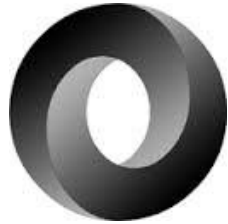


Oracle 12c as Document Store

Simple Oracle Document Access (SODA)

- Family of API's to built **schemaless** applications
- Developer working with JSON-Documents, managed by the Oracle Database
 - No SQL needed



Oracle DB as Document Store

Schema-less Development Concepts

- Store application data as documents rather than in tables and columns
 - Typically XML or **JSON**
- Primary access metaphor is Key/Value
- Database agnostic to the structure of the document
 - Application data model not as database schema
 - Developers can change data model „on-the-fly“
 - (Most) Application changes possible without DBA Support or DB-Outages

JSON Document Stores

- Schema-less developers gravitate towards JSON document stores
- JSON Document Store Characteristics
 - Simple, easy to use, document centric API's
 - Indexing and querying of JSON
 - Natural fit for popular RESTful development techniques
- A number of NoSQL databases provide this functionality
 - MongoDB & CouchDB

But ...

- Difficult to perform effective Analytic and Reporting
 - No standard query language other than limited Query By Example (QBE) capabilities
 - No interface with popular Business Intelligence, Analytics and Reporting tools
 - Limited indexing
 - Limited support for joins between documents or with other types of data
- Limited support for RDBMS Table stakes
 - Concurrency Control
 - Transactions
 - Read Consistency
 - High Availability and Disaster Recovery

Enabling 'No-SQL' development on Oracle Database

- Allow “next generation” application development to leverage Oracle Database
- Allow Oracle Database to store and manage JSON documents
- Provide the “NoSQL” application development experience
 - Simple document centric API’s for storing and accessing JSON
 - QBE Query capability
 - No need to learn SQL
- “NoSQL” means NOT Only SQL
 - Can still leverage the power of SQL for Reporting and Analytics on JSON documents

~~NoSQL needed~~
No SQL needed
But possible and very useful

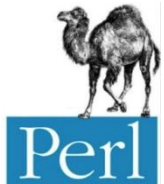
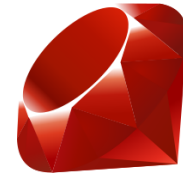
Simple Oracle Document Access (SODA)



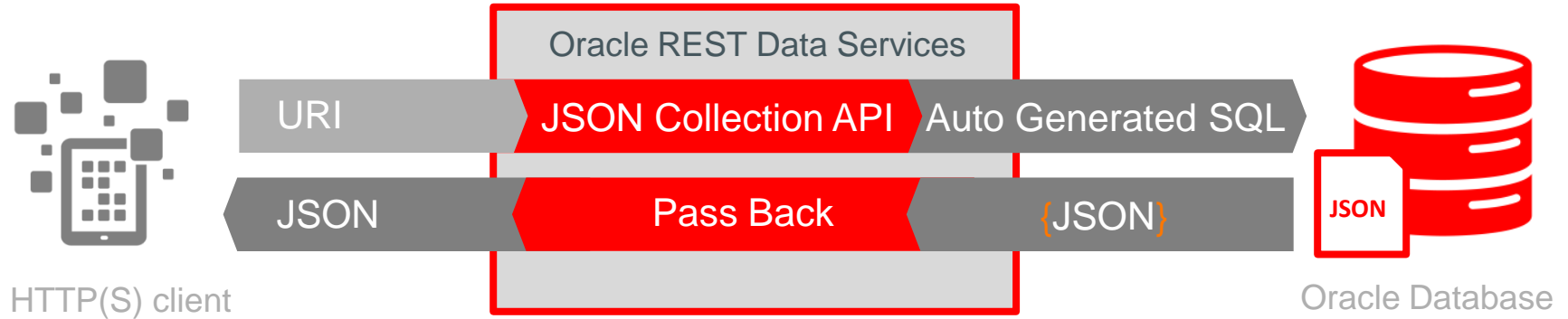
- SODA for Java
 - Collection of Java-Classes with Methods zu create & manage collections with JSON-Documents
- SODA for REST
 - ORDS 3.0
 - REST based Interface (Java Servlet)
 - HTTP (PUT, POST, GET & DELETE)
 - Could run inside the database
- SQLcl



Access JSON-Documents with SQL



Schemaless REST-Services via SODA Collection API



CRUD Operations as
HTTP Methods

List of all Collections	GET	/ords/schema/soda/version
Create Collection	PUT	/ords/schema/soda/version/collection
Add Document	POST	/ords/schema/soda/version/collection
Add Documents	POST	/ords/schema/soda/version/collection?action=insert
Query Collection	GET	/ords/schema/soda/version/collection
Call Document	GET	/ords/schema/soda/version/collection/id
Change Document	PUT	/ords/schema/soda/version/collection/id
Remove Document	DELETE	/ords/schema/soda/version/collection/id
Remove Documents	POST	/ords/schema/soda/version/collection?action=delete
Remove all Documents	POST	/ords/schema/soda/version/collection?action=truncate
Query by Example	POST	/ords/schema/soda/version/collection?action=query
Create/Drop Index	POST	/ords/schema/soda/version/collection?action= un index
Remove Collection	DELETE	/ords/schema/soda/version/collection

Path

`/ords/schema/soda/version/collection`

Virtuell Folder of ORDS Servlets

Identifier in ORDS, linking to the used DB Schema

Indicator to involve SODA Component for Request in ORDS

Version of SODA for REST
(*latest* uses most current version)

Name of Collection

JSON and SQL Duality

>30 Years of Development & Experience
with the query language SQL are
available for JSON-Documents

Oracle Database 12c



← JSON →



← SQL →

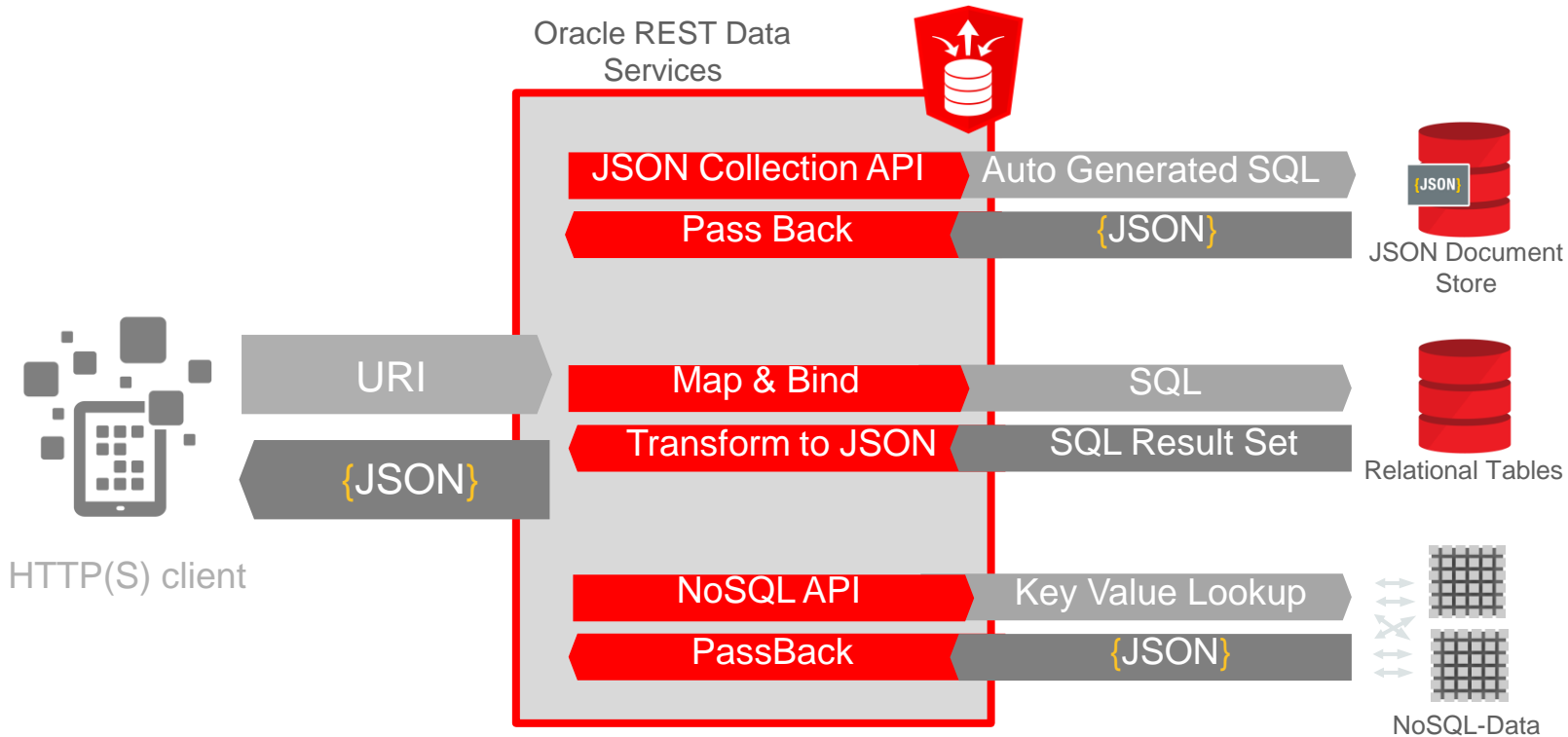


Data Access via
REST or Native API

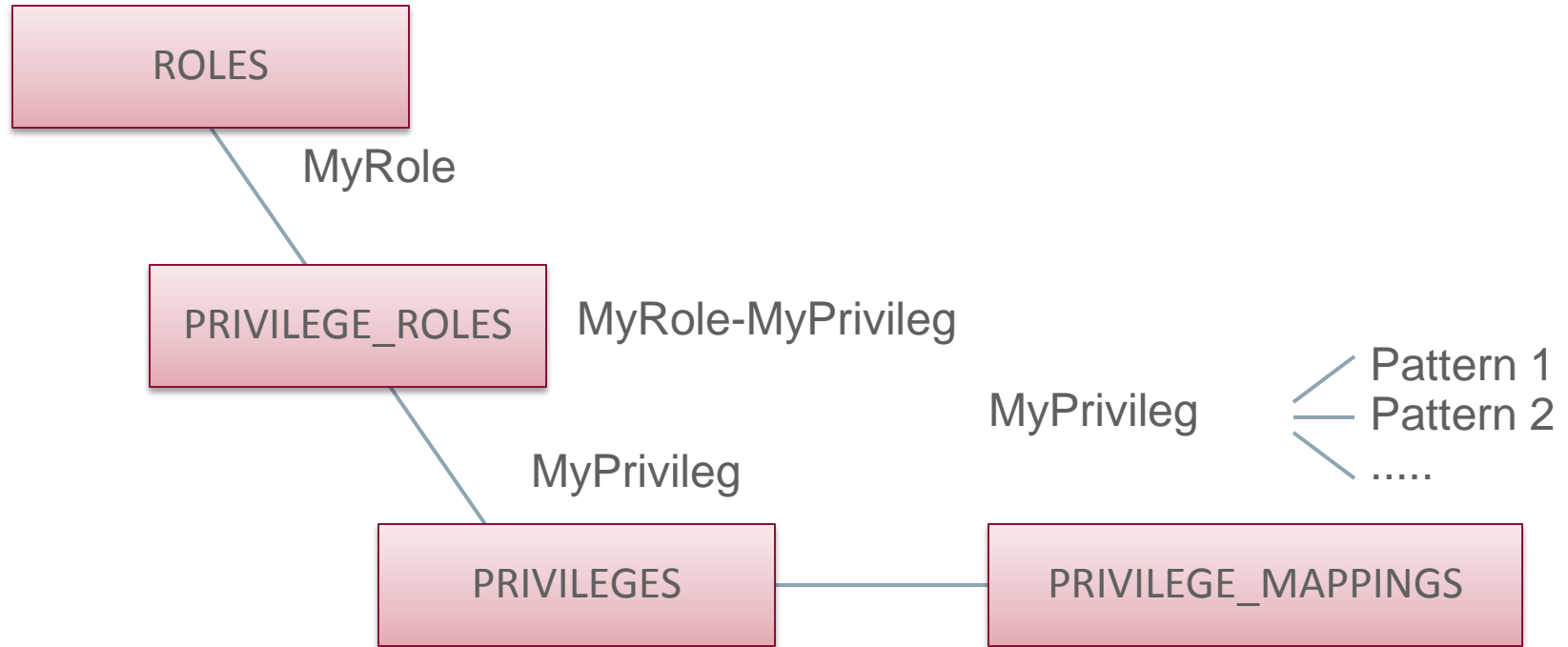
JSON in the Database

Analysis / Queries with SQL

Oracle REST Data Services: Architecture



ORDS_METADATA – SODA Security



Requirements for SODA

- Oracle Database Release 12.1.0.2 with Patch 20885778
- Possible Java-Container for SODA for REST
 - Oracle WebLogic Server ($\geq 11gR1$ (10.3.6))
 - GlassFish Server (\geq Release 3.1.2)
 - Apache Tomcat ($\geq 7.0.56$)

Sources

- SODA for REST Developer's Guide
 - https://docs.oracle.com/cd/E56351_01/doc.30/e58123/toc.htm
- SODA for JAVA @ github
 - <https://github.com/oracle/SODA-FOR-JAVA>
- Whitepaper
 - Developing schemaless applications using the Simple Oracle Document Access API's
 - <http://www.oracle.com/technetwork/database/appdev-with-soda-2606220.pdf>
 - Schemaless Application Development with Oracle Database 12c
 - <http://www.oracle.com/technetwork/database/soda-wp-2531583.pdf>

Sources - German

- Blog – JSON, REST und mehr – mit der Oracle Datenbank
 - <http://json-rest-oracledb.blogspot.co.uk/>
- Oracle Dojo – Arbeiten mit JSON und Oracle12c
 - <http://www.oracle.com/webfolder/technetwork/de/community/dojo/index.html>
- Video – Oracle12c als Document Store
 - <https://youtu.be/WRXAIAz-0cY>

ORACLE®