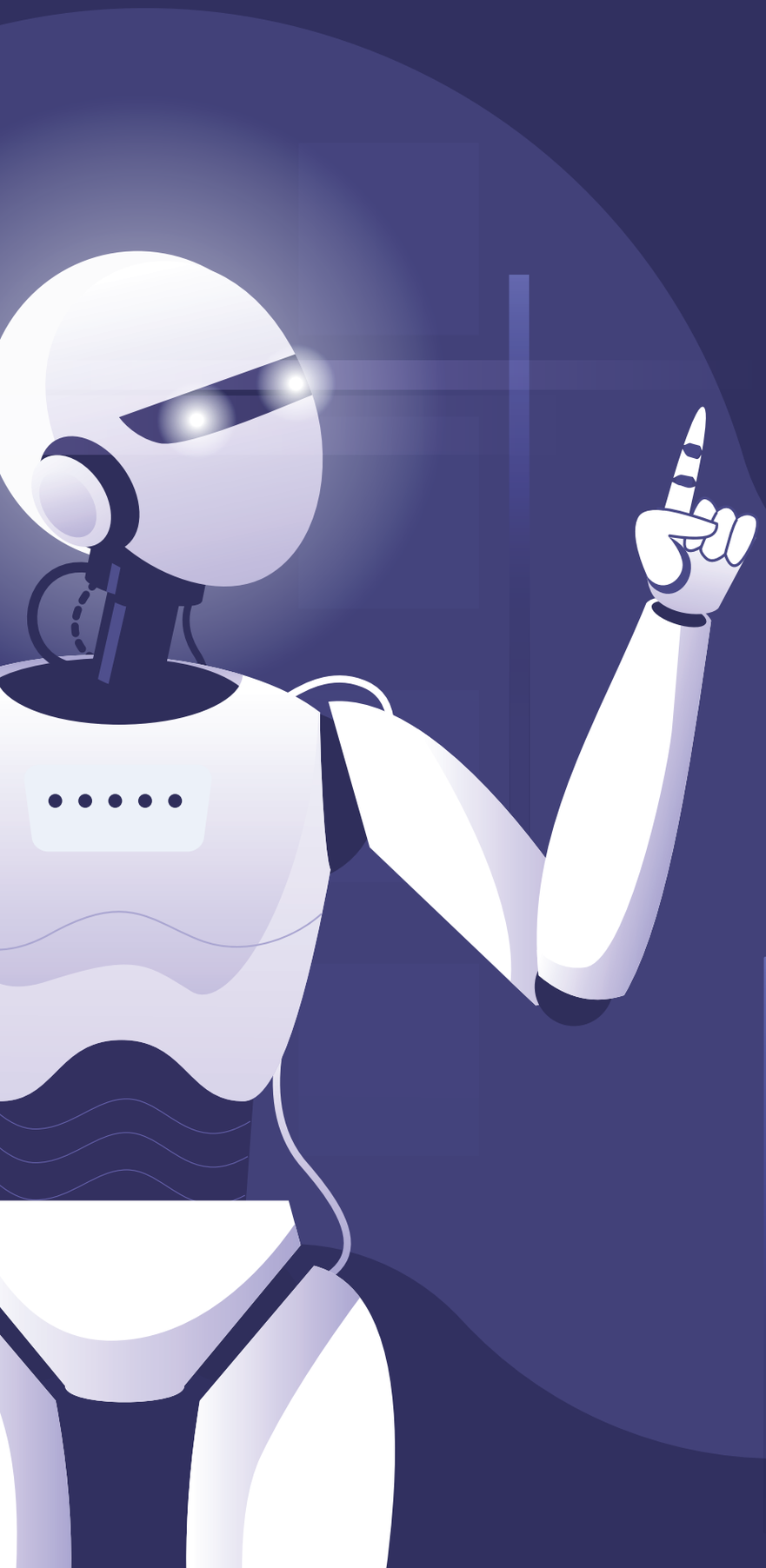
## Further reading

- VLDB and Partitioning Guide: **2.1.10 Hybrid Partitioned Tables**.
- **Oracle Global Leaders Webcast: Managing 1 PB of data with Oracle Autonomous DW**
- My Oracle Support: **How To Setup And Use DBMS_CLOUD Package (Doc ID 2748362.1)**
- Oracle Livelabs: **Database 19c - Hybrid Partitioning Workshop**
- Slideshare: **DOAG 2021 presentation**
- Oracle Blog: **https://blogs.oracle.com/coretec**
  - **DBMS_CLOUD: Zugriff auf Object Storage aus der Oracle Datenbank - Praktische Anwendungsfälle**
  - **Hybrid Partitioned Tables und Lifecycle Management**
  - **Hybrid Partitioned Tables - Lifecycle Management leicht gemacht**

## About Ulrike Schwinn

**Ulrike** studied mathematics and works currently as a cloud engineer for Oracle in Munich. As a trusted advisor she consults customers in latest Oracle database and cloud technologies and supports presales projects of high technical complexity. She is author/co-author of books, papers and articles (e.g. c't, iX-Heise, Red Stack, Informatik aktuell), podcaster and speaker at conferences & symposia and contributes to diverse social media channels.

She is a member of the advisory board of **IT-Tage**, the **DOAG Database Community**, **German Data Science Community** and volunteer mentor in the "Cyber Mentor Online Mentoring program" (cybermentor.de).



# Got BOTS?

*Mia Urman*

## What to Look Out for When Beginning Your Oracle Automation Journey

***While Robotic Process Automation (RPA) is helping businesses advance at a rapid rate, Oracle Forms and EBS users are not always seeing the same results and ROI as other technologies. What is all the hype behind RPA, and why do Oracle applications need a specialized RPA tool to automate successfully?***

## Introduction: What is RPA?

In today's world of digital advancements, Robotic Process Automation (RPA) is becoming one of the most sought-after solutions to help solve business process shortcomings and enhance organizational productivity, efficiency, and stability. With RPA, companies can provide operational excellence, a key component in building a successful business.

Robotic Process Automation works by allowing employees to configure computer software or a "robot" to capture and interpret existing business flows from legacy back-office applications through a recording feature. These bots accurately mimic user actions, such as sending or reading emails, copying and pasting data between applications, and performing data validation. RPA bots then execute these manual, repetitive tasks by playing back the automation for pre-recorded flows. Automations are based on set rules, and they seamlessly integrate with one's existing applications.

**The global RPA market size is steadily growing, already reaching $1.89 billion in 2021 and expected to rise to $13.74 billion by 2028.**
**(Gartner; Grand View Research)**

*Predicted growth for the global RPA market*

## Why is RPA such a popular trend in business today?

The automation revolution is making a significant impression on businesses all over the world. Many industries are rapidly adopting RPA (including manufacturing, healthcare, retail, financial services, transportation services, customer service, IT), proving that it is the trending technology with unparalleled benefits. It has been globally recognized that automation solutions create higher rates of service quality, reduce data entry errors, provide greater flexibility, and most importantly, lend themselves to greater speed and scalability. With its end goal to mimic human tasks as closely as possible, Robotic Process Automation can take care of mundane, repetitive tasks and processes. Thus, allowing employees to work on higher-level tasks and goals to help increase company productivity and revenue.

## Realizing the Benefits of RPA

The benefits of RPA are endless. Its domino effect on business operations and outcomes is immeasurable and for good reasons. It enables cost-savings and fast ROI; it allows for greater productivity and more accuracy; it's scalable, and it provides better customer experiences and satisfaction – among many more advantages. Moreover, RPA improves business outcomes by accelerating workflows, thereby freeing up time for employees to work on higher-level tasks. This shift not only eliminates wasted hours spent on manual, administrative, time-consuming tasks but also improves data quality, productivity, and employee morale. People don't want to feel like human robots, which frees them up to contribute in more meaningful and advanced ways.

Meanwhile, companies benefit greatly, as RPA bots work around the clock, 24/7, and ensure 100% reliability, speed, and precision. RPA bots are intuitive, and therefore, they are easy

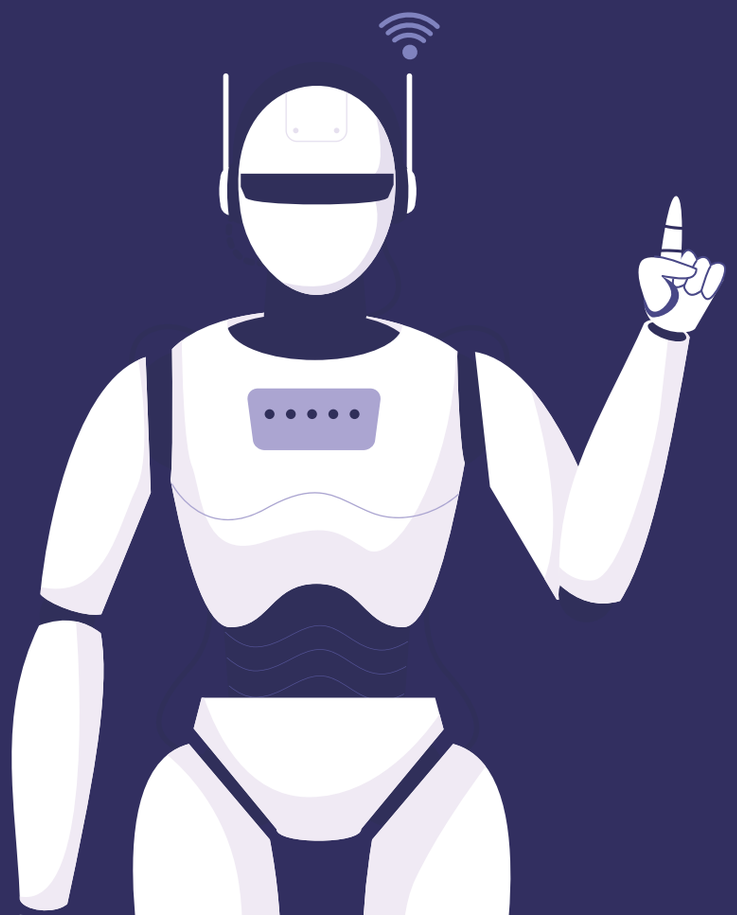
to install, use, and configure. It's as easy as showing your bots what to do and letting them do the work for you.

RPA proves most beneficial on complex data entry applications, such as Oracle EBS and those custom systems developed using Oracle Forms. Many organizations worldwide currently use these applications as their mission-critical, back-office systems, having based their entire day-to-day operations around them. These organizations are now struggling to find an enterprise-level RPA solution to automate the processes trapped in their Oracle applications and enjoy the cost savings, increased flexibility, and improved accuracy of the data entry processes achieved with RPA.

## Why does Oracle Forms/EBS need a specialized solution for RPA?

While there are many RPA solutions available, these tools are not made with the complexities and unique sensitivities of Oracle applications in mind. Oracle Forms technology is built differently than other technologies out there today, and as a result, has different needs in order to automate smoothly. Traditional RPA tools may bring significant ROI when automating other applications. Still, Oracle Forms/EBS users will often experience errors, complications, and failures in their automations – ultimately preventing these companies from achieving the results and ROI they're after.

Users automating Oracle legacy systems with traditional RPA tools have reported significant complications. Such users have discovered that any UI changes – even the slight movement of a button location - will prevent traditional RPA tools from finding the necessary button, causing the automations to fail. This is of great concern as UI changes can occur quite frequently, whether due to a developer's changes or as the result of routine upgrades and patches. Consequently, each of these slight UI changes will disrupt the automation's ability to playback the recorded flow and will require that new flows be recorded every time a change occurs. Additional complications include slowed speed, timeout errors, and constant failures due to pop-up and error messages. Other drawbacks include the inability to run concurrent flows, which can become challenging and expensive if a company is looking to automate multiple business processes in parallel. Doing so will require investing, installing, and maintaining a new server for each dedicated process, plus having an orchestrator to manage them all. In addition to all the technical complications that can arise in production, Oracle Forms/EBS users have also found that it can be a long and expensive process to develop certain customized Forms components, such as tabbed canvases. What quickly becomes clear is that Oracle legacy systems require something different from other technologies to ensure smooth and stable automations and achieve ROI.



One example of this was with Worthington Industries, a large manufacturing company in the United States. After automating several business flows with a leading RPA vendor, they soon encountered instability and failures, specifically with their Oracle system's automations. After such a significant investment in their RPA strategy, it led to unstable and unreliable bots, ultimately keeping them from seeing any ROI from their Oracle automation journey.

Worthington was able to integrate a specialized RPA solution as a plug-in to their existing RPA orchestrator specifically to automate their Oracle applications, thereby bringing immediate value and ROI. Using this specialized Oracle RPA tool saved them 200 hours in development time and continues to save them 75 hours of data entry a month.

It is becoming clear that RPA is the key to helping businesses gain and keep momentum, especially as they attempt to adjust to the "new normal" following the pandemic. The global RPA market size is steadily growing, already reaching $1.89 billion in 2021 and expected to rise to $13.74 billion by 2028. Ultimately, the benefits and ROI will almost certainly exceed the costs of deploying RPA. But as we have seen, users of Oracle legacy systems must first ensure that their RPA solution is truly compatible with their system's needs and complexities. When done right – with an RPA tool that protects and works efficiently with your Oracle applications—there is no doubt that automation can help take your business to the next level.

## About Mia Urman

**Mia** is an Oracle ACE Director and a world-class expert in Oracle development technologies, with over 20 years' experience presenting, supporting, training and consulting Oracle products. In her 7 years at Oracle, she was a senior support analyst and product manager of Oracle Developer Suite, Jdeveloper and IAS technologies, as well as the lead on the topics of Oracle Forms modernization and ADF/Java development. She is the CEO and founder of AuraPlayer (formerly OraPlayer), a cutting-edge technology company offering solutions to extend and modernize Oracle Forms and EBS as Microservices to mobile/web and Chatbots. Her elite list of enterprise clients in the Telecom, Government, Defense and Finance industries include: NYC MTA, CA DCA, Ministry of Wildlife TN, Dept of Rev of CT, MasterCard, and the Gap.

Mia is a seasoned presenter on Oracle technologies at various conferences including Oracle OpenWorld, IOUG Collaborate, ODTUG Kscope, UKOUG, DOAG, and keynote speaker at many local Oracle Technology events.

# A Look back at the Oracle APEX Italy Course

ITOUG
ITALIAN ORACLE USER GROUP

***Things often arise by chance, 2 chats, a couple of jokes and an idea is born. In this case the idea was born by having a chat, we in ITOUG, with a couple of good people from Oracle Italy decided to organize an Oracle APEX course in 5 afternoons in July, online, for hundreds of people!***

The challenge was ambitious, this thing had never been done, there were no similar examples from which to draw information, there were standard tutorials, standard documentation, one-hour workshops on specific topics, but nothing organic that could hold for 5 afternoons without making people fall asleep (which among other things would have been even without previous experience).

There were several issues to be addressed:

- Understand what cut to give to the course: more generalist or more technical
- Organize a program of 15 hours (3 hours each for 5 days) quite complete and with the right compromise of theory and practice that was not too difficult but also not trivial
- Create hundreds of independent environments, one for each participant, so that everyone had their own workspace where they could practice in total autonomy
- Find a system to communicate massively with everyone to understand if they were following, performing the exercises or having difficulties in general

The tools at our disposal were:

- Oracle's ability to set the organizational machine in motion and provide all the resources to ensure that everything could start in the best way
- The availability of Oracle Cloud without which we could not have done anything in such a short time, neither develop the course nor create the environments for the participants
- Our experience, in ITOUG, on Oracle APEX

The first problem to be solved was technical: creating hundreds of independent work environments, one for each participant.

Here, of great help for us was the powerful programming language of the Oracle database, PL/SQL, enhanced with the entire Oracle APEX development framework. Thanks to these features we were able to create a program that automatically managed and created all the work environments necessary to make each participant work.

This, dismissed so it seems of little importance, I do not think I would have been able to do something similar with another technology, certainly not in such a short time. What has been done at the educational level could easily be used in the enterprise and have enormous potential.

For the program, a NON-IT user who had no previous knowledge of applications or databases was chosen as a target. The course would have allowed you to develop applications WITHOUT WRITING CODE!

To dialogue with the participants we have chosen to develop an ad-hoc application ***(clearly in APEX, see Image 1)*** where to insert questions to answers, closed or in open form for comments and insert feedback from the participants in real time (feedback immediately graphic with diagrams).

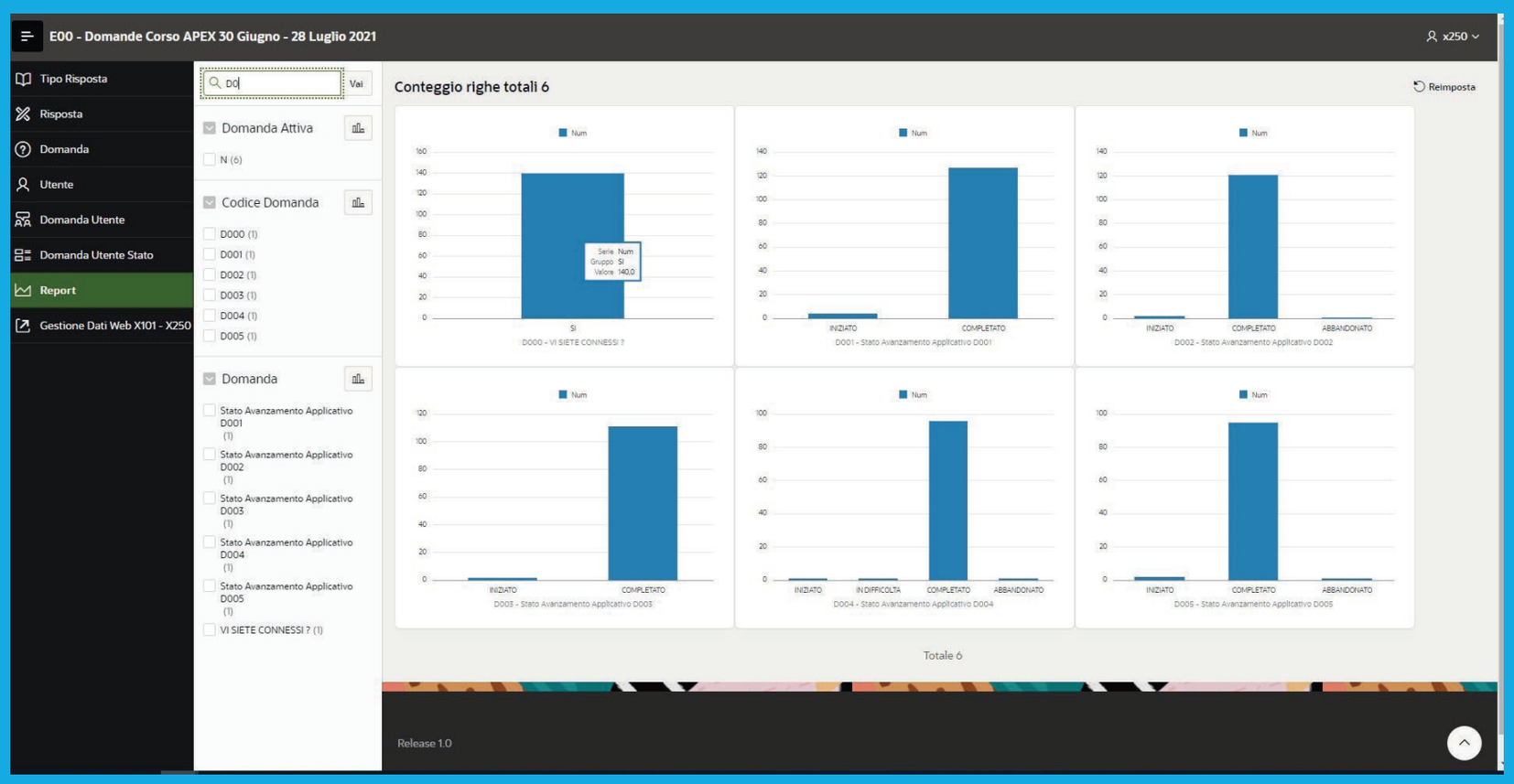



*Figure 1*

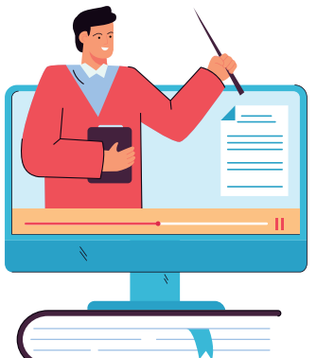
In addition, it was decided to use an Oracle portal available offline after the course where we could insert videos, documentation, and a forum for information exchanges ***(see image 2)***.

The course ended on July 28, 2021, the participants were about 250, the appreciation was high, all the tools made available worked very well, the organizational machine was impeccable and without sinning of presumption, I can say that the format chosen was winning.

At the end of the course, we asked for feedback from the participants also asking for suggestions on what they liked and what needs to be improved.

Thanks go first of all to all those who have trusted the course and have managed to follow even a single lesson.

Thanks go to Oracle Italy and Oracle Digital, in particular to Roberto Zampese, Riccardo Sagratini, Carmen Allocca and last but not least Harshit Kumar, who gave the necessary technical support for everything to work.



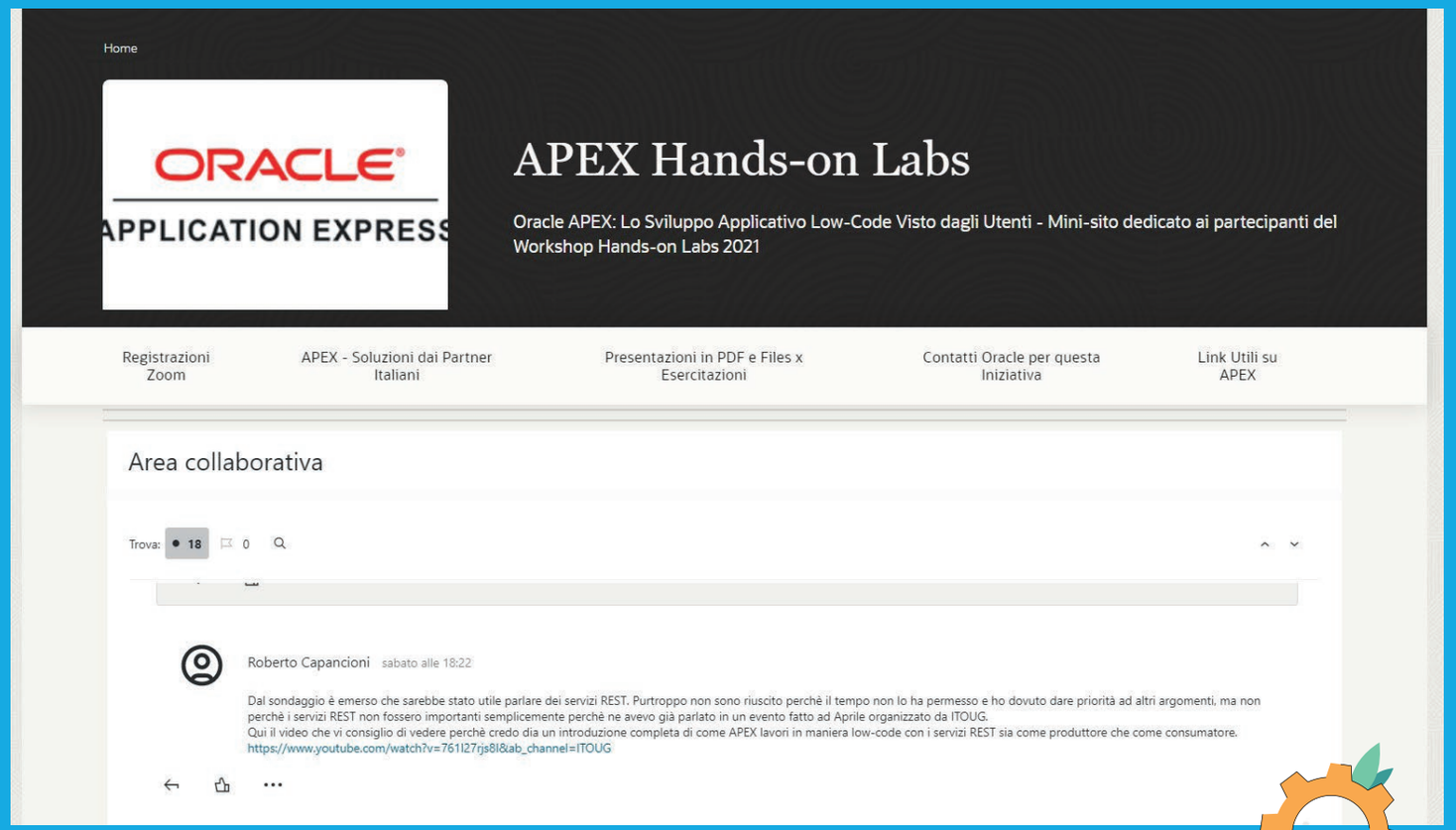



*Figure 2*

## About Roberto Capancioni

Roberto is a Data Analyst, Trainer and Oracle APEX Developer. He began working with Oracle technology in 2005 developing BI projects with Oracle Discoverer. As a freelance developer, he understands the importance of having a fast development environment and searches for a suitable tool: he found it in 2011 and has been developing exclusively in Oracle APEX ever since.

*Interview by Mirela Ardelean*

# Back to Normal Times?

***After one year and a half of online meetups and conferences, the autumn of 2021 brought a bit of "back to normal times" feeling: six Oracle User Groups from EMEA – POUG (Poland), nlOUG (Netherlands), HrOUG (Croatia), AUFO (France), SPOUG (Spain) and UKOUG (United Kingdom) – were brave enough to organize on-site (in-person) or hybrid conferences.***
***We invited all of them to answer a few questions, to share their experience, their challenges.***

## *What format did you adopt for the event: on-site or hybrid?*

### Luiza Novak, POUG

In 2020 we switched from on-site events to hybrid form. We decided to think about it as an opportunity, because for many years POUG attendees were asking us about recording sessions and online participation.

### Yvonne Bakx, nlOUG

On-site.

### Davor Rankovic, HrOUG

Our approach was hybrid. One part on-site and one part online. The online part was actually special. Unlike conferences that are held on-site but are also streaming online so that participants who cannot or do not want to come can listen to the content of the conference, we opted for a model in which participants are on-site and only lecturers are online. We did not have an online streaming outside the conference. Everyone who wanted to listen to the lecture had to be at the conference location.

### Emmanuel Ruez, AUFO

Due to the period of lockdown, we have suddenly moved from totally physical events to remote events. We had exclusively the experience of physical events.

### Oscar García, SPOUG

The beginning of this year was plenty of positive thoughts. “Vaccine” was the most repeated and popular word and we thought that in a matter of week the situation will revert back to the previous situation before COVID. But weeks were moving forward and finally we realized it will take months or ever more to recover the normal situation.
We considered we had to build a strategy, a roadmap of initiatives under different approaches with lessons learned all the way through. At this point we setup up the SPOUG annual convention in November with the goal of having a hybrid event, adding small virtual events during September and October using a brand-new approach. Events at late October and November will be on-site.

And that’s exactly how we’ve been working on events in SPOUG until today. During September and October, we learnt how to make better virtual events with live realization and in November we’d a great SPOUG21 on hybrid mode. With a fantastic on-site venue and many people joining +50 sessions on virtual.

At this point we’ve gone through also with a couple of full on-site events, the JDE Tour and the EBS Tour, with less attendees as a couple of years ago but with positive results. Of course, this has been possible due the good numbers in terms of COVID we’ve in Spain.

### Neil Chandler, UKOUG

We decided to have a 12-stream in-person event. There was no virtual streaming of the event. We wanted to maximize the on-site footprint. This is a smaller event than the UKOUG would typically have for its main conference, but Covid forced us to downsize team significantly. Given the ongoing restrictions, we knew the event would be smaller and the number of attendees lower – if you aren’t going to the office, you’re probably not going to a conference. The event was split between Oracle Applications and Technology, with streams dedicated to a very broad cross-section of Oracle products, such as EBS, ERP, HCM, JD Edwards, Peoplesoft, and Business Analytics as well a technological subjects like Database, Development, APEX and Engineered Systems.

## *Which were the challenges you faced?*

### Luiza Novak, POUG

The logistic is more complicated when you want to run a hybrid event. You’re dividing your audience and speakers into groups with various need and expectations. You need to make sure everyone on-site feels safe and at the same time connected. How? By finding a trustworthy venue with professional staff that will follow all necessary procedures. You need to provide on-line participants smooth experience of watching sessions at home. How? By investing in the solid tech team with high quality equipment. You need to at least TRY to make everyone feel like a part of something unique, no matter where and how they’re joining your event.

Additionally, in the COVID era, you need to be prepared for last-minute changes like the number of participants on-site or new restrictions.

### Yvonne Bakx, nlOUG

The Corona restrictions. We didn't know what was or wasn't going to be possible. Also, a challenge was a couple of last-minute speakers’ cancellations, due to Covid travel restrictions.

### Davor Rankovic, HrOUG

Of course, the biggest challenge was how to organize an on-site conference in the context of a global pandemic, without becoming a center of infection spreading. We had to meet the high criteria of the local civil protection headquarters that approved us to hold the conference. Participants could come to the conference if they have: vaccine certificate, overcame the disease, had a negative PCR or a rapid antigen test

If you introduce an online component in any way, it is a risk. The problems faced by the organizers is the quality of the link on both sides. One part of the performance the organizer can’t control, and that is the quality of logistics by the lecturer. Regardless of the fact that the organizer tries to provide the best possible link and equipment, it used to happen that, for example, the quality of the audio signal is worse than expected, there can be problems with understanding.

The problem may also be the time difference between the venue of the conference and the place where the lecturer is. It can happen that the time that suits the organizer is a completely inappropriate time for the lecturer because it is in the middle of the night.

### Emmanuel Ruez, AUFO

We were not at all experienced in remote (or hybrid) mode and had to learn in a hurry how to set up and run such events in remote mode. We were thus confronted with a transformation of our own working methods while at the same time each of us had to deal with the personal impact of a brutal lockdown. The balance between private and professional life was profoundly altered.

### Oscar García, SPOUG

Although we finally had good numbers in terms of attendees in the on-site part of SPOUG21 we seen that mainly the big organizations still don’t allow yet employees to attend on-site events. This caused us to put more effort in communication and getting the sponsors more involved in the invitation to customers and audience. The level of uncertainty was higher, in general terms it was easier last year when everything was virtual, now we’d to take into account a huge number of factors: First the COVID numbers – we should be in a positive COVID situation. Secondly, global regulations:

speakers and people traveling from multiple countries. Thirdly, local regulations as capacity of the venue. Fourthly, the number of sponsors – expecting a lower number of sponsors. And finally, less funding due to lower number of sponsors.

**Neil Chandler, UKOUG**

Getting all the speakers we wanted was challenging, as companies such as Oracle have an international travel ban on employees. Traditionally we have around 30% of our speakers from Oracle Corp., with quite a few flying over from the USA and beyond. We needed to bring them to the conference virtually. Having a good camera and microphone setup allowed the audience to directly interact with those speakers, which proved very successful.

We also needed to ensure that all delegates were either fully vaccinated or had registered a negative Covid test within the last 48 hours. We had on-site testing capability and a local pharmacy on standby to do supervised testing too. We only had 0.5% of the delegates turn up without the required documentation and we catered for them all on-site within 30 minutes.

***What was your backup plan in case physical events were no longer allowed?***

**Luiza Novak, POUG**

Postpone. We didn't want to organize another fully remote event. We did that once in 2020 because we had no other choice, but we decided to never do that again. It's just not a good fit to POUG formula. It's great that we live in such advanced times that you can connect to the people from the other side of the globe in just a few seconds, but we need at least a little bit of the on-site connection to run our event.

**Yvonne Bakx, nlOUG**

We absolutely wanted an in-person event, so the only option was to postpone. Luckily, we didn't have to do this.

**Davor Rankovic, HrOUG**

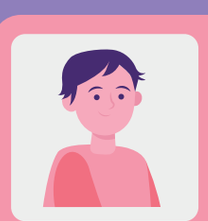
We didn't have a backup plan because we didn't want to organize online conferences. We believe that contact, conversation, and networking are an extremely important part of any user conference. It is something that is built into the foundations of OUG and without it the OUG conference is not an OUG conference.

**Emmanuel Ruez, AUFO**

Remote events are very different from physical events. The events can have the same title (e.g. ERP user meeting) but it is compulsory to have a dead line for the choice of remote or physical.

You can prepare what is common in advance, but the actual set up (such as booking of venues, coffee, lunch, open discussion slot) does not exist in the same way between the two modes.

Our backup plan was to be remote rather than physical, but with advance notice of the decision date.



**Oscar García, SPOUG**

The plan was clear, if we were not able to hold the SPOUG21 on-site part we were ready to move it easily to the virtual. At the beginning of the year, we decided to get the support

of an external company to support SPOUG in the organization of all of our big events (SPOUG21 – the annual convention, JDE, EBS & PeopleSoft Tours & The SPOUG Masters of Cloud Applications, Technology and Developers). Having one partner who can help us on virtual and physical events at the same time would give us the possibility to pivot from one format to the other quite easy based on the circumstances.

**Neil Chandler, UKOUG**

The event would have been postponed. We did not intend to switch to either a hybrid or fully virtual event.

***What would you do different next time?***

**Luiza Novak, POUG**

After POUG2021 we are sure our hybrid form will evolve. We want to keep the streaming for online viewers so we can reach people all over the world, but we want to invite only on-site speakers to POUG2022. For us, the greatest value of the conference is the ability to interact with amazing experts face to face – ask questions, discuss, sometimes even argue. We want to make it possible to our on-site attendees. We hope it will also help us to avoid some tech errors that we have faced in the past.

**Yvonne Bakx, nlOUG**

I think this is a hard one. Since it was a business event in Covid times, we needed to follow the health restrictions set by the Dutch government. We had to get people checked for these at the door. Normally we wouldn't do this. Now we had to exclude people.

**Davor Rankovic, HrOUG**

We would kick out the entire online part of the conference. We have provided additional funds for the online part of the conference, and the result was below expectations.

People already have a lot of online lectures where they very often can't concentrate on the content and if they have the choice to listen to the lecture (even less interesting) by the lecturer who is personally at the conference, they will prefer that option instead of online lecture.

**Emmanuel Ruez, AUFO**

We are used to set up remote events, we already had experience of physical events. We became more efficient. Next time we will try to do the same: stay motivated, dynamic and flexible.

**Oscar García, SPOUG**

We've also to go through a better analysis about what type of sessions are better for virtual and what sessions are better to be delivered in-person.

**Neil Chandler, UKOUG**

Honestly? A full contingency plan for the Monday evening social event would have been sensible as the weather turned suddenly very cold but bringing in more help for the organizing team would have been a good idea. Having a team of 3 this year, when previously organizing with a team of 16, was challenging and I can only praise the hard work and dedication of the team delivering such a good event – well done Alexandra, Mycah and Mia, and my fellow board members. As for the event, there is very little I would have changed!

***Which are the lessons-learned, which are the recommendation for the other User Groups planning to go back to on-site events?***

### Luiza Novak, POUG

You'll get there, but it's a process. POUG2019 gathered +300 people and POUG2020 was supposed to be even bigger. Now we're slowly re-building our on-site community. We're testing new formats on a smaller sample of 50, 60 people. We've asked our audience how they want to experience POUG, and we've been listening carefully to their answers. What helped me personally to organize a partly on-site event after the first wave of pandemic were three things: A venue in Warsaw, which all the POUG team is based (less logistic problems), an honest communication with our community and a transparent return policy.

### Yvonne Bakx, nlOUG

Communication is key. Everyone knows it's rough and insecure, but we did our best to keep everyone updated. We learned in times of insecurities there's never to much information you can share. Better over share. We underestimated that.

### Davor Rankovic, HrOUG

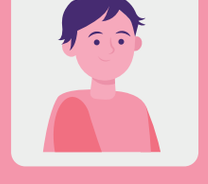
Don't be afraid to organize a conference on-site. People can't wait to come physically to the conference.

Also, don't bother organizing online conferences because you can't match the content of much larger conferences. Online doesn't work well anyway. After a year and a half of isolation and online education, people have had enough of any online content other than, maybe, Netflix. Then, try to carefully choose the time of conferences in the months when the statistics related to the Covid pandemic are at their lowest values. And also, be sure to light a candle for some saint, because in addition to luck, you will need every help you can get from above.

### Emmanuel Ruez, AUFO

The only lesson in this changing world is to think of a solution but have the flexibility to adapt it strongly if the situation requires it. The return to physical events requires a certain amount of courage. One should not hesitate to keep this option in mind and be ready to deploy it as soon as the conditions allow it.

Our first physical event was such a breath of fresh air that we (almost) forgot the effort.



### Oscar García, SPOUG

We've to look back at the challenges I've already mentioned: the COVID numbers, the global and local regulations, budget control. But the motivation of the stakeholders is much bigger when you go for physical events. The majority of the people is the first-time does not seen each other since ages, so expect more support from all the parties involved in the organization of the event.

### Neil Chandler, UKOUG

Have enough staff. Keep all of your virtual sessions in the same room when you only have limited equipment. Check the A/V equipment being supplied by the venue beforehand as much as possible – most of my problems were related to this! Have spare adapters for speakers with unusual requirements (who needs VGA projector connectors these days? Well, one of our speakers did!) And wear comfy shoes – you're going to be doing a lot of walking around checking so many rooms!

Importantly, have a good speaker reserve list. We had a number of cancellations; some early which we replaced quickly, and some last-minute due to the emergence of the Omicron variant. I'd like to say a special thank you to the speakers and delegates from Switzerland, especially those who still travelled to the UK knowing they would be under quarantine when they returned home. To anyone who did not travel, that's cool too. We expected it to be difficult and we knew that we would have a couple of last-minute holes in the agenda. Everyone was very understanding. I generally do not fill last-minute gaps as you tend to get a very small audience – nobody was expecting a different speaker.

Finally, everyone wants an app on their phone to read the agenda. We used a free(!) app developed by Smart4Solutions, where we helped develop additional functionality. It's an APEX app and really shows off APEX capabilities. It allowed us to make last-minute changes to the agenda really easily, as well as having all of the features you could want from a conference app, including maps of the venue to help with navigation. If you're running a conference (or need some other development), I'd recommend talking to them at *https://smart4solutions.nl* !

***Considering the process of organizing an event, what do you think will remain after the end of the pandemic and what will not go back?***

### Luiza Novak, POUG

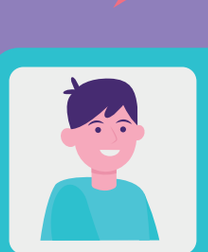
I would say it's the same situation as with the remote work. Some people prefer to go to the office, some want to stay at home. The best option is to give them a choice. That is why I think hybrid events, in various forms, will remain popular even when the pandemic is over. I'm sure it will take some time (maybe 2-3 years) to go back to the huge events for 500+ attendees that were consider "normal" in 2019.

### Yvonne Bakx, nlOUG

I wish I had a glass bowl...but I think the online possibilities have proven themselves. So, I think some events will do both (like have an online reel available for lower price). Next to that I don't think events will be the exact same as before the pandemic, but do they need to?

### Davor Rankovic, HrOUG

After the end of the pandemic, if it ever ends completely, the world will slowly return to normal. Events that are excellent with content and presentation will still have its place under the sun. I hope that the user group conferences as a concept of networking users who have a common interest will continue to be interesting as before.



### Emmanuel Ruez, AUFO

What will remain will be the experience of having lived through a great upheaval on a large scale.

Let us remain modest, the human being is always composed of a body, a head, upper and lower limbs.

We can adapt to remote or hybrid events, but we need human contact. The human beings are flexible.

There are some lessons to be learned but to my mind they are essentially motivations, a taste for action. Those who had them have kept it, those who don't have them, not sure they have acquired it.

## Oscar García, SPOUG

One big disruption is happening at the same time as the pandemic. The climate change disruption and the concept of sustainability is all around the globe, and of course this value should be present in all our communities going forward.

SPOUG21 was zero emissions. First, we evaluated the quantity of CO2 generated by attendees, speakers, materials used during the physical event etc., and once evaluated we got it compensated with reforest projects in LATAM.

Having in mind then the value of sustainability I think we won't see massive moves of speakers and attendees travelling around the world. Technology has been an enabler making possible to have similar experiences like the in-person events, for instance, the virtual world we created in our SPOUG20 convention incorporating the avatars.

Of course, I think also hybrid events will remain, it's the way we have to get in touch with people that are not able to travel, and they have also the right to attend conventions and get inspired by the incredible speakers we've in the Oracle community.

## Neil Chandler, UKOUG

We are planning both in-person and virtual events over the course of 2022. The smaller virtual events are useful to keep our membership interested throughout the year, but the social interaction, the networking, the atmosphere, and the face-to-face learning at an in-person conference was simply wonderful and it really showed what we had been missing. Here's to the next in-person event!

***Luiza, Yvonne, Davor, Emmanuel, Oscar and Neil, thank you for your time and thank you for your dedicated work for the Oracle tech community!***

## HrOUG:

The Croatian Oracle User Group (HrOUG) is a non-profit organization founded in 1995.

The most important event of the Oracle community in Croatia is the annual HrOUG conference, which is traditionally held in mid-October. This year's conference was the jubilee, the 25th.

In the last ten years, in cooperation with HUJAK (the Croatian Java Users Group, has successfully established and organized a conference intended for the Java community - JavaCro.

In the year 2022, we intend to organize HrOUG (spring) and JavaCro (spring) conferences in mid-May in the town of Tuhelj, and HrOUG (autumn) and JavaCro (autumn) in mid-October on the Red Island in Rovinj.
*www.hroug.hr*

## nlOUG

The Dutch Oracle User Group (nlOUG) is an Oracle user association of Oracle users based in the Dutch language area. It is independent of Oracle. Our goals are: a) to promote the effective and efficient use of Oracle products through the exchange of information among members and between nlOUG and Oracle b) to inform Oracle of our members' wishes regarding changes to or the addition of user options for Oracle products.

To achieve these goals, we organize monthly theme meetings. In these meetings users tell about their experiences and/or product presentations are given. We also organize mini-conferences and meetups. Several times a year we publish an edition of our magazine nlOUG Visie. It contains articles, facts and figures on Oracle products and their use.
*www.nloug.nl*

## SPOUG

We are SPOUG, the Association of Oracle Users in Spain, comprising Oracle clients and partners. Our job consists in laying the foundations for collaboration between members to help make better use of Oracle products and services, as well as setting up areas of expertise and encouraging members to exchange insights. Our goal is to achieve optimal use of Oracle products and services.

SPOUG21 is the annual SPOUG convention that took place on November 3 this year inside the Auditorium at Casa del Lector in the Matadero Madrid venue. Our slogan will be Let´s Re/start.

The aim of this hybrid event is to create a space where everyone can come together and enhance the knowledge and community of Oracle Users in Spain. There will be conferences by the finest international speakers, use cases presented by clients, and speakers specialising in processes.
*spoug.es*

## POUG

POUG (Pint with Oracle User Group) is an official Oracle group in Poland launched in 2015. The brainchild for the project came up from the need for meeting and discussing Oracle in non-formal and good for self-improvement atmosphere. Today, the group gathers more than 400 active and committed to the case members not only from Poland and from beginners to the experts from the Oracle field. Based on hundreds of Call for Papers sent every year, active audience, Twitter buzz, and blog posts, POUG has become a loved brand within the Oracle community.
*poug.org*

## AUFO

AUFO is the Association of French-speaking Oracle users. Created at the beginning of 1994, this Association gathers today nearly 400 members representing 55 companies. Totally independent from Oracle, AUFO's objective are: a) To listen to its members, users of Oracle solutions, b) To multiply the exchanges to better know the needs and expectations of each member, c) To continue and intensify the dialogue with the Oracle teams and its partners, d) To encourage the exchange of experiences between members and to contribute to the evolution of the Oracle offer.

Since 2021, the PeopleSoft Club is a community of the AUFO Club
*clubutilisateursoracle.org*

## The UKOUG

As the largest Oracle User Group in the UK, we are a hub for connecting, learning, sharing and shaping conversation for the benefit of the community. Made up of over 8,500 people, the user group consists of Oracle Customers, Oracle Partners and the Oracle Corporation, creating an eco-system where all can benefit.

UKOUG provides relevant products and services through membership benefits, designed to help you maximise your return on investment in Oracle. We're passionate about connecting you with other Oracle users and solution providers, in an environment where you can educate, innovate, and inform.
ukoug.org

# Call for Papers

## NW Spring 2022 Summit

December 31, 2021
Seattle, WA
https://www.conference2021.psnwrug.com

## APEX Connect 2022

January 31, 2022
Phantasialand Brühl, Germany
https://apex.doag.org/de/home

## Great Lakes Oracle Conference (GLOC)

February 4, 2022
Cleveland, OH
https://gloc.neooug.org/page/1985915/submit-an-abstract

## CloudLand

February 28, 2022
Phantasialand Brühl , Germany
https://www.cloudland.org

## psadmin.conf

March 18, 2022
Minneapolis, MN
https://conf.psadmin.io

# Events

## RMOUG Training Days 2022

February 7 -10, 2022
Online
https://rmoug.org

## APEX Connect 2022

May 3 - 4, 2022
Phantasialand Brühl, Germany
https://apex.doag.org/de/home

## Great Lakes Oracle Conference (GLOC)

May 10 - 12, 2022
Cleveland, OH
https://gloc.neooug.org/home

## HROUG Spring Conference

May 10 - 13, 2022
Tuhelj, Croatia
https://spring2021.hroug.hr/eng

## psadmin.conf

May 16 - 18, 2022
Minneapolis, MN
https://conf.psadmin.io

## NW Spring 2022 Summit

May 17 - 18, 2022
Seattle, WA
https://www.conference2021.psnwrug.com

## Blueprint 4D

June 6 - 9, 2022
Las Vegas, NV
https://questoraclecommunity.org/events/conferences/blueprint4d

## ODTUG Kscope22

June 19 - 23, 2022
Grapevine, TX
https://kscope22.odtug.com

## CloudLand

June 29 – July 2
Phantasialand Brühl , Germany
https://www.cloudland.org

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