

ORACLE

Zašto je važan broj 23

Oracle DB 23ai

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The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, timing, and pricing of any features or functionality described for Oracle's products may change and remains at the sole discretion of Oracle Corporation.



ORACLE
2 + 3 + 5 + 7 + 11 + 13 = 100
DATA BASE

300+ novih funkcionalnosti i poboljšanja

Predstavljamo Oracle DB 23ai – Sledeće *Long Term Support* izdanje

Oracle Database 23ai




Data Usecase Domains

Schema Privileges

Real-time SQL Plan Management





JSON Schema




Readable PDB Standby

Operational Property Graphs



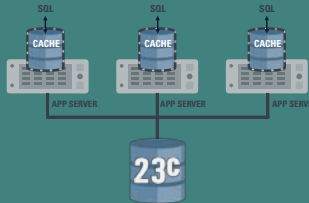
Microservice Support

JSON Relational Duality



AI Vector Search


True Cache



SQL Firewall

Priority Transactions

JS Stored Procedures



Developer Role

Shrink Tablespace

Boolean Datatype

Globally Distributed Database



Rolling Patching





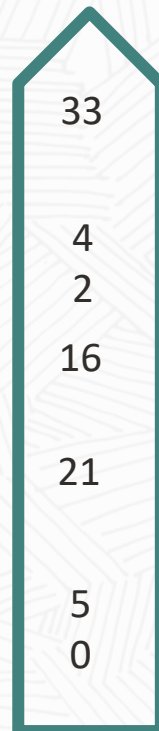
AI Vector Search

Novo | Oracle Database 23ai AI Vector Search

80% podataka je nestruktuirano



Vector



Vector, kao tip podataka, je sekvenca brojeva, tj. dimenzija, koje služe za prikupljanje „važnih“ karakteristika podataka

Vektori predstavljaju semantički sadržaj podataka, a ne reči, brojeve ili piksele

Vektori se generišu korišćenjem „deep learning (vector)embedding“ modela



AI Vector Search

Napredna tehnologija koja **pojednostavljuje** i **optimizuje pretragu** dokumenata, slika i ostalih nestruktuiranih podataka koji imaju sličnu **semantiku**



AI Vector Search ima najbolji rezultat kada se kombinuje sa relacionom pretragom poslovnih podataka





1 Pitanje korisnika običnim jezikom se pretvara u vektor i šalje u AI Vector Search

Dodavanje generativne pretrage podataka relacionoj je sjajno ali bolje od generativne pretrage

Retrieval Augmented Generation (RAG)

User

GenAI

4 GenAI koristi pitanje, sadržaj i generalno znanje kako bi vratio odgovor

2 AI Vector Search pronalazi lokalni sadržaj koji se blisko poklapa sa korisničkom pretragom

3 Korisnička pretraga je „obogaćena“ sadržajima



Novo | SQL Generation sa Select AI

The screenshot shows a software interface with a toolbar at the top containing various icons and a timer showing 7.671 seconds. Below the toolbar are two tabs: 'Worksheet' and 'Query Builder'. The main area contains a list of three lines of text:

```
1 select ai  
2 what are our top 10 streamed movies  
3 that were released after 2010;
```

A mouse cursor is visible in the center of the text area.

Korišćenje običnog jezika za generisanje upita uz pomoć LLM-a



Novo | Oracle Database 23ai *JSON Relaciona* Dualnost podataka

Storage Format

first_name	order	quantity
Jake	{ "product" : "TV", "price" : 250 }	1



Access Formats

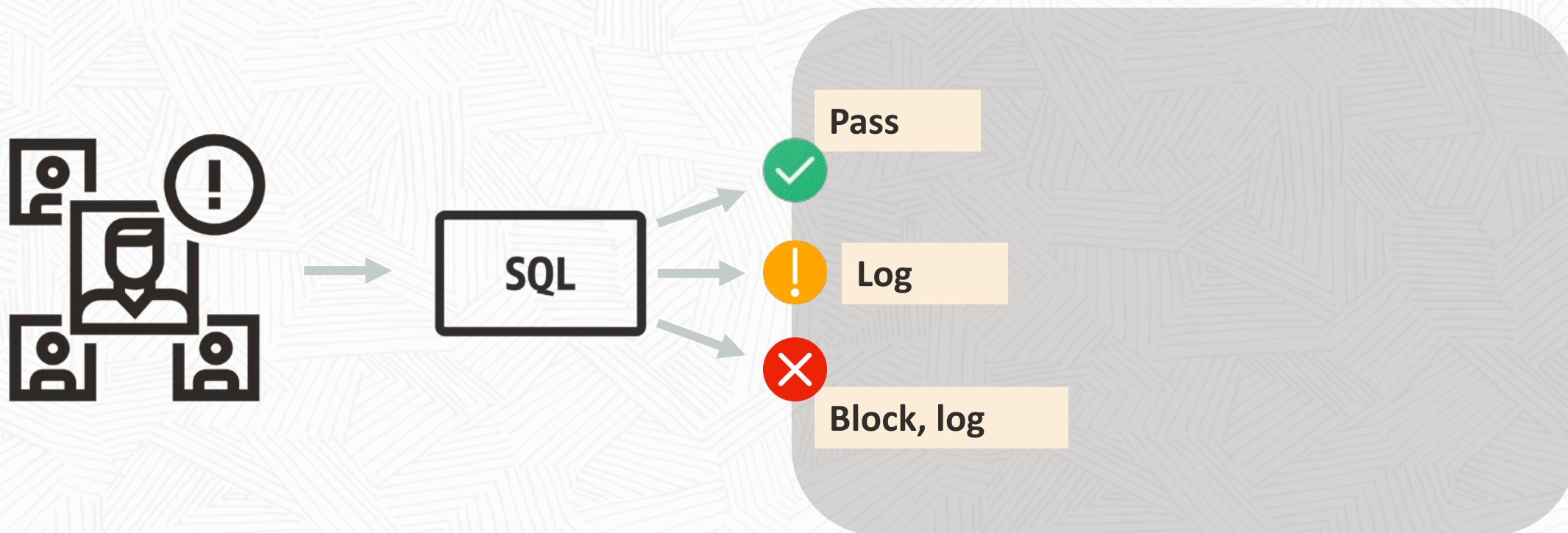
```
{  
  "first_name" : "Jake",  
  "order" :  
    {  
      "product" : "TV",  
      "price" : 250  
    },  
  "quantity" : 1  
}
```

JSON <-> Relaciona dualna priroda podataka omogućava **jednostavnost JSON-a** u vidu pristupa i isporučivanja kao i čuvanja i manipulacije kontrolisane **relacionim modelom**



SQL Firewall

Novo | Oracle Database 23ai SQL Firewall



- SQL Firewall je is **ugrađen u bazu**, tako da ne može **da se izbegne**
- Oracle SQL Firewall nudi zaštitu protiv napada na bazu podataka u vidu monitoringa i blokiranja **“unauthorized SQL”** i **„SQL injection“**





Eff
pr
po
sta

PGQL

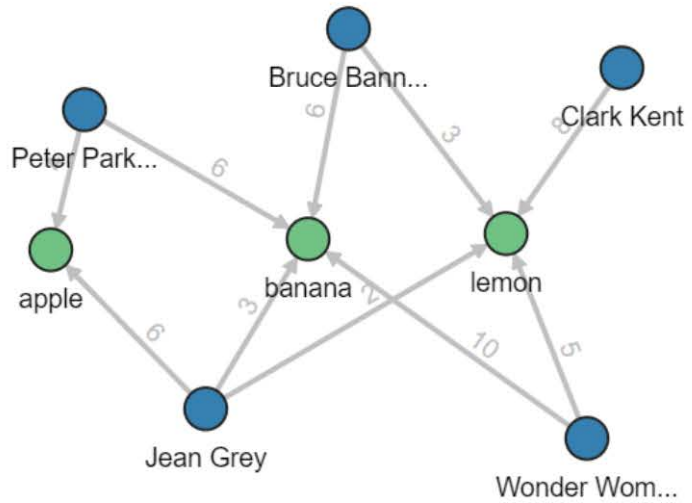
SQL/PGQ

SQL/PGQ Query

```
1 select id_p1, id_s1, id_pr, id_s2, id_p2
2 from graph_table (sales_pg
3
4 match
5 (p1 is person) -[s1 is sale]-> (pr is product) <-[s2 is sale]- (p2 is person)
6
7 columns (p1.name as person1,
8          p2.name as person2,
9          vertex_id(p1) AS id_p1,
10         edge_id(s1) AS id_s1,
11         vertex_id(pr) AS id_pr,
12         edge_id(s2) AS id_s2,
13         vertex_id(p2) AS id_p2)
13 where person1 != person2
```

Parallelism

0 [dropdown] [up] [down] [play] [stop]



Settings

[Link] [Table] [Settings] [Save] [Share] [Fullscreen]

Exploration

Modes

Legend

- Vertices
 - ID_PR (Green circle)
 - ID_P1, ID_P2 (Blue circle)
- Edges
 - ID_S1 (Arrow)



Boolean Datatype

true, false 0, 1 'N', 'Y' najzad

JavaScript from PL/SQL and SQL

```
declare
  valid number;
  result json;
begin
  select count(*) into :valid from emp
     where validator.isEmail(email) = true;
  result := compute_json_result(valid);
  print_json_result(result);
end;
/
```

PL/SQL and SQL from JavaScript

```
export function printEmployeeCount() {
  const oracledb = require("mle-js-oracledb");
  const connection = oracledb.defaultConnection();
  const cnt = connection.execute(
    "SELECT count(*) from emp").rows[0][0];
  connection.execute(
    "BEGIN DBMS_OUTPUT.PUT_LINE(:cnt); END;", [cnt]);
}
```

Shrink Tablespace

```
DBMS_SPACE.TABLESPACE_SHRINK(ts_name, shrink_mode, target_size, shrink_result)
```

Schema
Privileges

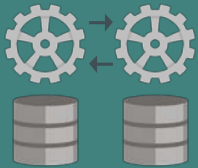


Developer Role

```
GRANT SELECT ANY TABLE ON SCHEMA <schema_name> TO <user_name>
```

...

```
GRANT DB_DEVELOPER_ROLE TO <user_name>
```



Microservice Support

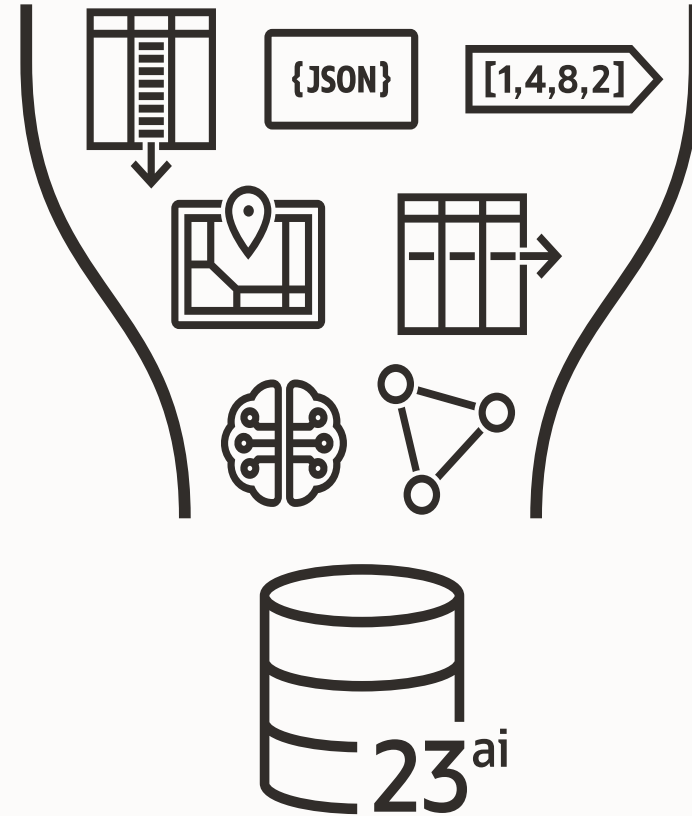
Kafka APIs for Transactional Event Queues (TxEventQ)

True Cache

Ispunjenje naše vizije

Oracle Baza podataka **konvergira** prema:

- Kompletnoj podršci za **sve** moderne tipove podataka, opterećenja i stilova razvoja
- Ekstremnoj skalabilnosti, dostupnosti i sigurnosti



Kompletna, jednostavna platforma prilagođena svim potrebama u domenu upravljanja podacima

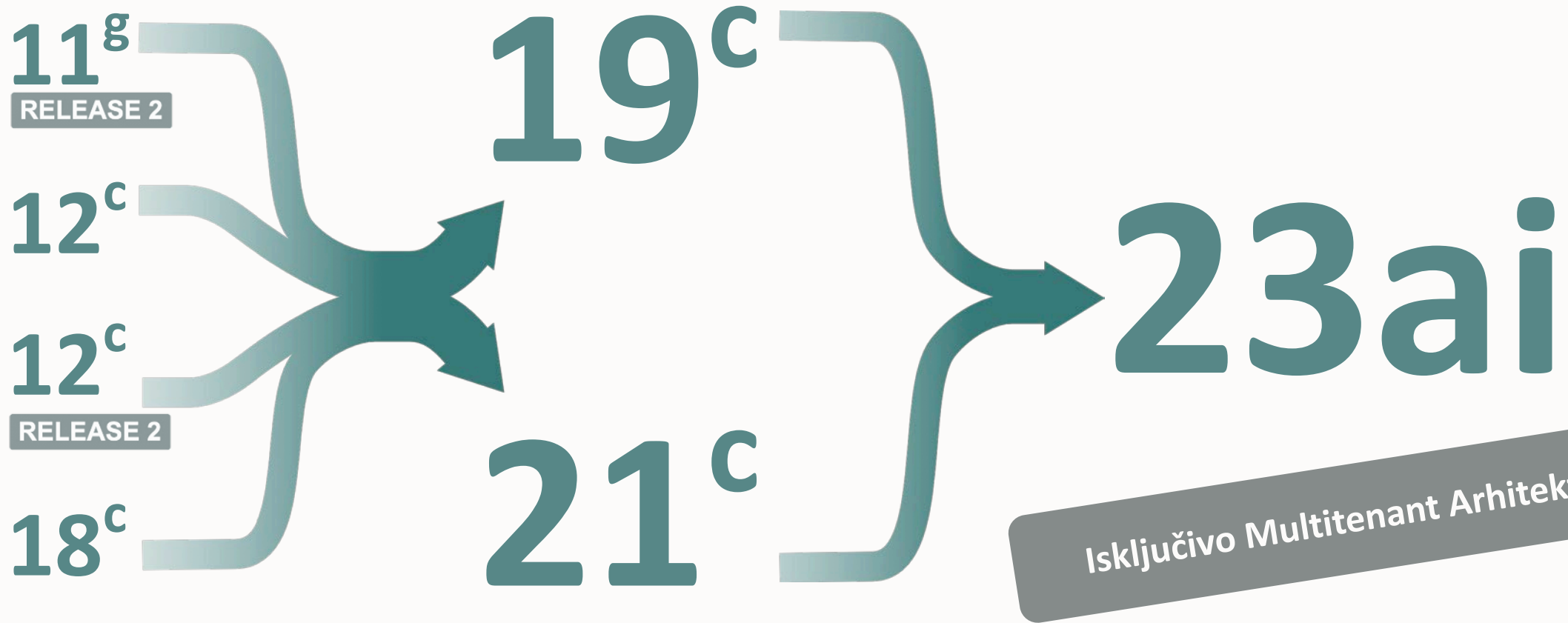
Oracle DB 23ai je sinteza...

21^c + 23ai

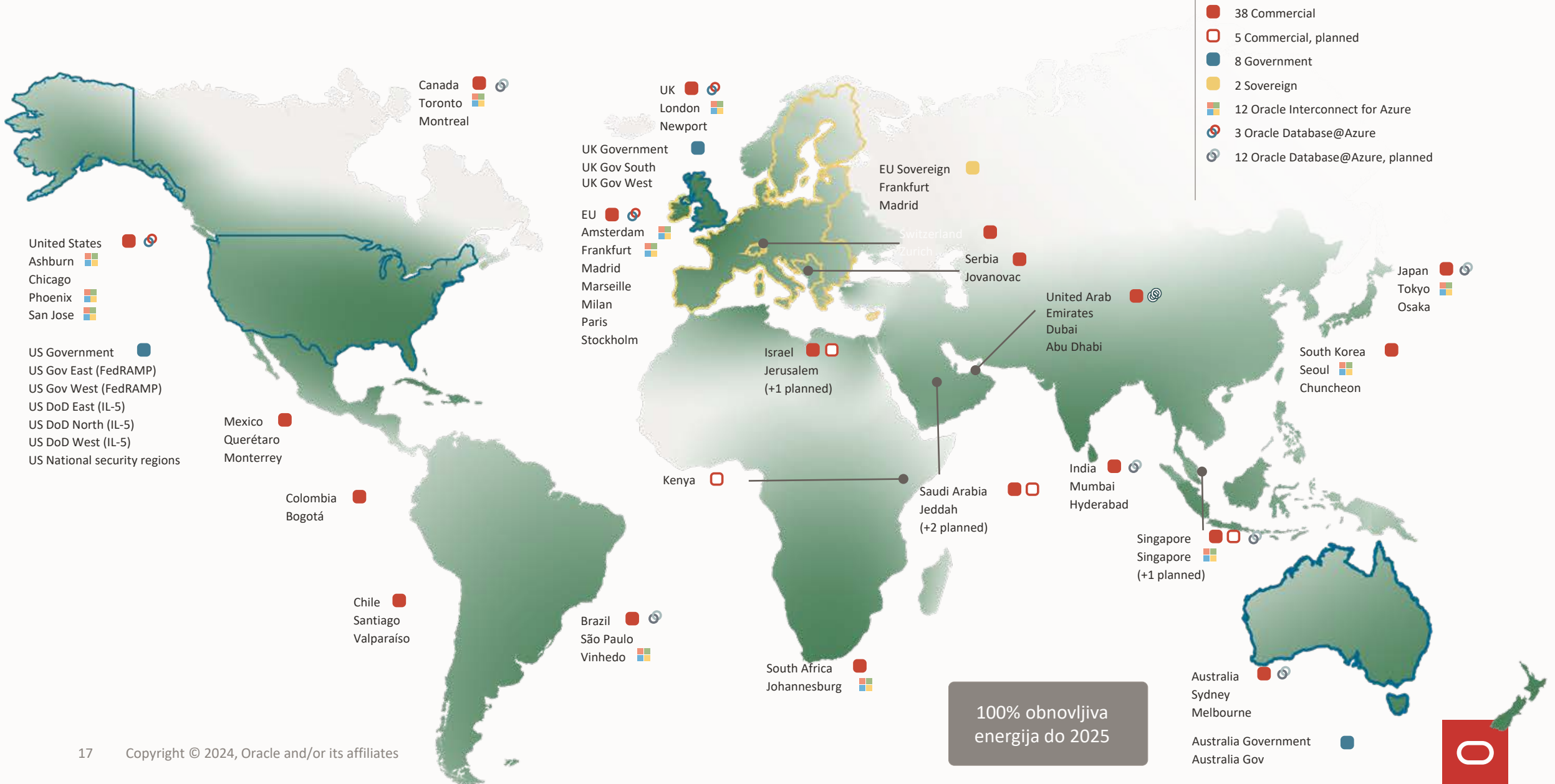
Sve funkcionalnosti iz 21c Innovation Izdanja

300+ novih funkcionalnosti i poboljšanja

Podizanje verzije do Oracle Database 23ai



April 2024 | Oracle Cloud



OCI je jedini Top Tech „Cloud“ region u Srbiji



Prednost fizičke lokacije

- Regulative i odluke koje zahtevaju da se podaci skladište na teritoriji Republike Srbije
- Lokalno mrežno kašnjenje
- Ugovaranje mrežnih linkova u okviru teritorije Republike Srbije
- Podrška lokalnog partnera



InfoWorld

Technology of the Year

2023

Oracle APEX

Software Development: Platforms

“Kreiranje aplikacije na „cloud“-u, u veb pretraživaču, bez kodiranja, nad vašim postojećim podacima, sa svim definicijama u metapodacima? Zvuči kao budućnost u razvoju softvera.”

Više na infoworld.com

APEX obezbeđuje jednostavnost u razvoju bez konkurencije

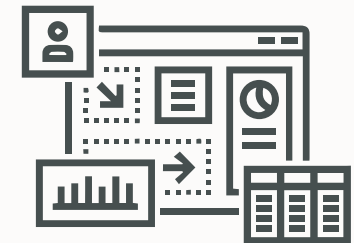
low-code razvoj za *enterprise* sisteme

Bez limita u vezi sofisticiranosti aplikacije

Bez limita u vezi broj korisnika

Bez limita u vezi kritičnosti sistema

Bez limita u vezi interoperabilnosti



ORACLE

<https://blogs.oracle.com/database/post/oracle-database-23ai-where-to-find-more-information>

<https://blogs.oracle.com/machinelearning/post/introducing-natural-language-to-sql-generation-on-autonomous-database>