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Considering "buy versus build" for data operations platforms
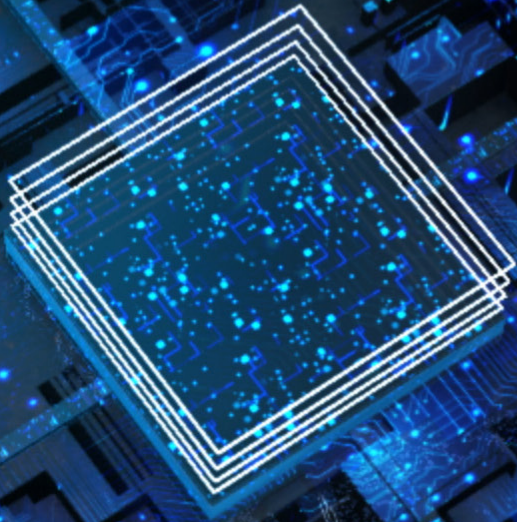
Contents

Introduction

The term "digital transformation" has been repeated so much in the business world, it can now be considered a cliché.

Enterprise technology trends such as software-driven automation, data-driven applications, and artificial intelligence technologies, are aggressively introducing opportunities for both new revenue channels and lowering operating costs.

To take advantage of these opportunities, the modern enterprise is highly dependent on data. And, of course, the amount of data with which enterprises have to grapple is growing at an exponential rate. Software is a key element in the infrastructure that keeps this flow of data circulating throughout the organization. With data operations now a crucial element for enterprises, developing and maintaining the software platforms that support data operations is mission critical.

As enterprises implement data operations infrastructure, data operations platforms are increasingly becoming more complicated. The cybersecurity and operational burdens placed on these systems are also multiplying as enterprises become more distributed. Not only is corporate data distributed across multiple data centers and clouds, the amount of data held at the edge is expected to rise. Enterprises also have to share their data, both internally and externally, in complicated ecosystems while complying with an increasing number of data privacy and other regulations. On top of this, the COVID-19 crisis combined with the near ubiquity of mobile computing devices means that enterprises have to provide access to their data to an increasingly distributed workforce.

With this in mind, enterprises need to consider the ever-green question of "buy versus build" as they make decisions on how to implement their data operations platforms. The choice is between building an end-to-end solution using internal resources or purchasing an off-the-shelf technology solution suited to their needs. This is an extremely important decision, since data operations platforms underpin the long-lasting digital architectures that are likely to drive business operations for much of the remaining part of the 21st century.

This paper will explore considerations related to making a "buy versus build" decision for data operations platforms.

Some drivers of software costs

According to Gartner, in 2021 worldwide IT spending will reach a total of $4.1 trillion, a growth rate of 8.4% compared to 2020. Of that total, $516.8 billion will come from spending on enterprise software.

The growth rate for enterprise software spending is 10.8%, the second highest growth rate of the IT categories tracked by Gartner.[1] This rapid growth of spending on software isn't surprising in light of an increasingly decentralized workforce and the adoption of modern digital processes.

IT is now an integral part of any enterprise function. This includes customer support as many customers now demand that their suppliers share their data flows. Enterprise technologies are also on an exponential growth curve. Technology trends like software-driven automation, data-driven applications, and artificial intelligence (AI) represent opportunities for companies to find new markets and revenue channels as well as lowering operating costs. These same trends, however, increase the complexity of IT and software projects.

Increases in IT and software spending is also driven by the rapid growth of data held by enterprises. In 2020, the amount of data held by enterprises was a tad over 1 petabyte. That number is expected to grow to 2.02 petabytes in 2022, an amazing growth rate of 42.2% (Figure 1). The distribution of where data is physically held also demonstrates the complexity of modern software projects. In 2022, on-premises data centers are forecasted to continue to hold the most amount of data at 570 terabytes. Cloud and third-party run data centers are also expected to hold significant amounts of data with the amount of data held at the edge expected to nearly double to 390 terabytes. Developing, maintaining, and operating the software systems that can access and manage these ever-increasing distributed datasets is an expensive undertaking. Throw in the growth in distributed users, and corporate software projects become even more daunting.
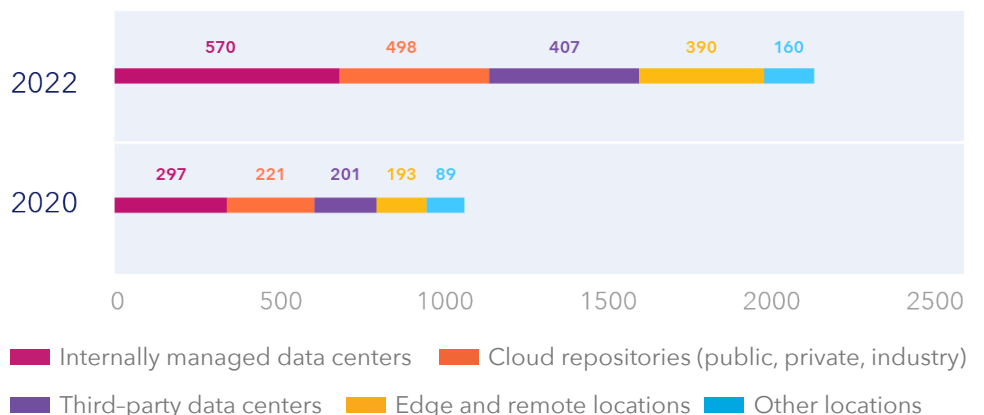
Figure 1.
While enterprise data growth from 2020 to 2022 is forecasted to grow at a rapid pace of 42.2%, the data is still expected to be held in distributed locations.

Sources: Seagate: IDC, @ Statista 2021,

Additional Information: Worldwide, IDC; 2020

Total enterprise data volume worldwide from 2020 to 2022 by location (in terabytes)

2022	570	498	407	390	160
2020	297	221	201	193	89

Legend:
- Internally managed data centers (magenta)
- Cloud repositories (public, private, industry) (orange)
- Third–party data centers (purple)
- Edge and remote locations (yellow)
- Other locations (blue)

Many software developers are also adopting pay-per-use pricing models; while these may be more difficult to predict, they do have the advantage of reducing upfront costs.

IT project development and management has typically been a challenging undertaking for enterprises. One survey from the early 2010s showed that **only 2.5%** of companies completed 100% of their IT projects on time. Another survey from the same period found that among 1,471 IT projects, average cost overruns on the whole were 27%—but one in six projects had cost overruns that averaged 200%, with a corresponding average time overrun of **nearly 70%.**[2]

Proprietary software development is a special type of IT project. Much like building a new factory, enterprises need to consider software as infrastructure and account for all associated support costs. Beyond developing the initial software build, companies must marshal the internal resources, especially financial, needed for supporting the software, fixing the inevitable bugs, upgrading software for security updates and expanded use cases, and keeping up with market trends.

Planning an IT project of any sort is not for the faint of heart. Planning for developing proprietary software projects that can morph over an average life span of six to eight years[3] needs special attention from both the CIO and the CFO. While commercial software may come with a higher upfront cost or a substantial subscription fee, these expenses are a known factor and can be planned for. Many software developers are also adopting pay-per-use pricing models; while these may be more difficult to predict, they do have the advantage of reducing upfront costs. No matter which pricing model is used, commercial software is typically ready to use "out-of-the-box." For many CIOs, the known cost quantities of commercial software make it an attractive alternative to the unpredictability associated with building software in-house.

Answering the "buy versus build" question

When considering a software solution, any IT team must closely assess their requirements and choose between building their own end-to-end solution or buying a commercially available package that suits their needs.

Since the software will be a key element of a long-lasting IT architecture that the team will need to support and nurture, this is a decision that should not be taken lightly.

This is especially true when considering a data operations platform. As noted above, data is the lifeblood driving 21st century business operations. Data operations platforms are the software technology that will take data from sources in the company and guide it through the computing processes that create value from the data for the company. It will also manage and secure access to that data.

The number of IoT devices and other edge data sources are expected to explode in number. At the same time, the AI technologies that analyze this data are rapidly evolving. Additionally, the various data ecosystems of most organizations continue to increase in complexity. IT teams must prepare to support a data platform that can flexibly grow along with the needs of their companies.

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The "build" option

First, let's look at factors that should be considered for deciding whether or not a company should build their own platform. While there are certainly a large number of technical factors to consider, in the end cost considerations are likely to be one of the main driving forces. Considerations for building your own include:

1. Total costs of using internal resources

2. Ongoing maintenance and operating costs

3. Hardware costs

4. Opportunity costs

5. Change management process execution

6. Responsibility for maintaining cybersecurity

Among these, three points call for some more explanation. First, opportunity costs need to be weighed from a number of perspectives. IT departments are familiar with the phenomenon of every request being an urgent one. Developing and implementing a data operations platform will of course take a certain amount of time. Does your organization have the

breathing room needed to give your team the necessary amount of time for software development? IT teams are also typically strained to muster the resources needed to meet corporate demands. Does your team have enough people with the right talents for the project? Are there other important projects these people could be working on? Are you willing and/or able to bring in and rely on outside resources if you don't have enough internal ones?

Change management process execution means dedicating the resources and time to modify and grow the platform software as needed and ensuring any updates happen in a timely manner. This consists of everything from bug fixes (which all software needs) to major functionality upgrades. The latter is something that should be thought through with care. While proprietary corporate software doesn't have the same development pressures as commercial software, the technology industry is known for constant rapid change. You need to be prepared to follow and quickly adopt new technologies as they become necessary. All this must be done in a timely manner while not interrupting the processes that rely on the software.

Finally in today's world, enterprises must pay particular attention to cybersecurity. Cybercriminals are becoming increasingly sophisticated, with many now possibly part of or backed by nation states. Cybersecurity statistics are alarming. According to Checkpoint Software, every day in 2020 there were over 100,000 malicious websites and approximately 10,000 malicious software files in circulation. No software can be warranted to be free of security vulnerabilities. In the same year, 87% of organizations were probed by cybercriminals looking to exploit software vulnerabilities.[4] While proprietary enterprise software may be a less visible target for cybercriminals, that is no guarantee against hacking. Enterprises must be prepared to invest in the cybersecurity professionals and other measures needed to protect their IT infrastructure. If they rely on proprietary software, then they must rely on their own cybersecurity resources to protect it.

The "buy" option

While buying a commercial data operations platform doesn't come with the development and implementation costs of building your own, you still need to be prepared to devote the resources needed for implementation, customization, and the inevitable unforeseen engineering projects that come with installing the software into your operations. These expenditures can be significant and should be considered and planned for.

Since you will be relying on a vendor for your software, many of the considerations associated with the build option are addressed. Still, there is always the risk that the vendor may fall down on the job. Before a contract is signed, vet the vendor and ensure that the proper SLAs and performance measures are included in the agreement.

The purchase option also has a checklist for consideration. These include:

1. The total costs of resources needed for initial implementation

2. Solution procurement costs

3. Support, training, and maintenance costs

4. Customization and enhancement costs

5. Additional ad hoc engineering build costs

6. Vendor performance risks

After considering the benefits of reduced costs, a more predictable development effort, and the ability to rely on a dedicated organization for upgrades and cybersecurity, most companies will come down on the "buy" side for their data operations platform needs.

You can choose the best-in-class from a number of competitors in the business of developing and selling data operations platforms.

These companies are incentivized to ensure their customers have the best possible experience with their product and have developed an ecosystem to support it. Figure 2 shows some of the advantages of the buy option. Other advantages of buying a solution include:

1. You can benefit from the experience of others who have implemented the software

2. Faster and more predictable implementation schedules

3. Proven scalable solutions

4. Availability of experts for support

5. Access to latest updates with a clear product roadmap

Buy	Build
Lower upfront cost with a trial component. You can try out the software before purchasing.	Higher upfront costs due to the need for a dedicated development team and creating the necessary infrastructure
Total ownership costs are lower since development costs are spread out in the pricing given to a number of customers. They are also more predictable since pricing is negotiated upfront.	Total ownership costs will be higher in the long run due to the assumption of all developer costs and higher integration and infrastructure overhead pricing is negotiated upfront.
Accelerated time to commercial operation due to the purchase of a ready-to-deploy solution.	Slower release cycles due to a sole dependence on internal teams.

Figure 2.
Some advantages of the buy option over building your own software.

Use case: a medium-sized organization

As noted above, from both a cost and operational perspective, buying a commercially available data operations software platform logically makes more sense for most companies.

This is backed up by data from an actual use case. A medium-sized organization decided that they needed to migrate from their current data ecosystem where all of their data was held in an on-premises legacy data center to a mixed infrastructure setup over a three-year time span. To do so, they knew they would need to also migrate their current data ecosystem to one based on a new, more capable data operations platform. After a careful study of the costs associated with building their own versus buying an off-the-shelf solution, the organization concluded it would realize around a 55% cost savings if they were to buy and customize commercially available software rather than building it in-house over the entire duration of the project. The organization's setup involved accessing data across different kinds of databases that used different identity management services and creating a unified interface and environment for accessing data from multiple sources. The results of the study are summarized in figure 3.

Of course, every organization must take into account their own unique circumstances and needs. However, these results strongly suggest that for many companies, the savings associated with purchasing a commercially available data operations platform are substantial enough that they should strongly consider the buy option in their data operations planning.

For many companies, the savings associated with purchasing a commercially available data operations platform are substantial.

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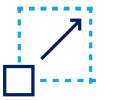
	Buy	Build
Personnel costs	$635,000	$1,940,000
Cost of procured/ built software/op-ex	Based on custom pricing	$216,000
Cloud/on-premises infrastructure (Servers/Storage/Software/Infrastructure)	Similar	Similar
Time-to-production	Lower due to use of pre-built solution	Increases as the development team and complexity of the project grows
Ensuring data availability for mission-critical decisions	Immediate availiability	Long time frames before data may be available
Scalability	High	Limited
Risks to organization	Low	High

Figure 3.

A medium-sized organization found it could save about 55% over three years if it bought data operations platform software.

**55%**
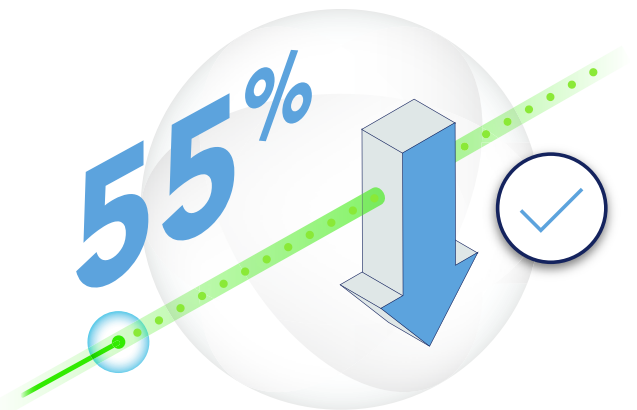
Choosing the right data operations platform

When selecting a data operations platform, companies should consider their future needs as well as their current ones. As previously described, the quantity of an organization's data assets is expected to grow at an exponential rate.

Beyond just quantity, the datasets are expected to be distributed in nature as more organizations go to hybrid setups and as edge data repositories increase in number. For companies that expect to handle increasing amounts of data from IoT devices, the velocity of data flows will increase as well.

The days when companies were data islands unto themselves are rapidly drawing to a close. With data now an intrinsic part of operations for organizations of all types and sizes, companies find themselves parts of complicated ecosystems. Not only do they have to share data internally and with their customers and partners, they may even find themselves sharing data with pan-industry organizations that include their competitors.

Additionally, companies are finding that they need to bring in data from their suppliers and third-party sources for their own operations. All of this data must be governed in accordance with an ever increasing array of data privacy and other data-related regulations issued by regulatory bodies throughout the world.

Intertrust Platform™ is a versatile data operations platform that addresses organizations' needs for secure collaboration and data interoperability. Backed by Intertrust, a company with over 30 years of history in protecting valuable distributed data for major international companies, the Platform enables organizations to manage distributed data and devices at scale, so they can make data-driven business decisions, confidently and securely.
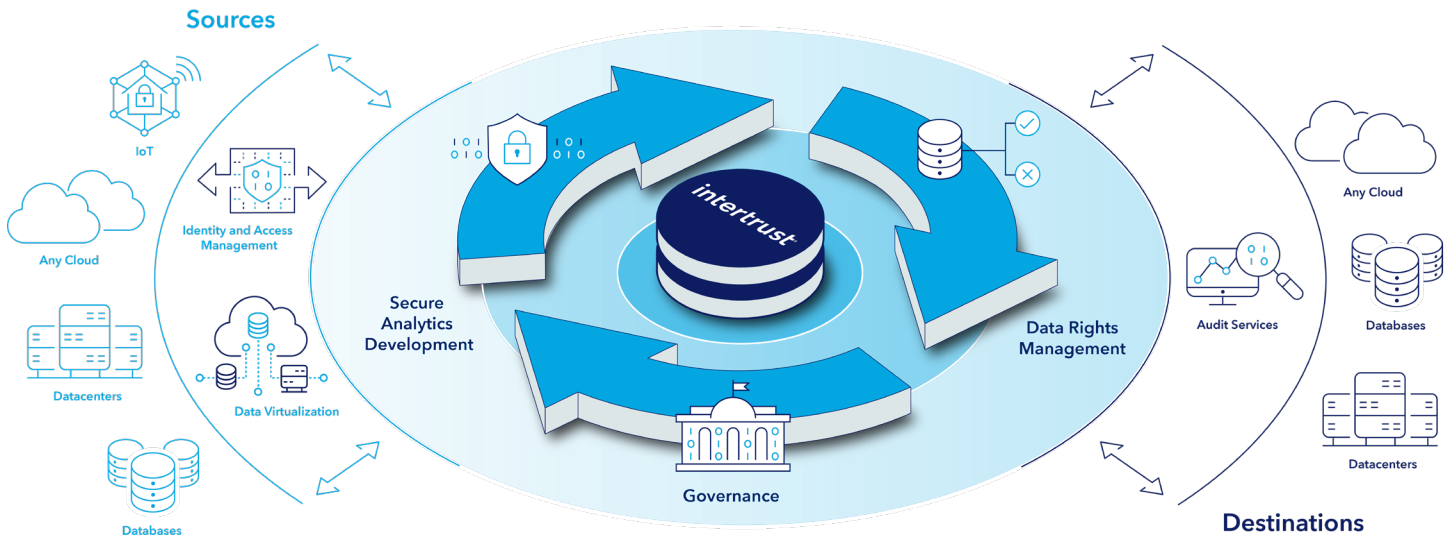
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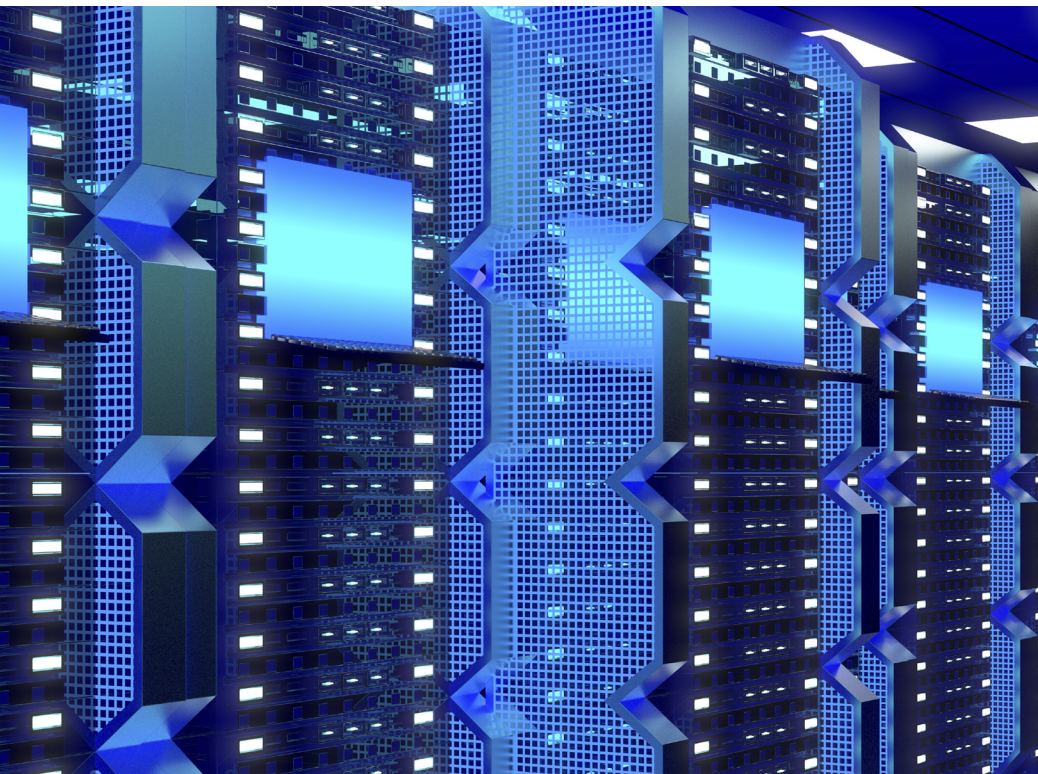
Figure 4.
Features of Intertrust Platform.

Intertrust Platform is designed with features that enable organizations to securely share data with their partners in isolated environments (Figure 3). It also includes an option for a high performance time-series database that can be used for time-stamped data, such as IoT data, in an agile way. The Platform supports three major functions:

Identity and access management
The Platform enables fine-grained user authentication via open standards. This feature can allow organizations to finetune access privileges to sensitive data for both internal and external users and is an important feature for regulatory compliance.

Data virtualization
Data does not need to be migrated onto Intertrust Platform. Fine-grained privileges may be applied to existing databases, regardless of their location, creating a unified point of access control that governs all interactions via the Platform's data interfaces. The Platform also enables users to create 'virtual datasets' by joining data from one or more physical data stores.

Secure execution environments
Intertrust Platform provides workflow environments where containerized workloads can be deployed and executed in a managed cluster across any cloud/on-premises setup. Both ingress and egress to containers are constrained by network policies. When coupled with the Platform's governance mechanisms, this ensures that workloads may only access data to which privileges have been granted and that data may not transit beyond the governance boundaries.

As a complete data operations platform, Intertrust Platform will form the underpinning of a modern corporate data operations ecosystem. The Platform is already in use by major international companies for their data operations.

- Its Data Virtualization feature allows companies to add a virtual layer over their existing data repositories. This gives the analytics, visualization, and other software processes in the data operations ecosystem access to data without moving data from its original location to a data lake or other cloud repository. By avoiding moving data, organizations can realize significant cost savings and reduce security risks.

- The combination of the Platform's Identity and Access Management and Secure Execution Environments form the basis for a fine-grained authentication and policy-based governance system for both human users and software programs. As such, it simplifies regulatory compliance and reduces many of the friction points preventing effective data sharing with both internal and external data ecosystem partners.

- Intertrust Platform is designed to run on commodity hardware and does not require any cloud-specific services to function. It may be deployed on the infrastructure of any major cloud-service provider as well as on-premises infrastructure. This also means companies deploying the Platform aren't dependent on any specific cloud provider.

- For auditing purposes, the Platform also provides a robust logging mechanism that meets stringent standards, generating a secure log that is controlled, immutable, and protected.

Conclusion

Intertrust Platform is an attractive data operations platform designed for success in today's complex data ecosystems.

"Buy versus build" is an age-old issue for corporate IT departments and is especially relevant when planning the company's data operations. While every organization is different, after weighing the tradeoffs for cost, project predictability, and security and support, many gravitate toward the "buy" option as the most logical choice for selecting a data operations platform. For those companies, Intertrust Platform is an attractive data operations platform designed for success in today's complex data ecosystems.

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Footnotes

1   Gartner Forecasts Worldwide IT Spending to Reach $4 Trillion in 2021, https://www.gartner.com/en/newsroom/press-releases/2021-04-07-gartner-forecasts-worldwide-it-spending-to-reach-4-trillion-in-2021

2   Gallup, "The Cost of Bad Project Management," https://news.gallup.com/businessjournal/152429/cost-bad-project-management.aspx

3   https://mitosystems.com/software-evolution/

4   Cybersecurity Report 2021, Checkpoint Software Technologies

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