To Build or Not to Build:

Building your own data management system versus Buying

A Dataforensics White Paper

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Summary

A company wishing to streamline the construction quality control testing process using computing/database resources essentially has two options: they can either build a solution in-house or buy a packaged software application. Many companies choose to build their own custom application, which may seem like the most cost-effective route, but this approach introduces a variety of problems. Bloor Research notes,

“There are clear downsides to custom code: can you easily integrate data cleansing, is documentation automatically generated, and can you prove the lineage of your data for compliance purposes? These would be just a few of the questions that can not typically be answered in the affirmative when it comes to custom code.”

Packaged data management solutions applications offer a very compelling alternative to the expensive, time-consuming, and lengthy drawn out processes of the “do it yourself” in-house development route.

Introduction: Examining the Build vs. Buy Dilemma

Application integration. Compliance requirements. Business intelligence. Legal liability. Web services. Collection and access of large volumes of data. These demands drive the growing need for data management across a company.

Highly functional and flexible enterprise data management applications are available as out of the box packages. Unfortunately many organizations are unsure whether a “store bought” package is reliable, particularly if they are accustomed to handling application development in-house.

This paper covers the “build versus buy” dilemma of an organization faced with the need for a data management application. The first section examines preliminary issues and the due diligence required to start the decision process; the second section presents more in-depth challenges related to the build option. Section three explains the benefits of buying a data management system.

Preliminary Considerations and Due Diligence

Building an in-house data management system boils down to an honest assessment of the needs of the organization and what it will take to meet those needs. Sometimes the nature of the project dictates the necessary direction. If your organization requires a solution for a highly specialized business function for which no commercial software exists, then that solution should be built in-house.

Perhaps though, you need to integrate another standard Software as a Service (SaaS) or on-premises application with established applications across an enterprise? In this case, you should give the option to buy a solution a closer examination.

The following factors should be evaluated in regards to your proposed project:

* “Comparative costs and uses of Data Integration Platforms,” by Philip Howard, Bloor Research, August 2008. Build versus Buy
• Availability of in-house resources, including development staff and hourly rates
• Complexity and purpose of the project
• Particular needs of the organization
• Time to deployment

Also, consider these issues:

• Can your project’s time-to-market strategy support developing the data management component in-house?
• Is your development staff large and skilled enough in the technology and standards to build a data management system in-house?
• Are your resources best spent developing homegrown data management software? Is data management software your core competency?
• Still considering a custom-built solution? The next section details some of the problems you might encounter while developing a data management application in-house.

The Challenges with Custom Data Management Solutions

The complexity of today’s computing environments only magnifies the difficulties of implementing custom data management applications. Problems inherent in building these solutions from scratch include:

• Too expensive to develop
• Too expensive to maintain
• Too time consuming
• No real process improvements
• Too difficult to support multiple hardware platforms
• Too difficult to support online and offline data collection

Too Expensive to Develop

If a check isn’t directly earmarked for your data management project, it may appear to have low to no real cost. Your in-house programmers’ time is already paid for, after all. In-house development can be much more costly than it appears though and nearly always far more so than that seemingly expensive off the shelf software solution. Developers require training and code must be carefully tested. Consider the salaries of your development team, consider the salaries of the personnel guiding the technical process, consider the salaries for users testing the application, the downtime in user departments during all phases of development, and the opportunity cost of not putting developers or engineers on other worthy projects that would move your core business forward. The bottom line: **Labor costs dominate custom software development projects**, which require significant investments.

Too Expensive to Maintain

Maintaining and running a custom-built data management application on your current platform and the eventual successors of that platform can be an expensive proposition. What happens when the programmers who developed the original application move on to other projects or other companies? The maintenance of custom data management applications is complex, time-intensive and full of undocumented functions/capabilities. Unless the data management application is WELL documented—another complex, expensive and time consuming proposition—you wind up throwing more and more money into maintenance than you ever imagined or planned.
Too Time Consuming

Traditionally, data management efforts created in-house have required extremely long learning curves, seemingly never ending and slow deployment schedules. Time consuming custom development requires considerable due diligence to scope and plan the entire data management project. Often times this due diligence and scoping is skipped altogether leading to a disjointed and disconnected/piecemeal system. Once again, your developers' time is better spent on your core business—and time is money.

No Real Process Improvements

A significant danger of in-house development lies in the tendency to fall back on tried-and-true methodologies. Unfortunately, the old ways of doing things won’t necessarily yield the optimal solutions. Development methodologies are constantly changing and unless your programmers are versed in the latest data management and programming best practices, you risk ending up with a system that’s less than what you hoped and planned for. Even if your organization’s business processes have evolved over time, they may still not be refined enough to reflect best practices.

Too Difficult and Expensive to Support Multiple Platforms

Developing applications that run on a variety of devices (i.e. laptops, tablet PCs, PDAs, iPad, and Android tablets) requires significant development effort. There isn’t a single device or platform that is optimal for each type of data collection. Sometimes a larger form factor such as laptops, tablet PCs, iPad or Android tablets is desirable. Sometimes a smaller form factor for mobile personnel is more desirable. Developing software to run on all of these platforms increases application complexity, development time as well as the associated costs.

Too Difficult and Expensive to Support Online and Offline Data Collection

Most custom built solutions either work online or offline, but not both. Having online access only limits your employees ability to utilize the software in scenarios where you do not have internet access. On the other hand, having only offline data collection eliminates the possibility of having real-time access to data as field personnel are recording mission critical data. Developing systems that work online and offline require additional development time and costs.

The Benefits of Buying a Data Management Solution

Typically a packaged data management application can overcome the challenges presented by custom-built solutions. Packaged software leverage existing expertise and technology and offer the following compelling reasons to buy:

- Low total cost of ownership (TCO)
- Faster time to deployment
- Flexible, scalable implementations
- Higher quality of data with third-party technology
- Integrated, cross-functional processes
- Automated, standardized design processes
- Optimization of development resources
- High reliability through proven performance
- Self-documenting
Low Total Cost of Ownership (TCO)

High costs are the primary drawback to developing in-house applications. Development and especially maintenance costs are often severely underestimated. Data management costs in general continue to skyrocket as enterprise-wide computing environments become ever more heterogeneous and complex.

The most comprehensive packaged data management products keep integration costs down through:

- **Automation and standardization of the data management process**, which eliminates the need for costly custom coding.
- **Optimization of development resources**, as programmers can plug into new, more exciting development projects that will further organizational capabilities and efficiencies.
- **Fast implementation and deployment**, which reduces the cost of the entire deployment process.
- **Broad range of connectivity options** for disparate platforms, for leveraging of existing protocols and formats.
- **Project scalability**, which allows the organization to start with smaller deployments before investing in the whole enterprise.

Faster Time to Market

The long development cycle of a custom-built solution isn't an option if your organization needs to deploy a data management application quickly. Packaged software can offer some or all of the following features that speed the time to value of your data management solution:

- **Easy to learn**, so users can immediately begin using the system after a short training period.
- **Easy-to-design data management processes and reporting tools** for faster implementation.
- **Short deployment period** on time-critical projects.
- **Easy to use**, for IT staff at the company-wide deployment level as well as end users who need basic data entry and reporting

Flexible, Scalable Implementations

Instead of leaving your organization to its standard old methodologies, the best data management packages provide maximum opportunities for flexibility in data collection and reporting. Logic and business rule definitions, for example, can be customized to fit an organization's specific needs. Open architectures accommodate emerging applications, allowing new technologies to plug into the enterprise. Through all this adaptability, the data management system can remain up to date with best practices.

In-house applications are often developed to meet the needs of the moment, without taking into account rising user demands, data volumes and future technologies. Off the shelf systems, on the other hand, meet growing levels of user requests and transaction loads with real-time, event-driven, scalable solutions.

Higher Quality of Data with Third-Party Technologies

When an organization sets out to develop a data management application in house, it may not consider additional technologies that may be adopted after the fact. Effectively, the new
application in the long term may not end up offering enough in the way of functionality to truly streamline the data management process across the enterprise.

Fully functional packaged data management systems provide a broad range of connectivity, web services and potential for integration with common ERP and CRM applications. Support for standard document schemas—including XML—saves integration time and improves data accuracy. Transport-independent solutions allow you to choose the data transport model that best fits your business.

Integrated, Cross-Functional Processes

Custom-built data management applications may only address a small spectrum of data management issues, excluding hooks into other processes. The best packaged options go beyond simply data management to aid in managing data workflows, including third-party processes. For example, even with several applications linked together, users might get one point of view on the organization’s process flows eliminating the need to toggle between applications.

Automated, Standardized Design Process

When it comes to data management, most organizations have similar needs. So why reinvent the data management wheel when it already exists in the form of packaged applications? Data management systems automate and standardize the data management process using proven best practices. While there’s plenty of opportunity for customization—as described above—the basic implementation is ready to go.

Optimization of Development Resources

A custom data management application project pulls programmers away from a company’s regular development work. Ideally, after the fast deployment of a packaged application, you can focus development resources on your business’s core competencies. Developers can get to work on exciting new projects that will further organizational goals and add to the bottom line.

High Reliability Through Proven Performance

Building data management application in-house is only the beginning. After development, a time-consuming iterative testing process is necessary, during which developers fine-tune the application and hope for the best in terms of reliability. In contrast, a good packaged data management solution offers high reliability by definition, right out of the box. The vendor and other users can attest to its proven performance.

Conclusion: Buy Trumps Build

In today’s complex IT landscape and competitive business environment, custom-built data management systems can't stand up to road-tested packaged software. Quick-hitting, cost-effective packaged solutions meet your organization’s data management demands by leveraging existing applications and technologies while taking the burden off of internal development resources.

Where custom-built solutions present expensive development and maintenance considerations, packaged options counter with proven lower total cost of ownership. Where in-house development involves long deployment cycles, packaged software provides easy-to-learn and easy-to-use speeding time to value. Where custom applications can get mired in old methodologies and lack scalability, available data management software offers flexibility of
customization options and the scalability that meet your organization’s needs—now and into the future.

Packaged data management applications offer other compelling advantages over traditional custom-built approaches. High levels of integration with third-party technologies, integration with cross-functional processes, automated and standardized data management processes, and high reliability through proven performance—all of these make it easier to maintain a highly functional, organic integrated computing environment. Instead of "reinventing the wheel," your developers can focus on the organization’s core competencies and help to propel the business forward.

Even though a custom-built data management application may seem to offer control and flexibility, it will lock your organization into a suboptimal and expensive solution. Is software development really your organization’s core competency? Can you spare the programming resources? Do you have several months or years to develop the system, test and fine-tune your application? If like most organizations you answered “no” to all of the above, buying a highly reliable and functional packaged data management application is your best option.

**The Dataforensics Data Management Solution**

Dataforensics is a leader in developing and deploying geotechnical and geoenvironmental software applications which help geologists, geotechnical and environmental engineers, and engineering technicians accomplish field and office work in less time, with more accuracy and with higher quality data.

More information about Dataforensics software is available at [www.dataforensics.net](http://www.dataforensics.net).

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