
Beacon White Papers

# Buy and Build on Top: How to Get the Best of Both Worlds

# Introduction: The Traditional Buy Versus Build Tradeoff

Institutions traditionally have a choice when they need software for their business: they can license a vendor product, or invest in building that software themselves.

Most vendor systems are black boxes with programmatic interfaces (APIs) to customize limited corners of the system – for example, to plug an in-house analytics library into existing derivatives product representations. Furthermore, most vendors do not provide source code to their clients, so the "buy" decision is risky: if the vendor cannot deliver the required functionality out of the box or customize their product to the client's requirements, the client will not be able to get all the functionality they need. When clients inevitably bump into the edges of that black box, and cannot extend the vendor platform in the ways required by their business, they end up building ad hoc applications from scratch to fill the gap, often in spreadsheets. Such ad hoc solutions duplicate functionality and data from both the vendor system and other in-house ad hoc applications. That approach may solve business problems in the short term, but it can be expensive and does not scale well in the medium and long term.

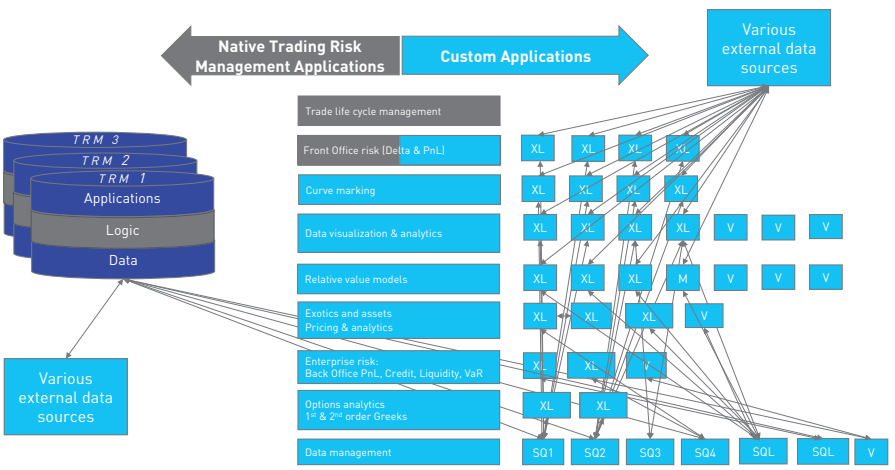


*Figure 1: The "ugly truth" of a typical Trading and Risk Management (TRM) landscape in a financial institution. In this case, there are three TRM systems for trade lifecycle management (e.g. trade booking, option expiries) and a proliferation of ad-hoc and vendor tools for front office functions (e.g. data visualization and analytics, curve marking, exotics pricing, relative value models).*

The "build" choice is risky as well. Running a large technology project is difficult, and many institutions find that projects often run dramatically over budget and over time. Finding a team of developers who are experienced enough to understand the business problem, design commercial requirements, and also execute an enterprise-scale multi-year technology projects, can be very challenging. Beacon's platform helps our clients break the buy versus build standoff by offering the best of both worlds.

## About Beacon Platform, Inc.

Beacon Platform, Inc. was founded in 2014 by the front office trading and risk technologists who created SecDB, Athena and Quartz at Goldman Sachs, JP Morgan and Bank of America Merrill Lynch. Leveraging the experience and lessons learned during their extensive careers at major investment banks, Beacon's founders have created the only third-party solution on the market that delivers a cloud-based, end-to-end development and production platform. With Beacon's open architecture, transparent source code, and automated infrastructure solutions, we give financial and quantitative developers the tools they need so that they can focus on the business rather than plumbing and process. And for business users, we deliver fully integrated applications for analytics, pricing, risk management, and more. Beacon has over 60 employees with offices in the United States, UK, Germany, and Japan.

**www.beacon.io**

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We call this flexibility "buy and build" to contrast with the usual "buy versus build" decision that institutions normally have to make when deciding whether to license a vendor product or invest in building in-house functionality. Beacon clients get the best parts of both.

Unlike buyers of black box vendor solutions, Beacon's clients have access to the full set of Beacon source code and can build their own components at any level in the stack. Client developer teams have one shared codebase in which they build their tools and run their applications against the same code, and even run on the same hardware, as the applications that they license from Beacon. Having full access to the code and underlying platform means that clients can buy the out-of-the-box Beacon functionality and then build their own in-house extensions. The result is a scalable platform that can be maintained for many years and avoids the problems of ad hoc solutions such as spreadsheets.

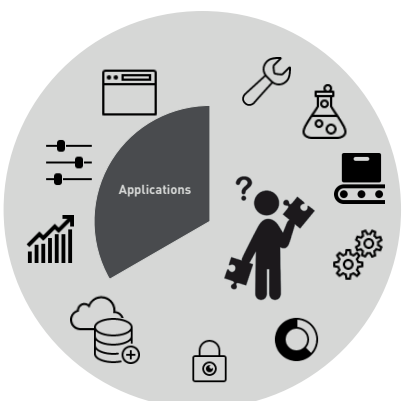
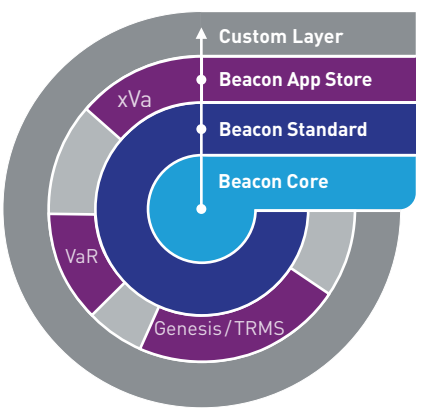



*Figure 2: Traditional vendor systems are "black boxes" with little or no support for client developer teams, who often end up building tools to cover new or missing functionality in spreadsheets. This approach does not scale, is hard to support, does not promote collaboration, and does not create enterprise intellectual property (IP).*




Our clients' internal developer teams build proprietary enterprise IP in Beacon's **Custom Layer**.

The **Beacon App Store** includes cutting-edge modules and applications in the trading and risk management space.

**Beacon Standard** provides generic financial engineering logic, from market conventions over instruments to trade life cycle events, risk and PnL analytics.

**Beacon Core** streamlines complex enterprise technology functionality, from automation of cloud infrastructure to sandboxing, controlled development and deployment at scale.

*Figure 3: Unlike black box vendor systems, Beacon's platform integrates end-user applications within a comprehensive developer platform. Beacon's source code is shared with clients, enabling them to build and support their own proprietary applications and analytics in a secure and scalable platform that encourages collaboration and can be maintained for many years.*

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Beacon offers cutting edge trading and risk management functionality and analytics, and it also offers the underlying development platform to our clients. Beacon clients have access to all the code that we wrote to define the out-of-the-box functionality, but code itself is not enough. Our clients' developer teams also have access to all the data driving the calculations and the hardware that those analytics and applications run on. They can build their own applications, relying on the business logic already in Beacon, and run them on the same infrastructure that Beacon uses to run our own applications. Clients have access to all the enterprise technology tools that Beacon's own developers use: a consistent development environment that encourages collaboration, the "Bob Job" scheduler for batch jobs, the WMP grid scheduler for parallel compute, Beacon's web application development framework, and more.

## Build Better: Enabling Analytic Developers To Own the Full Stack

Whether filling a gap left by a vendor purchase or building in-house from scratch, organizations struggle to build functionality for business users in an efficient and timely manner. For example, many businesses have analytic developers, including quants, technologists, data scientists, and so on. These developers understand the business well and are good at using analytic tools to solve business problems. However, they are often not well-versed in enterprise technology techniques. Absent a platform like Beacon, businesses often make design decisions that work well in the short term but often fail to scale – such as delivering functionality to business users in spreadsheets.

Or, if they go through the institution's standard technology release process, they hand off their functionality to a separate technology team who often has a somewhat different set of skills and processes. This discrepancy causes significant bureaucracy to accrue at the organizational boundary between the analytic developer and technology organizations, which reduces effectiveness of both teams and leads to slow and cumbersome releases. With Beacon, however, analytic developers are given a platform full of enterprise technology tools, so that they do not need to be enterprise technology experts themselves.

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The platform enforces a modern software release process through an automated process controlled by the analytic developers: they develop, test, satisfy enterprise controls, and release code themselves once those controls are satisfied, on a schedule that makes sense for their business.

This quant and desk developer organizational model was first implemented at an enterprise scale at Goldman Sachs in the 1990s: the analytic developer team there is known as the Strategies quant developer team, and the enterprise technology platform that enables their work is called SecDB. This model was further refined in the mid-2000s at JPMorgan with their Athena platform, and again in recent years at Bank of America Merrill Lynch with their Quartz platform. Beacon's co-founders architected, developed, and deployed Athena and Quartz and have use that experience to build Beacon in the same mold, and for the same purpose: to help analytic developer teams be productive and commercial.

## Conclusions

Beacon introduces a new option into the technology choices for institutions: instead of making the tough choice of whether to build or buy, they can now build and buy. Because our clients have full access to the platform, including the source code, data, and infrastructure, they can extend the out-of-the-box functionality that comes with licensing Beacon. They can also build new functionality over time as their business needs evolve.

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In addition to being able to see Beacon code and data, Beacon's platform products are truly end-to-end platforms that include a production environment that end users run applications in. Beacon's development platform includes workflow tools for source code release that allow analytic developer teams to manage their own production releases, cutting down bureaucracy and making them more productive while still maintaining a modern, controlled, and scalable environment.

The decision to buy or build will always be imperfect. Third party vendors provide off-the-shelf products for generic clients, which is why they need to be customized and updated. A full build entails recreating many of the core aspects of good vendor software, which takes time, introduces key personnel and legacy code risk and can be difficult to manage. An investment in Beacon is different: by giving client developer teams the tools they need to make a difference for their unique business, Beacon helps clients invest in themselves.

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ACCELERATE TECHNOLOGY


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