Outcomes of Plato’s CAVE™

Video transcript featuring Paul E. Sovelius, President & Founder, The Advanced Surgical Visualization Consortium
How would you describe the outcome of the project?

Okay, it's actually better if you think of it as a solution because it's an integration of applications. It's an integration of hardware, software. It's actually an integration of what people now are calling "Watson" characteristics. Artificial intelligent. Deep learning. What does all that mean?

What that really means is a surgeon's experience, a surgeon's knowledge and a surgeon's technique for getting the job done. In surgery there are codes.

Now, you being from New Zealand, coming from Thailand, your medical system's a little bit different. You're not billing for every procedure, every thought. You're just not doing it that way. It's more of a European method. In the States there are codes, so that everything, I as a surgeon, or you as a surgeon do, has a billing code.

Unless the corporate suite sees a way of making money outside of the marketing flash, outside of inter-collegial competition between institutions. You have to validate the system as what they call a service line. Service line, I never knew what a service line was. But it's difficult because there's rules, internal, external, federal, medical organizations.

Okay, so what if we just make it an internal project, and we're only gonna use it for radiation oncology with an overview from liver surgeons, kidney surgeons as an advisory tool. There's no codes. So, there's no money. So nobody wants to put money in it unless there's money coming out of it. Now, what we didn't know is cancer hospitals have another code and that code changes based upon how many times you're reevaluated for your procedure.

So then we found out there was money. So the hardest thing, from a corporate standpoint, was to have enough financial justification that they were willing to sign off on it because it was a risk to them.
Now, the second biggest hurdle was any institution of this kind of size has a network security risk, and when somebody like me starts bringing in partners, machines, equipment, that they have literally no clue. Because the radiology PACS diagnostic systems are separate from the information electronic medical record within a hospital. Now they're being merged, but there is an IT security problem.

We solved that. And it was easy. We just unplugged. So we were truly an island. People would bring their data in, the standard way on a CD. Initially. That changed as people got more comfortable with it, went back to the PACS. And then people can see, 'Oh, I got this patient, but then this, can you bring this one over'? And we could. And again it was all with FDA approved clinical diagnostic.

Now, the really hard part, corporate sees to suite adherence, IT blessing is one thing, but then you've got to document everything, so the first initial publication we did was actually in DeBakey Journal, and I was asked to write about how we did it. Now the interesting thing was, it ended up being a little political too, because it was twice the length and more pictures than anybody else's article, but it made people take notice.

The beauty of it is, is that particular journal who the editor was Dr. William (Bill) Winters, went to 45,000 heart surgeons in the world. It was one of these mechanisms that created, in a tsunami most people worry is a very bad experience, but from trying to get a positive experience out of it to make a difference to change a ship's direction, medicine. It was unbelievably instrumental because people can sit back and say, 'Wait a minute, we can not only use it for active clinical evaluation, we can use it for academic education'.

Yes and we did, and yes we can use it for research so we can do 3D prints of craniofacial stents, or craniofacial deformities, craniofacial trauma, all sorts of things. So it became a visual, some people call it a media room or a cave. A cave is nothing more than a computer room that has been augmented for true computers. Local, cloud. Cloud really doesn't exist. Cloud is really just somebody's computer somewhere else.
The fourth thing is probably, I created it as an open source environment. That's why it's written up in there. Many of the second phase was a challenge for me computational surgery book. More detail in radiation oncology. But the hard part is getting people to share. It became a tool, a solution, an application. The people wanted to protect for internal use and I said no I'm leaving so I created a consortium.

It was completely open source and from that we were able to take again a look at the best partners, best tools, and a really nice venue which is your venue, in Baltimore Maryland in March. So I'm kind of excited about that.

I feel good that we've made a clinical difference, images are acquired at higher resolution. Images are shared more readily. Images are now viewed anatomically instead of an interpretive standpoint.

The hard part is waking up every day and just keep pushing because if you’re a non-clinician and you’re pushing in your clinical world, you need the right partners now. I'm fortunate now, I have a UT med school partner.

We're in the process of either expanding or moving the consortium back east from a policy stand point, because the only way that this kind of whole consortium process works is on a policy level and that means all the other leading medicine institutions locally, nationally, globally, have to take notice.
Learn more!

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