



Data-Driven Business Agility Without Compromise



Enabling business teams to get deep, trustworthy insights fast with a governed and secure solution improving productivity

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PURPOSE STATEMENT

This document provides an overview of Oracle's solution for departmental data warehouses. It is intended solely to help you assess the business benefits of Oracle's solution to plan your I.T. projects.

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INTRODUCTION

Digital disruption shock waves have sent all organizations a clear wake-up call that change is the only constant, and that obtaining deep data-driven insights fast is needed to survive and thrive. Business teams are eager to access ever more data to quickly answer new questions arising every day. However, the processes they relied on in the past may no longer be appropriate to meet new business demands, and may not help IT and lines of business to effectively partner.

In this white paper, we will first review why successful digital transformation and resiliency during crisis require business agility powered by data-driven insights. We will then consider the drawbacks of common data and analytics processes. Finally, we will suggest a simple, reliable, and repeatable approach allowing business teams to easily get deep, trustworthy data-driven insights fast and make rapid decisions, relying on a complete, governed and secure solution.

SUCCESSFUL DIGITAL TRANSFORMATION REQUIRES BUSINESS AGILITY

What is the #1 priority¹ of CIOs? Driving and embedding digital transformation in the company business strategy. New technologies are disrupting what was once considered normal business operations, forcing companies to embrace digital transformation or be left behind.

According to IDC², digital transformation spending will amount to 53% of all worldwide technology investment in 2023, with the largest growth in **data intelligence and analytics** as companies create information-based competitive advantages.

Digital transformation at its best involves a journey from inflexibility to a permanently agile condition. Being agile has indeed become more important than ever; it helps business teams to continually adapt to changing scope and deliverables, to manage changing priorities in a highly volatile environment.

A McKinsey³ survey shows that:

- Agile organizations have a 70% chance of being in the top quartile of performers. They are more resistant to disruption and simultaneously achieve greater customer centricity, faster time to market, higher revenue growth, lower costs, and have a more engaged workforce.
- 75% of business leaders say organizational agility is a top or top-three priority.
- Leaders believe that more of their employees should undertake agile ways of working: on average 68 % compared with the 44 % of employees who currently do.

¹ <https://www.alert-software.com/blog/top-cio-priorities>

² <https://www.techrepublic.com/article/idc-digital-transformation-spending-will-eat-up-50-of-it-budgets-by-2023/>

³ <https://www.mckinsey.com/business-functions/organization/our-insights/the-five-trademarks-of-agile-organizations>

Digital disruption will potentially wipe out 40% of Fortune F500⁴ firms by 2030, and according to Accenture, only a mere 20%⁵ of businesses are prepared to address it. Agile organizations will be able to constantly adapt to market changes rather than being impeded by them, they will be able to survive and thrive in a constantly changing environment, and therefore to win in the age of digital disruption.

The pandemic has only been accelerating digital transformation initiatives as workforces have been required to go remote with very little time to prepare. According to a recent survey⁶, COVID-19 forced many organisations to operate at unprecedented levels of pace in order to adapt, and they have been able to achieve this by radically altering the way they manage change using agile principles.

As noted, the largest digital transformation investments will be in data intelligence and analytics, which should come as no surprise. Indeed, agile business teams need to be able to make decisions extremely quickly to take action, and the only way for them to confidently do so is to have data-driven insights at their fingertips.

AGILE BUSINESS TEAMS NEED DATA-DRIVEN INSIGHTS

All lines of business are in dire need of data-driven insights to meet new expectations.

Finance has radically evolved in the past few years. Their focus has shifted from back-office processing and reporting of historic results to forward looking forecasting and analysis of the business. Executives now expect finance to address their questions quickly, solve problems, and to make recommendations to drive business growth. As a matter of fact:

- 79% of CFOs rate data analytics as a priority⁷
- 85% believe the finance organization must transform from reporting on “what” to “why”⁸

Similarly, HR used to be primarily viewed as a business support function. HR is now considered a strategic advisor and expected to work with the leadership team to drive top and bottom-line results. The HR analytics market is planned to grow⁹ to \$3.6 billion by 2025, with HR leaders aiming to use data analytics to improve productivity, learning, recruitment, retention, wellness, collaboration, and performance management.

⁴ <https://www.information-age.com/65-c-suite-execs-believe-four-ten-fortune-500-firms-wont-exist-10-years-123464546/>

⁵ <https://www.accenture.com/gb-en/insight-leading-new-disruptability-index>

⁶ <https://www.agilebusiness.org/news/510628/COVID-19-has-required-enhanced-organisational-agility-but-will-it-stick-as-the-lockdown-eases.htm>

⁷ <https://blog.protiviti.com/2019/09/13/new-finance-trends-survey-by-protiviti-reveals-a-strategic-shift-in-cfo-priorities/>

⁸ <https://go.oracle.com/LP=88830?elqCampaignId=238833>

⁹ <https://www.globenewswire.com/news-release/2020/02/04/1979262/0/en/HR-Analytics-Market-to-grow-at-11-to-hit-3-6-billion-by-2025-Global-Insights-on-Size-Share-Growth-Drivers-Key-Trends-Competitive-Landscape-and-Business-Opportunities-Adroit-Market-.html>

Spending on marketing analytics will double¹⁰ to reach \$4.68 billion by 2025. According to the CMO survey conducted by Gartner¹¹: *“76% of marketing leaders say they use data and analytics to drive key decisions. Yet, marketing organizations also struggle to evolve their data capabilities. Continued investment in technology and data talent is not optional for those with ambitions for their data.”*

Finally, the fastest-growing companies are using data and analytics to radically improve their sales productivity and drive double-digit sales growth with minimal additions to their sales teams and cost base. Data-driven sales organizations are outperforming their peers¹² in terms of revenue growth, profitability, and shareholder value.

Common to all lines of business is the fact that they are being asked to answer new questions every single day. Their agility can be measured by their ability to rapidly answer those questions, which in turn is highly correlated to their capability to independently turn data into insights. Armed with those insights, they can make the best decisions and take action.

While enterprise applications enable them to easily answer questions of the “what” type, e.g. “What is this quarter’s revenue?”, they tend to struggle to perform root cause analysis, to figure out the “why” beyond the “what”, e.g. “Why is profitability dropping for this product?”. Understanding trends and modeling future scenarios is equally difficult. To answer such questions, their transactional reporting is not sufficient, they need to consider data sets from other sources, both internal and external ones. That is typically where their data and analytics processes fall short and where they, as we will see, tend to heavily rely on spreadsheets and manual processes to blend and analyze data from different sources.

This is compounded by the fact that an increasing number of the questions lines of business need to answer nowadays require data from several departments and applications. For example, answering the question “Do we have the budget to increase compensation for our top performing sales reps at risk of leaving given quota attainment?” would require data from finance, HR and sales applications.

For IT, those needs translate into an increasing number of more and more complex demands from the different departments.

Being agile also means being resilient

As we could unfortunately all notice, disruption events can occur at any time and in any form. They’re unpredictable and very hard to prepare for, and an agile business is more likely to be resilient.

Given a disruptive event, organizations typically go through 3 different stages. At each stage, business teams need to answer new questions and therefore need to swiftly obtain new data-driven insights.

¹⁰ <https://www.mordorintelligence.com/industry-reports/marketing-analytics-market>

¹¹ <https://www.gartner.com/en/marketing/insights/articles/4-key-findings-in-the-annual-gartner-cmo-spend-survey-2019-2020>

¹² <https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/what-the-future-science-of-b2b-sales-growth-looks-like>

- **Conserve:** During this first stage, organizations need to address the immediate challenges that the crisis/disruption has presented. Finance must for example support rapid decisions on resource usage, clarify the impact of HR decisions, and provide insights on different scenarios to the leadership team. For marketing, it's about figuring out the effect of the crisis on pipeline generation, and considering where to refocus efforts to minimize the overall impact.
- **Scale** is where the recovery begins. Once the end of the crisis/disruption is in sight or under control, it is important to scale back up as quickly as possible. The ability to rapidly select the most promising opportunities to fund and focus resources on is critical to a swift recovery and rapid growth. The crisis may also have presented new opportunities for some businesses, requiring new analysis and decisions to best take advantage of them.
- Finally, **Reimagine** the new normal once the crisis is over. Customer habits may have changed due to the disruption, implying new business models, processes, new channels, complying with new guidelines....etc. Internal policies and ways of working may also need to be revised. Data-driven insights are once more needed to make the right decisions.

A survey¹³ from Dresner Advisory Services on the impact of COVID-19 highlights the respondents' strong belief that data-driven decision making is a must-have for their businesses to survive and eventually grow again. Businesses are seeing data and analytics as the radar they need to plan and execute strategies essential to their survival. According to the survey, 49% of enterprises are either launching new analytics and BI projects or moving forward without delay on already planned projects.

Whether a disruption event has occurred or not, business teams typically turn to IT to access new data sources and get help to turn data into insights. However, organizations tend to rely on processes that are far from being agile...

COMMON DATA AND ANALYTICS PROCESSES DO NOT SUPPORT BUSINESS AGILITY

The process represented in figure 1 is very common. It involves the following steps when new data or reports are required:

¹³ <https://www.surveymzmo.com/s3/5563270/Covid-19-Update-Survey-4-22-2020>

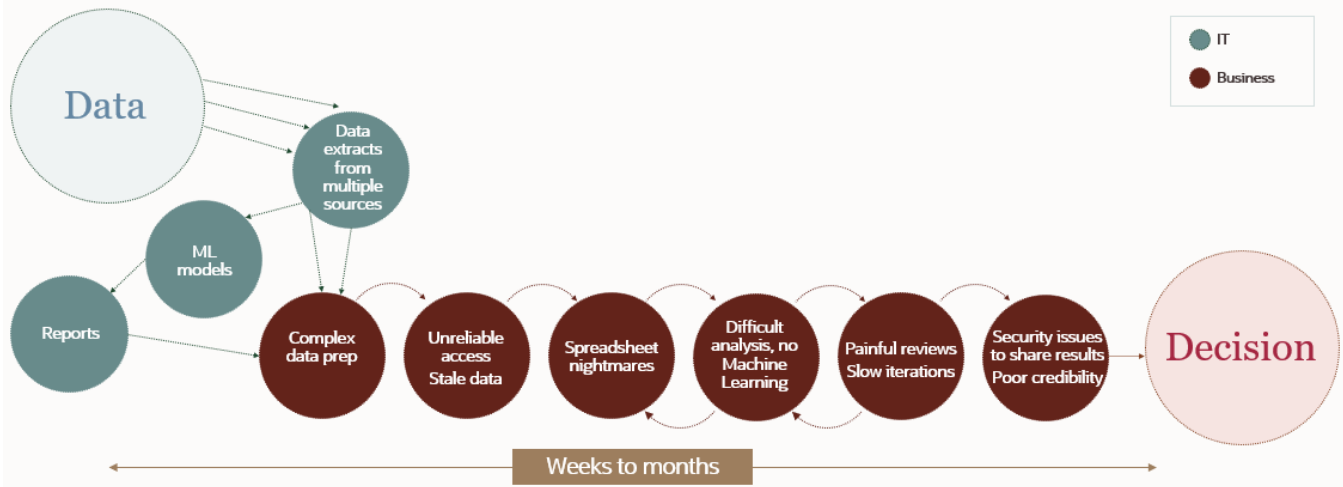


Figure 1

- IT receives a request from the business. Often times, IT will provide data extracts from various sources to the business teams (data from enterprise applications, web site data, external data...etc). IT can occasionally be asked to build and run Machine Learning models on the data and provide reports to analysts, which can require multiple rounds of specifications and revisions, taking time.
- Once business teams receive the data from IT they need to prepare it for analysis. By then analysts may already have new requirements, which means they may need to go back to IT with additional requests.
- They then need to set-up a workspace allowing workgroup members to access the data. Typical issues involve data security and the ability for all members to access the needed data, which often means that by the time they can start working on it, some of the data is already stale.
- The next step could often be referred to as “spreadsheet nightmare”: analysts tend to rely on spreadsheets to share and collaborate on the data. Unsurprisingly, this often results in human errors, confusion, complex reconciliations and multiple sources of truth. According to IDC¹⁴, 80% of the time is spent on searching, preparing and protecting data, with only 20% spent on analysis.
- The actual analysis may be mostly reporting, as opposed to interactive discovery using Machine Learning capabilities, making it harder to surface unexpected insights.
- During management reviews data lineage (e.g. data provenance, what data sets were combined, what calculations were used) is unclear, which creates a lack of trust in the data and the predictions, and iterations are slow since they require going through the entire process again.
- Results may be shared via spreadsheets or slides, creating additional security issues.

¹⁴ <https://www.idc.com/getdoc.jsp?containerId=US44930119>

There are multiple implications. This process is:

Complex: it involves many steps, often multiple tools, and is prone to human errors. Complex processes and architectures tend to also be more difficult, and costly, to integrate and manage on an ongoing basis.

Slow: going from data to decision may take weeks to months. Business teams are dependent on limited IT resources to obtain what they need, and complain about wait times. Additionally, IT needs to go through this unproductive exercise for each new request.

Unsecure: as noted, there are security risks throughout the entire process. Furthermore, frustrated business teams may take matters in their own hands and implement shadow IT environments/data marts, further increasing security risks. Indeed, according to a Gartner report¹⁵, a third of successful attacks experienced by enterprises will be on their shadow IT resources.

Most importantly, stakeholders do not trust the data and the predications, and are back to making decisions based on gut feelings as opposed to data-driven insights. Moreover, IT is not perceived as providing the business with what they need. They are not seen as enabling business agility despite the fact that 64% of IT operations leaders believe their job is to deliver an agile, responsive, and resilient infrastructure that can support fast-moving business requirements¹⁶.

DATA-DRIVEN BUSINESS AGILITY WITH A GOVERNED AND SECURE SOLUTION

The common and ineffective process we described represents an opportunity for IT to dramatically improve both results and collaboration with lines of business. IT can implement a new framework allowing business teams to obtain the data-driven insights they need much more rapidly, and independently, while maintaining control over the process and tools used to help ensure security. In other words, IT can provide the business with the self-service autonomy they want, relying on a governed and secure solution. Furthermore, IT can use a simple, reliable, and repeatable approach for all data analytics requests emanating from business teams, greatly improving their productivity and data governance.

An Agile Approach

Consider the process presented in figure 2 below. The time to get going with a new project and to go from data to decisions can be compressed from weeks or months to hours or days.

¹⁵ <https://www.gartner.com/smarterwithgartner/top-10-security-predictions-2016/>

¹⁶ <https://www.techrepublic.com/article/despite-moving-to-the-cloud-it-departments-struggle-to-meet-business-demands/>

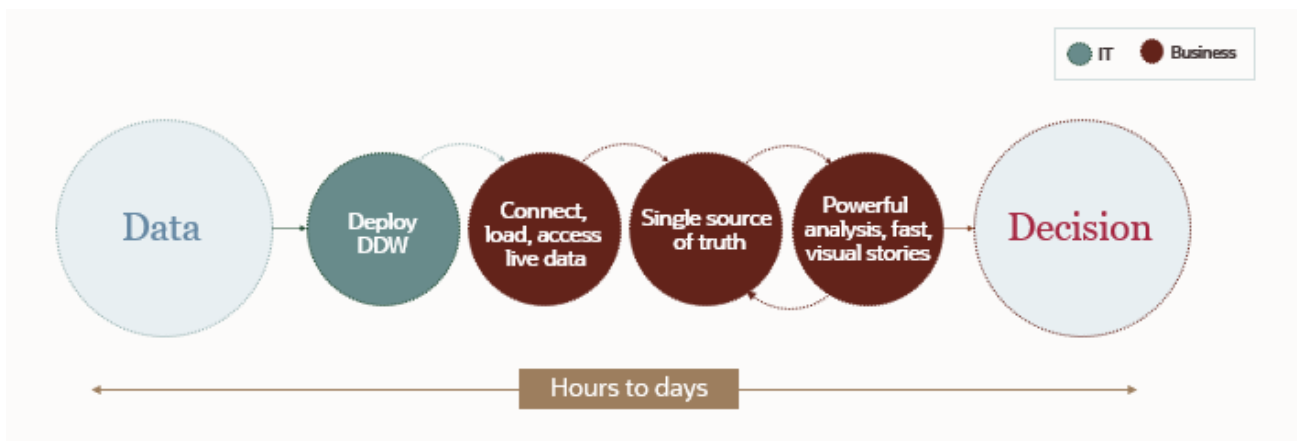


Figure 2

- IT can provision a new departmental data warehouse for a business team requesting access to data and reports in minutes, and keep track of its purpose and usage. As we will see later in this document, Autonomous Database for analytics and data warehousing eliminates virtually all the complexities of operating a data warehouse and securing data. As matter of fact, IT could also let business users set up data warehouse instances themselves in self-service mode. And they could do so using a governed, secure solution.
- Business users can add data themselves. Autonomous Database includes data tools for simple, self-service drag and drop data loading and transformation. Once connections to the data sources they need are established, they can get live data whenever they need it, without having to go to IT each time. They no longer need to rely on periodic extracts. With smart data preparation, analysts can leverage Machine Learning recommendations to enrich datasets with a single click.
- The data is available only to authorized users, via a shareable and secure workspace allowing secure collaboration within a workgroup.
- Business teams no longer need to use spreadsheets to share data and collaborate, they can rely on a single data source, which means a single source of truth. Most importantly, all stakeholders trust the data, having clear visibility on data lineage.
- Analysts can focus their time on data analysis, not on manually obtaining data extracts, blending data sources in spreadsheets, trying to protect data...etc. Autonomous Database provides built-in tools for business modelling and automatic discovery of insights.
- When analyzing the data, analysts can also leverage the interactive self-service discovery capabilities of Oracle Analytics Cloud powered by Machine Learning. They don't start with a blank canvas but with auto-created visuals based on their data. They can ask the system to explain it for them automatically, which gives them great insights and answers to questions they perhaps didn't even think of asking.

- With Autonomous Database as their data platform, users always get excellent performance for their queries, even at busy times, while only ever paying for resources they use. They can analyze all the data they need, no need to sacrifice data sets. And consistent high query performance enables to empower business users in finance, HR, marketing and other departments with secure and fast data access.
- Analysts can securely present results to executives with visual stories and iterate very quickly to address any further demands they may get.

With such a solution, data can be trusted, and fact-based decisions rapidly taken. This agile approach presents multiple benefits for both IT and business teams:

IT BENEFITS	BUSINESS BENEFITS
Governed and secure solution	New projects started in minutes
Simple and rapid implementation	Single source of truth
Automated management	ML-powered self-service analytics
Reduced complexity and cost	Deep data-driven insights fast
More time spent on business needs	Consistent high performance

ARCHITECTURE AND COMPONENTS

Analysts need an efficient way to consolidate data from multiple systems, spreadsheets and other data sources into a trusted, maintainable, and query-optimized source. With Oracle Autonomous Database for analytics and data warehousing, they can load and optimize data from Oracle applications, non-Oracle applications, spreadsheets and other sources into a centralized departmental data warehouse.

The architecture presented in figure 3 uses Oracle Data Integrator to load and optimize data from multiple sources into a centralized Oracle Autonomous Database and then uses Oracle Analytics Cloud to analyze the data to provide actionable insights.

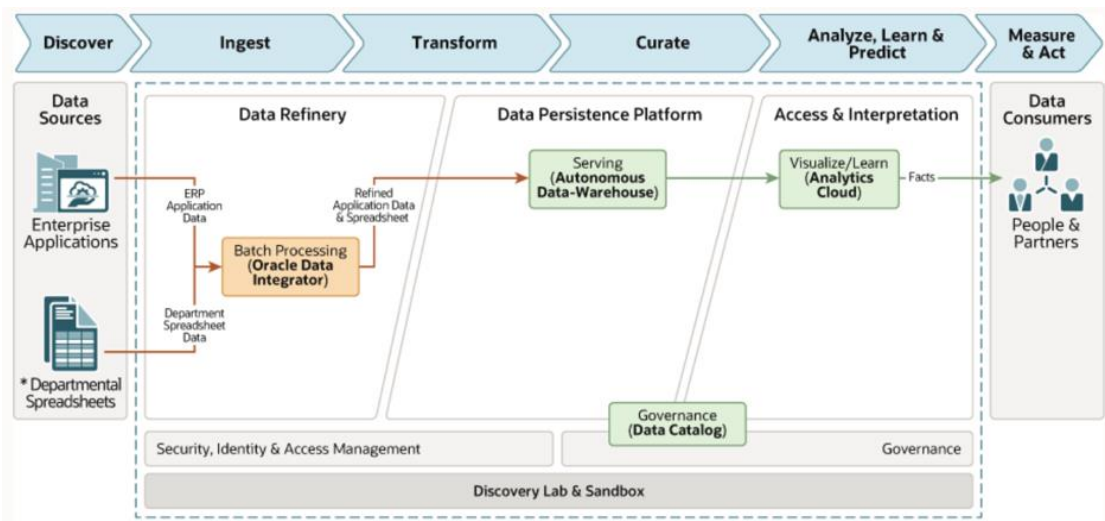


Figure 3

Starting on the left, any data source can be considered. Data from enterprise applications, from spreadsheets, third party data...etc.

Data can be refined (e.g. pre-process of raw unstructured data for analysis) before being loaded into Autonomous Database. With Oracle Data Integrator, IT can create mappings between data sources and targets to refine and cleanse the data using both ETL and E-LT methods.

Business users can also load and transform data on their own using the [Autonomous Database data tools](#) for self-service drag and drop data loading and transformation - zero coding required.

Data is persisted in Autonomous Database. The idea is indeed to create, in minutes, a departmental data warehouse to support a specific functional area, for example, finance profitability reporting, HR attrition, or marketing click-stream analytics. Each use case is self contained and supports a specifically identified group.

Analysts can immediately discover insights in Autonomous Database with built-in machine learning algorithms surfacing anomalies, outliers, and hidden patterns.

Oracle Analytics Cloud is connected to Autonomous Database, empowering analysts with modern, AI-powered, self-service analytics capabilities for data preparation, visualization, enterprise reporting, augmented analysis, and natural language processing/generation.

Additionally, data scientists can access the data directly in Autonomous Database to build, evaluate and deploy machine learning models in-database, without moving data across systems.

A Terraform code for this reference architecture is available on [GitHub](#), allowing rapid implementation.

Let's now consider in slightly more details the benefits of using Autonomous Database for analytics and data warehousing as the data persistence platform.

Autonomous Database for analytics and data warehousing

Oracle Autonomous Database for analytics and data warehousing is a fully managed service optimized for analytic workloads, including data marts, data warehouses, and data lakes. It is preconfigured with columnar format, partitioning, and large joins to accelerate the full analytics lifecycle— from extracting, loading, and transforming data to running sophisticated reports, predictions, and machine learning. With Autonomous Database, data analysts, data scientists, and business analysts can rapidly, easily, and cost- effectively discover business insights using data of any size and type.

Key reasons to choose Autonomous Database for analytics and data warehousing include:

Autonomous warehouse management

Oracle Autonomous Database for analytics and data warehousing eliminates nearly all manual administrative tasks. It automates common tasks like backup, configuration, and patching. Uniquely, it continuously automates performance tuning and autoscaling, with no downtime, human intervention, or over-provisioning. This reduces administration effort by up to 90% and enables business teams to operate without help from IT.

A complete solution with self-service data tools and analytics

Autonomous Database is the only complete solution that uses a converged database, providing built-in support for multimodel data and multiple workloads. It includes built-in self-service tools to improve the productivity of analysts, data scientists, and developers.

Available in Oracle public cloud or in customers' data centers

Unlike other cloud data warehouse services, Autonomous Database offers three deployment choices.

- Shared infrastructure—offers the full benefits of Autonomous Database for analytics and data warehousing at a lower cost.
- Dedicated infrastructure—offers isolation, improved predictability, and customer control of autonomous policies.
- Cloud@Customer—offers Autonomous Database on Oracle Exadata in customer data centers, meeting strict requirements for data sovereignty and security.

Comprehensive data and privacy protection

Autonomous Database autonomously encrypts data at rest and in motion, protects regulated data, applies all security patches, and performs threat detection. In addition, customers can easily use Oracle Data Safe to conduct user and privilege analysis, sensitive data discovery, and protection, and activity auditing. Autonomous Database makes it easy to keep data safe from outsiders and insiders.

Other components presented in the architecture include:

Oracle Data Integrator: a comprehensive data integration platform that covers all data integration requirements: from high-volume, high-performance batch loads, to event-driven, trickle-feed integration processes, to SOA-enabled data services. You can download Oracle Data Integrator from [Oracle Cloud Marketplace](#).

Oracle Analytics Cloud: Oracle Analytics Cloud empowers business analysts with modern, ML-powered, self-service analytics capabilities for data preparation, visualization, enterprise reporting, augmented analysis, and natural language processing/generation. You also get flexible service management capabilities, including fast setup, easy scaling and patching, and automated lifecycle management.

Unlike other products that require you to compromise between governed, centralized analytics, and self-service, Oracle Analytics Cloud resolves this dilemma with a single solution that incorporates machine learning into every step of the process. With Oracle Analytics Cloud, augmented analytics, self-service analytics, and governed analytics can be combined into a single solution.

[Learn more about Oracle Analytics Cloud](#)

Autonomous Database is additionally [certified with numerous third-party analytics and integration tools](#).

A REPEATABLE APPROACH FOR DEPARTMENTAL DATA WAREHOUSES

The solution we described provides IT teams with a simple, reliable, and repeatable approach to address the demands from business teams:

1. Select a specific use case with a well-defined scope, e.g. profitability analytics for finance, based on demands from lines of business
2. Deploy the solution, using the aforementioned architecture
3. Allow business teams to iterate on their own to find a model, reports, dashboards that work for them leveraging Machine Learning, independently from IT but with a secure and governed solution
4. Celebrate successes! Quick wins ensure adoption, and the word is spreading...
5. Apply the process for the next use case. It could be another functional reporting area within the same department (cost management in finance) or a different department entirely (campaign analytics in marketing or attrition analytics in HR). Autonomous Database allows you to instantly clone a departmental data warehouse with either the metadata only or the full data
6. Decommission departmental data warehouses if/when they're no longer needed and reallocate resources to new ones

This approach provides business teams with the agility they need to be successful. They can rapidly iterate and experiment on their own, without relying on IT. And they can do so within a secure, IT managed, framework.

IT teams can free themselves from the manual constraints preventing them to effectively address the demands from business teams, and they can shift their time and focus from routine database administration tasks to innovation and helping business departments achieve their goals.

CUSTOMER SUCCESS

Nabil Foods

Business Challenges

Nabil Foods manufactures a wide range of frozen and chilled products that it sells to retail, catering, and quick service restaurant customers in more than 25 countries.

In the food industry, recipes are the crown jewels, so they must be protected from external attacks and malicious users. Following a security breach, Nabil Foods needed to implement a highly secure infrastructure. The COVID-19 pandemic only amplified this need as 800 employees were required to access data and applications remotely. Additionally, Nabil Foods managers and executives felt it took too long to obtain key insights about the business. The company had to improve its data analytics infrastructure and processes, yet it lacked the specialized technical resources to do so and wanted to implement a solution that business users could rely on independently from IT.

Why Nabil Foods Chose Oracle

Oracle earned the confidence of Nabil Foods' leadership with a lift and shift of all its on-premises Oracle E-Business Suite and Microsoft applications to Oracle Cloud Infrastructure, which helped ensure security and reduced operational costs by 80%. For its data analytics project, Nabil Foods evaluated Amazon Redshift and Snowflake, but both those options required complex implementation, significant administration, and a higher total cost of ownership. Moreover, the amount of hands-on administration required raised the risk of human error that could lead to outages and security risks. Oracle Autonomous Database for analytics and data warehousing virtually eliminated the complexities of operating a data warehouse and offered a complete, integrated data and analytics solution with Oracle Analytics Cloud, delivering increased performance at lower cost.

Results

With the support of Oracle partner Xpertier, Nabil Foods implemented Oracle Autonomous Database, Data Integrator, and Analytics seven times faster than they had implemented their on-premises solution. The automated provisioning, configuring, securing, tuning, scaling, patching, backing up, and repairing of the data warehouse reduced operational costs by more than 40% while significantly increasing performance compared to on-premises. Complex financial queries that previously required five hours now complete in a few seconds.

Nabil Foods also greatly enhanced business agility. The time required to prepare monthly reports has accelerated from three weeks to three days after closing the financial periods in Oracle E-Business Suite. Business users across finance, sales, marketing, and manufacturing can access data in real-time to build multi-faceted reports and dashboards of key performance indicators such as cost of goods sold or average selling price on their own. And they can access them from anywhere on any device using

either text or voice search, without IT support. Faster response times for complex financial queries bring a better user experience and faster decision making. By leveraging Oracle Analytics Cloud's embedded machine learning capabilities, they can surface new insights, predict likely outcomes, and reduce time to market for new product innovations.

"We found Autonomous Database to be the best solution. It secures itself, manages itself, tunes itself, and is less expensive than other cloud providers." says Mohammad Salamah, Business Technology Director at Nabil Foods

[Discover](#) how many other customers are succeeding with Autonomous Database.

CONCLUSION

Rapidly getting data-driven insights has become a sine qua non condition to accelerate innovation, beat the competition and harness disruption. Processes of the past may no longer be appropriate to meet new business demands. According to Gartner, public cloud services will be essential for 90% of data and analytics innovation by 2022¹⁷. Oracle Departmental Data Warehouse is a complete solution enabling business teams to get the deep, trustworthy, data-driven insights they need to make quick decisions. Governed and secure, the solution reduces risks and complexity while increasing both IT and analysts' productivity. IT teams can additionally rely on a simple, reliable, and repeatable approach for all data analytics requests from business departments. Select a first project and try out our Oracle Departmental Data Warehouse solution!

ADDITIONAL RESOURCES

[Learn more about Oracle Departmental Data Warehouse](#)

[Get started with a Departmental Data Warehouse for free](#)

[Learn more about Autonomous Database for analytics and data warehousing](#)

[Try Autonomous Database for free](#)

[Contact one of our industry-leading experts](#)

¹⁷ <https://www.gartner.com/smarterwithgartner/gartner-top-10-trends-in-data-and-analytics-for-2020/>

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