What Is the Best Clinical Information Systems Strategy?
And the Answer Is…

What is the best clinical information systems strategy—a single-vendor solution or a best-of-breed approach? The first time I was asked that question was in 1987. I had spent 12 years in clinical practice and four years working in a hospital IT department and was interviewing for a position in a consulting firm.

Since I had come from an in-house development shop, I really had no idea what the difference was between a single-vendor solution and a best-of-breed approach. But since the interviewing partner asked the question, I was sure there must be a right answer and a wrong answer. Twenty-three years later, I have come to the conclusion that this question is like a riddle that has no solution.

SINGLE-SOLUTION VENDORS
Those of us working in health IT in the 1980s spent most of our time implementing ADT and patient-accounting systems. Clinical systems were primarily ancillary departmental systems, built to support the productivity and workflow management of the laboratory, radiology and pharmacy departments.

Order entry was a component of the core application and the primary driver for implementing the functionality was to enhance charge capture. Any connectivity between the core system and the ancillary systems was through point-to-point interfaces. But the order entry system was often merely printed as a request in the receiving department, where staff manually entered it into the applications.

The single-solution vendors touted the benefits of integration, but when you pulled back the covers, it was frequently discovered that the “integrated applications” were, in fact, merely interfaced to each other. Regardless, it seemed like the 1980s were the decade of the single-vendor solution, with each hospital market type having two or three major software suppliers.

BEST-OF-BREED APPLICATIONS
In the late-1980s and early-1990s, with healthcare facing a major nursing shortage, a tremendous amount of attention was paid and some funding was directed toward nursing information systems.

Point-of-care systems were being promoted as a way to decrease the amount of indirect patient care time nurses spent away from the bedside documenting. These systems ran the gamut from applications that supported barcode medication administration and codified nursing documentation to ones that required nurses to carry laminated binders of barcodes which were scanned to build a note.

Point-of-care technology was introduced at the bedside in ICUs by physiological monitor vendors who developed clinical documentation applications that were interfaced to the monitors. The only real connectivity between these stand-alone documentation systems and the core applications was usually an ADT interface.

Pilot projects were instituted all over the country, but other than the critical-care systems, these best-of-breed applications didn’t get much traction. Costs were high; nurses resisted documenting at the bedside; and physicians refused to access the system for patient information.

Clinicians, in general, found it difficult...
to work in a hybrid environment—a part paper, part electronic—and CFOs were not satisfied with the return on investment these systems would deliver.

While these best-of-breed nursing applications didn’t really take hold, the 1990s saw more interest in using clinical IT to improve patient care and clinician productivity. Core clinical vendors began adding clinical documentation and rudimentary CPOE into their portfolios, while boutique vendors were developing applications to support highly specialized clinical areas.

With the introduction of integration engines in the health IT marketplace and the development of standardization through HL7, there was hope that integrating these specialized systems with a core application would become less challenging.

The cycle of best-of-breed had begun in earnest. The size of the HIMSS exhibit hall grew exponentially each year as more vendors and products came into the marketplace. While the majority of clinicians still spent most of their time using the paper record, tech-savvy caregivers looked for opportunities to bring information systems into the clinical setting.

Hospitals started replacing point-to-point interfaces with integration engines; programmers and clinicians started developing highly specialized applications internally; and clinical departments started implementing commercially developed best-of-breed systems.

A lot of these specialty systems “took” as clinicians saw value in them, adopted them and used them. Hospital IT departments also started to internally develop repositories that allowed them to capture the clinical information from disparate systems and format it in a way that the clinical staff found valuable. And while boutique vendors addressed specialty needs, the core clinical vendors focused on delivering the best inpatient or best ambulatory CIS for their healthcare markets.

Unfortunately, what we learned during this clinical IT cycle was that integration engines weren’t so easy to implement or maintain, and that data within these islands of automation were not consistently defined and were a lot harder to move across the enterprise than we had hoped.

Integration engines slowly evolved into clinical systems where data was been adjusted or interpreted so that it could be passed along. A common solution to addressing lack of data standards across applications was to catch it at the gate and manipulate the data so that it could be processed along to the downstream systems.

**BEST OF FIT**

As we entered into the new millennium, a new term surfaced in health IT—best-of-fit. While best of breed applications all provided enhanced functionality, some applications truly were better bundled together, and the integration between those applications provided more value than the individual applications alone.

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associated with chemotherapy are not routinely delivered out of the box with core CPOE, and one can argue that patient and provider could be better served with a best-of-breed solution.

The physiological data measurements, nutritional orders and medication calculations required to manage the care of the neonate in an ICU setting are not part of the basic CIS package. Providers argue that while that information is critical to delivering care to this fragile patient community, it may not be historically important in their future care and can, therefore, reside in a best-of-breed system. But I believe these are the exceptions rather than the rule.

**CONCLUSION**

Many people believe this discussion will be moot when health IT initiatives associated with ARRA start to kick in. The integration and connectivity requirements of the HITECH Act will either spur new technology solutions by vendors and IT departments or continued shifts in clinical systems purchasing and implementation behaviors of healthcare organizations. Regardless, I believe the debate between single vendor vs. best-of-breed will continue for a while longer. JHIM

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