

Knowledge-Based Technology Applications for the Veterinary Industry



James Carroll
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“As a human population we are creating 2.6 billion gigabytes of data every single day. Our cognitive limitations prevent us from ingesting and recalling this much information, so we need to create systems that will allow us to analyze huge amounts of data to make better decisions.”
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CEOCFO: Mr. Carroll, big and bold on your site is “Turn knowledge into action.” How do you do that at LifeLearn?

Mr. Carroll: Turning knowledge into action is kind of the cornerstone of how we look at everything that we do here. We do it in a number of different ways, but basically we create knowledge, primarily through two mechanisms. One is through specialized content creation, which is distributed in a highly engaging and effective manner using our proprietary distribution platforms. And our specialized content creation is specific to our field of operation, which is animal health. As part of the LifeLearn family we have veterinarians of course, but also a group of individuals called biomedical communicators. This is a specialized type of person, in that they have unique creative content creation capabilities that are mirrored with a master’s degree level knowledge of science and medicine. I often think of creativity and technical capacity as coming from two different parts of the brain that don’t often operate simultaneously. Well, these are individuals that have the ability to use both of those skills. For example, our pharmaceutical clients have very complex products that they are trying to market, and we are a specialized team that can help them deliver content that is very technical in nature, but very engaging and very understandable, therefore turning knowledge in to action.

CEOCFO: Was that the original concept at LifeLearn? Did you understand or realize the opportunity in the area that you described?

Mr. Carroll: That is a great question. LifeLearn has actually been around for twenty-one years and I have been here for six of those. Knowledge and education was always part of the DNA of the organization, right from the beginning. However, it was in a very different form back in the early days. LifeLearn initially was focused on continuing education for veterinary practitioners and in particular on staff education and medical training, vet labs and elements of that nature. LifeLearn was actually born from the University of Guelph's Ontario Veterinary College and was spun off in 1994 from their continuing education program to a private organization. So in the beginning we were really focused on hands on training and textbook publications, evolved into client education materials and then into online business services for veterinary practices, such as website development. We now assist with search engine optimization, online reputation management, social media management and video production as well. An in the past few years we further evolved to deliver content and creative services to large industry organization such as pharmaceutical companies, industry groups, nutrition organizations, diagnostics and also now pet insurance. In our most recent advancements, we've been working with IBM Watson to deliver cognitive applications to assist veterinarians with access to massive amounts of information to help them make decisions around patient care. So you can see that while the company has really transformed into a true technology innovator, we maintain our roots in knowledge and education.

CEOCFO: Let us talk about the veterinary area. What are some of the more unique or different challenges working with veterinarians, creating content for and helping them overall?

Mr. Carroll: That is a great question! Veterinarians have a really unique challenge. Many veterinarians are general practitioners, meaning that they have a wide range of knowledge across many different topics. However, not all are necessarily specialists in a given area, such as cardiology, radiology, pathology or internal medicine yet they need to make decisions that are sometimes urgent. Many veterinarians also practice in smaller environments that range anywhere from single doctor practices up to maybe half a dozen different veterinarians, and as a result may not have immediate access to a specialist down the hallway for complex cases. And they have patients that cannot speak to them, which is also a unique challenge. Many times our customers are veterinarians that are running small businesses with clients that not typically covered by pet insurance, so medical services are out of pocket expenses. We have, in the industry, a decreasing number of client visits year over year and veterinarians need to find ways to grow their businesses in a manner that is medically relevant for their client base. Therefore, some of the unique challenges that we have are highly educated, incredibly talented medical professionals that are also trying to run businesses. That is where a big part of where LifeLearn comes in the veterinary practice. We help them market their businesses and educate their clients. We do that through knowledge delivery, website services, client education, specialized content, social media and online reputation management tools.

CEOCFO: Do veterinarians, as a group, typically look at their website? Do they typically look at marketing or a little late to the game compared to some other professions?

Mr. Carroll: That is an interesting question. I think that more and more veterinarians are becoming increasingly aware of the importance of online marketing tools. Consider at any given consumer; we spend a lot of time on our mobile phones and lots of transactions are happening online now. Over half of the online searches that are done are done for local transaction-based services, so these are people that are looking to conduct business in their area. In this case they might be looking for veterinary medical services. A growing number of veterinarians have come to recognize that without a good, strong, flexible and relevant online presence that they are going to potentially miss out on some prospective clients. And businesses need to consider that their online presence serves for client acquisition as well as client retention, both of which are important for sustainable growth. Therefore, veterinarians are also now recognizing the importance of engaging with clients, using online mechanisms to insure that we have clients that are returning for routine screenings, that they are compliant with medications and other healthcare components, but also that instead of just going to Google to research pet health topics, that they are actually going to the trusted resource, which is their veterinary practitioner. LifeLearn is helping them develop websites that are more than just online billboards. They are learning centers for their client base and it keeps their clients engaged and adds another layer of value to the experience that they receive in-clinic.

CEOCFO: *Is there a particular point in time when a veterinarian might come to you? Do they take advantage of the full range of services you offer? What is a typical engagement?*

Mr. Carroll: Our approach here at LifeLearn is really consultative. We have many different clients with many different needs. There is not always a cookie cutter approach to it. Website services--you and I can get website services pretty much anywhere. What makes LifeLearn unique and different is that we understand the animal health market and we have the content to help make a veterinary online presence credible and relevant. Therefore, when veterinarians come to us they are often looking for solutions for things that are pain points in their business. Those pain points could be an outdated website, competitive pressure in their local geography or it could be compliance challenges with their client base. It could be related to client acquisition or client retention issues. Therefore, we will first work with them on what those main pain points are and then we will identify solutions that can help them address those pain points, but also take work away from them so that they can focus on practicing medicine, which is what they are trained to do. What we find is that many of our clients are owners or business managers of veterinary practices, some of which are single hospitals and some of which are multi-site hospitals. Those challenges can range anywhere from client retention and client compliance issues all the way up to, "How do I aggregate my services across my four different hospital sites." Therefore, we offer solutions that can be very quick and simple to install for the single veterinary hospital site all the way up to custom solutions that will allow a synergistic messaging approach to four, five or twelve, up to hundreds of veterinary practice sites that are all associated under one corporate entity. Our clients range from the single doctor practice in the very rural areas of North America all the way up to the largest corporate groups in North America.

CEOCFO: *Do you work primarily with vets in the companion animal arena?*

Mr. Carroll: Yes, less so on the food animal side. For a period of time LifeLearn was very broad in the types of clients that we would service. About three or four years ago we made a commitment to really focus on the companion animal segment. We did that because one, we saw that continuing need and two, there is still a great deal of runway for us the within companion animal segment. Now, having said that, part of our growth strategy is to look at agriculture and production animal/food animal industries as a growth mechanism for us. We have the talent. We have the data capabilities and we have the content creation capabilities. There is just still so much opportunity for us to grow LifeLearn within the companion animal and that is what we are really good at.

CEOCFO: *Would you tell us about the LifeLearn Sofie and the Gold Edison Award?*

Mr. Carroll: I would love to! Almost two years ago we partnered with the IBM Watson ecosystem with a use case that was really very unique. It addresses some of these challenges that I spoke to earlier about the veterinary industry. We were really quite inspired by what IBM had done in collaboration with the Memorial Sloan Kettering Cancer Center, where they had developed cloud-based applications to help human oncologists identify treatment options for cancer patients. They were doing that by analyzing massive volumes of unstructured data; this was primarily text-based data. If we think about the recent history of computing, back in the 1940s we entered what was called the programmatic computing era. This is where computers used math-based algorithms to solve challenges. Really, up until a few years ago this programmatic approach has been our only computing capability. But now it is limited because in today's world we are creating content at a pace that is so fast we cannot possibly, as human beings, cognitively keep up. An example to elaborate on that point is, as a human population we are creating 2.6 billion gigabytes of data every single day. Our cognitive limitations prevent us from ingesting and recalling this much information, so we need to create systems that will allow us to analyze this information to make better decisions. Another way to look at this is that ninety percent of what we know in today's world was discovered in the last two years. So from the beginning of time with cave drawings in France all the way up to this morning, we are creating information at such a rapid pace that ninety percent of that information we have was created in the last two years. The additional challenge of that is that two thirds of our data is unstructured. That means that it is text based, video based and image based. Programmatic computing methods cannot analyze and understand that type of data and is "dark" to us in aggregate. With the onset of cognitive computing systems like IBM Watson we now have the ability to look at patterns and context within that data. This is what IBM Watson had done in the area of oncology. We saw that and we thought what an incredible opportunity that was for veterinary medicine. Our use case was originally around the creation of an incredibly intelligent treatment support tool for veterinary practitioners. What I mean by that is that we essentially took tens of thousands of pages of unstructured text-based data; entire textbooks, conference proceedings and journal publications and we worked with Watson to ingest that content into the Watson ecosystem. We then trained the system, helping Watson understand the context around a natural language question related to veterinary medicine. Our product is called Sofie, and we can ask Sofie, as a simplistic example, "What are my best treatment options for a dog with pancreatitis." Most veterinarians might have the answer to that question based on the factors of physical observation and past

experience. However, what we are doing is returning a set of hypotheses based on the context of the question structure and the content we have ingested into Watson. The difference from the Internet, for example, is that we have curated the content, so we know that it is current, we know that it is relevant and we have trained the system to return the results that are specific to passages that are relevant to the context of the question. Therefore whereas if you went into Google and you said pancreatitis you would get pretty much anything that had the word pancreatitis in it. However, here we are actually looking at the structure of the question; "How do I treat pancreatitis in a dog." That context is going to point to very specific passages of different sources to return hypotheses that are ranked on confidence intervals with the intent of returning the result that is most relevant for that veterinarian's need at that point in time. Now, why that is unique to the veterinary industry and what that is important comes back again to the fact that many veterinarians are general practitioners. Many of them need the assistance of the information and knowledge that they might otherwise get or would still get from a specialist, but they may not have immediate access to that specialist. They have patients that cannot speak to them. They have patients that come through the door that are of multiple species, different breeds within those species, all requiring unique sets of knowledge. We have helped Sofie understand the unique characteristics of over five hundred breeds of dogs and cats, unique all the way down to the genetic predispositions of those breeds. Therefore, we can help a veterinarian facilitate an informed conversation with a pet owner around, let us say, a two-year old healthy boxer that is visiting the practice. We can help the veterinarian have a conversation with that pet owner around hyperthyroidism or mitral valve disease, whereas they might look at that dog and say, "It is perfectly healthy, why should I be thinking about heart disease." Well, we are going to help them to understand genetic predispositions for that dog and what a management plan might look like over the life of that pet. We're trying to help facilitate a more proactive healthcare approach for our pets, much like we do for ourselves in human medicine.

CEOCFO: *How did you become involved with general pharma and medical and where is that going for you?*

Mr. Carroll: A few years back, probably just before I joined the company, we saw an opportunity to use some of the talent that we have here at LifeLearn around custom content and solutions creation, specifically for some of the larger organizations that are servicing the veterinary industry. LifeLearn is servicing veterinarians directly and in another manner we have all of these other organizations; pharmaceutical companies, nutrition companies, diagnostics and so on that are also servicing the same client base. We were able to enter into the market with a unique solution in which we could, again, understand the complexity behind the topic, behind the subject matter and deliver engaging content that was distributed through our own intellectual property platforms that allowed us to help those organizations engage their target clients more effectively. We now service thirty-six or so large corporate accounts, where we have everything ranging from special one-off projects to multi-year, long term marketing and content creation strategy, key-opinion-leader management, meetings / event management and full software development. It's been a strong and growing business for us.

CEOCFO: *If we speak a year from now what might be different?*

Mr. Carroll: Sofie will be commercialized, so that will be exciting! Our intent here is not just to deliver Sofie into the market, but also to continue to evolve it. We are looking at new advancing technologies that are not currently available today on the commercial market. For example IBM, as one of our partners, has spent over \$4 billion this year through acquisitions and technology advancement in the area of cognitive computing. With that investment has come a tremendous increase in capability. If we look at today's capability we think primarily about text-based analysis. But we're exploring medical imaging and video. A year from now, one of our hopes and our intent is to help veterinarians with cognitive analysis for medical imaging such as X-ray and ultra sound, and potentially to help with postoperative therapy monitoring through video gait analysis and wearable technology. When you and I look at a passage of text, an image or a video, sometimes our experiences can bias what we observe and what we interpret. However, cognitive computing systems do not have human cognitive bias. They see only what is actually there. Therefore, when we look at an x-ray, based on our training and based on our skill and based on our past experiences, we might see something that the next veterinarian would interpret differently. With cognitive computing we can help standardize the analysis of images and pre-screen some of the medical images before they get to a boarded radiologist, helping to streamline the entire process. That is one example. We are pouring tremendous amounts of investment into product innovation in many areas. For example we are going to be launching a revised platform for client education this year as well, which will help veterinarians deliver a more engaging client experience. We'll be expanding the client education and engagement experience to animation, video and to interactive info graphics where veterinarians can really hone in and point to specific components of topics around disease states, screening protocols, surgical procedures, post treatment therapy and so on, to continue to build that relationship with pet owners in a way that they can ingest information, understand it and act on it in collaboration with their veterinarian more effectively. Essentially, turning knowledge into action.

Interview conducted by: Lynn Fosse, Senior Editor, CEOCFO Magazine

