ORACLE

Oracle Global Leaders Program

June 23 - 14.45 CET

Oracle Global Leaders Summer Meeting EMEA 2020

Oracle Autonomous Database Panel

retraced

Peter Merkert
CTO & Co-Founder
Retraced - Germany

11880.com

Christian Maar
CEO
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CERN openlab

Manuel Martin Marquez
Openlab Coordinator
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accenture

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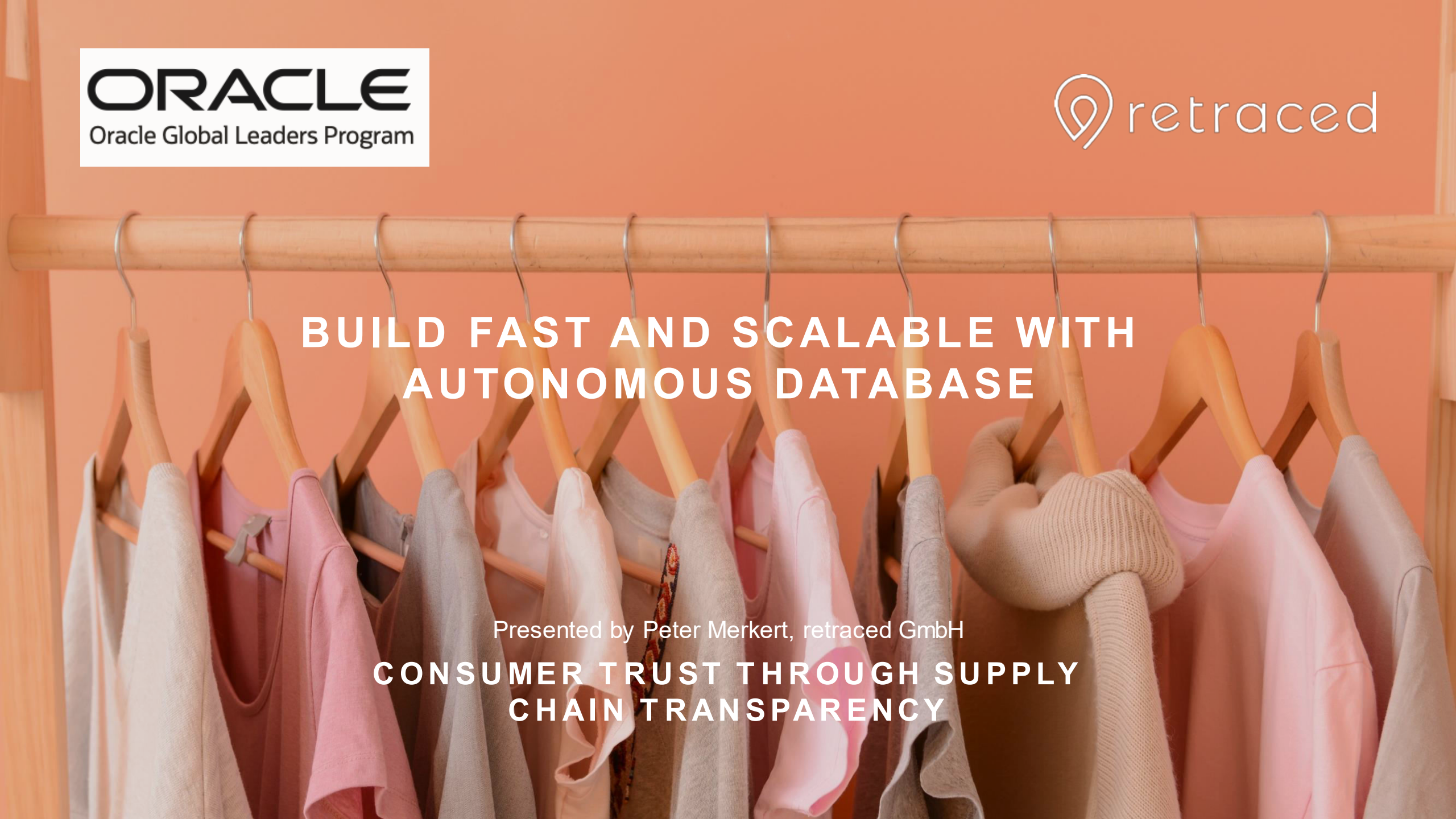
ORACLE
Oracle Global Leaders Program
retraced
BUILD FAST AND SCALABLE WITH AUTONOMOUS DATABASE
Presented by Peter Merkert, retraced GmbH
CONSUMER TRUST THROUGH SUPPLY CHAIN TRANSPARENCY


INDEPENDENTLY
QUALITY
TESTED
tested according to KTW and W 270
Chemically and microbiologically tested
QUALITY GUARANTEED
4x
UTZ Certified
cocoa
FSC
ISBN 978-3-625-50148-0
9 783625 501480
TÜV SÜD
GS
geprüfte Sicherheit
Natura Farms
RAINFOREST ALLIANCE
CERTIFIED
2058 6379
WITHOUT PALM OIL
TESTED QUALITY
HOHENSTEIN INSTITUTE
TESTED FOR:
HARMFUL SUBSTANCES
WORKMANSHIP
FIT
www.hohenstein.de/qualitaet
OEKO-TEX®
CONFIDENCE IN TEXTILES
STANDARD 100
11.HBD.87638 HOHENSTEIN HTTI
Tested for harmful substances.
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GLOBAL ORGANIC TEXTILE STANDARD
GOTS
organic
Certified by BCS
License no. 24874
www.global-standard.org
4 048588 225756
Κύπρος. Τηλ.: 800 94404
Zemlja podrijetla/Zemlja porekla/Produs în/Страна на произход/
Χώρα κατασκευής/Made in: Belgija/Belgija/Belgia/Белгия/Βέλγιο/Europe
KIND TO THE SKIN
MICRO FIBRE
BREATHABLE
OEKO-TEX®
CONFIDENCE IN TEXTILES
STANDARD 100
1207033 Centexbel
Tested for harmful substances.
www.oeko-tex.com/standard100
MADE IN EU
FSC
RECYCLED
Packaging
FSC™ C044153
7
5

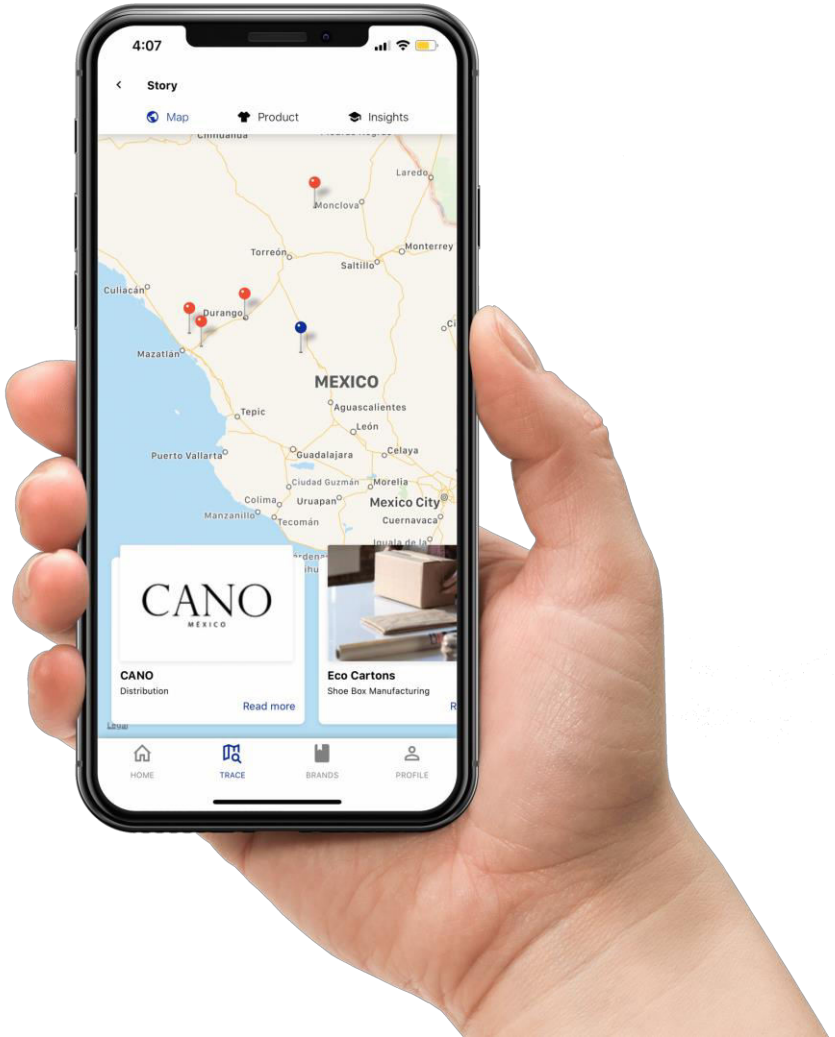
FASHION BRANDS HAVE A PROBLEM

Consumers lost trust in fashion brands long time ago. We are here to reestablish the relationship by providing honest and relevant information for consumers.

CONSUMERS LOST TRUST

TRANSPARENCY AS A SERVICE

We offer supply chain transparency as a service. Since our pricing starts for free, this is a no-brainer to use for fashion brands.



RELEVANT INFO

We are constantly running market studies to investigate consumer demands to make all honest information **simple**.

RELIABLE DATA

Blockchain based **temper proof** audit log. Every consumer can inspect what really happened.

EASY TO IMPLEMENT

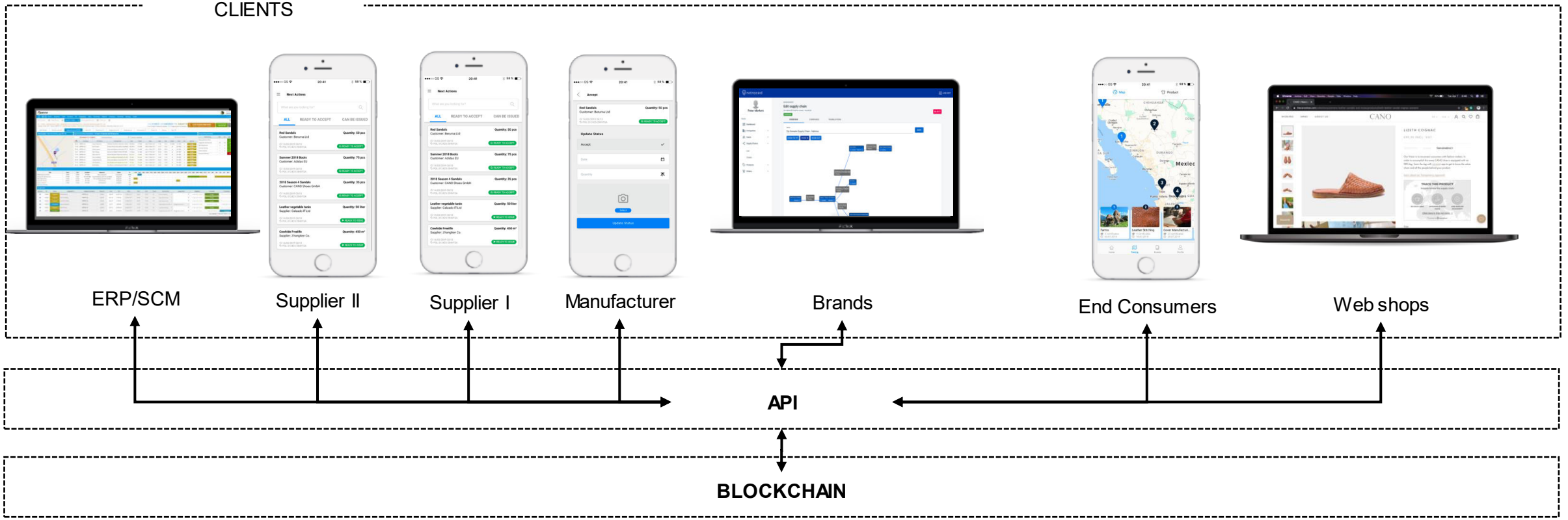
Reevolutionary lightweight integration into existing platforms.
This means from **ordering till webshop** – we got all covered.

COST-EFFICIENT

The value add can be quantified and it is affordable for every fashion brand of any size.
You can start for free!

INFRASTRUCTURE OVERVIEW

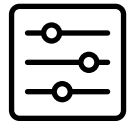
We knew from the beginning the requirement are to handle not only supply chain side, but also consumer side and analytics.



WHAT IS AUTONOMOUS?

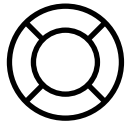
SELF-DRIVING

One does not need to configure ANYTHING. The artifact is ready to use within minutes. Updates are applied automatically.



EASILY CONFIGURABLE

Just expose the most important and relevant options.
Option adjustments are applied within seconds.



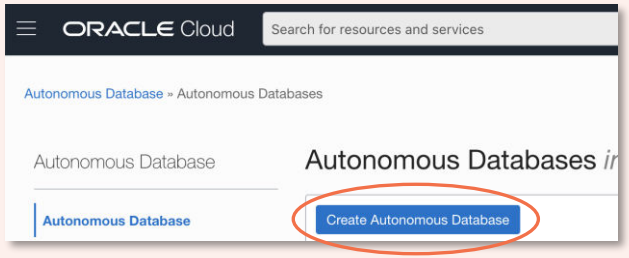
24/7 SUPPORT

Since no man power is dedicated to DevOps, great 24/7 support is required.

FAIR PRICING

The pricing is benchmarked against on-premise sollutions managed by DevOps and must be cheaper.

…and ORACLE AUTONOMOUS DATABASE?



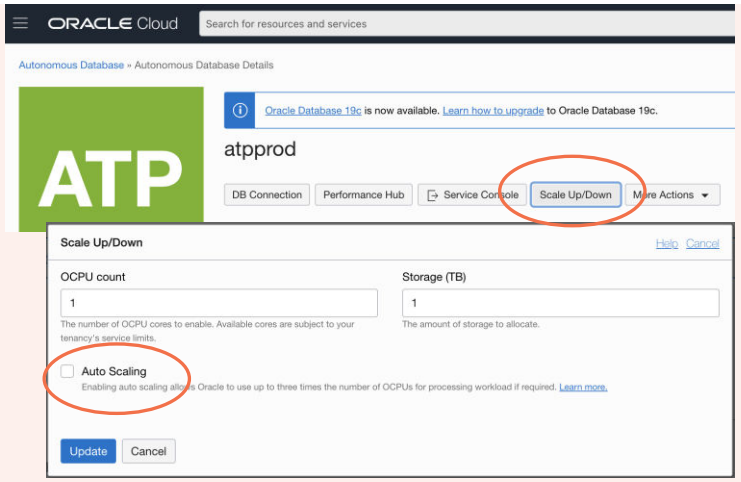
Simply “Create Autonomouse Database” and give it a name! That’s it!
Network? Done.
Infrastructure? Done.
Updates? Done.

SELF-DRIVING

One does not need to configure ANYTHING. The artifact is ready to use within minutes.

EASILY CONFIGURABLE

Just expose the most important and relevant options.



1 click scale up or down.
And if that is too much: “Automatic scaling”!

In every Oracle cloud subscription automatically included.

As far as I know.

24/7 SUPPORT

Since no man power is dedicated to DevOps, great 24/7 support is required.

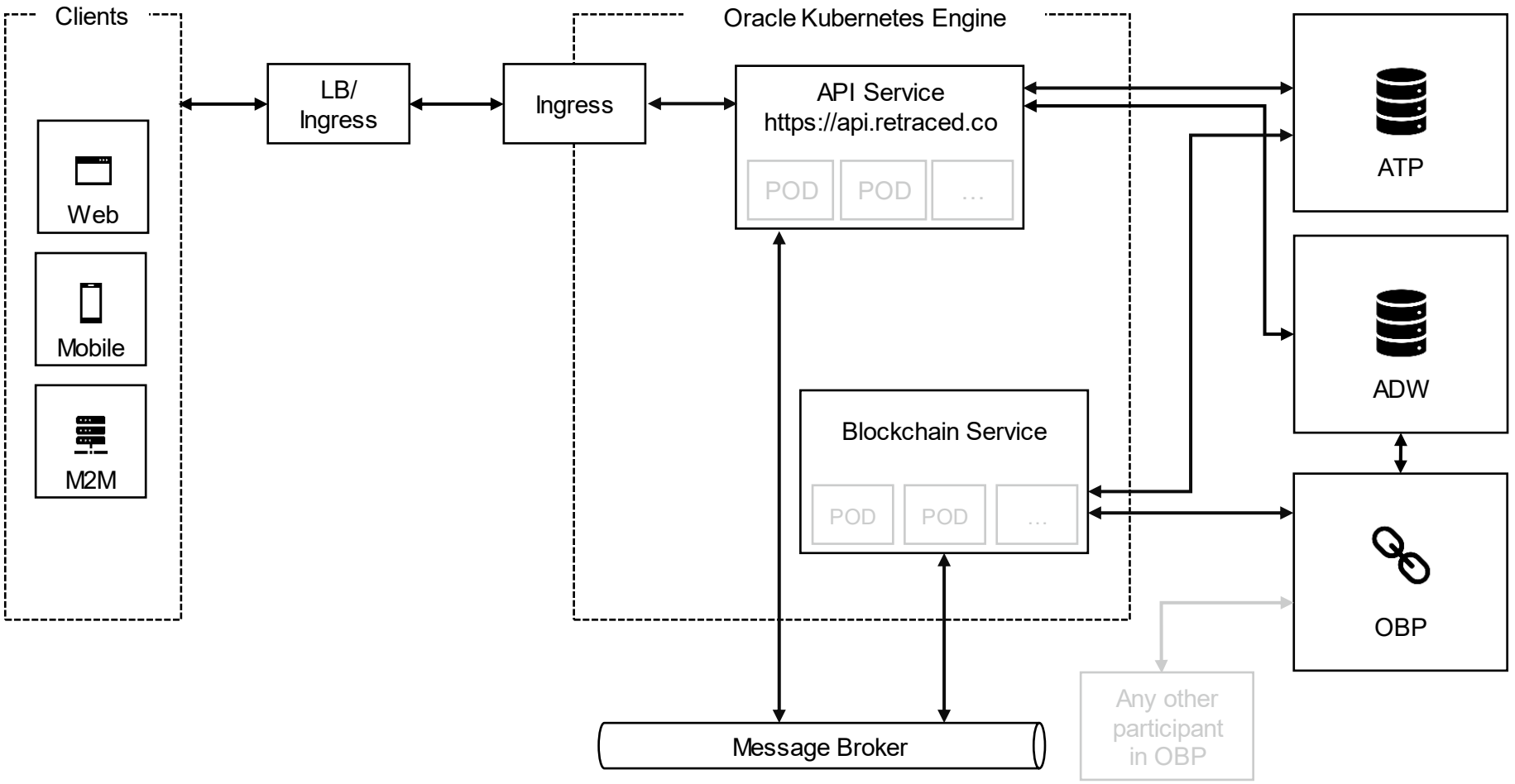
FAIR PRICING

The pricing is benchmarked against on-premise sollutions managed by DevOps and must be cheaper.

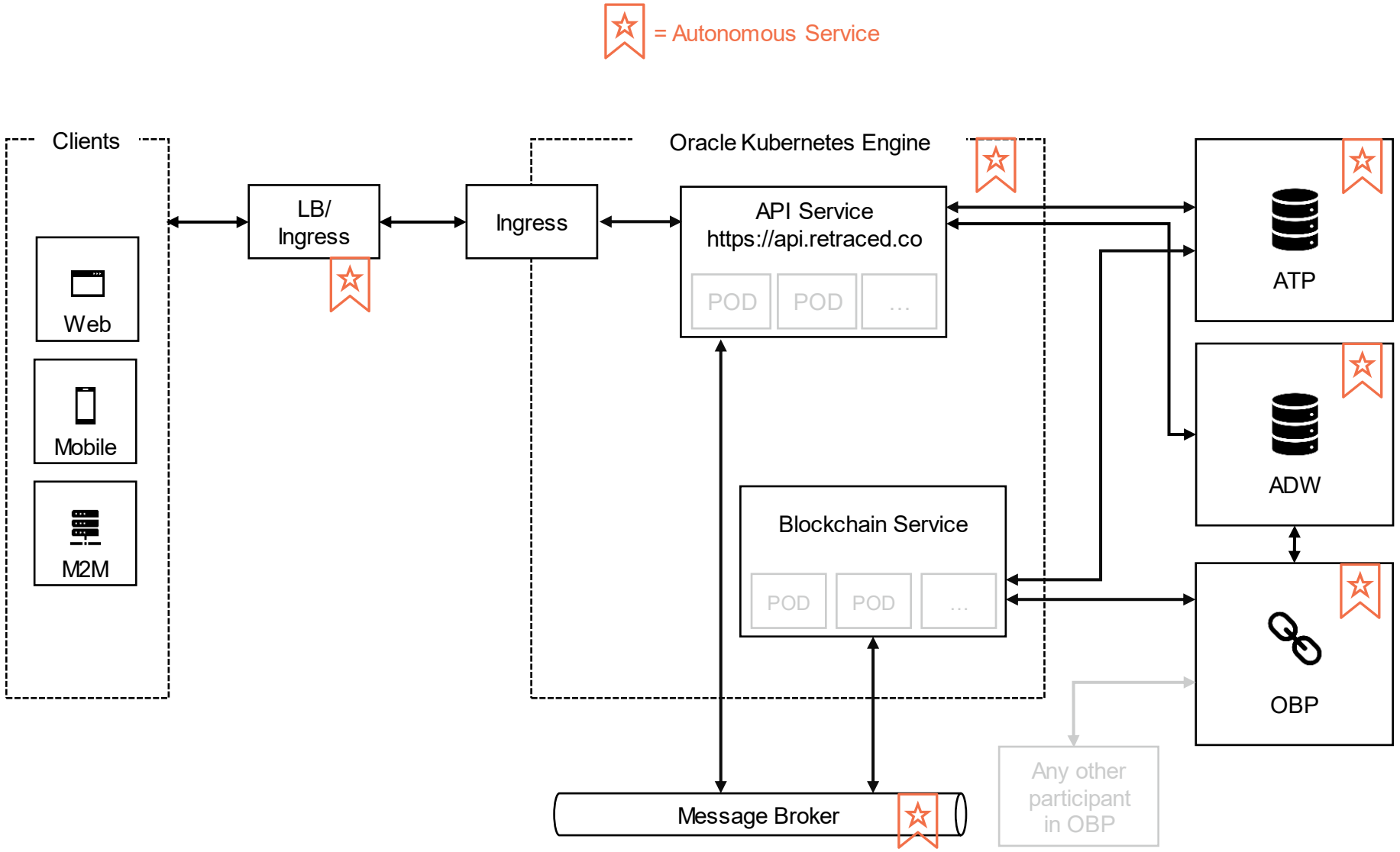
1 Autonomous Database with 0.2TB storage and 1 OCPU is **FOREVER FREE**.

For more information, see the pricing page of Oracle Cloud services.

HOW DOES retraced LOOK UNDER THE HOOD?



WHERE DO WE USE AUTONOMOUS?



PETER MERKERT

CTO & CO-FOUNDER

peter@retraced.co

https://retraced.co

REAL TRACED ITEM
SCAN WITH YOUR PHONE CAMERA

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Da werden Sie geholfen.

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Global Leaders
Oracle Autonomous Database Panel

A CEO's view on autonomous DW & Business Intelligence

Christian Maar (CEO)
11880 Solutions AG, Germany

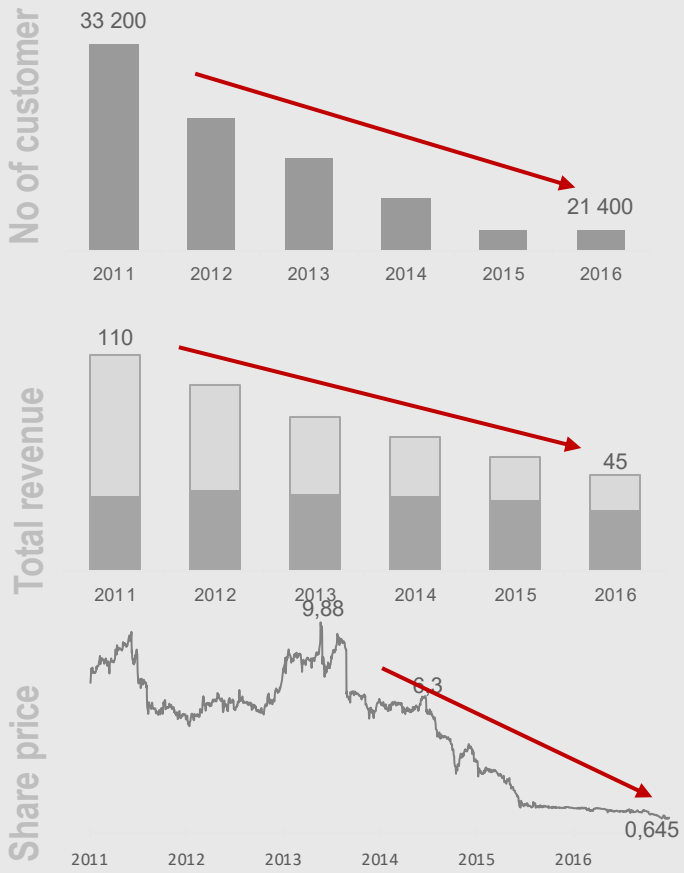
02.06.2020

Since 2015 the 11880 SAG has established a broad product folio

Business Directory	Specialist Portals	Ratings
Websites, Social Media	Secretariat Service	Google & Bing Partnership
Telephone directory enquiries	Banner Advertising	Data & Software

The recovery of 11880 is based on the Genesis Program

Initial situation



Genesis Program

Watch (PMO)
Setting up a PMO shortly

Vault (Brand)
New brand strategy.

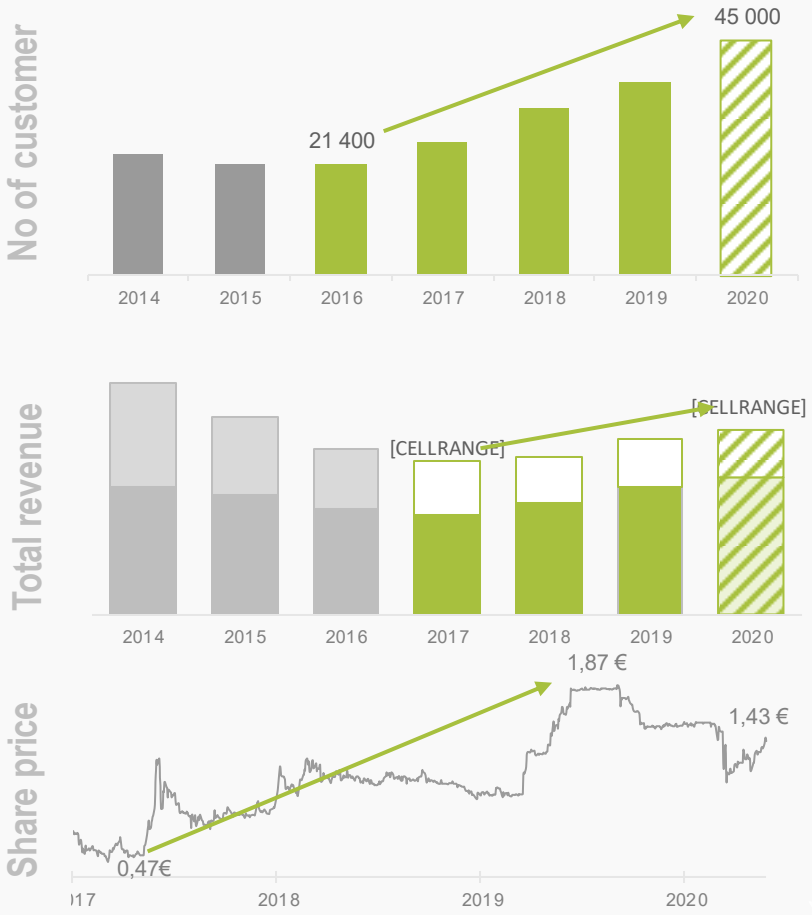
Supernova
Data Driven Decision Management)

Predator
Sales

Octopus (Verticals)
Product innovations and product portfolio realignment

Darwin (Orga)
Restructuring in Management and Sales, further measures in 2017 inevitable.

Current situation



Christian Maar: key success factors

PMO – organization through efficient project management

SPEED – getting things done quick and agile

DDDM – data driven decision managing

2007 – 2010	2010 – 2015	since 2015
allegro growth	immonet.de Wir sind Immobilien merger	11880.com Da werden Sie geholfen. turn-around
CIO	CEO	CEO

CEO’s main goals for investments in BI

GAIN INSIGHTS

i.e. smarter management decisions …

01

SPEED UP

i.e. projects, decisions, product development…

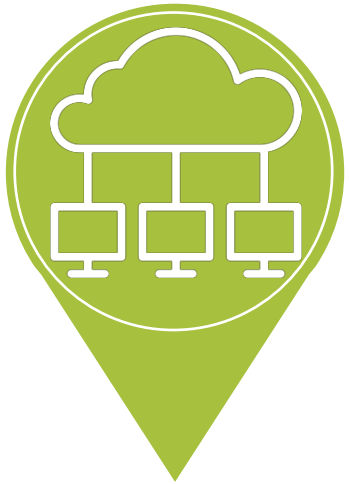
02

REDUCE COSTS

i.e. infrastructure, licenses, IT-staff …

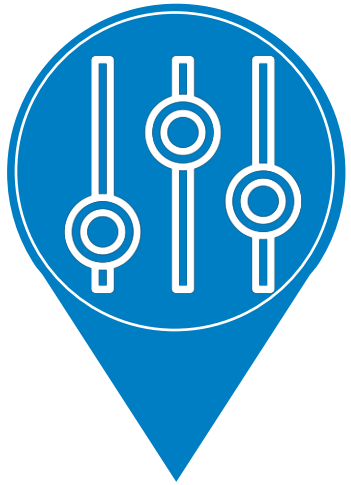
03

(sales promises of the) Oracle Autonomous DW Cloud fits to our cloud strategy to streamline IT budgets and gain speed



Focus on cloud

11880.com is a medium size company, hence no large IT budget, concentrate on business and new developments rather than IT and maintenance work



Fully-tuned

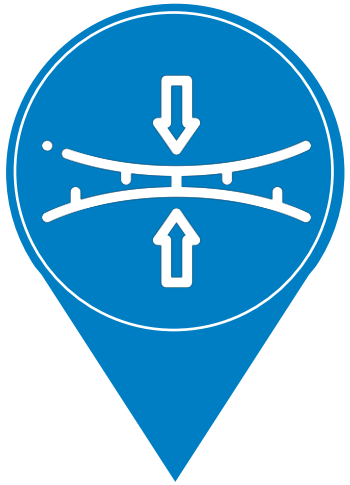
Good performance out of the box, No tuning No special database expertise required

Full Support of DW

connect existing tools running on-premise and, in the cloud, third-party BI tools (i.e. QlikView), Oracle cloud services and others like SQL, JDBC, ODBC

Fully-managed

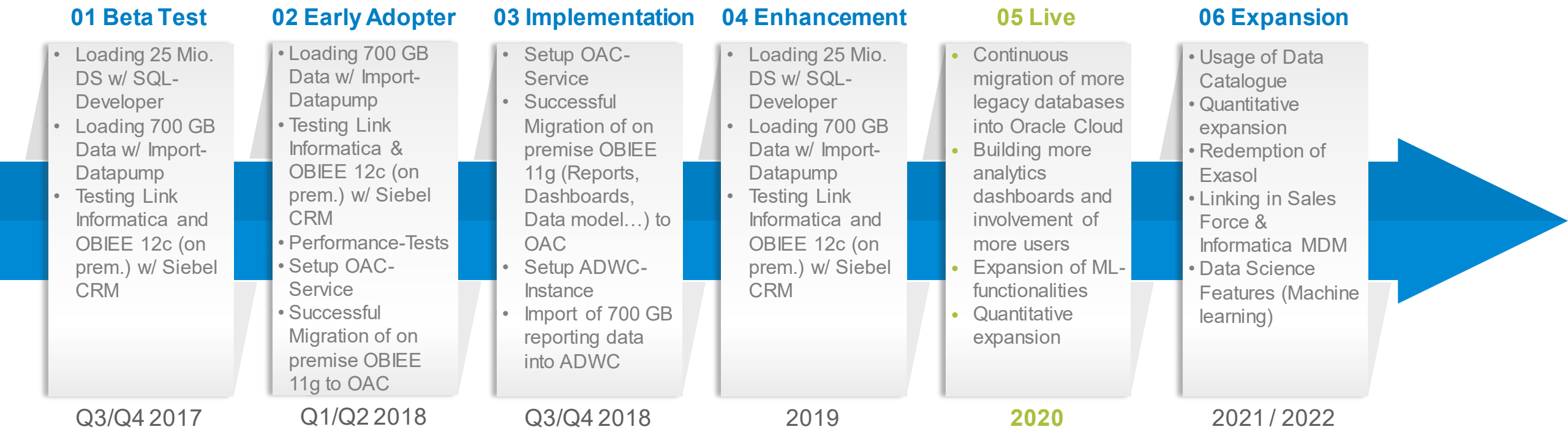
Oracle automates end-to-end management of the data warehouse (Provisioning new databases, Growing/shrinking storage, Patching, upgrades, Backup, recovery…)



Fully-elastic

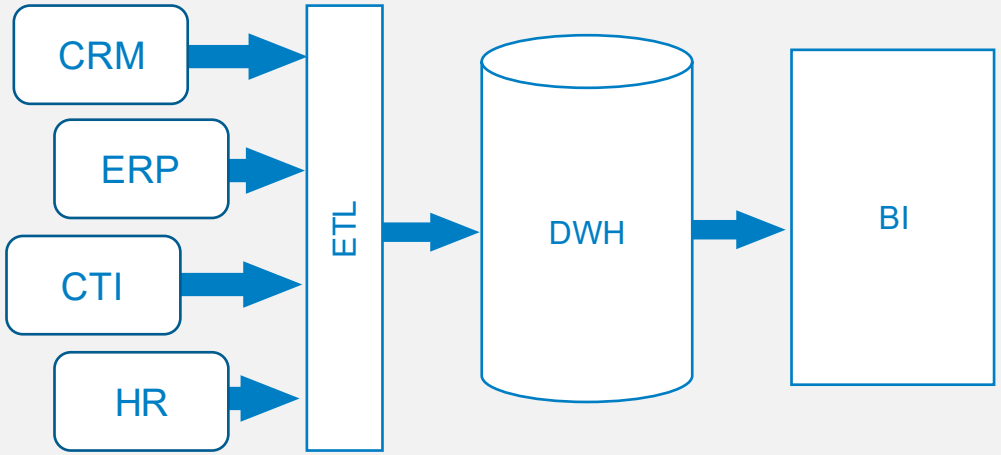
Size the DW to the exact current requirement, scaling on demand, save money by shutting off idle compute, instant restart

We were able to successfully test and implement multiple components of the Autonomous DW Cloud



With only small changes in our infrastructure we were able to tackle several challenges at 11880.com

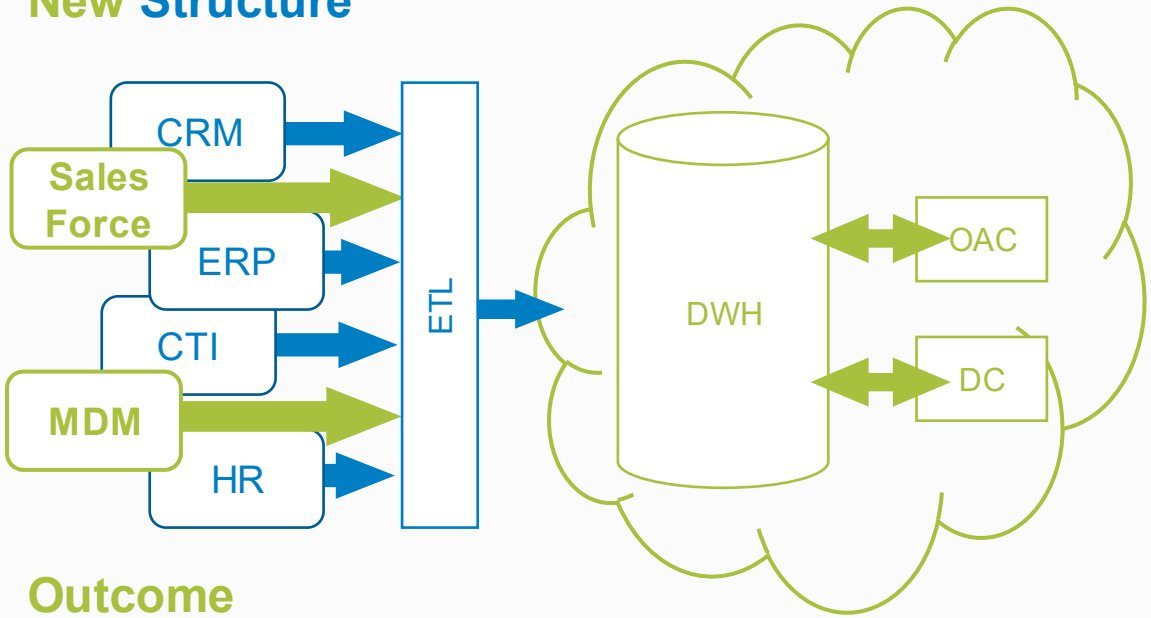
Old Structure



Challanges

- Rising amount of data (scaling difficult)
- Local administration (costly)
- Limited performance

New Structure



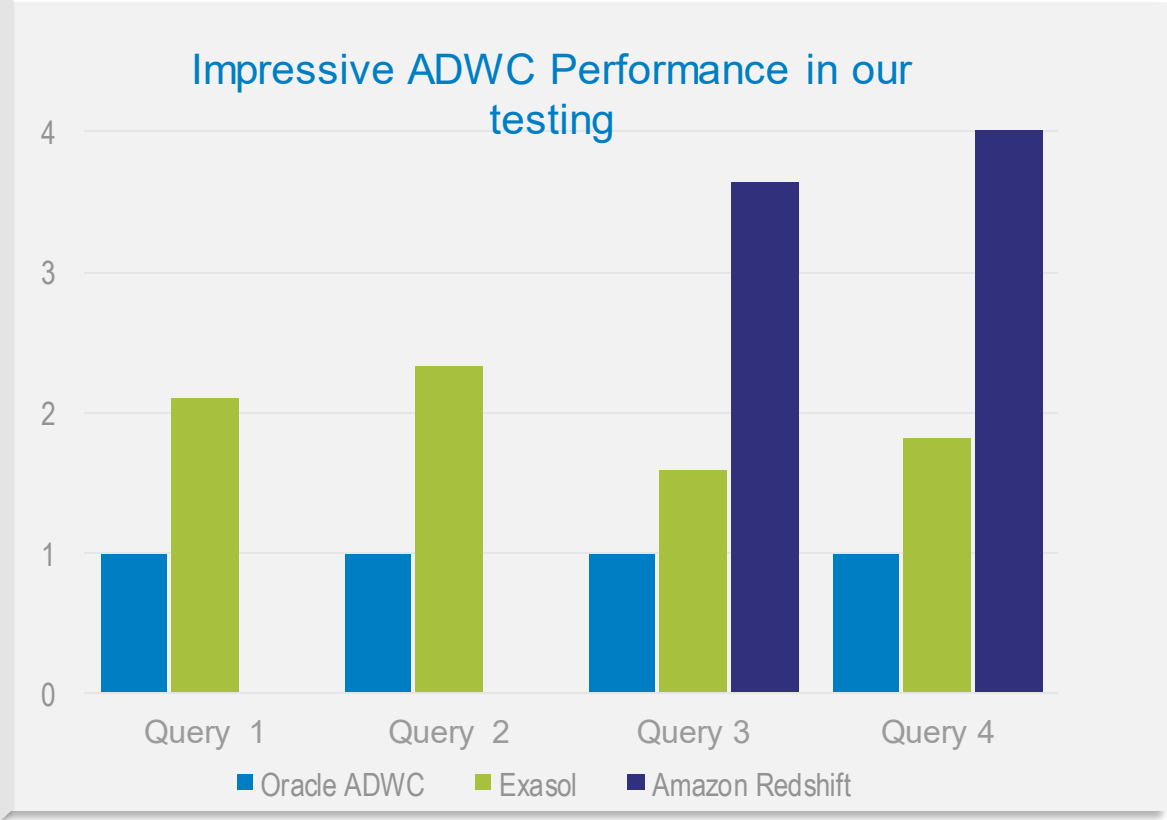
Outcome

- ADW scales easily on needed space
- ADW runs autonomous (no backup, tuning, patches…)
- ADW scales flexible during the day depending on performance need
- High speed data transfers to AWS cloud
- Using ML-functionalities (churn analysis, forecast, failure detection)

✓ **All data in one place for the first time**

Handling and performance of ADWC impressed our Technology and BI departments.

- **Fast provision** of a **high-performance** DB
- Easy and fast **connectivity** options
- Easily **convert from** Oracle **on premise** to ADWC
- Conversion- and migration tools for other data sources need some improvements
- All-in-all IT / BI department is impressed, further projects ongoing.



Q&A

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CERN

MANAGING 1PB OF DATA WITH ORACLE AUTONOMOUS DATA WAREHOUSE

Manuel Martín Márquez, Senior Project Leader
Sebastien Masson, Oracle DBA
CERN – IT Database Services

CERN Aerial View

World's largest scientific instrument

27km (16.8 miles) circumference, 6000+ superconducting magnets

Fastest racetrack on Earth

Protons circulate 11245 times/s (99.9999991% the speed of light)

Emptiest place in the solar system

High vacuum inside the magnets

Hottest spot in the galaxy

During Lead ion collisions create temperatures 100 000x hotter than the heart of the sun;

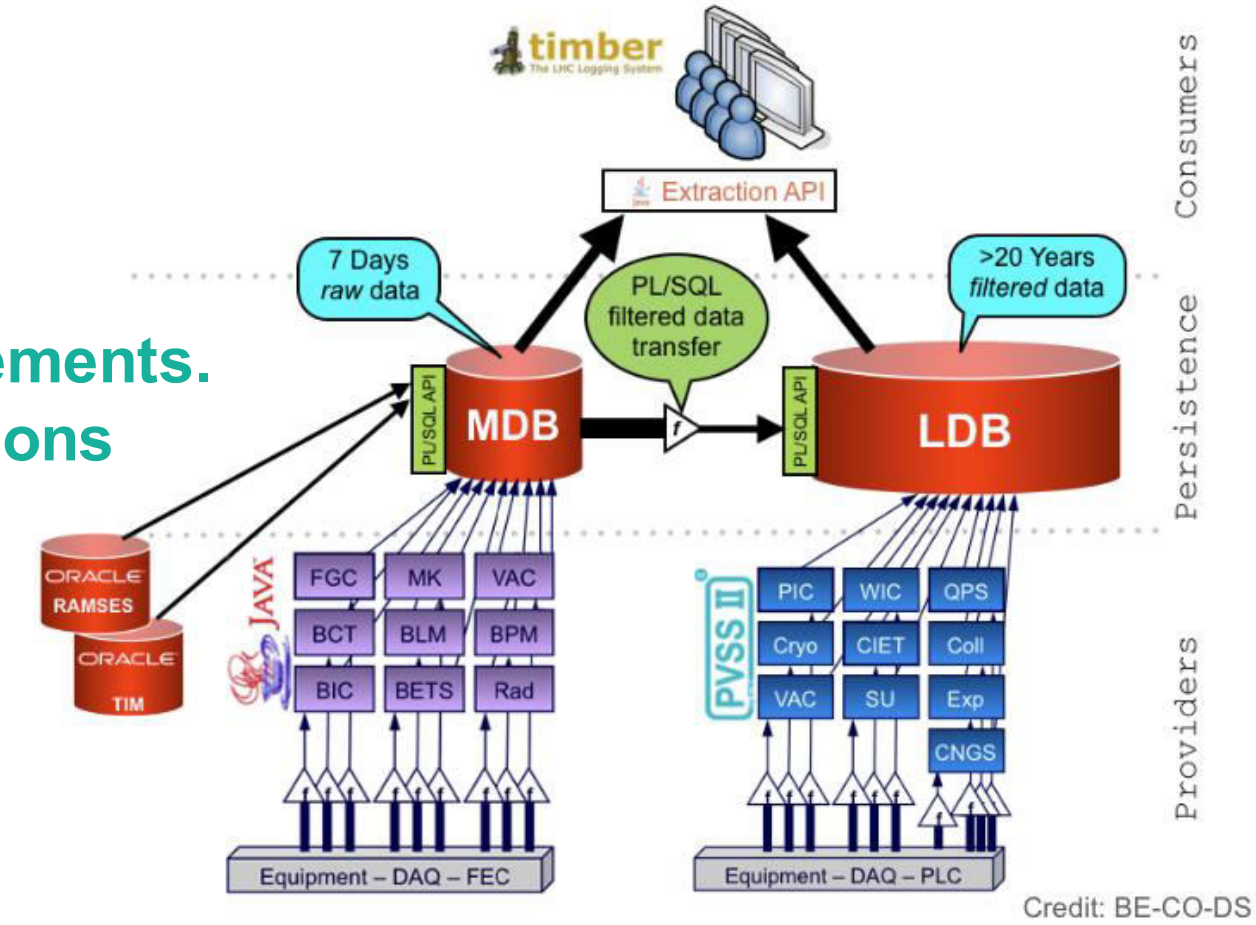
CERN's INDUSTRIAL-IOT
INDUSTRIAL CONTROL SYSTEM

CERN ACCELERATOR LOGGING SERVICE - CALS

- In addition of physics data, CERN's produces high volume of data for its **Supervisory Control And Data Acquisition** systems.
- The scope is very wide:
  - **Accelerator systems: cryogenics, vacuum, machine protection, radiation, beam monitoring, quench protection, etc...**
  - **Detector Control System: ATLAS, CMS, ALICE and LHCb**
  - **Technical Infrastructure: electrical network, cooling and ventilation systems**

CERN ACCELERATOR LOGGING SERVICE - CALS

- 1.1PB of time series data
- +2 057 960 signals
- +2.5TB data per day.
- Scalars to arrays of up-to 4 million elements.
- +1000 users and 130 expert applications



Credit: BE-CO-DS

CERN ACCELERATOR LOGGING SERVICE - CALS

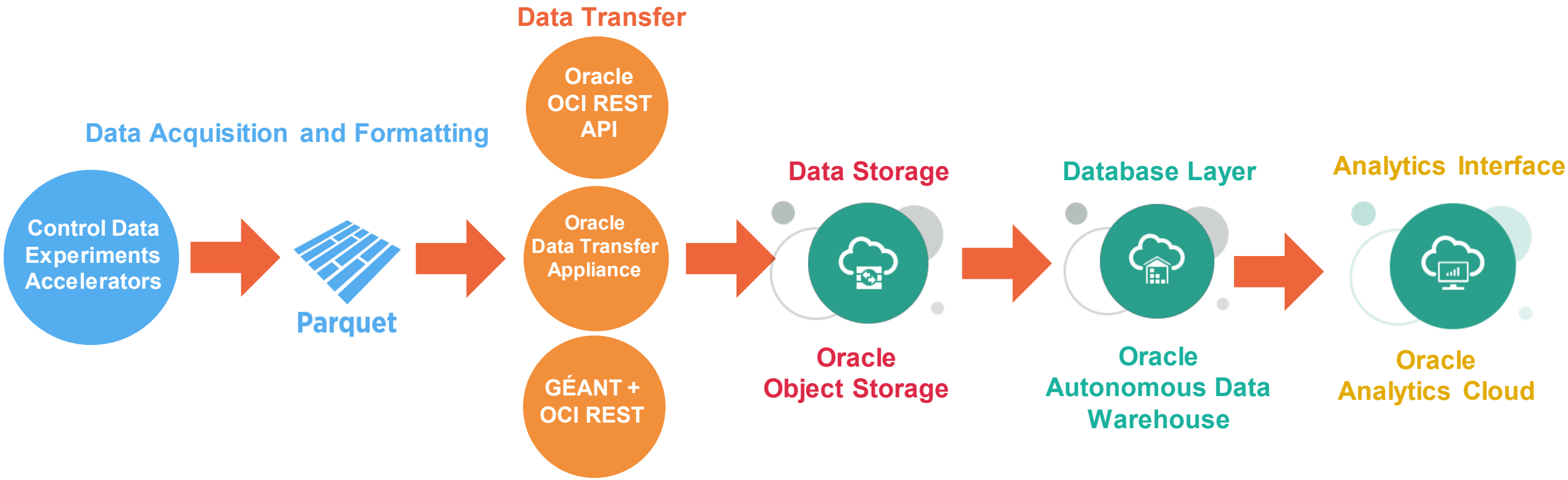
- **Advantages**
  - Simple architecture
  - Extremely efficient for 90% of use cases
  - Allow to control critical systems in almost real-time
- **Disadvantages**
  - Data exploration
  - Better performance on bigger datasets

AUTONOMOUS DATA WAREHOUSE (ADW)
WHY AND HOW

ADW - WHY

- Unique system that
  - Introduces a **simple architecture**
  - Facilitates **data exploration** (unknowns – unknowns)
  - Allows to control critical systems on **almost real-time**
  - **Lowers operations and development costs**
  - **Reduces migration and integration efforts**
  - Transparent and seamless **access to advance optimization features**

ADW – HOW - GENERAL OVERVIEW



ADW – HOW – DATA ACQUISITION AND FORMAT

- Data is collected from the control system using **Apache Kafka** and later on is transformed into **Apache Parquet files** which are persisted in **HDFS.**
- **Parquet schema is defined on-write based on control device categories (CMW, PVSS) and properties.**
- Data Schema is used by Oracle Autonomous to **automatically generate tables definitions.**


```
root
|-- __sys_nxcals_system_id__: long (nullable = true)
|-- __sys_nxcals_entity_id__: long (nullable = true)
|-- __sys_nxcals_partition_id__: long (nullable = true)
|-- __sys_nxcals_schema_id__: long (nullable = true)
|-- __sys_nxcals_timestamp__: long (nullable = true)
|-- application_arcgroup: string (nullable = true)
|-- timestamp: long (nullable = true)
|-- value: double (nullable = true)
|-- variable_name: string (nullable = true)
```

- The data is also **partitioned by timestamp and device family.**

```
--prefix ${entity_name}_${device}_${year}_${month}_${day}_
```

- Due to the large data volume involved **(about 1PB)** different solutions to transfer the data to **Oracle object storage** are being used:
  - **Oracle OCI Rest API**
    - On top of the OCI rest we have created a **set of scripts to automatize** the data transfer and optimize the network resources.
    - **Scan HDFS and bulk upload parquet file to Oracle object storage**

Oracle OCI REST API

```
for f in $(find /hdfs/... -mindepth 2 -type d | sort -V); do
  month = $(drname $f | cut -d/ -f12)
  day = $(basename $f)
  oci os object bulk-upload -ns tenant -bn oss --src-dir $f —object
    --prefix ${entity_name}_${device}_${year}_${month}_${day}_
done
```

ADW – HOW – DATA TRANSFER

- **GEANT + OCI Rest API – Openlab team has worked with GEANT and Oracle to make GEANT available as a provider on Oracle Cloud.**
  - **BM server 8Gbps, VMs 6Gbps**

GÉANT + OCI REST

Available Network: 10 Gbit -> 1 GB / sec
*30 – 50% **network overhead***
Transfer time for 1 TB -> 1000 sec / 60 = 150 min -> 2.5 hrs
Transfer time for 1 PB -> 2500 hrs / 24 -> 105 days -> 2.5 months

Oracle Data Transfer Appliance

- **Oracle Data Transfer Appliance – 150TB per machine can be shipped to Frankfurt data center. Cancelled due to Covid19**

ADW – HOW – OBJECT STORAGE

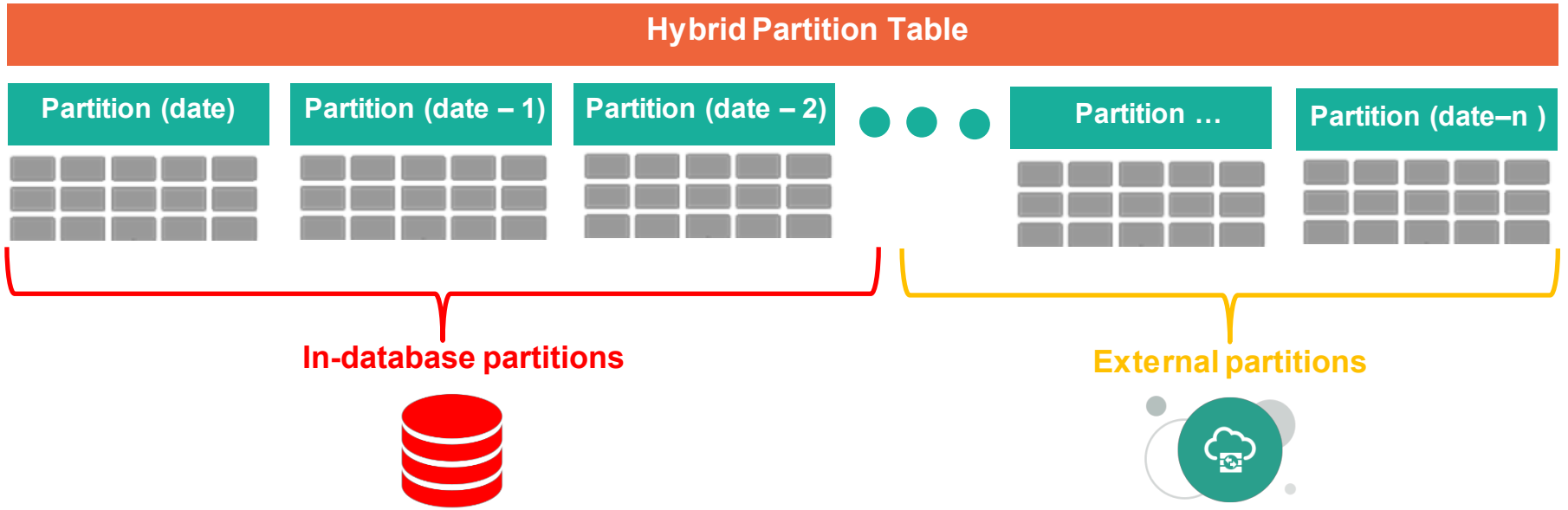
- Object storage is scanned using Oracle **dbms_cloud packages** to determine the data have been successfully imported and **create tables and partitions by family and date**

```
FOR objects IN (
    SELECT object_name,
          substr(object_name, instr(object_name,'_',1,2)+1,
           - (instr(object_name,'_',1,5)-instr(object_name,'_',1,2)-1)) AS s_date
      FROM table(dbms_cloud.list_objects(credential_name => 'ADW_CRED_OCI_OS',
                location_uri => 'https://swiftobjectstorage.eu-frankfurt-1…'
    )) WHERE object_name LIKE 'QPS%' ORDER BY to_date(s_date, 'YYYY_MM_DD')
)LOOP
```

```
DBMS_CLOUD.CREATE_EXTERNAL_PART_TABLE(
  table_name =>'PSEN_TA',
  credential_name =>'ADW_CERD_OCI_OS',
  partition_clause => 'PARTITION BY RANGE(timestamp) (' || partition_clause || ')',
  format => json_object('type' VALUE 'parquet')
);
```

ADW – HOW – DATA MODEL

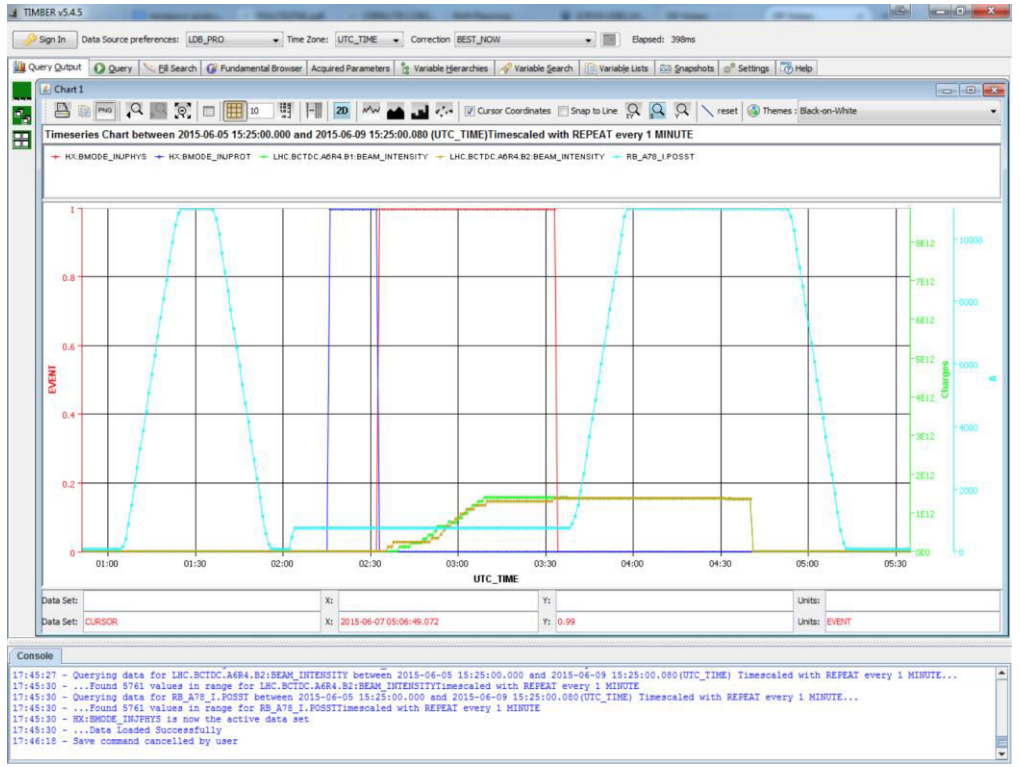
- The rolling hybrid model emphasizes the benefits of the oracle object storage using **transparently and co-ordinately:**
  - **External partitions based on parquet files for less accessed data and**
  - **Regular database partitions for data that require almost real-time responses.**



ORACLE ANALYTICS CLOUD (OAC)
FROM CONTROL SYSTEM DATA TO VALUE

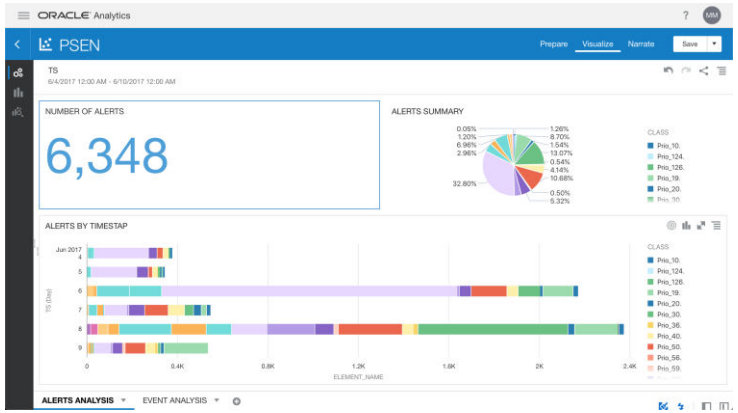
OAC – CALS SITUATION

- Current data access and analysis
  - Custom Java API
  - Custom Java Application
  - Notebooks (Jupyter)
- Limitations
  - **No exploration tools**
  - **Push load to clients**
  - **Requires advance users**



OAC – WHY

- Exploration tool
  - **Data integration, transformation, exploration, and discovery**
  - **Allows us to push data analytics responsibilities to equipment experts**
- Oracle Autonomous Strategy
  - **Automated creation of required resources, administration, patches, backups, etc.**
- One click provisioning and scaling



www.cern.ch

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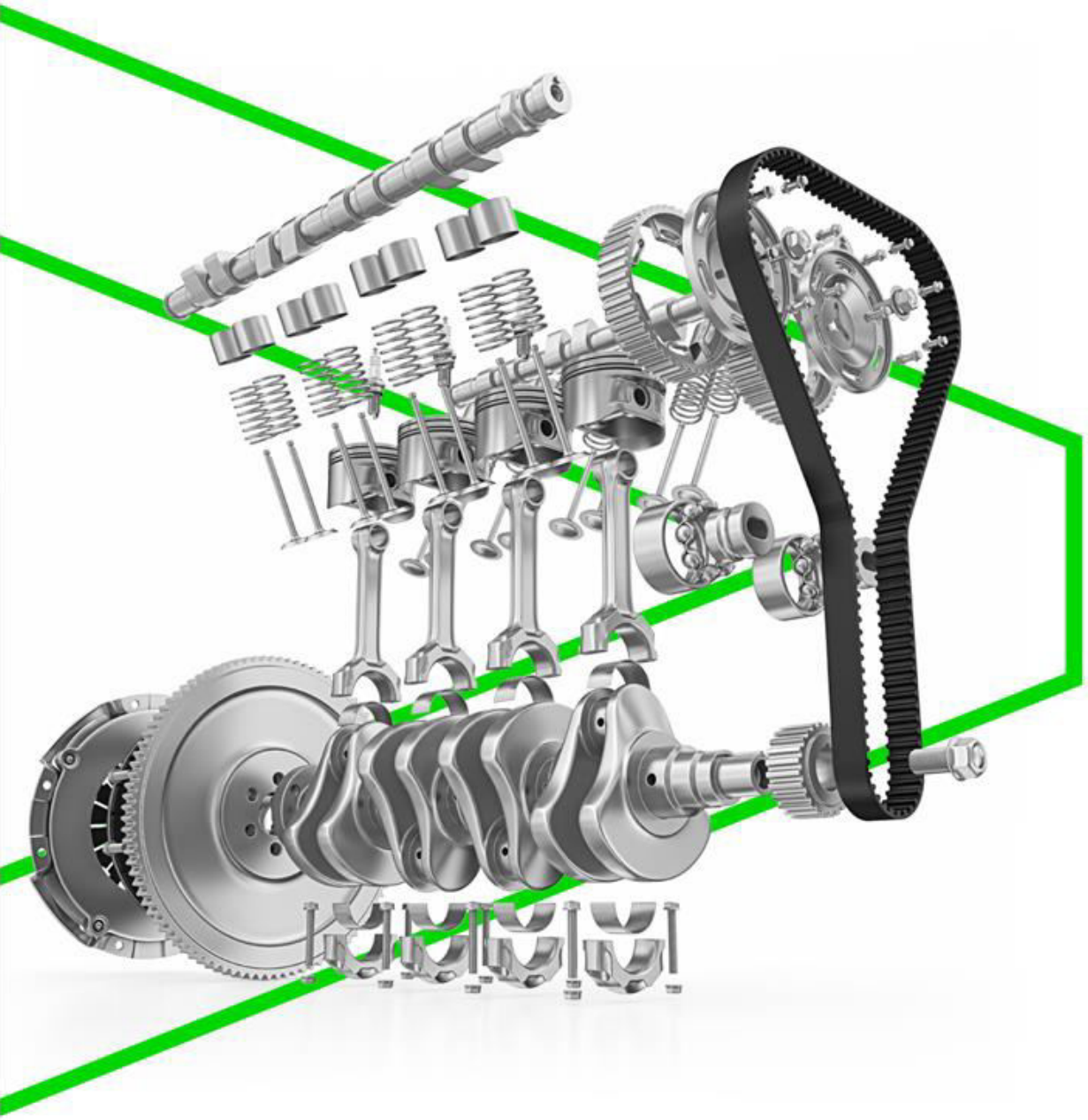


accenture technology

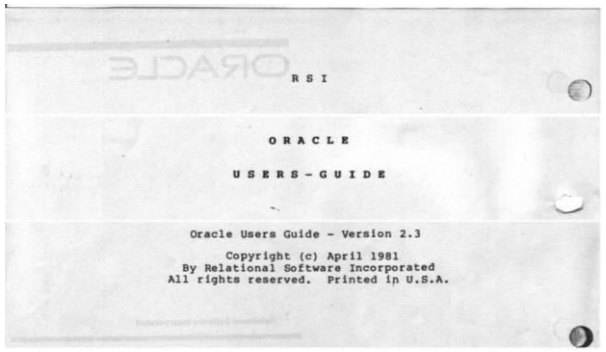
Accenture Enkitec Group

Comparing Oracle Database Performance in the Cloud

June 23rd, 2020
Oracle Global Leaders Meeting – Autonomous Data Management, Big Data & Analytics

- 10.000+ hours of 24x7 on-call DBA
- First Oracle Certified Master in Europe: 2002
- Oracle ACE Director
- Master Technology Architect
- Master Data Architect
- Database Blog at: juliandontcheff.wordpress.com

THE ORACLE AUTONOMOUS DATA WAREHOUSE CLOUD:



COMBINING CLOUD AND MACHINE LEARNING INTO THE WORLD'S FIRST SELF-DRIVING, AUTONOMOUS DATABASE

EXTREMELY FAST

TESTING SHOWED SIGNIFICANT SPEED IMPROVEMENT

- Inserting 500 million rows of data took less than three minutes, on average
- 1.6x performance improvement compared to published findings
- 14x performance acceleration

FEATURE COMPARISON

DATABASE PROVISIONING

MANUAL INSTALL*

4 HOURS

DBCS

1 HOUR

ADWC

SECONDS

SCALE UP / DOWN HARDWARE

PHYSICAL HARDWARE

Not possible as the hardware is not elastic

DBCS

30 MINUTES

Database is down while scaling is happening

ADWC

SECONDS

Database remains active while scaling is happening

*assume hardware is already procured

TESTING APPROACH

Utilizing an existing cloud based analytics application called PRETT [Platform Resource Enablement Tracking Tool] running on OACS [Oracle Analytics Cloud Service]. Data will be replicated in DBCS and ADWC to provide a real life application usage experience

The data will then be extrapolated and expand based on that existing application to simulate ADWC functionality.

SPRINT 1
BASELINE

- Compare like to like data volume in OACS[DBCS] to OACS[ADWC]
- 3 Month Data volume
- Run and compare performance in OACS[ADWC] and compare with baseline OACS[DBCS] information

SPRINT 2
EXTRAPOLATE

- Create 9 years of data on ADWC based on the 3 month live data to then compare performance on high volume data.

TESTING RESULTS

SPRINT 1
BASELINE

SPRINT 2
EXTRAPOLATE

ADWC IS CONSISTENTLY PERFORMING FASTER

AVERAGE RUN TIME

1.63x

AVERAGE RUN TIME

1.72x

New Performance Tests: Oracle ADW and Major Cloud DW

Other Cloud DWs are a solid offering that performed well in the tests, especially in the smaller cloud- and data-size scenarios

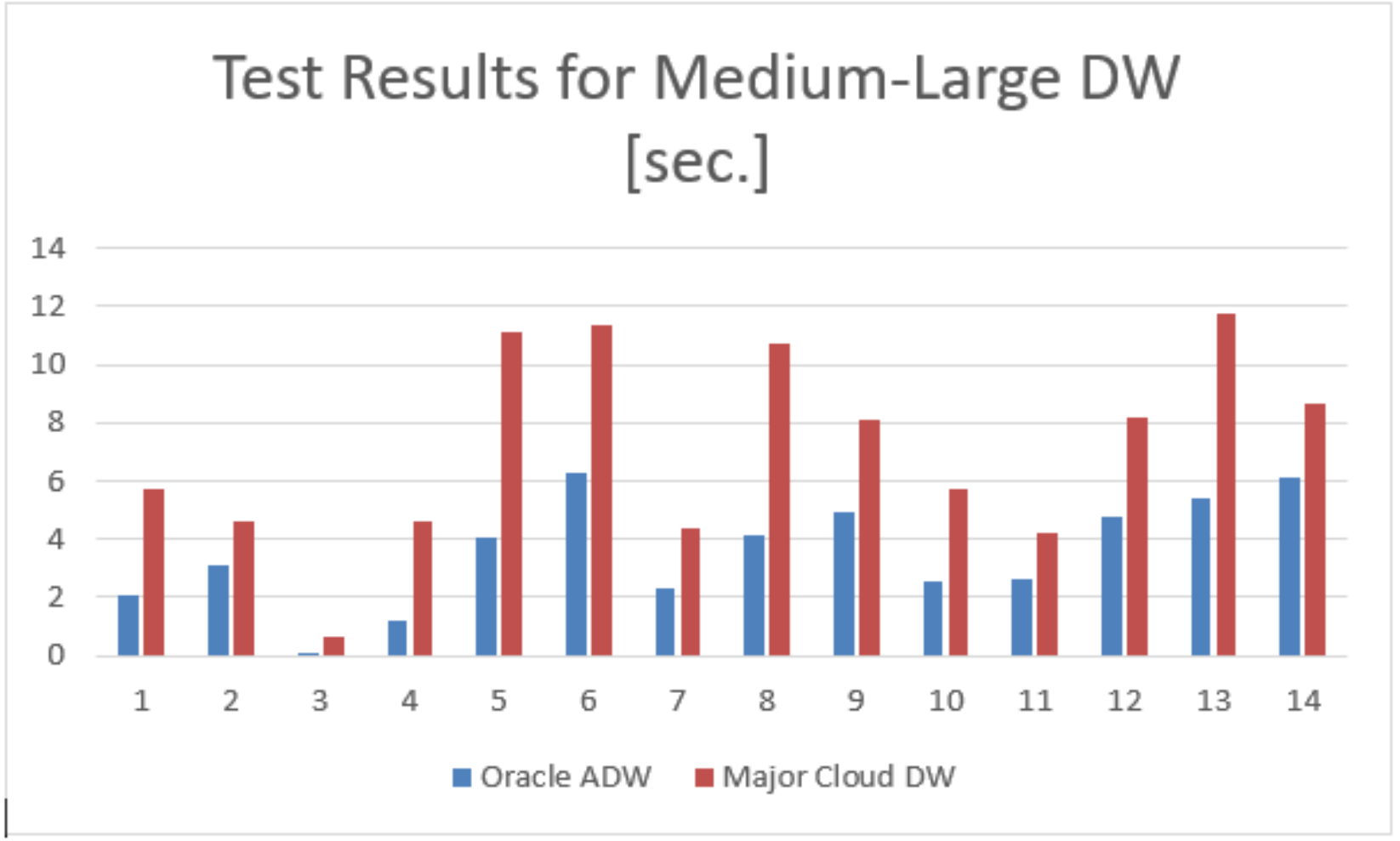
With its data-caching and parallel-execution capabilities, they showed performance above and beyond that which would be expected from a traditional database engine

Nevertheless, Oracle ADW essentially matched or exceeded that performance in the small and medium scenarios, and it clearly exceeded it in the large scenario

At the same time, when it comes to heavy workloads ADW delivers higher performance at much lowers costs

With its winning performance/cost ratio—and the operational advantages offered by its extensive autonomous capabilities—Oracle ADW should be considered by companies that want to run their enterprise data warehouse in the cloud

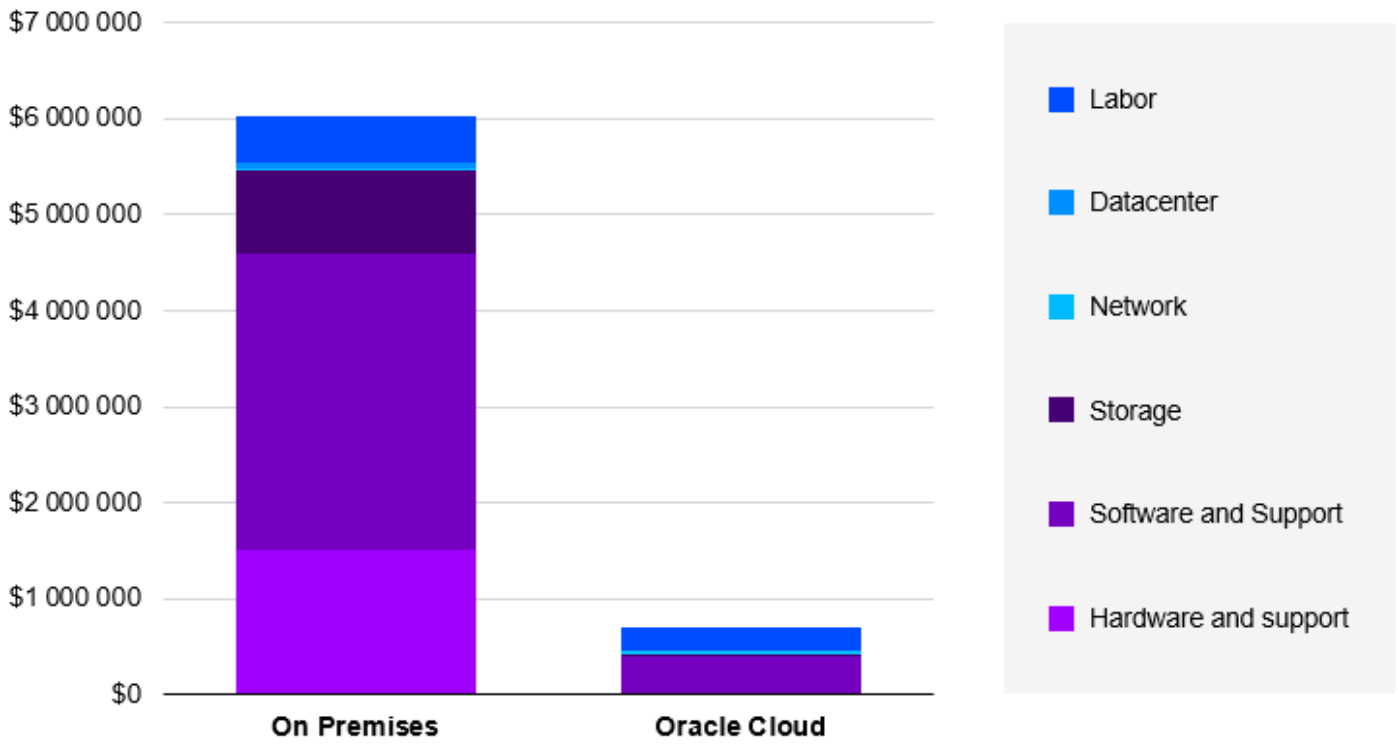
Accenture New Performance Tests



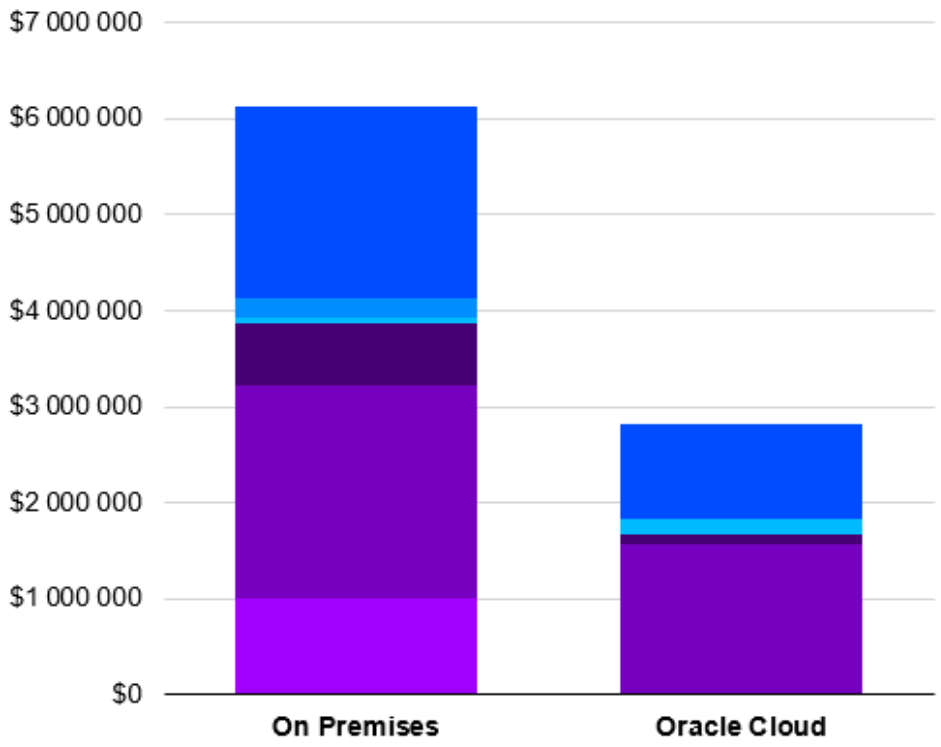
TCO savings for Autonomous Data Warehouse – a graphical view

A client TCO analysis

Year 1 cost comparison of On Premises vs. Oracle Cloud

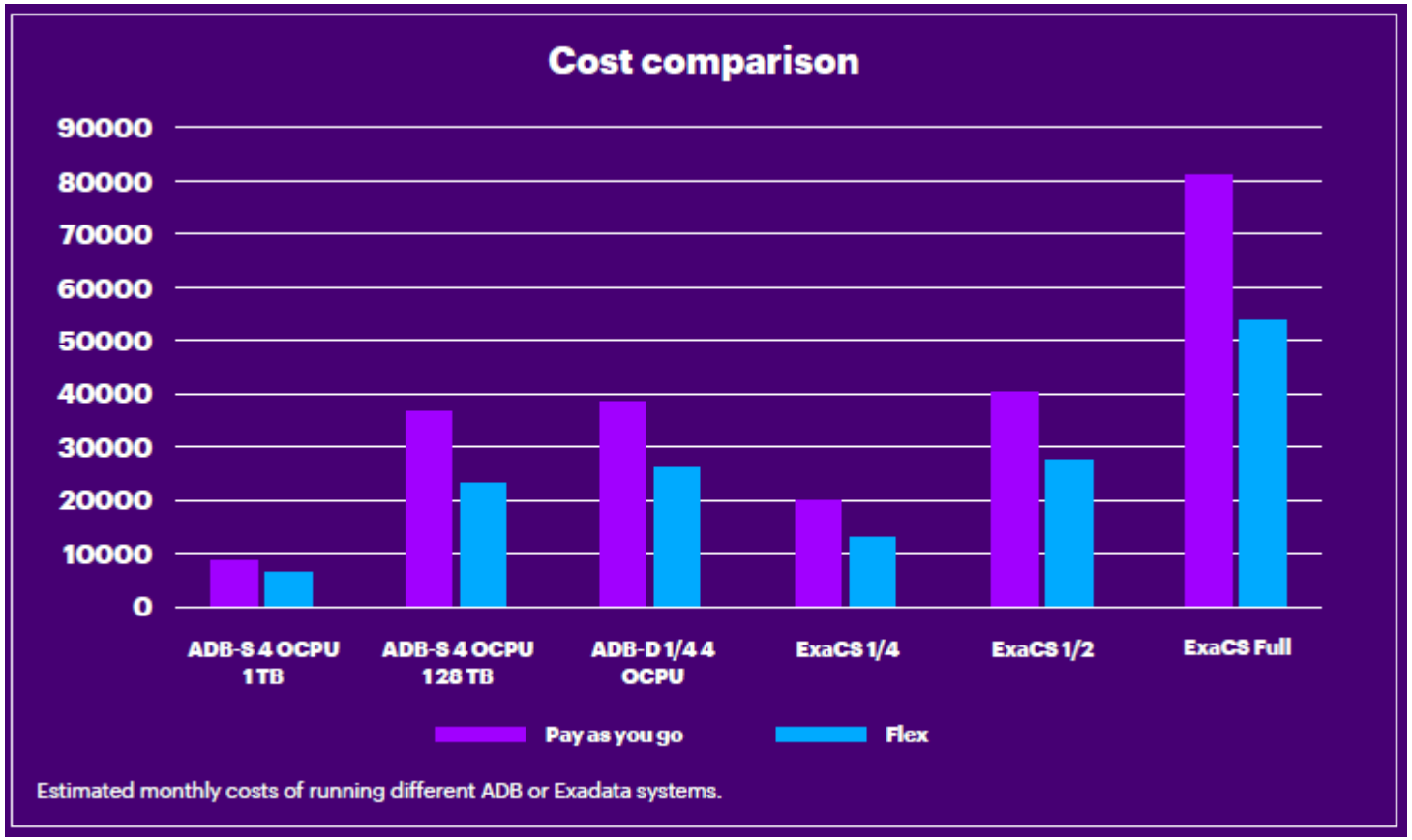


Years 2 through 5 cost comparison of On Premises vs. Oracle Cloud



Comparing monthly costs of Exadata and Autonomous

There are two options when purchasing these database services—the “Pay as you Go” model and the “Monthly Flex” model. The figure below illustrates how these payment models compare across the three databases.



Estimated monthly costs of running different ADB or Exadata systems.

Comparing monthly costs of Exadata and Autonomous

- ADB-D will often be appropriate for companies that want to run their mission-critical systems in a secure isolation zone, on a highly available platform, and take advantage of Exadata Performance
- ADB-S will often be attractive to companies that want to move to the cloud quickly; do not want to maintain any infrastructure; and do not require full isolation or control over maintenance schedules for their workloads
- The ExaCS platform, like ADB-D, offers dedicated performance and true isolation, and can handle mission-critical workloads and can be an especially good option for companies wanting to consolidate multiple databases on a highly available system
- In addition, ExaCS works with many traditional applications, such as Oracle e-Business Suite, Siebel, PeopleSoft and JD Edwards, that are not yet supported on the Autonomous Database platform

Comparison of deployment features with Exadata X8 shapes

	CPUs	Storage	Scaling	Deployment	Supported DB versions (as of Q1 / 2020)
ADB-S	128	128 TB	Auto-matic/ Manual	Minutes	19C
ADB-D 1/4	100	128 TB	Manual	Around 4h	19C
ADB-D 1/2	200	179 TB	Manual	Around 6h	19C
ExaCS Base	48	74 TB	Manual	Around 4h	11.2, 12.1, 12.2, 18C, 19C
ExaCS 1/4	100	149 TB	Manual	Around 4h	11.2, 12.1, 12.2, 18C, 19C
ExaCS 1/2	200	299 TB	Manual	Around 6h	11.2, 12.1, 12.2, 18C, 19C
ExaCS Full	400	598 TB	Manual	Around 8h	11.2, 12.1, 12.2, 18C, 19C

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SPEED: FEEL THE NEED

	LEADING CLOUD PROVIDER	ORACLE CLOUD INFRASTRUCTURE	AUTONOMOUS DATA WAREHOUSE	
vCPU	**16**	**16 (8 OCPU)**	**16 (8 OCPU)**	**4 (2 OCPU)**
Memory	128 GB	120 GB		
Disk Type	SSD	NVME SSD	Exadata	Exadata
Disk Size	1 TB	6.4 TB	1 TB	1 TB
Queries per Hour	**65**	**1,264**	**11,975**	**2,453**

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MONEY: MAKE IT WORK

	LEADING CLOUD PROVIDER	ORACLE CLOUD INFRASTRUCTURE	AUTONOMOUS DATA WAREHOUSE	
			LARGER	SMALLER
Queries per Hour	65	1,264	11,975	2,453
Term Commitment	3 Years	None	3 Years	None
Annual IaaS Cost	$5,352	$8,928	**$101,580**	**$46,812**
Annual Oracle DB Support	$110,000*	$55,000*		
Annual Infrastructure + Oracle DB Cost	**$115,352**	**$63,928**		

* Database licensing only includes Oracle Database Enterprise Edition and Advanced Security

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VALUE: MORE FOR LESS

	LEADING CLOUD PROVIDER	ORACLE CLOUD INFRASTRUCTURE	AUTONOMOUS DATA WAREHOUSE	
			LARGER	SMALLER
Annual Total Cost	$115,352	$63,[illegible]	$101,580	$46,812
Queries / Hour	[illegible]	1,2[illegible]	11,[illegible]75	2,4[illegible]
Cost / Hour	[illegible]	$7[illegible]	$11[illegible]	$5[illegible]
Cost / Query	$0.2026	$0.0058	$0.0010	$0.0022
Patching for Security	Days / Weeks / Months	Days / Weeks / Months	Real-Time	

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ORACLE RUNS BEST ON ORACLE CLOUD

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accenture.com/adb

READ THE TECH VISION:
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Oracle Autonomous Database Panel

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