



Graph Analytics Applications: Build or Buy?

Executive Summary

More and more organizations today are investing in graph analytics solutions to uncover decision driving insights from various types of data. A common question among them is whether to address this need by purchasing a commercial-off-the-shelf (COTS) graph analytics solution or building their own application on top of a graph database.

If you're weighing the benefits of building a solution for your organization, you should consider the sheer expenditure of resources, numerous challenges, and ultimately high failure rate involved in choosing to take on the effort of developing your own software. Alternatively, a richly featured COTS software application such as DataWalk offers you significant benefits in cost and time savings; exceptional functionality, reliability, and security; ongoing maintenance, support, and innovation; and the flexibility to be customized via internal apps. Furthering its benefits as an application, DataWalk is also an enterprise-class *platform* with an application development framework, empowering you to build entire applications on top of it.

This paper discusses important considerations to make in custom building, deploying, and managing a graph analytics application on top of a graph database, and highlights the key advantages to buying one as an alternative.

Option A: Developing Your Own Application

The single most important advantage to developing a graph analysis application from scratch is the ability to create a solution precisely tailored to your needs. With complete control over the development process, you're able to design and implement a solution that aligns seamlessly with your organization's specific workflows and unique business processes.

That said, building such an application—even if starting with a graph database—involves a number of complex tasks:

- Authorizations and user permissions
- Error handling
- Logging
- Backups and restores
- High availability
- Disaster recovery

- Lineage
- Patching and versioning
- Regression testing
- Feature requests
- Bug fixing
- Security

To accomplish these steps requires hiring skilled developers, establishing infrastructure and processes, and dedicating considerable effort towards design, development, testing, and deployment. In addition, an enterprise-class graph analytics system demands robust analytical features and stringent granular security, and may need to support large volumes of data, of many different types. All of this requires significant domain know-how—expertise in developing not just software, but analytics applications in particular, and the ability to develop, and often innovate, key technologies. It also means working with and incorporating feedback from potential users who are well informed and can articulate exactly what they need. Overall, it's a process that entails a significant investment of resources and time, often leading to delays in implementation and availability to end users. In many cases it can take years before any return on the investment is realized.

After initial development, once a custom application is deployed, it requires considerable maintenance and support on an ongoing basis to minimize the impact of downtime and software-related disruptions on user productivity. Common tasks are:

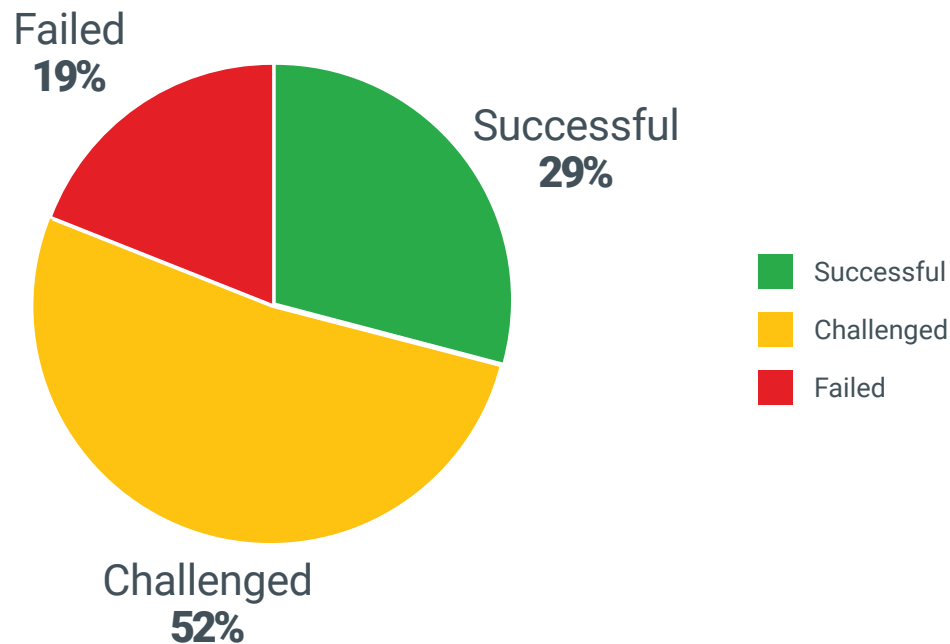
- Keeping the software up to date and compatible with evolving technologies and industry standards
- Monitoring and patching security vulnerabilities
- Troubleshooting issues and providing timely resolutions and bug fixes
- Ensuring the protection of user data and compliance with privacy regulations
- Providing end-users with technical assistance
- Modifying features and functions expeditiously based on user experience with the software

Accomplishing these tasks means devoting additional time and resources, especially if your organization expects to continue focusing its efforts on core business activities and strategic initiatives.

Even if you ultimately decide to invest the time and resources required to build, maintain, and support a custom enterprise application, doing so means taking on considerable risk. Initial releases are not always sufficiently functional for production deployments with demanding teams, and an effective solution is often achieved only after multiple releases and a series of learning cycles. The success rate is low. Industry studies have

suggested that less than one-third of custom software projects are successful, and as the scale of the project increases, so does the failure rate.¹ Data warehousing projects perhaps provide a more accurate barometer for developing an enterprise-class application, with studies reporting failure rates ranging from 60%² to 90%³. For some organizations, it may be worth taking on this risk to develop key strategic applications. Even so, you should weigh the cost-benefit of that decision carefully and selectively.

Enterprise Software Project Success



Results from the most recently published research by [the Standish Group](#). In that research, successful projects were defined as being on time, on budget, within scope, and with satisfactory results; challenged projects were defined as being late, over budget, and/or with less than the required features and functions; and failed were defined as being canceled prior to completion or delivered and never used.

¹ www.projectsmart.co.uk/it-project-management/the-curious-case-of-the-chaos-report-2009.php

² www.techrepublic.com/article/85-of-big-data-projects-fail-but-your-developers-can-help-yours-succeed/

³ www.informationweek.com/it-life/study-data-warehouses-are-still-high-risk

Option B: Buying an Off-the-Shelf Solution

Faster Deployment and ROI. Opting to purchase a commercial-off-the-shelf graph analytics solution offers the promise of saving considerable development overhead, since all of the tasks typically required to build the software have already been completed, tested, and refined. You can quickly adopt and deploy such software, allowing your organization to rapidly reap the benefits of its graph functionality while avoiding the upfront and ongoing costs associated with custom software development.

Rich Functionality, Superior Capabilities. Beyond the baseline advantages over building a solution from scratch, DataWalk in particular has been developed with a number of features fully integrated into the platform. These are specifically designed to address the rigorous demands of graph data analysis:

- **Universe Viewer**, a knowledge graph that provides a flexible, visual representation of data organized around understandable data sets and the cross-references between them
- **No-Code Visual Querying**, allowing insights to be found without the need for any query language
- **Geospatial Data Mapping**
- **Folders**, supporting multiple users with selective sharing controls
- **Machine Learning models** that automatically complete, clean, overwrite, fix and enrich data for rapid analysis
- **NLP Text Analysis** with automated entity extraction for over 60 languages
- **Flexible Logical Data Model**, enabling data sources and connections to be easily added or deleted without interrupting system operation
- **Graph Algorithms** that quickly execute across vast amounts of data
- **Flexible Scoring Engine**

In addition, DataWalk has innovated key technologies “under the hood” that provide superior graph analytics capabilities, as demonstrated by having 2-15x the performance of high-performance graph databases ([such as Tigergraph](#)) for the *find path* algorithm, and with far less resource utilization.

Application Development Framework Included. In addition to being a COTS application, DataWalk is also a platform. DataWalk can function as a graph data platform to serve data to other applications, and also includes an application development framework allowing you to generate applications that run inside of DataWalk. This enables you not only to code new features and capabilities in your DataWalk instance, but also to build complete applications. For applications that utilize data residing in DataWalk, this can dramatically simplify the amount of work required to build and deploy a new application.



Altogether, these platform capabilities enable you to leverage data and analyses from DataWalk for various other use cases across your organization.

Low Risk, Extensive Testing, Team Expertise. Compounding the savings that DataWalk provides in development overhead, the software undergoes rigorous testing and improvement cycles to ensure its continued functionality and reliability. In addition to the more than 400 development years our team has spent in building the platform, we've spent more than 100 sales-engineering years working with the solution to eradicate bugs, find areas for improvement, and test it in different use cases. Collectively, this extensive amount of knowledge and experience—not easily matched in-house—allows organizations opting to buy the solution to avoid reinventing the wheel and mitigate the risks and uncertainties often associated with custom-built applications. We've secured over ten patents and continue to invest heavily in research and development to enhance our platform, frequently incorporating feedback from customers across a wide range of industries. As a result, DataWalk offers a robust and mature solution that has been tested and validated by many organizations. Unlike a horizontal approach to enterprise software development, our use-case focus means our customers get a solution designed to meet their specific use cases.

What's more, DataWalk provides highly granular, military-grade security with minimal performance impacts. It's been deployed in data-sensitive organizations, including national intelligence and investigative agencies; the U.S. Departments of Defense, Justice, State, and Homeland Security; and a number of global banks.

High Flexibility and Customization. Even as an enterprise COTS application that's immediately ready "out of the box", DataWalk is by no means "one size fits all". It offers the advantage of being adaptable to a range of requirements without starting from scratch. The platform is designed to be highly flexible and scalable, providing options for customization and integration with other systems and enabling organizations to tailor the software to accommodate their specific and evolving needs.

At the core of that customization is the DataWalk App Center, a framework that enables you to extend system functionality by developing additional applications that run safely inside the platform. These apps can be used to import/export data from/to other data sources/systems, extend system functionality, create custom features, enrich data, and perform various other functions. And through the use of APIs, users can leverage the data from the platform in other applications of their choice. This flexibility allows you to align DataWalk with your organization's unique workflows, ensuring a better fit with existing processes.

Ongoing Maintenance and Support. DataWalk provides dedicated support to users through regular updates, bug fixes, and technical assistance, freeing you from the burden of software maintenance. Our expertise ensures that the software remains up to date, secure, and compatible with evolving technologies and industry standards. We also monitor and address security vulnerabilities, and ensure the protection of user data. This high level of support and maintenance helps you to focus your resources on core business activities and strategic initiatives, rather than diverting them towards software maintenance tasks.

DataWalk's support team is well-equipped to troubleshoot issues and provide timely resolutions. This ensures minimal downtime and allows your organization to operate smoothly, minimizing the impact of software-related disruptions on productivity and user satisfaction.

Continuous Innovation. Beyond maintaining the DataWalk platform in its current state, we invest significant resources in research and development to continually enhance the application and underlying database. This commitment enables organizations opting to buy DataWalk (over building their own solution) to access regular updates, new features, and technological innovations. By leveraging our expertise, users can benefit from emerging technologies without additional investment. These new features and enhancements provide organizations with a strategic edge, as they can leverage the latest tools and functionalities without having to develop them in-house. DataWalk's continuous evolution ensures that organizations stay at the forefront of advancements in graph analytics technology, allowing them to meet the ever-changing demands of their field or industry.

Furthermore, our understanding of customer needs and of the investigative and financial landscapes enables us to prioritize and develop features that are relevant and beneficial to a range of organizations. With DataWalk, you can tap into the collective intelligence of our development team and the user community, fostering a collaborative ecosystem of innovation and continuous improvement.

Conclusion

When deciding to invest in a graph analysis solution, it's important to seriously consider the benefits and drawbacks of developing your own software versus buying a commercial-off-the-shelf (COTS) solution. Going the route of building involves spending a great deal of time and resources, surmounting numerous development challenges, and taking on considerable risk of failure. While some organizations may decide that the potential rewards of delivering unique value to the business outweigh the risks, others will find the cost-benefit in favor of buying a COTS solution—especially one that can be customized for their needs.



If you're leaning towards buying graph analytics software, you'll find that DataWalk offers considerable advantages—not just over the choice of building a solution from scratch, but also over competing solutions currently on the market. The platform provides:

- Faster deployment and time to ROI (savings in development time and costs)
- Rich functionality and superior, innovative capabilities
- Low risk, thanks to extensive testing, deep expertise, and military-grade security
- High flexibility through customization
- Ongoing maintenance and support
- Continuous innovation and access to new features

The ability to quickly implement our robust and mature software solution, combined with reduced costs and ongoing support, allows your organization to focus its resources on core business activities. What's more, DataWalk provides you with the benefit of our development team's expertise and access to a rich ecosystem of features and functions to support your strategic objectives.

About DataWalk

DataWalk is a scalable, no-code, graph analytics software platform. DataWalk's graph analysis foundation enables you to connect all your data, understand structures, and identify patterns in large, highly connected datasets through an intuitive knowledge graph. This includes data import, data prep and linking, data exploration, data analysis (including machine learning, scoring, alerting) and data lineage. DataWalk effectively supplements case management and monitoring systems to weed out false positives, accelerate investigations, and enable customers to more effectively meet compliance regulations.

To learn more visit www.datawalk.com.