# KMWorld article – KM resurgence in life sciences


The popularity of the term “knowledge management” has waxed and waned over the past couple of decades and continues its cycle. At first, KM promised comprehensive understanding and management of enterprise knowledge, but fell short of that goal and lost some of its standing as a concept. More focus was placed on specific and finite applications of KM-enabling technologies such as enterprise content management, business process management and business intelligence. Even during that time, many consulting firms were cognizant of the value of KM and worked to impart a cohesive vision of its potential to their clients.

Now the cycle has advanced, and the ideas embodied by KM have become more mainstream. With the advent of more affordable and powerful computing capability, the original concept of an enterprisewide knowledge management program has become more attainable because greater volumes of data can be processed and previously siloed data can be integrated across applications. In addition, the issues of stakeholder buy-in and change management are being addressed more consistently and effectively.

One indication that KM has proliferated is the number of knowledge management conferences in specialized markets that have emerged over the past five to seven years. KM conferences are now being offered in areas as diverse as construction, agriculture education and the nuclear industry. The life sciences sector, which was an early adopter of KM because of its need for compliance and R&D, now has a conference focused on KM. The 3rd Life Sciences Knowledge Management Summit was held in August 2016. “A lot of activities described at the conference were related to the R&D side of life sciences,” says Jim Kane, head of collaboration and knowledge management at Paragon Solutions. “Many of the initiatives come out of the business units but they depend on enterprise applications.”

One company at the conference described how lab data gathered during investigations was collected on a collaboration platform, which was used to support decision making during the discovery phase. Issues were the flow of content and who had to touch the data to approve it. “About 20,000 scientists are using it,” Kane says. “The knowledge platform was built to support and document informed decision making.”

In another life sciences organization presenting at the conference, the convergence of digital asset management, KM and records information management was seen as critical to being able to track ownership of information across enterprise processes. “Many folks at the conference had technical solutions, but because they come out of a KM environment, they know that behavior change, knowledge stewardship and structuring information are also critical,” Kane explains.

Today’s KM solutions offer a wealth of options that were not available when the field first emerged. Graph databases, modern connectivity and new content management solutions provide new dimensions for life sciences and healthcare.

### *Relationships emerge*

AstraZeneca is a leading pharmaceutical firm with about $25

billion in annual revenue and research facilities throughout the world. The company has approximately 140 drugs at various stages of clinical trials, including drugs for treating cancer and respiratory diseases as well as immunotherapy products. To make the best use of its resources as products go through early stages of the pipeline, AstraZeneca developed a competitive intelligence platform that it named CI360.

“We needed to get data out of silos so we could ask questions across multiple disciplines,” says Tom Plasterer, U.S. cross-science director, R&D information at AstraZeneca. CI360 has an integrated data layer, an application layer and a community layer. The integrated data layer uses AllegroGraph, a graph database from Franz, to provide links among different data elements and incorporates big data into its analyses. Graph databases store information about connections among data elements, and the information is easily presented in visualized form to show those connections.

“We started at a high level, developing a model to answer basic questions such as what other companies have a drug with the same biological target and what is the stage of development,” says Plasterer. The information can come from any source, including lab data, news feeds, content providers and publishers of medical information. “Then we expanded to late stage challenges and additional use cases, looking for companies that had assets in Phase II or Phase III trials or opportunities for existing drugs that might be appropriate for a different indication,” he adds.

One of the main advantages of graph databases is that the model can be built incrementally. “With a relational database, you need to design a schema and if the model changes, it has to be redone—it cannot keep up with the science and the data flow,” Plasterer explains. “At the other end of the spectrum is the NoSQL mode, which has little-to-no structure. This is where big data often falls down. To be candid, people arrive at graph databases when they have run out of options, and

there are only a few outstanding vendors in this space."

Another advantage of graph databases is that they mirror the way scientists think. Plasterer says, "Biologists do not think about data as just a matrix optimized for analytics. They think about relationships—how a certain drug treats a certain disease, for example—and that represents a connection, not just a set of data points. Graph databases fit this model."

CI360 is now being used by other teams in AstraZeneca, including patient safety and trial outcome analysis. The flexible model allows the system to support analysis and decision making in numerous areas. The graph database shows links to such concepts as drugs, diseases, patients, measurements and clinical trials.

Because of the way graph databases store and present data, they are readily applied to the discovery process. The graph data model transforms structured and unstructured data into the resource description framework (RDF), which makes data comparable across various sources including the Internet and enterprise applications. "Researchers and analysts can look at information that is apparently unrelated and see unexpected relationships," says Jans Aasman, CEO of Franz. "This can be done across very different databases and allows for sophisticated searches on heterogeneous data."

### *Integrated communications*

Communication networks in the hospital environment have developed over many years and present a challenge because they are a mixture of legacy and emerging technologies: pagers, telephones, computers, smart phones, tablets and more. Spok, with a long history in critical communications, has developed an integrated communications platform called Spok Care Connect, which is designed to address a range of communication issues. Those include tracking down medical staff for incident response and patient care, integrating disparate clinical systems, and providing flexible and robust workflow support

for clinical activities. Spok solutions are now installed in more than 1,900 hospitals globally and are making a significant difference in response times and patient outcomes.

When a Code Blue is issued for cardiopulmonary arrest, a specific team of doctors, nurses and other medical professionals must be pulled together as soon as possible. Spok’s communication software provides a way to contact everyone who is needed, using their preferred modality, whether that is phone, text, email or other method. If a particular individual does not respond, the system escalates the message to the backup person until the full care team is assembled. In some cases, a screen may appear, indicating the steps needed to respond.