

Time To Get Real

by Michael Soenen

TECHNOLOGIES THAT
CONVERT 5 "NEW"
STRATEGIES INTO REAL
RESULTS—AND WHAT
CLINICAL DEVELOPMENT
CAN LEARN FROM THE
INDUSTRIES THAT HAVE
DONE IT

Reprinted with permission from *BioExecutive International 2(9)Supplement:28-35 (November 2006)*

Much has been written and spoken about spiraling R&D costs, increased competition, and price pressures that have collectively crushed biopharmaceutical profit margins and forced new strategies in drug development. Although a few forward-thinking companies are beginning to implement those new strategies, they often outpace operational and organizational readiness.

Strategy alone is not enough, so this article goes beyond strategy. It shows how five practical, executable solutions have helped other industries conquer the same pressures facing biopharmaceutical product development today. Described for each strategy are

- Technology solutions that enable the strategy.
- Key criteria and capabilities to seek when evaluating technology solutions.
- How using the technology has helped other industries conquer challenges similar to those facing bioexecutives.

The five strategies described are adaptive clinical trials, scenario planning, collaborative planning, functional service providers, and global outsourcing.

ADAPTIVE CLINICAL TRIALS

A relatively new strategy, adaptive clinical trials, aims to allow clinical research professionals to monitor the results of a clinical study and to change its design after it is under way. Most of the focus to date is aimed at dynamic recruitment based on how certain groups of subjects respond early in a study. The approach can also be applied to other aspects of the study.

Because the strategy is relatively new, little operational impact has been measured. The first hurdle with this strategy is regulatory acceptance. To encourage the use of these newer trial methodologies, FDA leaders are “working on a series of guidance documents—up to five in all—that will help articulate the pathway for developing adaptive approaches to clinical trials,” says FDA Deputy Commissioner for Medical and Scientific Affairs, Scott Gottlieb, M.D. (1).

Once the regulatory hurdle is cleared, we then face the operational

hurdle. Responding effectively to early data requires knowing how to adjust and the degree to which adjustments should be made. It is also necessary to know how study adjustments made by clinical operations will affect downstream functions and departments—outsourcing, resource and project management, and finance—and effectively reforecast the study.

Two key criteria for any system that enables reforecasting are that it be built on industry algorithms and business rules and that it can be integrated with the systems used by the downstream functions. That way, all those affected are notified of changes to the plan as they occur.

Midstream course corrections are not a foreign concept in other industries, where “agile manufacturing” practices have been in use for years. You may notice on Dell’s web site, for example, that if you price a PC, then return a few hours later to price the same PC, the price may have changed. Yet Dell has been much more successful than its competitors in maintaining profit levels. Dell’s “adaptive” technology allows it to quickly adjust its selling price and its supply side operations to respond to what it sees in the

market. Wal-Mart is also famous for its integrated supply chain system, where the supply side of its business is notified almost instantly when customers check out at the register about which products require inventory replenishment.

Clinical research is beginning to use similar capabilities. For example, EDC systems give early visibility to subject study data. We now need the integration with back-end planning systems so we can respond to what we see quickly by recalibrating the study design and notifying all stakeholders of the changes.

SCENARIO PLANNING

Scenario planning, at its core, provides the ability to modify assumptions. Driven down to the tactical level, scenario-planning tools allow managers to quickly assess the impact of the assumption changes on the time and/or cost of a project.

Clinical operations groups at sponsor companies have in the past employed some scenario planning. But this was often the kind of quick-and-dirty planning encouraged by an environment where clinical funding was plentiful and urgent deadlines pushed planning to the back burner in favor of "Just get the project going." With tighter budgets, leaner staffs, and unrelenting deadlines, today's clinical departments recognize that an "ounce of planning" can save months of time, a great many resources, and millions of dollars.

Underlying algorithms and business rules drive scenario-planning tools. There are three key selection criteria:

- Rules and algorithms that were developed through experience in the biopharmaceutical industry. Generic tools from other industries may lack that domain content.
- Those rules and algorithms should be compartmentalized, separate from the software code, to ease maintenance and changes to rules over time.
- The software must be easy to use. Most clinical personnel do not have the time nor desire to

learn overly complex software. Look for a simple version-control mechanism to clearly keep track of multiple development scenarios.

Scenario planning has long been used in other industries. Strategic consulting and venture capital firms that must assess capital-intensive investments regularly employ such tools. Manufacturers of complex products have employed a flavor of this technology in a way that can benefit clinical development. A visible example of algorithm-based technology is on Dell's web site (2), where you can configure multiple versions (scenarios) of a PC for purchase in an effort to get the best price and performance mix. Just as important, this system has

When evaluating collaborative planning solutions, be mindful of their security features.

embedded rules and algorithms that prevent you from designing a PC that Dell cannot build.

Another example occurred at a major midwest manufacturer of industrial pumps. With myriad potential configurations for the company's complex pump lines, sales representatives often produced pricing quotations for unfeasible product configurations. Such errors were not discovered until the order reached the production floor, which caused expensive production line delays. The company implemented an algorithm-driven, rules-based software system that guided the salesperson's quotation process and caught errors in the design and configuration of the product before the orders hit production.

Of course, a clinical study is not an industrial pump. It is, however, a compilation of related activities similar to the compilation of related components in a pump. The activities in a clinical study are more standard and componentized than, say, the activi-

ties in an IT project. Consequently, it is possible to apply similar technologies to improve the achievability of milestone dates, budgets, and other performance goals of clinical studies. Further, clinical research often has many potential development scenarios that could work. The task is to find the one that will best meet a sponsor company's business goals, which may face budgetary, resource, and/or timeline constraints.

Brian Birchler (vice president, Development Operations, Isis Pharmaceuticals) has done just that in his recent planning of a complex, global oncology program. He states that this technology enabled Isis to "quickly assess the costs associated with multiple development strategies

and rapidly estimate project costs." (3)

COLLABORATIVE PLANNING

A few forward-thinking biopharmaceutical companies have begun looking at collaborative planning. Very early in the planning process, they invite service providers to take an active role in defining not only how to do the work, but also the work that must be done.

This strategy is typically preceded by a major cultural shift to treating service providers more like strategic partners than suppliers. By enabling partners to inject insights and ideas into the process earlier, the strategy can lead to an overall approach that typically leads quickly to a better end product. This strategy calls not only for a new openness but also for new supporting technologies.

Technology that supports collaborative planning today is typically web-based software, which means users need only a standard web browser to participate. When evaluating collaborative planning solutions,

be mindful of their security features, given the sensitive nature of clinical study plans. At a minimum, web traffic should use SSL (secure sockets layer) encryption. Depending on the sensitivity of the data, sponsor companies might also consider database encryption. Further, an identity-aware, user-permission scheme should be used to ensure that users can see or

internal systems of both sponsors and service providers, and also connect them to multiple business partners.

FUNCTIONAL OUTSOURCING

Some sponsor companies are moving away from full-service outsourcing to a functional service providers (FSP) model that assigns a study's different functions to service providers with

Third, some companies may require robust vendor management capabilities to handle the complexities of multiple providers on a single project. Those capabilities may include prenegotiated rate structures, country-specific billing rates, and vendor performance measurement—an important capability for continual efficiency and quality improvement.

Finally, consider hosted or web-based systems with a central repository of all study planning and execution data. That can ensure that all FSPs—no matter where they are located—can access the latest status information.

The first step

toward avoiding offshore pitfalls is a strong planning system.

perform only the functions for which they are authorized. Finally, look for workflow features to help track the status and routing of the information as it migrates through the planning process.

Extreme pressures on profit margins have driven automakers to find faster and less expensive ways to build cars. They first migrated from simply sharing product specifications with suppliers to sharing sales data and consumer demand forecasts. That helped their suppliers to better plan their own production and provide more responsive service. Some then moved to collaborate on the design of a car's subsystems. They invited suppliers into shared workspaces to collaborate on electronic CAD engineering drawings. Many product lifecycle management (PLM) applications have collaborative capabilities that allow users to work together on design, share a view of the results, and avoid the version-control nightmares that result from emailing ever-changing specs and draft designs back-and-forth.

Some clinical operations groups have mimicked collaborative systems by giving their service providers access to the sponsor company's internal systems. The difficulty for the service provider in such a case is to train its people on a different system for every client, and to integrate multiple client systems with their own. A long-term solution is commercially available. Collaboration technologies, sometimes called hubs, can be integrated with the

specific specializations. Operationally, that can mean more service providers to manage, creating more requests for proposals (RFPs), vendor Q&A sessions, bid evaluations, and ongoing contract management activity. The approach can also mean an increase in overall project management costs, because each provider may require its own project managers for the work they perform. Additionally, it may mean losing some of the economies-of-scale associated with a full-service CRO where one project manager can oversee multiple functions. Cross-function communication may become more difficult. But an FSP strategy can work with appropriate support.

First, have a resource-driven or activity-based planning system in place. An activity-based planning system first estimates the hours needed for a qualified professional to execute each given task—irrespective of the company that employs that professional. It then derives expense based on the cost of that professional, which can vary by service provider and by region. A traditional planning method based on benchmarking may be less accurate when using these progressive strategies, because benchmark costs are based on projects that predated approaches like FSP.

Second, it is useful to have the ability to “roll-up” activities and costs across all service providers to avoid having to manage disjointed proposals and status reports for each vendor.

DEVELOPMENT AND OUTSOURCING

A increasingly common strategy to lower R&D costs is to conduct parts of a study in regions of the world where labor costs are lower. Many sponsors have negotiated low-cost investigator grants in developing countries. Others outsource entire functions, such as data management, to centers in India and elsewhere.

Any global development effort heightens the importance of detailed planning, communication, and integration. Detailed and clearly documented specifications that leave little room for cultural misinterpretation are crucial. Those planning clinical research functions should have accurate information about the level of effort or hours a vendor will spend on study tasks. That way, they can avoid being enamored by low hourly billing rates, only to find later that it takes twice as long to get the work done. The time differential can be caused by increased communication overhead or by the need to fix work that is fraught with errors because of poorly defined project specifications.

Some enabling technologies required for a global communications infrastructure are fairly apparent, such as web meeting software, video conferencing capability, and virtual private networks (VPNs). One layer deeper are technologies that may be less apparent.

The first step toward avoiding offshore pitfalls is a strong planning system and planning discipline. Clinical planning systems must produce detailed task specifications that

can be easily updated and communicated to global constituents as planning assumptions change. To make visible the hours that a vendor will expend, the planning system should follow an activity-based costing method, as described in the FSP section above. Because resource costs vary dramatically by country, look for systems that support cost structures that can vary by country. Other features to look for include a way to handle currency exchange rate fluctuations and sensitivity to different standards and time requirements across countries; for example, differences in site activation and regulatory activities.

The electronics manufacturing industry moved early to global outsourcing to sophisticated contract manufacturers. The IT Systems Integration industry jumped in a few years later. In the early days of IT offshoring, one company initiated a \$2 million overhaul of its mission-critical order processing system. The company outsourced a portion of the work to an offshore company, but despite billing rates that were 33% of domestic rates, didn't initially receive the anticipated cost savings. It was using an activity-based planning tool, however, that showed instantly that there were almost twice as many staff hours bid as was usual for a project of that magnitude. After a bit of investigation, the sponsor learned that much of the additional effort was to support a "paired programming" approach where a bilingual analyst was paired with a "less bilingual" team member. The sponsor also found that early on many of its specifications were not being implemented correctly, largely because they had been written at a level that left too much room for interpretation.

The biopharmaceutical industry has no doubt hit a new point on the industry maturity curve. But other innovation-based industries have gone through the same inflection points that bioexecutives now face. As new strategies are adapted to biopharmaceutical development, much can be learned by analyzing other industries' successes and failures. ❖

REFERENCES

1. Gottlieb, S. Speech before the 2006 Conference on Adaptive Trial Design, July 10, 2006. Washington, DC. www.fda.gov/oc/speeches/2006/trialdesign0710.html
2. http://www.dell.com/content/products/features.aspx/inspn_1300?c=us&cs=04&l=en&s=bsd
3. Personal communication.

Michael Soenen is managing partner and COO at ClearTrial. For more information, visit www.cleartrial.com.