



Build or Buy? How to Make the Right Call for Mobile Automated Data Collection

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Introduction

Build a new software application or buy it—it's the age-old question for corporate IT departments. For businesses looking to increase the efficiency of their supply chains with mobile data collection, the build versus buy decision is a critical one. Choose incorrectly and you could end up with an inadequate solution or a poor return on investment.

Whether you build or buy a mobile data collection solution, you will need it to fulfill the same basic functions. First and foremost, it needs to be able to automate and streamline key processes in your operation, such as warehouse operations, traceability, or work order completion. In doing so, it should tightly integrate with your company's ERP system. It should also be capable of working with the types of hardware devices you want to use, from barcode scanners to ruggedized tablets to voice-enabled headsets.

This paper will help you consider the case for buying or building mobile data collection software, highlight potential drawbacks of each approach and provide a checklist to help you evaluate commercial off-the-shelf solutions.

Five Considerations in Making the Case for Build or Buy

In a perfect world, IT departments would have the time and resources to build completely customized solutions that fit the exact needs of their businesses. But that's not the reality at most companies. When an enterprise decides to purchase a commercial software solution, it's usually because of cost and time constraints. Let's examine the five primary considerations in any build-versus-buy decision:

1. Strategic Importance

For many companies, the most important question to ask in the case for build versus buy is this: Will building our own solution deliver a unique competitive advantage that helps us achieve business objectives? The IT adage says "buy to standardize, but build to compete." In this way, you take advantage of cost efficiencies for routine processes while investing time and energy in areas that can make your business stand out from the crowd.

"You shouldn't build anything that's available off the shelf that's not the source of competitive advantage," advised ThomasNet CEO, Mark Holst-Knudsen, at MIT's 2014 CIO conference.¹ Of course, the million dollar question is how you define competitive advantage. Before you make a build or buy decision, form a consensus with the executive team about what areas of the business can create the most value and differentiation.

"The IT adage says "buy to standardize, but build to compete."

¹ Barb Darrow, "In software, the build-versus-buy debate flares anew," Gigacom.com, May 23, 2013.

2. Business Process Fit

Sometimes companies jump to the conclusion they must build their own software to accommodate existing business processes. If your process is very unique and it's a key part of your competitive advantage, you may need to build. Before deciding, carefully scrutinize those business processes. An article in Tech Republic cautioned, "You may be paving the cow path. Sure they do things this way, and you can program the system to accommodate that. But why do they do it that way? ...Just because the business processes have evolved over time does not mean they have been refined over time."²

In truth, you may also find advantage in looking at the way commercial software performs certain business processes. The vendor has often based the process on industry best practices, and adopting their way of doing things may make your operation more efficient.

Still, there are times that you simply want to do things your own way; it's worked well for your company and there's no advantage to reworking the process. If that's the case, you will either need to build your own solution or search for commercial software that is highly flexible, empowering you to reorder certain steps and workflows to match your existing process.

3. Time to Completion

It is important to carefully plan any enterprise mobile data collection initiative, but your company also needs to see productivity and efficiency savings as soon as possible. There is no faster way to achieve your data collection goals than choosing to buy an existing, commercial software solution. Purchasing a solution eliminates the software development process, leaving only the implementation, testing and deployment phases to complete.

Additionally, if you do choose to build your own mobile data collection software, your development team is likely to underestimate (sometimes vastly) the amount of time it will take to complete the new solution. There are many departments and internal agendas competing for the limited resources of your IT department, whereas a commercial vendor focuses all of its development effort on mobile data collection.

There is no faster way to achieve your data collection goals than choosing to buy an existing, commercial software solution.

2 Jerry Loza, "Consider these points when making the build vs. buy decision," Tech Republic, 2002.

4. Internal Programming Resources

Building your own solution requires a set of developers with the right coding skills and the technical ability to integrate your solution to back-end systems such as your ERP. If your company does not currently have employees with this skill set, you will have to invest considerable time and money in training existing employees or recruiting new employees to complete the job. Alternatively, you could outsource the job to custom development consultants; however, these solutions tend to be more costly than building in-house or buying commercial software.

5. Total Cost

In most cases, implementing a packaged mobile data collection application will be more cost-effective for your organization than building it from scratch. But the cost of each enterprise IT project should be evaluated on a case-by-case basis.

When considering the build case, it can be tempting to avoid a formal cost analysis because you consider staff development time to be paid for already. Just because you didn't write a separate check doesn't mean development was free. As you know, there are plenty of other high priority projects your team could complete. Your developers aren't sitting around idle, so there is an opportunity cost in choosing this project over another.

Here are other cost factors to consider for the build approach:

- Most IT teams underestimate development and implementation timeframes.
- It's not just development; it's also the maintenance.
- Analyze cost across the entire software lifecycle—generally considered to be seven or eight years. For many applications, as much as 70% of the total cost of ownership happens *after* development.³

On the buy side, there are also cost factors to consider. In addition to an upfront license fee, most software solutions require purchasing an annual maintenance and support plan to ensure ongoing upgrades, enhancements and technical support. When you buy a solution, you will also likely pay for some features you won't use. This is because software vendors must create a solution with wide appeal and usability across many businesses.

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³ Polly S. Traylor, "To build or to buy IT applications," InfoWord, February 13, 2006.

Potential Drawbacks in Building Your Own Solution

There are several key factors to consider when contemplating the decision to buy or build your mobile data collection solution. In addition to time, staff and cost constraints, here are some additional limitations of the build approach:

Lack of formal software development processes

If your IT developers don't build complex software solutions from scratch very often, your organization may not have adequate processes in place for key aspects of the development process. Some often overlooked areas include beta testing, adequate quality assurance and proper software documentation.

Scope creep

When you build your own solution, it can be tempting to move far too many of your "nice to have" features and capabilities into the "must have" column. As you move through the development process, programmers, managers and other stakeholders will make lots of suggestions for improving the solution. Before you know it, scope creep becomes difficult to manage and adds significantly to your total development costs.

Internal politics

When you develop solutions in house, internal turf wars and conflicting personalities can sometimes derail even the best planned project.

- A vague definition of the project deliverable can lead to missed expectations.
- Project parameters can be unduly influenced by stronger personalities.
- Too many stakeholders providing input can lead to unnecessary additions to the scope.
- Powerful managers or executives may cause project delays by pushing up the priority of their competing IT projects.

Unrealistic management deadlines

Let's face it, most corporate executives don't understand all that goes into designing, developing and testing a high-quality, high-performance enterprise application. Unrealistic management deadlines can cause the IT department to rush the testing or QA in order to keep up implementation timelines, leading to a botched deployment.

Ongoing maintenance

At some point, or more likely, at many points, your mobile data collection solution will need to evolve. If you've built your own solution, your developers must adapt it for changing business needs and technology trends. You'll also have the challenge of updating the application's integration during ERP upgrades—a time that always stretches resources thin. Finally, as employees bang on the solution through regular use, bugs surface and new user needs reveal themselves, requiring yet more attention from your developers.

Most companies underestimate the time and cost involved in maintaining their own solutions. According to one enterprise software development blog, "Ongoing maintenance and support costs are invisible...many organizations do not account for the time needed to repair bugs, add software enhancements and maintain compatibility with system upgrades. This could greatly impact your upfront financial analysis to determine the viability of an in-house project as maintenance costs are about 55% of the total cost of the product life cycle."⁴

Potential Drawbacks in Buying a Commercial Solution

Although purchasing a mobile data collection solution is usually easier and faster than building one from scratch, there are some potential downsides.

Inflexible

Software exists to serve business, not the other way around. The main argument against buying any software solution is that it may force your company to conform your existing business processes to the new software. To avoid this pitfall, it's important to choose a solution that can be adjusted to fit into your current way of doing things. It's also worthwhile to examine your existing business processes to see if there is a way to improve them for greater efficiency.

Any mobile data collection solution you buy will also need to be flexible enough to grow and adapt as your business grows. But that's often not the case with prebuilt software. If you choose a solution that meets your exact needs today and it's not built on open standards, it may be impossible to adapt it for new or changing business needs in the future.

Most companies underestimate the time and cost involved in maintaining their own solutions.

The main argument against buying any software solution is that it may force your company to conform your existing business processes to the new software.

⁴ Geoviz blog, "Software Dilemma – Buy vs Build (In-house or Outsource)," September 4, 2014.

Inadequate capabilities versus cost

Sometimes, in order to find an affordable solution for purchase, you have to compromise on its feature set. As we discussed above, the challenge in purchasing off-the-shelf software is that it's usually not easy to add features later. If the software architecture doesn't allow it, your developers will have a very hard time building onto the solution. And if you hire the vendor to develop new features, you will add to the total cost of the solution, possibly negating the savings of buying ready-built software.

Too complex

Suppose you go the other way and purchase a prebuilt solution with every conceivable bell and whistle. The cost was higher, but the solution is feature rich and surely will be capable of meeting any future need. You implement it at considerable expense, roll it out to your employees, and wait for productivity to soar. But it doesn't. The complexity of the solution makes learning to use it too difficult. Discouraged employees either fail to adopt the new software or are forced to use it and find their productivity suffers. Return on investment = dismal.

Lack of engagement for in-house development talent

While not specific to mobile data collection, another potential drawback of buying enterprise software applications off-the-shelf is "brain drain." Writing a commentary for *InformationWeek* magazine, a senior IT executive at a large national bank recently argued that companies that consistently choose to buy instead of build can experience a decline in their programming and software engineering resources.⁵ Top talent wants to work on challenging projects rather than implementing off the shelf software, so the best IT employees may leave the company.

Best of Both Worlds?

Open Source Commercial Mobile Data Collection Software

When it comes to difficult build versus buy decisions, there's some very good news with mobile data collection solutions. Affordable, best-of-breed commercial solutions exist that are flexible enough to adapt to the business processes of most companies, while delivering a rich feature set. Some automated data collection vendors have built solutions using open standards architecture and validated ERP integration, making it easier to integrate with your existing IT infrastructure.

For many organizations, this is the best of both worlds. Open standards and common programming languages mean rapid customization and deployment of commercial software. But it also means that you can more easily put your internal development resources to work fine-tuning the solution for your organization's unique needs.

Some automated data collection vendors have built solutions using open standards architecture and validated ERP integration, making it easier to integrate with your existing IT infrastructure.

5 Coverlet Meshing, "The build versus buy lie," *InformationWeek*, January 31, 2014.

Designed to be used by users with a wide variety of education, skills and experience, the user interface on a commercial solution will be designed for simplicity and intuitiveness. This will lower your employees' learning curve, improve internal adoption and speed up return on investment.

Finally, if you purchase a proven solution, the vendor is responsible for delivering feature enhancements and fixing bugs. Prebuilt ERP integration eliminates many maintenance and support headaches and puts the burden for ensuring continued integration performance squarely on your vendor during ERP upgrades.

Evaluation Criteria for Mobile Automated Data Collection Solutions

If you've decided to pursue a commercial mobile data collection solution, the following evaluation criteria will help you find a solution that's highly useable, affordable and flexible.

- 1. Open source architecture.** Leave room for future development and easier integrations by choosing a solution that's based on Open Source standards. If the solution was written in one of the most commonly used programming languages, you can quickly and easily develop and implement mobile applications in a fraction of the time it would take with other solutions.
- 2. Certified or validated integration to your ERP.** When you choose a solution that is certified or validated by your ERP vendor to be properly integrated, you know you're working with a vendor that can ensure the solution performs properly with each new version of your ERP.
- 3. Leaves no footprint on your ERP.** If the solution you implement does not install on your ERP server nor modify your ERP environment, there won't be any hassle when it's time to upgrade.
- 4. Runs in every mode needed for your operational environment.**
 - **Wireless:** Use real-time solutions to provide immediate visibility of all activities within the supply chain with mobile apps updates handled in real-time.
 - **Mobile:** Capture, validate and store data on the device, then exchange and sync that data with your ERP on an on-demand basis, using a wireless or cellular connection.
 - **Voice:** Combine text-to-speech and speech recognition capabilities to allow users to perform various tasks in an eyes-free, hands-free environment.

5. **Works with the devices you want to use.** Mobility is proliferating, and the devices you use today may not be the only devices you use in the future. Choose a solution that easily accommodates new types of mobile devices, including ruggedized laptops and tablets, headsets, barcode scanners, smartphones and more.
6. **Easy to learn and easy to use.** A mobile data collection solution is worth nothing if nobody adopts it. Make sure the solution you choose can be learned and implemented rapidly by your employees, and you'll enjoy a good return on investment.
7. **Affordable, capable developers to assist you.** If one of the primary reasons you're buying instead of building is a lack of internal development resources, make sure your vendor employs plenty of developers and charges reasonable development fees. Choosing a vendor with great in-house expertise and plenty of developers to help you create or customize new mobile applications will ensure that the solution adapts easily for your evolving business needs.

Consider the ROI

Cost will be an important factor in your decision to build a mobile data collection solution or buy a commercial software solution. Use this worksheet to make estimates with your development team about the time and cost that would be involved in building your own solution. You can use this cost to calculate a Total Cost of Ownership (TCO) over a five to seven-year period. Then compare that TCO to the cost of purchasing commercial software and subscribing to a maintenance and support plan.

Task	Estimated Time	Cost = Hours x Loaded Labor Rate
Define the Problem <ul style="list-style-type: none"> Identify entities and relationships Map out the business process including inputs, outputs, all steps and all participants 		
Design System Components		
Design and Test Input Screens		
Design and Test Output Screens and Reports		
Design and Test Integration Points		
Estimate & Set-Up Data Transmission & Storage Requirements		
Design Device Specific End-User Interfaces		
Build Help Files		
Build Validation Scripts		
Create Documentation		
Ongoing Debug, Maintenance & Enhancements		

Note: The above does not take into account the time and resources required to maintain and upgrade the application. It is best to show Total Cost of Ownership over a five to seven year period. It would be wise to recognize the opportunity costs: the value of whatever the IT resources would have been directed at rather than building and maintaining this solution. Keep in mind a solution like RFgen does all of this for you.

Conclusion

Prebuilt automated data collection solutions can offer your company the same level of performance, productivity, customization and integration as building your own mobile application. However, buying a proven solution with certified integration to your ERP system may cost only a fraction of the time and programming resources of building your own solution. To help manage costs and ensure adequate flexibility for your future needs, choose a solution that is built on an open source platform and leaves no footprint on your ERP server.

RFgen Software—The Data Collection Experts

RFgen Software, a division of the DataMAX Software Group, helps organizations reduce supply chain implementation costs and increase accuracy and efficiency with the industry's most reliable and flexible wireless and mobile automated data collection (ADC) software and open source supply chain solutions.

In business since 1983, RFgen is known in the manufacturing and distribution industry for its solid, high-quality products and high customer satisfaction ratings among its more than 2,800 customers. With a global reach and local touch, RFgen and its network of more than 140 certified solution partners can service and support your organization no matter where your operations are located around the world.

Using RFgen, businesses are able to quickly take their current manual processes and turn them into real-time mobile applications using barcoding, RFID and voice technologies. RFgen's Mobile Foundation Suites accelerate the integration of mobile and bar-coding technologies into your environment providing certified solutions that can simplify existing processes as well as combine multiple ERP operations into an optimized workflow.

Whether you are looking for solutions to automate your warehouse and better manage your inventory, comply with government regulations, ensure 24/7 warehouse operations, track and trace your products, voice-enable your warehouse or manage your remote inventory, RFgen is the smart choice.

To learn more, please call us at 888-426-2286, or visit our website at: www.RFgen.com.

Reduce supply chain implementation costs with RFgen Software—one of the industry's most reliable and flexible mobile and wireless automated data collection solutions on the market today.

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