

FORRESTER®

The Total Economic Impact™ Of The Exasol Analytics Database

Cost Savings And Business Benefits
Enabled By The Exasol Analytics Database

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Consulting Team: Varun Sedov

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ABOUT FORRESTER CONSULTING

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Executive Summary

Majority of enterprises still struggle to get tangible ROI from their investments in data warehouse and analytics solutions due to performance limitations, limited AI support, unpredictable pricing, and a lack of depth and scale required for complex workloads. As businesses become more data-driven, there is a greater need to have a resilient and scalable database platform to support time-sensitive analytics workloads and meet demanding high-performance computing challenges.

Exasol is an analytics database designed from the ground up to run analytics faster than any other database system. Born out of a scientific project aimed at solving demanding high-performance computing challenges, Exasol brings an in-memory, columnar database, massively parallel processing (MPP) architecture, and auto-tuning to turbocharge the data warehouse. Exasol offers a complete choice of deployment that allows enterprises to boost analytics performance from anywhere: on-premises, across multiple clouds, or a hybrid environment.

Exasol commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying the Exasol Analytics Database.¹ The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of deploying Exasol in their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed four representatives with experience using the Exasol

KEY STATISTICS



Return on investment (ROI)

320%



Net present value (NPV)

\$3.61M

Analytics Database. For the purposes of this study, Forrester aggregated the interviewees' experiences and combined the results into a single [composite organization](#) that is a financial services organization with 2 million customers and revenue of \$2 billion per year, and deploys a raw database of 10 terabytes (TB).

Prior to using Exasol, these interviewees noted how their organizations struggled with slow data processing, high costs, and performance issues with legacy database solutions. The organizations used a mix of in-house legacy systems and point solutions that lacked the deep analytical capabilities and scale needed to support a multitude of business use cases, such as business intelligence, data services and application acceleration. The interviewees also mentioned that their database administrators (DBAs) spent a significant proportion of their time on tedious manual tasks.

Improved database administration effort by

80%



After the investment in Exasol, the interviewees reported a significant increase in database performance especially in real-time data loading, query response, and large-scale concurrency. The automation of manual labor-intensive tasks like query optimization enabled the reallocation of data teams to focus on higher value and business critical projects.

KEY FINDINGS

Quantified benefits. Three-year, risk-adjusted present value (PV) quantified benefits for the composite organization include:

- **Improved database performance resulting in savings worth \$1.29 million.** Exasol database is built on in-memory columnar architecture that supports MPP and a flexible cluster configuration. This results in a high degree of analytics performance and concurrency, which improves the speed in which data analysts can deliver insights and facilitates data democratization. More users can run queries to enable faster decision-making and better outcomes for the business. This improvement also encourages the ability to bring business critical applications and use cases to market quicker.
- **Improved operational efficiency worth \$1.71 million.** Exasol automates a lot of the manual tasks and processes (e.g., query optimization, including index creation and management). This allows organizations to free up the DBAs' time for business critical activities of higher value, and database performance improved up to 80%. This reduces database administration effort and avoids additional database team effort.
- **Avoided cost of tooling and infrastructure worth more than \$895,000.** Exasol provides a full spectrum of capabilities that are built into the core platform. This includes resource pooling, monitoring, full virtual schema support for easy connectivity and a single view of data, and enterprise class security and encryption credentials with row level security and role based

access control. This eliminates the need to invest in third-party tools and reduces licensing and maintenance costs.

- **Reduced cost of development and integration worth over \$836,000.** Exasol has a very open, flexible, and extensible architecture which could be readily integrated into the existing data warehouse as an analytics layer without any significant administrative overheads. It also comes with several pre-built connectors and virtual schema support for existing tools or systems for rapid integration without the need for expensive interfaces or data engineering development effort.

Unquantified benefits. Benefits that provide value for the composite organization but are not quantified in this study include:

- **Flexible deployment options.** Exasol can be deployed anywhere, from anywhere: on-premises, across multiple clouds, or in a hybrid environment. This flexibility minimizes data gravity, egress charges, and data sovereignty impacts. Additionally, Exasol can augment legacy database environments as an acceleration layer. This enables a cost-effective method to drive performance improvements by modernizing existing infrastructure with minimal change management and resourcing effort. This flexibility is valuable as it enables fast performance, cost efficiencies, ease of use, and choice of deployment for diverse analytics use cases.
- **Predictable, consumption-based pricing and bring-your-own-license (BYOL) model.** Exasol offers a fixed price model per TB to allow iterations, innovation, and experimentation with data analysis without worrying about what the final fees would be.
- **Greater agility and faster time-to-market through application and service acceleration.** Exasol uses an in-memory columnar architecture

that enables real-time data loading, faster query response, scaling through separation of storage and compute, and large-scale concurrency. This allows business users to process and query data at petabyte scale and run complex queries in-memory, and hence deliver higher speed to insights and application acceleration.

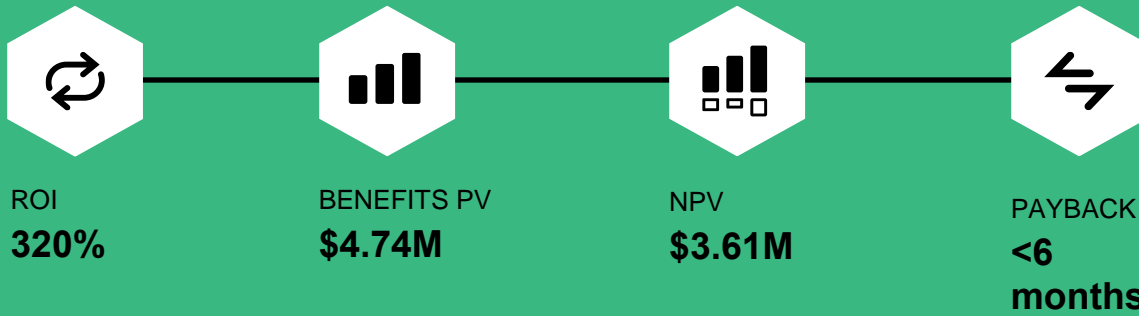
- **Support for the execution of data science and machine learning.** Exasol provides native support for a wide range of popular programming languages. Coupled with the user-defined function (UDF) framework, this allows data scientists to run algorithms using their preferred language, then run the models on a parallel, in-memory analytics engine to achieve rapid results at scale.
- **Increased ability to meet compliance regulations.** Some mission-critical workloads like fraud detection, risk analysis and compliance reporting are very time sensitive. Exasol can provide the scale and level of performance needed to support these time-critical analytics workloads — thereby preventing potentially catastrophic outcomes like risk exposure, steep fines, and customer churn.

Costs. Three-year, risk-adjusted PV costs for the composite organization include:

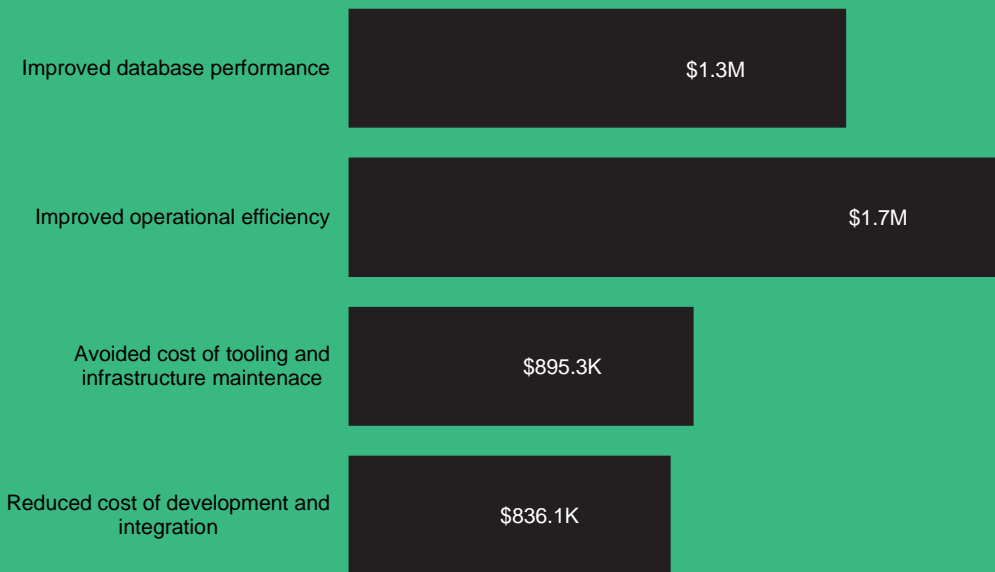
- **Exasol licensing fees totaling \$914,000.** Exasol offers choice of licensing to balance cost with performance and scalability. Exasol also uses storage-based licensing.
- **Implementation, maintenance, and training costs totaling \$213,000.** Implementation costs may vary depending on the choice of deployment as Exasol can be deployed on-premise or across multiple clouds. This includes the cost of implementation, ongoing maintenance costs, and training costs over a three-year period.

The representative interviews and financial analysis found that a composite organization experiences

benefits of \$4.74 million over three-years versus costs of \$1.13 million, adding up to a net present value (NPV) of \$3.61 million and an ROI of 320%.



Benefits (Three-Year)



“In less than a year we have more than doubled our business intelligence operations, and it works perfectly, no performance issues, faster response times, all thanks to Exasol.”

— Head of business intelligence and analytics, financial services

TEI FRAMEWORK AND METHODOLOGY

From the information provided in the interviews, Forrester constructed a Total Economic Impact™ framework for those organizations considering an investment in the Exasol Analytics Database.

The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact that the Exasol Analytics Database can have on an organization.

DISCLOSURES

Readers should be aware of the following:

This study is commissioned by Exasol and delivered by Forrester Consulting. It is not meant to be used as a competitive analysis.

Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the study to determine the appropriateness of an investment in the Exasol Analytics Database.

Exasol reviewed and provided feedback to Forrester, but Forrester maintains editorial control over the study and its findings and does not accept changes to the study that contradict Forrester's findings or obscure the meaning of the study.

Exasol provided the customer names for the interviews but did not participate in the interviews.



DUE DILIGENCE

Interviewed Exasol stakeholders and Forrester analysts to gather data relative to the Exasol Analytics Database.



INTERVIEWS

Interviewed four representatives at organizations using the Exasol Analytics Database to obtain data with respect to costs, benefits, and risks.



COMPOSITE ORGANIZATION

Designed a composite organization based on characteristics of the interviewees' organizations.



FINANCIAL MODEL FRAMEWORK

Constructed a financial model representative of the interviews using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the interviewees.



CASE STUDY

Employed four fundamental elements of TEI in modeling the investment impact: benefits, costs, flexibility, and risks. Given the increasing sophistication of ROI analyses related to IT investments, Forrester's TEI methodology provides a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

The Exasol Customer Journey

Drivers leading to the Exasol Analytics Database investment

| Interviews | | | |
|---|--|---------------|---------------|
| Role | Industry | Region | Revenue |
| Head of data warehouse | Retail | EMEA | \$67 million |
| Information management and technology (IM&T) BI manager | Healthcare | EMEA | \$127 million |
| Head of BI and analytics | Financial services | EMEA | \$2.7 billion |
| Senior manager of data engineering | Agriculture research and development (R&D) | North America | \$15 billion |

KEY CHALLENGES

The interviewees noted how their organizations struggled with common challenges, including:

- **Database performance lacked the analytical depth and scale needed for complex workloads.** Existing legacy and point solutions did not scale well as business needs increased. Ad hoc queries required lots of tuning and workarounds to execute — the analytics teams were often required to put other projects on hold to support them.
- **Managing the on-premises legacy database environments was time-consuming.** Interviewees felt their DBAs and IT staff spent too much time planning, provisioning, deploying, and maintaining the legacy database environments which spanned custom applications, packaged applications, and supporting staging and processing activities like extract, transform, and load (ETL), as well as development and testing activities. It was time-consuming to perform upgrades, backups, tuning, security patches, security optimizations, and other tasks that put a heavy burden on staff. Interviewees sought to reduce the growing efforts and direct costs of maintaining increasingly complex underlying

infrastructure and the expanding volume and variety of data.

- **DBAs and IT staff lacked time for higher-value initiatives.** The tedious administrative tasks and operational load prevented DBAs and IT staff from addressing more strategic business needs. Interviewees said their organizations wanted to free up their DBAs and IT resources to focus on higher-value projects, new business initiatives, and strategic priorities (e.g., innovation) by reducing the heavy burden of day-to-day database management.

“Our previous solution was not scalable, and we realized our DBAs are spending a lot of time doing admin tasks like creating or maintaining indexes and queries which was not sustainable.”

Head of data warehouse, retail

SOLUTION REQUIREMENTS/INVESTMENT OBJECTIVES

The interviewees' organizations searched for a solution that could:

- Support modern high compute analytics use cases.
- Provide flexible deployment options — on-premise and across multiple clouds.
- Offer a predictable, consumption-based pricing and BYOL approach.
- Be scalable and resilient.
- Integrate well with the existing data warehouse ecosystem with minimal overheads.

COMPOSITE ORGANIZATION

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an ROI analysis that illustrates the areas financially affected. The composite organization is representative of the four interviewees, and it is used to present the aggregate financial analysis in the next section. The composite organization has the following characteristics:

Description of composite. The composite organization is a global, multibillion-dollar financial services organization with a strong brand, global operations, and a large customer base of about 2 million customers and annual revenue of \$2 billion. Prior to implementing Exasol, the composite had a legacy on-premises database solution.

Deployment characteristics. The composite organization has implemented a 10TB raw Exasol analytics database on-premises to support multiple use cases including BI acceleration (e.g., visualization, reporting), anti-money laundering (AML) acceleration, data services, application acceleration and predictive data analytics.

Key Assumptions

- **Financial services organization**
- **\$2 billion in annual revenue**
- **Legacy on-premises database solution**
- **2 million customers**
- **10TB raw analytics database with Exasol**

Analysis Of Benefits

■ Quantified benefit data as applied to the composite.

| Total Benefits | | | | | | | |
|--------------------------------|--|---------|-------------|-------------|-------------|-------------|---------------|
| Ref. | Benefit | Initial | Year 1 | Year 2 | Year 3 | Total | Present Value |
| Atr | Improved database performance | \$0 | \$519,792 | \$519,792 | \$519,792 | \$1,559,376 | \$1,292,646 |
| Btr | Improved operational efficiency | \$0 | \$689,520 | \$689,520 | \$689,520 | \$2,068,560 | \$1,714,734 |
| Ctr | Avoided cost of tooling and infrastructure maintenance | \$0 | \$360,000 | \$360,000 | \$360,000 | \$1,080,000 | \$895,267 |
| Dtr | Reduced cost of development and integration | \$0 | \$336,211 | \$336,211 | \$336,211 | \$1,008,634 | \$836,107 |
| Total benefits (risk-adjusted) | | \$0 | \$1,905,523 | \$1,905,523 | \$1,905,523 | \$5,716,570 | \$4,738,754 |

IMPROVED DATABASE PERFORMANCE

Evidence and data. All the interviewees reported significantly improved database performance after their organizations implemented Exasol. They cited improvements in the following areas:

- Interviewees mentioned that Exasol outperforms prior solutions in terms of pure query performance and peak load performance. The IM&T BI manager for a healthcare firm said: “The performance of Exasol is impressive under any load conditions but it is particularly impressive when performing an update on complex data sets which we have to do often here. What used to take almost an hour now takes less than a minute, so my team can spend more time analyzing and optimizing the results rather than waiting for the update to run.”
- All interviewees noted a significant improvement in query performance. The senior manager for data engineering at an agriculture R&D firm said: “We work with extremely complex compute models involving multiple data sources and thousands of complex queries to support our ongoing DNA sequencing and R&D work. The

query performance [with Exasol] is at least 40% to 50% faster than anything else we have seen during the proof of concept, and the peak performance is almost double — very impressive.”

- Most interviewees cited auto-scaling and concurrency amongst the most valuable capabilities within Exasol. The head of data warehouse for a retail commerce organization shared: “Over the last four to five years, our business grew at an unprecedented scale and our previous database solution did not scale well at all. We conducted a proof of concept with five other database solutions and found that Exasol was not only the fastest, but it also scaled easily to accommodate any data load and integrate easily within our analytics ecosystem.”
- Faster database performance and automation enhanced business efficiency. Data analysts could respond to requests from the business sooner, allowing them to fail fast, and decreasing time-to-market for new initiatives.

Modeling and assumptions. Forrester assumes the following about the composite organization:

- It employs 30 data scientists or data analysts who run queries for about 4 hours each working day. The remaining time is typically spent on analysis and reporting.
- There is up to 80% efficiency improvement for data analysts due to faster query performance and less time spent on running updates or tuning and automating manual tasks.
- There is a 50% productivity capture.
- The fully burdened annual salary is calculated as 1.35 times of the base salary to account for employer’s costs (e.g., benefits, taxes, overheads).
- Each employee works 2,080 hours annually.

Risks. Factors that could impact the realization of this benefit include the following:

- The efficiency improvement for the analyst may vary with the enterprise.

- The database solution or technology stack that was in use prior to implementing Exasol.
- The amount of productivity captured and utilized elsewhere.

Results. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV of \$1.29 million.

“In the last couple of years, we have seen a significant improvement in our ability to bring projects to live more rapidly, saving on an average three to five months per project.”

Head of BI and analytics, financial services

| Improved Database Performance | | | | | |
|--------------------------------------|--|-----------------|--|-----------|-----------|
| Ref. | Metric | Source | Year 1 | Year 2 | Year 3 |
| A1 | Number of data scientists, BI analysts, or data analysts | Composite | 30 | 30 | 30 |
| A2 | Hours spent on database queries daily | Assumption | 4 | 4 | 4 |
| A3 | Hourly fully burdened salary per data analyst BI analyst | Assumption | \$49 | \$49 | \$49 |
| A4 | Improvement in database performance | Interviews | 80% | 80% | 80% |
| A5 | Reduction in hours spent on running queries | B2*B4 | 3.2 | 3.2 | 3.2 |
| A6 | Productivity capture | TEI standard | 50% | 50% | 50% |
| At | Improved database performance | B1*B3*B5*260*B6 | \$611,520 | \$611,520 | \$611,520 |
| | Risk adjustment | ↓15% | | | |
| Atr | Improved database performance (risk-adjusted) | | \$519,792 | \$519,792 | \$519,792 |
| Three-year total: \$1,559,376 | | | Three-year present value: \$1,292,646 | | |

IMPROVED OPERATIONAL EFFICIENCY

Evidence and data. Interviewees said that Exasol significantly reduced database administration effort, thus enabling them to work on tasks of higher value. Automating manual tasks (e.g., indexing and query optimization) improved operational efficiency of the database teams and led to significant savings for the composite organization.

- DBAs spent time on various ongoing management and maintenance tasks — database backups and performance tuning were particularly burdensome.
- The level of operational support and administration effort required varied with the technology stack used. As the IM&T BI manager for a healthcare firm noted, the administration required on the SQL stack was much higher prior to implementing Exasol, and their overall administration effort reduced by as much as 70 to 80% after implementing Exasol.
- The senior manager of data engineering at an agriculture R&D company said: “Exasol is really low maintenance. We have moved from at least two FTEs from the previous data warehouse to 20% of an FTE currently and this has been made possible due to all the smart automation capabilities built into Exasol like self-tuning, auto-indexing and auto-backups. There are fewer batch process and batch jobs so less performance issues as compared to a spend of around \$500,000 a year just on maintenance for another solution.”

Modeling and assumptions. Forrester assumes the following about the composite organization:

- There are 25 FTEs in the database team.
- Individuals in the DBA team spend approximately 6 hours a day on administrative tasks. Additional hours are spent typically on planning, training, reporting, and meetings.
- Exasol helps the composite organization save 80% of the time spent on database administration efforts.
- There is a 50% of productivity capture, allowing reallocation of DBA effort into more value-added work (e.g., critical project support, data interpretation and analysis).
- Fully burdened annual salary is calculated as 1.35 times of base salary to account for employer’s costs (e.g., benefits, taxes, overheads).
- Each employee works 2,080 hours annually.

Risks. Factors that could impact the realization of this benefit include the following:

- The maturity of an organization’s database and analytics operations prior to the investment.
- The database solution or technology stack that was in use prior to Exasol.
- The amount of productivity captured and utilized elsewhere.

Results. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV of \$1.7 million.

| Improved Operational Efficiency | | | | | |
|--------------------------------------|---|-----------------|--|-----------|-----------|
| Ref. | Metric | Source | Year 1 | Year 2 | Year 3 |
| B1 | Number of DBAs prior to Exasol | Interviews | 25 | 25 | 25 |
| B2 | Hours spent on database administration daily | Interviews | 6 | 6 | 6 |
| B3 | Hourly DBA fully burdened salary | Assumption | \$52 | \$52 | \$52 |
| B4 | Reduction in administration effort | Interviews | 80% | 80% | 80% |
| B5 | Reduction in hours spent on database administration | A2*A4 | 4.8 | 4.8 | 4.8 |
| B6 | Productivity captured | TEI standard | 50% | 50% | 50% |
| Bt | Improved operational efficiency | A1*A3*A5*260*A6 | \$811,200 | \$811,200 | \$811,200 |
| | Risk adjustment | ↓15% | | | |
| Btr | Improved operational efficiency (risk-adjusted) | | \$689,520 | \$689,520 | \$689,520 |
| Three-year total: \$2,068,560 | | | Three-year present value: \$1,714,734 | | |

AVOIDED COST OF TOOLING AND INFRASTRUCTURE MAINTENANCE

Evidence and data. Interviewees noted that they avoided having to procure or maintain multiple tools after using Exasol, which reduced their technical debt. Exasol has inbuilt capabilities like monitoring, resource pooling, and a host of pre-built connectors integrated within the platform, thus mitigating the need to invest in additional third-party tools and infrastructure.

A senior manager for data engineering at an agriculture R&D firm shared: “We [previously] relied on multiple tools and point solutions like monitoring, security, encryption, resource pooling, and spent a few hundred thousand dollars each year just on licensing. Exasol comes with all of these capabilities already built into the platform, which translates into real savings for the business.”

“Previously, we’d have to implement at least five to six separate point solutions to achieve the same level of functionality that we get pretty much straight out of the box with Exasol.”

IM&T BI manager, healthcare

Modeling and assumptions. Forrester assumes the following about the composite organization:

- It avoids maintenance of four different tools at a cost of \$100,000 per year.

Risks. Factors that could impact the realization of this benefit include the following:

- The annual operational infrastructure cost.

- The number of third-party tools and solutions needed depending on business requirements.
- The licensing and maintenance costs for the tools and services.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of \$895,000.

Avoided Cost Of Tooling And Infrastructure Maintenance

| Ref. | Metric | Source | Year 1 | Year 2 | Year 3 |
|--------------------------------------|--|------------|--|-----------|-----------|
| C1 | Number of legacy point solution tools | Interviews | 4 | 4 | 4 |
| C2 | Average annual maintenance costs | Interviews | \$100,000 | \$100,000 | \$100,000 |
| Ct | Avoided cost of tooling and infrastructure maintenance | C1*C2 | \$400,000 | \$400,000 | \$400,000 |
| | Risk adjustment | ↓10% | | | |
| Ctr | Avoided cost of tooling and infrastructure maintenance (risk-adjusted) | | \$360,000 | \$360,000 | \$360,000 |
| Three-year total: \$1,080,000 | | | Three-year present value: \$895,267 | | |

REDUCED COST OF DEVELOPMENT AND INTEGRATION

Evidence and data. The interviewees mentioned that one of Exasol’s key differentiators was the ease with which it can be integrated into their existing analytics ecosystem. The virtual schemas and a host of built-in connectors and an adaptable language framework to provide a single view of their data offered by Exasol makes this possible.

- The head of BI and analytics at a financial institution said, “Exasol has virtual schemas pre-built connectors with most of the common databases available in the market, which allows us to fetch meta data from a variety of different data sources with minimal overheads.”
- The senior manager for data engineering at an agriculture R&D firm said, “Exasol provides native support for a wide range of programming languages and a well-defined user-defined function framework which makes it easy for our data scientists to focus on programming logic and

executing the models rather than worry about the language.”

Modeling and assumptions. Forrester assumes the following about the composite organization:

- It spends 5,000 hours in database and programming development efforts every year. With Exasol, the organization can save 40% in development effort.
- It develops around 12 interfaces each year at an average of 90 days of FTE effort. The composite can save 60% of this effort using Exasol’s pre-built connectors and virtual schema support.
- Fully burdened annual salary is calculated as 1.35 times of base salary to account for employer’s costs (e.g., benefits, taxes, overheads).
- Each employee works 2,080 hours annually.

Risks. Factors that could impact the realization of this benefit include the following:

- The number of interfaces.
- The potential savings in development effort.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of \$836,000.

Reduced Cost Of Development And Integration

| Ref. | Metric | Source | Year 1 | Year 2 | Year 3 |
|--------------------------------------|---|---------------------------------|--|-----------|-----------|
| D1 | Hours of database development effort yearly | Interviews | 5000 | 5000 | 5000 |
| D2 | Average hourly cost of custom development | Assumption | \$52 | \$52 | \$52 |
| D3 | Savings in development effort | Interviews | 40% | 40% | 40% |
| D4 | Subtotal: Development effort saved | $D1 \cdot D2 \cdot D3$ | \$104,000 | \$104,000 | \$104,000 |
| D5 | Average yearly integration components | Interviews | 12 | 12 | 12 |
| D6 | Average hourly integration effort | Assumption | 720 | 720 | 720 |
| D7 | Average daily cost of custom development | Assumption | \$52 | \$52 | \$52 |
| D8 | Savings in integration effort | Interviews | 60% | 60% | 60% |
| D9 | Subtotal: Integration effort saved | $D5 \cdot D6 \cdot D7 \cdot D2$ | \$269,568 | \$269,568 | \$269,568 |
| Dt | Reduced cost of development and integration | $D4 + D9$ | \$373,568 | \$373,568 | \$373,568 |
| | Risk adjustment | ↓10% | | | |
| Dtr | Reduced cost of development and integration (risk-adjusted) | | \$336,211 | \$336,211 | \$336,211 |
| Three-year total: \$1,008,634 | | | Three-year present value: \$836,107 | | |

UNQUANTIFIED BENEFITS

Interviewees mentioned the following additional benefits that their organizations experienced but were not able to quantify:

- **Flexible deployment options.** Exasol can be deployed on-premises, in multiple clouds or in a hybrid environment. When asked about their choice of deployment, some of the interviewees indicated that they did not have a choice as local regulations required their organizations to have their data on-premises or in a hybrid setting. Exasol provides this flexibility for the enterprise to host and deploy their data as per their business and regulatory needs. This allowed them to minimize concerns around data sovereignty, data gravity and egress charges.

The head of BI and analytics for a financial services institution said: “We have multiple data sources and workloads running in a hybrid cloud setting as well as downstream user services like BI and analytics hosted on [cloud computing platforms]. We needed a solution that can seamlessly connect to our hybrid ecosystem without much development effort, and we found Exasol to be a perfect fit.”

- **Greater agility and faster time-to-market through application and service acceleration.**

Interviewees mentioned how the improved database performance with Exasol enabled their business to become more efficient. This is attributed to the following:

- **Data democratization.** The head of data engineering at an agriculture R&D firm said: “Through the use of Exasol, we have seen an almost 300% increase in the number of users [for an analytics platform] in the last year and each day we are getting new requests for data and reports. This level of data democratization is unprecedented and has been made possible by Exasol.”

- **Concentrate on business outcomes.** The interviewees highlighted that the high degree of automation built into the core platform and the ease of integration using virtual schemas and pre-built connectors meant that enterprise teams could concentrate on optimizing business outcomes and work on critical projects. This reduces time wastage on mundane administrative work and the tuning of queries. Business can thus cut down on their development time and launch projects and products into the market quicker.

- **Predictable, consumption-based pricing model.** Exasol offers a fixed consumption-based pricing model per TB, no matter the deployment option chosen. Exasol also allows for BYOL to allow decision-makers to iterate, innovate and experiment with their organizations’ data analysis without worrying about the final fees.
- **Support for data science and machine learning execution.** Exasol provides a completely adaptable language framework, and makes it easy to add libraries to the built-in programming languages or add new language containers. It has native support for a wide range of popular programming languages (e.g., R, Python, Java, and Lua) and allows the compilation and running of data science models directly in the database. It also has a fully defined user-defined function (UDF) framework which allows data scientists to run algorithms using their preferred language, then run the models on a parallel, in-memory analytics engine to achieve rapid results at scale.
- **Increased ability to meet compliance regulations.** As enterprises become more data driven, a significant number of business-critical processes are entirely reliant on having timely and accurate data-based insights. Interviewees

mentioned that some of their mission-critical workloads (e.g., fraud detection, row level security, access-based controls, risk analysis, and compliance reporting) are very time sensitive. Exasol can provide the scale and level of performance needed to support these time-sensitive analytics workloads, thereby preventing potentially catastrophic outcomes like risk exposure, steep fines, and customer churn.

FLEXIBILITY

The value of flexibility is unique to each customer. There are multiple scenarios in which a customer might implement Exasol and later realize additional uses and business opportunities. Primarily, interviewees highlighted future potential value with migrating their analytics ecosystem to the cloud. Exasol can seamlessly integrate with critical cloud services such as data ingestion, data lake, identity and access control, as well as various downstream BI and analytics services in various cloud platforms. Aside from the public cloud, Exasol offers ExaCloud, a fully-managed database-as-a-service offering in Exasol's private cloud.

Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in [Appendix A](#)).

Analysis Of Costs

■ Quantified cost data as applied to the composite

| Total Costs | | | | | | | |
|-------------|---|----------|-----------|-----------|-----------|-------------|---------------|
| Ref. | Cost | Initial | Year 1 | Year 2 | Year 3 | Total | Present Value |
| Etr | Exasol subscription fee | \$0 | \$367,500 | \$367,500 | \$367,500 | \$1,102,500 | \$913,918 |
| Ftr | Implementation, maintenance, and training costs | \$62,832 | \$61,116 | \$60,086 | \$60,086 | \$244,121 | \$213,194 |
| | Total costs (risk-adjusted) | \$62,832 | \$428,616 | \$427,586 | \$427,586 | \$1,346,621 | \$1,127,112 |

EXASOL SUBSCRIPTION FEE

Evidence and data. Interviewees told Forrester that Exasol pricing was based primarily on the storage volumes.

Modeling and assumptions. Forrester assumes the following about the composite organization:

- It has a 10TB raw analytics database with Exasol, with an average fee per TB at \$35,000.

Risks. Factors that could potentially impact the fees paid to Exasol include the following:

- Potential increases in the unit pricing per storage volume.
- A change in the way fees are charged.

Results. To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV of \$914,000.

Acceleration Layer

Exasol can be augmented with legacy database infrastructure. This acceleration layer prevents an organization from having to scale the underlying infrastructure to a more expensive tool. This minimizes change management efforts and is a more cost-effective implementation of Exasol. The implementation effort and ongoing support remains the same (i.e., 0.5 FTE) as the composite organization in this case study. The subscription fee for a 2TB deployment is \$69,500 per annum.

| Exasol Subscription Fee | | | | | | |
|--------------------------------------|---|-----------|--|-----------|-----------|-----------|
| Ref. | Metric | Source | Initial | Year 1 | Year 2 | Year 3 |
| E1 | Size of database (TB) | Composite | 0 | 10.00 | 10.00 | 10.00 |
| E2 | Average annual fee per TB | Exasol | \$0 | \$35,000 | \$35,000 | \$35,000 |
| Et | Exasol subscription fee | E1*E2 | \$0 | \$350,000 | \$350,000 | \$350,000 |
| | Risk adjustment | ↑5% | | | | |
| Etr | Exasol subscription fee (risk-adjusted) | | \$0 | \$367,500 | \$367,500 | \$367,500 |
| Three-year total: \$1,102,500 | | | Three-year present value: \$913,918 | | | |

IMPLEMENTATION, MAINTENANCE, AND TRAINING COSTS

Evidence and data. Implementation costs can vary depending on how Exasol is deployed — on-premises, in the cloud, on top of existing databases, or in a hybrid setting.

Modeling and assumptions. Forrester assumes the following about the composite organization:

- It deploys Exasol on-premises. The implementation includes time allocated for hardware setup and coordination, setting up and loading jobs, checking data, and migrating reports.
- The implementation requires 0.5 FTEs for the initial implementation, and in Years 1, 2, and 3 for further maintenance and troubleshooting.
- DBAs will also require some training and change management support to use Exasol. Due to the level of automation Exasol provides, we assume 20 hours in total in initial implementation across 3 DBAs, that reduces to 10 hours in Year 1, and subsequently 4 hours per year.
- Fully burdened annual salary is calculated as 1.35 times of base salary to account for employer’s costs (e.g., benefits, taxes, overheads).

- Each employee works 2,080 hours annually.

Risks. The risks of fluctuations in this cost are relatively high. Factors that could potentially impact the fees paid to Exasol include the following:

- The salaries of an organization’s database staff.
- Differences in the deployment and implementation costs.
- Level of training efforts required for DBAs.

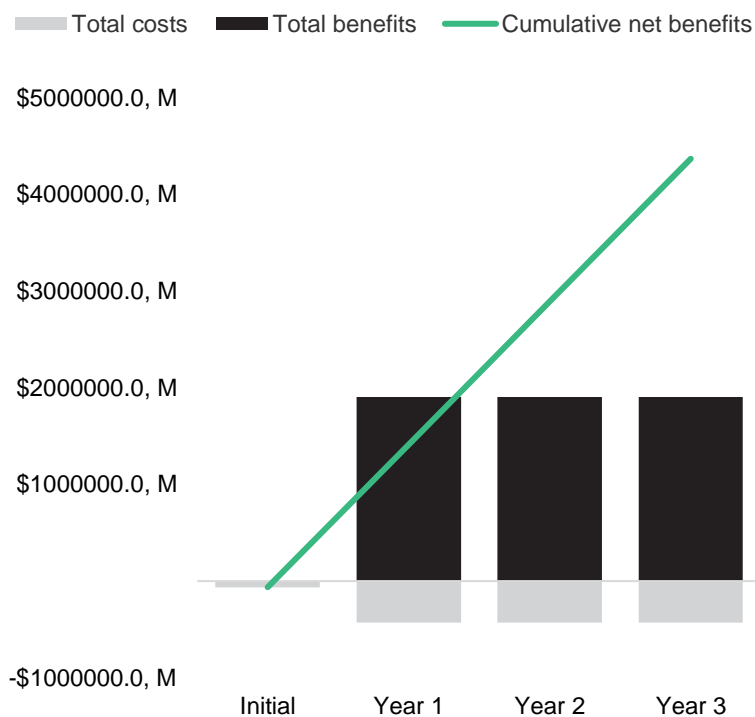
Results. To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV of \$213,000.

| Implementation, Maintenance, And Training Costs | | | | | | |
|--|---|---------------|--|---------------|---------------|---------------|
| Ref. | Metric | Source | Initial | Year 1 | Year 2 | Year 3 |
| F1 | FTEs needed for implementation | Interviews | 0.5 | 0 | 0 | 0 |
| F2 | FTEs needed for regular maintenance and troubleshooting | Interviews | 0 | 0.5 | 0.5 | 0.5 |
| F3 | Fully burdened salary per DBA | Assumption | \$108,000 | \$108,000 | \$108,000 | \$108,000 |
| F4 | Implementation costs | F1*F3 | \$54,000 | \$0 | \$0 | \$0 |
| F5 | Ongoing maintenance costs | F2*F3 | \$0 | \$54,000 | \$54,000 | \$54,000 |
| F6 | Number of DBAs to be trained | Interviews | 3 | 3 | 3 | 3 |
| F7 | Number of hours of training needed | Composite | 20 | 10 | 4 | 4 |
| F8 | Hourly fully burdened salary per DBA | Assumption | \$52 | \$52 | \$52 | \$52 |
| F9 | Training costs | F6*F7*F8 | \$3,120 | \$1,560 | \$624 | \$624 |
| Ft | Implementation, maintenance, and training costs | F4+F5+F9 | \$57,120 | \$55,560 | \$54,624 | \$54,624 |
| | Risk adjustment | ↑10% | | | | |
| Ftr | Implementation, maintenance, and training costs (risk-adjusted) | | \$62,832 | \$61,116 | \$60,086 | \$60,086 |
| Three-year total: \$244,121 | | | Three-year present value: \$213,194 | | | |

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)



The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.

These risk-adjusted ROI, NPV, and payback period values are determined by applying risk-adjustment factors to the unadjusted results in each Benefit and Cost section.

Cash Flow Analysis (Risk-Adjusted Estimates)

| | Initial | Year 1 | Year 2 | Year 3 | Total | Present Value |
|-------------------------|------------|-------------|-------------|-------------|---------------|---------------|
| Total costs | (\$62,832) | (\$428,616) | (\$427,586) | (\$427,586) | (\$1,346,621) | (\$1,127,112) |
| Total benefits | \$0 | \$1,905,523 | \$1,905,523 | \$1,905,523 | \$5,716,570 | \$4,738,754 |
| Net benefits | (\$62,832) | \$1,476,907 | \$1,477,937 | \$1,477,937 | \$4,369,949 | \$3,611,642 |
| ROI | | | | | | 320% |
| Payback period (months) | | | | | | <6 |

Appendix A: Total Economic Impact

Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

TOTAL ECONOMIC IMPACT APPROACH

Benefits represent the value delivered to the business by the product. The TEI methodology places equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization.

Costs consider all expenses necessary to deliver the proposed value, or benefits, of the product. The cost category within TEI captures incremental costs over the existing environment for ongoing costs associated with the solution.

Flexibility represents the strategic value that can be obtained for some future additional investment building on top of the initial investment already made. Having the ability to capture that benefit has a PV that can be estimated.

Risks measure the uncertainty of benefit and cost estimates given: 1) the likelihood that estimates will meet original projections and 2) the likelihood that estimates will be tracked over time. TEI risk factors are based on "triangular distribution."

The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1 that are not discounted. All other cash flows are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations in the summary tables are the sum of the initial investment and the discounted cash flows in each year. Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.



PRESENT VALUE (PV)

The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total NPV of cash flows.



NET PRESENT VALUE (NPV)

The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made unless other projects have higher NPVs.



RETURN ON INVESTMENT (ROI)

A project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits less costs) by costs.



DISCOUNT RATE

The interest rate used in cash flow analysis to take into account the time value of money. Organizations typically use discount rates between 8% and 16%.



PAYBACK PERIOD

The breakeven point for an investment. This is the point in time at which net benefits (benefits minus costs) equal initial investment or cost.

Appendix B: Endnotes

¹ Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

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