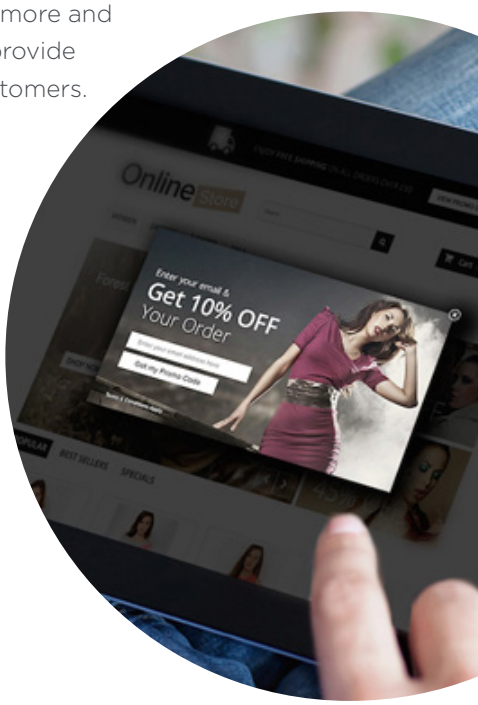
# Embedded Analytics: Beyond "Build vs. Buy"

Embedded Analytics has officially arrived: more and more businesses are looking for a way to provide embedded analytics solutions for their customers. There is an emerging class of embedded-analytics as a service providers that make embedded analysis of customer data a line of business all its own. Software as a service (SaaS) providers are always looking for a way to differentiate what they offer from the competition; in depth and easy-to-use analytics for the customers makes a good differentiator. Then there are large enterprises that frequently need to share the details of one or more internal processes — supply chain, sales, production HR — making the data visible and interactive to customers, partners, regulatory bodies, or others.




## Build or Buy

Some of the finer details around how and why you go about embedding analytics will differ among these three groups. But they all have a couple of important things in common. The first common factor is the people within the organization responsible for the embedded solution. If you're considering offering an embedded analytics solution to your customers, chances are you're coming at it from one of two angles:

### Product Manager

You are a product manager or other owner of the customer experience for embedded analytics.

**Responsibility**

You need to make sure that experience is consistent and that it more than satisfies the needs of the business and the needs of the customers (both of which are moving targets, of course). You want them eagerly coming back for more.

### Engineer

You are a web developer, data engineer, software developer, or (depending on the size of and structure of your organization) anyone else responsible for the implementation of an embedded solution.

**Responsibility**

You need to build or acquire the technology that will deliver precisely that customer experience.

As with most engineering, the work supporting embedded analytics is never done.

## Build vs. Buy Decision Criteria

It's a tough question. For embedded analytics, the answer is a solid "it depends." The argument can go either way—which hasn't always been the case. A decade or so ago, build was pretty much the only option. The choices for embedded analytics vendors and solutions we have today just didn't exist. But now we have a wide variety of options on both the build and the buy side.

In practice, it all comes to use-cases. You may be looking just to replace a reporting function, or supplement some existing information. In those cases, where you want to create a simple and focused experience, building won't make much sense. But if you need to provide in-depth and personalized analysis on the data that makes up your business, then you need a very customized and flexible solution, which might only be attainable with a homegrown build.

Of course, you don't make the buy or build decision in a vacuum. Any business considering providing an embedded analytics solution is very likely already doing analysis using something, which they bought or built themselves. Some of those solutions support the embedding that the business needs; others don't. So the first question may be, "Do we use what we have, or use something else?" Then comes the decision to build or buy. And these are not one-off decisions. As with most engineering, the work supporting embedded analytics is never done. Components break, and the product needs to evolve over time. With this in mind, there are some important considerations you should be mindful of. Let's look at a few of those.

### Time to market

Of course, you really can build anything yourself. When you build, you (theoretically) get the exact solution you need. The perfect fit. Most businesses build their own websites. Significantly fewer build their own email or accounting systems. And hardly any build their own operating systems or programming languages. Embedded analytics solutions lie somewhere in the middle. Building involves a big tradeoff. You may get the perfect fit, but you won't get it right away. And you will only get it after expending a considerable amount of effort.

Buying, on the other hand, is much faster than building. With the right tool, you can get in front of customers in weeks or even days. It won't necessarily be the "perfect fit," but chances are it is already solving the same kinds of problems you need to solve for organizations that are as committed to their customers' needs as your business is. The big questions are how customizable the tool is to your specific needs and how

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adaptable it will be to needs as they change (more on those questions below). The ability to iterate quickly and effectively should be a major consideration in whether you build or buy.

### Return on investment

An alternative, and potentially much simpler, way to choose between building or buying is to frame the question in terms of costs and benefits. It all comes down to determining the amount of investment you are willing to make when implementing an embedded solution, and what return you can expect to get on that investment.

### Organizational fit

You have to decide where your competitive advantage is as a business, and then focus your resources on those tasks. For example, if you are a large enterprise looking to share internal data with customers, your organization may lack the in-house coding expertise required to build a comprehensive analytics solution. On the other hand, if you are a SaaS provider, delivering data may be your entire product. It then becomes a question of how to make best use of the available analytics expertise.

### Customization and adaptability

Obviously, when you build internally, the look and feel can be completely custom to your own product or website. With any embedded solution, there will be limitations as to what information is accessible, how a far a user can drill into the data, etc. From the outset, it is important to scope out exactly what the experience is that you're trying to provide. For example, can you start with a simple graph and easily shift to full-on data exploration?

In many settings, the best solution is to have a baseline level of reporting, with tiers providing greater levels of access based on user type. Such a setup can provide upsell opportunities. In an SaaS environment, users of the more in-depth analytics capability may be customers who have paid for that as an option. In an enterprise setting, the different tiers may represent different categories of third-party users (for example partners rather than customers).

In any case, that flexibility is important. You don't want a solution that is too restricted in terms of what kinds of user tiers you can define. Moreover, you want APIs to enable quick and seamless embedding in the first place, and the assurance that you can change the solution as you need to.

Both the initial implementation and subsequent changes may be costly in terms of time and resources required to get them done.

# Implementing an Embedded Solution

Deciding whether you are going to buy or build is only the beginning. If you buy, what exactly are you going to buy? What will the implementation and customizations look like? And if you build, how exactly are you going to build it?

Let's look at some possible options for both.

### Buy light tools

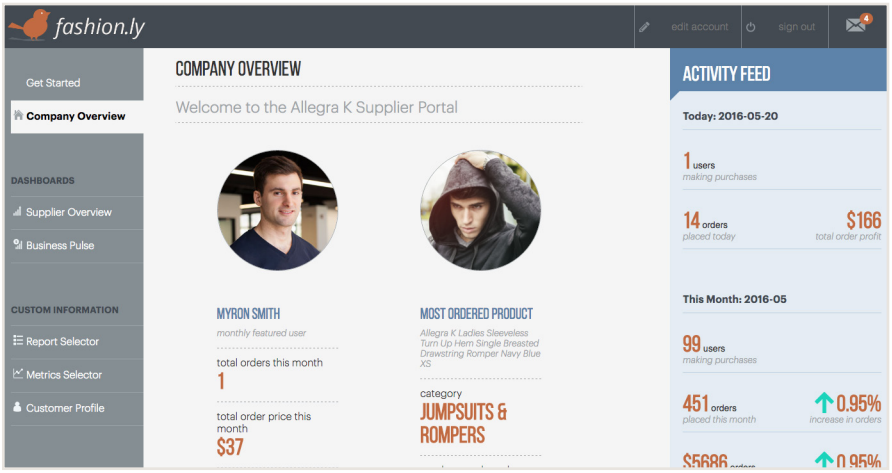
Some analytics tools are designed specifically for quick and easy implementation. Logi and Chartio are good examples. These are the kinds of tools described above that can get you in front of customers in a matter of weeks or even days. The potential downside to this speedy approach is that these tools don't tend to offer the robust analytics features found in some other environments. You get what you get. If you are just embedding reports and a few standard analytical options, you might be fine. If you need more, you're back to deciding whether to build or buy.

### Buy heavier tools

With tools like GoodData, Pentaho, Microsoft Power BI, you get many more options for the kinds of analytics you can embed. Unlike with the lighter tools, adding a new type of report or the ability to drill further into data won't put you back into a position of having to decide whether to build or buy. A lot of what you want to do is already there. But heavier tools can mean a heavier workload. Both the initial implementation and subsequent changes may be costly in terms of time and resources required to get them done. They also often confine developers to strictly GUI-based interfaces, making it difficult to deliver the level of flexibility a business might need.

Plus you have to be very careful to select a tool that supports both what you need now and what you may need in the future. That is exactly what happened to ISCS, who provide a suite of tools in support of insurers. One of their tools is embedded business intelligence. ISCS initially planned to implement a heavy tool, before discovering that the technology provided no way to tier the access to analytics. It was all or nothing. That approach was just not going to work with their business model, and they were forced to look for an alternative.

There are many more pitfalls lurking out there than most suspect. You need to be careful about putting limits on the future scalability of the database architecture.




## Build it yourself from scratch

You can build your own embedded analytics solution using the D3 JavaScript library for visualizing data along with HTML, CSS, and scalable vector graphics (SVG). This approach provides for unlimited customization. This is the "perfect fit" approach. But it presupposes that you have the technical resources in-house to take on such a project, or that you are prepared to find them. And it assumes that you have a lot of time at your disposal. Plus, keep in mind: neither the resources nor the time requirements are a one-off. When your needs change, or the needs of your customers change, you are right back in the analytics-solution-building business.

Another common problem with the build approach is that you can end up with a pretty narrow view of analytics as determined by the person who builds the solution. There are many more pitfalls lurking out there than most suspect. You need to be careful about putting limits on the future scalability of the database architecture. This will make the entire environment much more fragile, as the computing power of the database reaches limitations. When that happens, it becomes difficult to create a solution that can perform and that is comprehensive of all of your data. Something's gotta give.

## Use a data platform

Implementing a data platform such as Looker lets your business put aside the strict build / buy dichotomy when putting together an embedded analytics solution. In this model, you first centralize your data into a transactional database such as Redshift, Vertica, BigQuery, etc. You can then easily connect any other required data sources (Salesforce, Zendesk, Google Analytics, etc.) to get a more holistic view of your company's data.

This approach provides many of the benefits of the options described above. As with using lighter analytics tools, you can implement very

quickly. As with using the heavier tools, you can ensure that the solution meets the full set of analytics requirements that your customers are asking for. And as with building a solution from scratch, your embedded analytics solution will be fully customized to meet the needs of your business.

Looker includes the LookML markup language, which provides modeling tools that you can build on. These make the solution both easy to implement and easy to modify as requirements change. Using a web architecture (rather than a desktop or server architecture), Looker is easy to integrate with just about any environment.

For these reasons, Looker is deployed in a wide variety of embedded analytics solutions across a broad range of industries: software, insurance, financial services, and media / marketing agencies. Urban Airship uses Looker to power its solution for embedded analytics for mobile data. Campuslogic provides its CampusMetrics service, a cloud-based student financial aid analytics platform, via Looker.

Then there's ISCS. Remember how they were looking for an alternative approach to the analytics tool they were using, one that would allow them to provide tiered services while still delivering on all of their customer's requirements? Guess what they used.

## The Perfect Fit Revisited

When it comes to build or buy, there is no one-size-fits-all answer for embedded analytics. The size of your organization, the nature of your business, what use cases you plan to deploy, and your current and future need for scalability will come into play when designing a solution.

With Looker, businesses are finding a technology that combines the advantages of the build and buy approaches. They can deploy quickly, customize extensively, and iterate repeatedly. Looker's flexibility and adaptability is a fit for product managers as they define an embedded solution that matches both what the business needs and the end user customers need. Being a full data platform, it is also a fit for the software developers as they implement that solution, relying on Looker's modeling capabilities and its openness to all varieties of data and interactivity with other applications. Most importantly, Looker's completeness and ease of use make it a fit for the users of these embedded solutions.

And if that's not a perfect fit, it's about as close as you are likely to get.

### About Looker

Looker is an inventive software company that's pioneering the next generation of business intelligence (BI). We believe in bringing better insights and data-driven decision-making to businesses of all sizes. The company has fast become the catalyst that is creating data-driven cultures at hundreds of industry-leading companies such as Yahoo!, Gilt, Warby Parker and Sony.

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