

# Building and Maintaining Competitive Advantage Through Collaborative Business Process Innovation

A case for the Boardwalk Application Engine



After years of investment in on-premise and more recently hosted enterprise applications, many companies continue to run critical planning applications as outboard spreadsheet-based processes. There are three key unmet business needs and one key technology problem that have prevented ERP and other enterprise systems from automating the last mile to the desktop – thereby creating a persistent gap between the two worlds. The three unmet business needs are: collaboration, process specialization, and agility. The technology problem that hampers enterprise software’s ability to support these needs is the transaction-based database software at the heart of ERP itself. This whitepaper explores these assertions further, and proposes a new technology, the Boardwalk Application Engine (BAE), that “enterprise enables” these spreadsheet-based processes and closes the gap between enterprise software and the desktop.

Boardwalktech Inc.  
650-618-6200  
[www.boardwalktech.com](http://www.boardwalktech.com)

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## INTRODUCTION

Companies have spent hundreds of billions of dollars on Enterprise Resource Planning (ERP) software and “edge” or specialty applications (enterprise software), with single company outlays topping the hundred million mark – a lot of money. But, despite these massive spending levels, companies today continue to do a tremendous amount of business process work on the desktop – much of it in Microsoft Excel. Users want to plan, collaborate, run “what-ifs”, model, predict and share ideas – and they want to do it off-line until they are ready to commit the answers to downstream core system processes. Forecasting and budgeting, demanding planning, sales and operations planning (S&OP), and supply chain planning are all examples of critical, “forward-looking” business processes that run in the gap between core systems and the desktop; and these are processes where effective collaborative planning is essential for not only meeting and exceeding customer expectations, but for delivering optimal financial performance. And yet, despite the plethora of ERP modules and edge applications with the appropriate names, most collaborative planning activities are still done today via emailed spreadsheets and phone calls. When you factor in Excel’s continued growth to over 1 Billion users, it suggests that using spreadsheets for these activities is continuing to grow rather than recede in the face of the ever expanding enterprise stack.

These three examples are representative of the situation that exists in many industries.

- A multi-billion-dollar beverage company was consistently missing revenue and margin targets with one of their largest customers because of lack of process visibility. SAP and the manufacturer’s 20-plus other applications could not effectively automate this key process. They created a manual spreadsheet-based process to collaborate with one of their largest customers on joint business planning around promotions, forecasting, revenue and margins.
- A multi-billion-dollar consumer electronics manufacturer was struggling to manage stock-outs and associated penalties on the one hand, and high inventories on the other. They owned the suite of Oracle applications but found the usability of the applications too complex for the sales and planning teams. As a result, they implemented the entire forecasting and Collaborative Planning, Fulfillment and Replenishment (CPFR) processes in spreadsheets.
- A Multi-billion dollar apparel manufacturer ran the entire suite of SAP applications but was unable to effectively plan “lots” of seasonal product changes across brands, manufacturing locations, and retailers fast enough in SAP; they created a manual spreadsheet process to decide “drop” and “keep” of each SKU based on forecasted global demand because it was the only way to effectively work with thousands of rows of data at the same time.

These are all examples of companies that are innovating outside of their ERP environments running “gap” processes in spreadsheets to get the job done in the best way they can. However, for all of the power and flexibility of Excel, running manual, mission-critical spreadsheet-based processes in companies is high risk. The speed and quality of the decisions that come from these processes have a direct and major impact on revenues, margins, delivery metrics, customer satisfaction rates, and inventory levels. Large workbooks, rudimentary security, complex formulae, broken links, version proliferation, and many other challenges, cause process bottlenecks, errors, and poor results. And yet despite the high stakes, spreadsheets continue to be the “lingua franca” of collaborative planning in companies today.

Why hasn’t “enterprise software” solved this? If we look at what’s driving the proliferation of spreadsheet-based processes today, there are three key unmet needs and one key technology problem that have prevented enterprise software from automating the last mile to the desktop. The three unmet needs are: collaboration, process specialization, and agility. The key technology problem is the database software at the heart of ERP itself.

This paper explores these assertions further, and then proposes a new technology, the Boardwalk Application Engine (BAE), that “enterprise enables” these spreadsheet-based processes and integrates them with the core transaction systems to close the gap.

## THREE KEY NEEDS

**Collaboration** “Collaboration” has become a watered down word at this point – everybody has it and everybody does it. The old way of doing business consisted of serialized, compartmentalized organizations, each doing their part with little data sharing and often lots of finger pointing. For companies to compete today, boundaries between organizations and between partner and customer must be crossed and processes must be re-designed and streamlined. New processes like sales and operations planning (S&OP) or joint business planning with a customer or trading partner are re-defining the benchmarks of effective business execution. In the beverage company example above, the customer was demanding better results, and the supplier needed better visibility into the customer’s data to deliver them. Creating this collaborative process required marrying people, information, workflow, communication and tools as a cohesive whole.

The problem is that traditional enterprise software is inherently not collaborative. The traditional ERP and edge application user interface model is a form-based input mechanism where once the data is entered, it’s in the system. There is no “collaboration space” in ERP or edge applications – it is done through phone calls and emailed spreadsheets that are dumped out of the application with no persistence to the process. True collaboration must be done off-

line and outside the input screen of a web-form application. Users have to be able to work “off-line” to think, plan, test, problem solve and share with others to move the process forward to a decision. During this collaborative process, updates from ERP need to be accessed, shared, and tracked, alerts and exceptions monitored, comments captured, decisions made and tracked, and historical process data preserved. Due to the inherent design of enterprise software, it is unable to effectively support these needs despite being branded as “collaborative.” And as a result, outboard collaborative spreadsheet processes continue to flourish.

**Process Specialization** Collaborative planning processes are an untapped opportunity for building competitive advantage through business process specialization. The beverage manufacturer in the example above started by realizing that SAP couldn’t deliver the collaborative planning process it needed, and so they built a manual process in Excel to meet the unique needs of this important customer. They were still hampered by the vagaries of manual Excel, but built a specialized process to meet the business need nonetheless (as it was their only option), and were able to significantly improve their joint planning process with their customer. There are many other business scenarios needing specialization: Different divisions with different channel models or GL accounts? Specialize. Need key business logic not provided by core systems? Specialize. Need to forecast future products that ERP doesn’t know about yet; or track measures that weren’t designed into ERP to begin with? Specialize. Due to its inherent design, ERP and specialty edge applications can only support a single “model” which results in a “super-set”-based, “one size fits all” pre-built application. This frequent mismatch between specialized needs and pre-built applications results in out-board spreadsheet processes created by the users to meet the specialized needs that are not supported by the existing infrastructure. How many times do we hear that “my region doesn’t work that way, so we do our own thing in spreadsheets”? Risk aside, companies are using Excel to build competitive advantage by way of their collaborative planning processes. Excel enables model specialization. ERP and edge applications do not.

**Agility** Constant change is a way of life in every business enterprise today and the rate of business change is increasing. New technologies, globalization, consolidations, outsourcing, the list goes on and on. If we think of a manufacturing company as a series of interconnected “gears” of different sizes turning at different rates to execute on the business, the “collaborative planning gear” is turning much faster than the “core transactional ERP gear”. In other words, the collaborative planning space is hit the hardest by change and it is the place where the tools must be agile if companies are to keep pace and compete effectively. Companies need agility to respond to changes in demand; they need agility when customer demands and products are changing on a daily basis. And they need the corresponding agility in their tools to mirror the versatility that they expect from their business users as they meet and

respond to a rapidly changing business environment. In the example above, the beverage supplier went through multiple iterations with the customer to design and implement their joint business planning process. Once running, the process evolved further as the participants discovered new ways to make improvements. Without agility in the tools, frustration sets in along with the creation of parallel outboard processes to work around pre-built, static models. ERP is great in the transaction space, but can't keep up with the demands of the fast turning collaborative planning gear. IT enhancement lists grow longer and longer, and users can't wait, so they will find a way to solve the problem. Companies must respond quickly and effectively or someone else will take their place in the competitive landscape. Excel is extremely flexible and is on everyone's desktop; ERP and edge applications are not.

## ENTERPRISE SOFTWARE HASN'T SOLVED IT

**The Crux of the Problem** Many companies have declared war on Excel, but it lives on because ERP and edge applications can't meet the collaborative planning need. Why not? Simply stated, there is a mismatch between the dynamic nature of collaborative planning activities and the rigid database architectures on which ERP and edge applications are based. ERP architectures are designed to support repeatable high performance transactions and as a consequence, are not flexible enough to support agile response to changing business conditions. They use a "bottom up" architecture built on the relational database. The model is defined at the bottom at the data layer, and everything is built on top. Because of this, once built and deployed, ERP applications are extremely difficult, time consuming and expensive to change because changes have to be done at the data layer and will ripple through all of the layers to the top (user interface). As the backlog of user system change requests grows, so do the proliferation of outboard spreadsheet-based processes created to actually get the job done.

**Potential Solutions** So how do we solve this? Mission critical processes in virtually every enterprise today are being run in manual spreadsheets, and the tools we've spent tens to hundreds of millions of dollars to implement aren't getting the job done. From a tool perspective, the attempts at solving this problem have come from three areas:

1. More ERP or edge applications – trying to automate "the last mile"
2. Connect Excel to Microsoft Access databases – try to make spreadsheets respectable
3. Microsoft SharePoint or other file-based approaches

More ERP and edge applications won't work because of the needs versus technology mismatch as outlined above. Connecting Excel processes with Access databases is a partial solution at best. Microsoft Access is a relational database as well, so it has little flexibility when connected to a spreadsheet process, and does little to solve the range of problems associated with manual

Excel-based processes. SharePoint has been widely adopted, but is predominately a file sharing technology. And although SharePoint offers a rudimentary collaboration mechanism for working with Excel, it is extremely limited and not scalable (nor are “online spreadsheets”). Furthermore the “check-in/check-out” model of SharePoint makes it a non-starter for the kinds of collaborative processes most companies use to run their businesses. The processes are too complex, dynamic and time dependent to operate with checked-out Excel workbooks.

## THE BOARDWALK APPLICATION ENGINE

**Introducing the Boardwalk Application Engine** a new technology was conceived to support the unique needs of the collaborative planning space, while at the same time integrating with the ERP and edge applications running core business transactions. It is called the Boardwalk Application Engine (BAE) from Boardwalktech, Inc. BAE was designed to enable the kinds of process innovation leveraging Excel as illustrated above, on top of a newly developed and patented enterprise collaboration technology on the backend.

BAE not only closes the gap between enterprise software and the desktop, but it turns the collaborative planning space into a competitive weapon. Using BAE, companies for the first time can align business process innovation with the scalable, reliable, enterprise quality collaborative planning tools needed to support it. Furthermore, BAE’s unique architectural flexibility enables continued alignment between the collaborative process and the evolving needs of the business. That’s because it’s easy to make changes to a BAE-based process. This unique combination arms the company innovators with the tools to *build* and *maintain* competitive advantage over the long term. In the beverage example above, the beverage supplier couldn’t see what was happening fast enough to course-correct packaging, promotions, or shipments – so they were left in the dark and at the mercy of the results - after the fact. Now with BAE, this multi-billion dollar beverage manufacturer has created a tightly knit joint business planning process with their key customer after moving through several iterations to fine tune the process, and has been able to move from a monthly cadence to weekly. Based on this success, they are now deploying variations of that process to other key customers in attempt to improve their competitive position with rivals. This example illustrates the three key needs at work – collaboration with the customer, agility to fine tune the process, and specialization to extend variations of the process to other customers. All of this is being done using Excel as the “modeling tool” and application environment, and BAE’s unique technology.

**Boardwalktech's Innovation** Boardwalktech's innovation is a “positional database management system” that manages ranges of spreadsheet data (cells) as SQL objects where positionality is preserved and changes to the data are persistent. Boardwalktech was awarded a patent for this technology in 2008. Important distinctions include:

- Use native Excel on the desktop and “BAE enabled”-SQL Server as the relational backend
- Database services are delivered through BAE's patented “cuboid” technology
- Uses single schema architecture – data model is application independent
- Application complexity resides in the client (Excel)
- Application server layer is application independent - used for cell-level “net- change” update between the server and the client
- Security and entitlements are managed to the cell level
- Integration services are provided to allow push and pull of data with ERP
- Can be delivered in the cloud or as an enterprise application

BAE transforms Excel into an enterprise quality, multi-user, collaborative tool. Users can work off-line until ready to refresh updates or share data with others. All data is shared on a “net change” basis at the cell level (including ERP data). Users can see who changed it, what they changed, why they changed it, and what it was before.

What this means for companies is that they can now leverage their existing Excel-based processes and using BAE, “enterprise enable them”, integrate them with their core transaction systems, and make them collaborative. When you think about it, the Excel processes that users build today are really applications; they have rows and columns that define the dimensions of the problem; positionality to provide context, data values at the intersections; formulae to run transformations against the data, and reporting facilities (Pivots and now Power Pivot as well) for analytics and reporting. With BAE, all of this is preserved and data managed – no more broken links, check-in/check-out problems, sizing problems, and file and version management problems.

To add to this, BAE's single schema architecture delivers flexibility and adaptability in a way that traditional applications cannot. BAE is a “top down” architecture in contrast to traditional enterprise software's “bottom up”. Because the application model is driven by Excel, and the underlying layers are application independent, changes can be easily made to the process without any programming. This powerful aspect of BAE is what enables companies to maintain the tight fit between the tool and the dynamically changing business needs – thereby *maintaining* process-based competitive advantage gains over time.

**Using BAE for Collaborative Planning** Multibillion-dollar companies have adopted BAE in areas including forecasting, budgeting, FP&A, demand planning, supply planning, vendor managed inventory, S&OP, and trading partner collaboration. These companies have all recognized that ERP can't do it all and that BAE delivers an enabling tool to build and maintain competitive advantage through business process innovation. This traces to real dollars because now companies can tighten up those processes where improving efficiency, breadth of participation, accuracy and visibility translate into improved margins, improved service levels, and optimized inventories.

## CONCLUSION

Turning business process innovation into sustainable competitive advantage won't come from continued expansion of the traditional enterprise software model. The systems simply are not architected to meet these demands. Yes, the vendors will have the module names, and they will write the code and proclaim success, but it is not going to work. The winners will solve the problem from "the desktop in", not "from ERP out." Boardwalktech's BAE represents the future of computing for the collaborative planning space and as such, holds the key for building and maintaining collaborative business-process-based competitive advantage in the years to come.