Audience:
Butch I do want to talk about NASCAR with you. One of the reports that are coming out about drivers in NASCAR is that they're using video games as warm up for performances. And that they're on specific tracks, and I'm just wondering are there other examples in other fields where warm-up exercises with video games could inform what we're doing, are trying to do in the medicine now?

Butch: Yes, and we're gonna be talking about that at the Medicine Meets Virtual Reality Conference. We have an abstract that goes into the specifics. Besides the driving game, which is an excellent one, you have to learn how to get rubbed and not lose it all, you know, virtual environment before you get out on the track; very aggressive environment on the track, excellent example. But golfing; golfing is another one that has been shown that the warm up in the way you generate club hits is directly related in measurable dynamics with warm-up. And also reaction time associated with certain evasive counter measures associated with pilots, has been something that's measurable so there's excellent, excellent data out there to say that warm-up should not be discarded. And in fact, when I played ball at the University of Florida, I felt like I played a game before the first match, because the warm up, and we stress warm up because performance can be enhanced. Also at the American College of Surgery, there was an excellent presentation of the importance of, globally, for warm-up and a plea to surgeons that we need to pay more attention to that. And really that inspired the work that I just did.

Audience
Thank you, I got something to improve my golf game now.

Butch: Oh yeah, that club hits beating Tiger.

Audience:
Jim Korndorffer from Tulane University Invasive Surgery and Simulation Lab. Talking with what you mentioned Butch was that warm-up in that aspect, in addition, Miss Howell you did mention that the tools for practice and the time are expensive to_create, in that vein, one question that I do have is: how do_we put these things together? We need better tools as you know, quite frankly most of the programs use exactly what Butch has shown you there which a vast majority of them use just as the basic video trainers as opposed to something more advanced like the virtual reality, mainly because of the fact that it's not there yet. We can't get there yet, because you have 263 programs, so you're trying to design something for a very minimal group; you're focus group is very small. How do we go beyond that? Well, we do have flight simulator type set-up. You know the government doesn't really care if we cut a common duck. They do care if they crashed a $100 million plane. So they put the money into it. Where do we go and how do we get there from here?

Kay:
Well, unfortunately I don't have any easy answers. It's one of the reasons at the Federation we've been trying to work this as a policy issue. We think that this is a proper place for federal investment because it has very broad reaching societal

goals, because there is a lot of basic work that needs to be done to see that the general software tools are available, the studies are out there to guide the research. What we've been trying to do is to convince the people who write checks that we should have a focused research program on these technologies. Funding universities, corporations, non-profits, to build on the research, as well as, what we would call, pre-competitive tools. I've lived through this, on the internet, and lots of areas of computing, and you know you want these ideas to come forth. You want them to come part of the community. And then they become available to companies to build products on top of. It is expensive. You talk about games; a good game costs $4 -5 million dollars minimum? That's without the marketing piece of it to develop. And what do we do on the learning science and technology side? We give somebody a $300,000 dollar grant and we tell them to go forth and build a great learning tool, and then we evaluate it, and we're disappointed because it's not realty great. Ok, you just can't do that. And if we really want to change this, I think that it's important, not only for the federal government, but we also need corporate partners to be putting in some money here as well. Because it's expensive to do, it's a whole paradigm shift in the way that we approach education and training. In the meantime, there are things in the current funding environment that we can do which are to look at issues about how we share objects. I greatly applaud Parvati for putting this group together. The work that Ben is doing in serious games, the work that TATRC is doing in trying to build a community, keep people informed, find ways for us to share the things that work, the things that don't work, and to get us to build things in ways such that people can build upon them because we haven't really done that in the past.

Butch:
I really applaud what she just said. As you know, in the UK, they have government funding advanced laparoscopic training centers where they actually have embraced this as policy. So it can be done and we're on the right track. Well, but then I'm impatient. I get impatient with policy when I got people who have lives on the line, that, you know, we deal with everyday. So I'd like to suggest something else. We don't have to be as sophisticated to actually have impact.

And I want to give you a historical precedent that I live; I have the picture of in my office, of Jimmy Doolittle, taking off a carnival ride on of these little wooden airplanes. He took the wooden airplane off the carnival ride and he put it on a pivotable platform. And he basically put a cover over a pilot's head. Why did Jimmy Doolittle do this? Because landing accidents in bad weather and at night in the 1930's, were atrocious. So what Jimmy Doolittle did is he didn't go and get a grant or anything like that, he took something simple, and he reduced the landing accidents by 90% with that make-shift carnival ride. I would say that what we have to do, using good validation research, see where the low-hanging fruit happens to be, that's not so sophisticated, my goal is that we pinpoint, cross-over, intersections, with that $20 billion dollar industry, that uses a $199 platform and let's see what we can do on that level that helps us to generate data, that gives us validation, and that gives us vision as to where to go and it gives us possibly a better financial option because we have crossed-over. So our residents are using commercially generated platforms with game models that we validate can help and

then we get data and at the same time we have a grass-root movement that embraces the people who vote, and then, as we say in Mississippi, "that dog maybe able to hunt."

Kay:
Another important thing to think about is, we call it "micro learning", but, we've seen simulations here that are sort of full environment which I think are important. But another thing to drive cost down is how to think about how you break it into much smaller chunks, and how assimilation, existing tools, might be able to at least further that piece of the learning. And again, as we get smarter and we figure out how we put these things together, then they become larger learning elements. You put them together into a whole system but a lot of learning that we do is chunked, especially as adult learners. We actually don't have a whole lot of time. So thinking about how you put these into smaller pieces and how you deliver them on demand, I think that's a huge business. How do you get that little micro-learning component and get it delivered quickly, again, is an incremental step towards this larger thing we'd like to see.

Butch:
We call that NTP, Knowledge Transfer of Packets. You divide, break everything down in the knowledge transfer of packets, and you write that one item and you build it. This isn't rocket science. I did it when I played football, when I fly airplanes, I mean, this is how you do things very quickly with excellent outcomes, deconstruct it. Deconstruct it and you build from it.

Audience:
Hi I'm Mark Boyer. I'm the Surgical Director of the National Capillary Simulation Center, the Uniform Services University, and I just want to comment about what Kay had to say about funding. Clearly, to move this field forward, we need to start funding this at levels it took to move the aviation industry. And it needs a national agenda and many of you, I know in the room are aware of the national agenda has been undergoing at this time something caused AIMS, which is Advanced Initiatives in Medical Simulation. And we have tried to get all the stake holders involved who are part of this process, the world of simulation involved, to get the attention of Congress to build funding and interest to move this forward to the tune of the Genomics Project. We had a meeting in DC last year, a one-day symposium followed by an exhibit on Capital Hill where we had 130 members of Congressional healthcare staffers visit. It started to generate an enthusiasm. This is going to take place again in May of this year; the dates have yet to be determined because it's based on a Congressional calendar. But I would invite everyone in the room to be a part of this process to get this whole effort to move forward and get funding. It's very easy to sell this to Congress. What we all just have to tell them is that we're all going to be patients at some point and do you want that doctor who will be taking care of you to be proficient at what he does and simulation may very well help us to do that. We need to have collaboration, integration of the things that are out there, building the community and getting all the stake holders involved and some of us have forgotten who all the stake holders are. Bringing the gaming

industry into this, and getting all the stake, end-users out there, I think we'll move this forward very quickly.

Butch:
That's a great comment and I'd like to get information on the exact date but as you take that, remember the things that's gonna get that Congressman to really sit-up and take notice won't necessarily be that they're gonna be a patient one day. It will have to be "you're gonna have to face the vote of the people one day". I think what we've done, we're all academic individuals and we do research, we stay within our own realm. But you have to remember, to have a paradigm shift, you're gonna have to also embrace the grass roots level. So any formulation of any plan that does not include a Gerry Young of a national Baptist convention, not because of the religion relation but because we have 8 million people; anything that doesn't involve enlightening these individuals, will leave your grassroots backdoor only locked and it won't get done as quickly as we want. We have to expand. Expand our envelope of awareness on how great things are done. It is not by what resides in your cranial vault, but eventually, it has to reside within your chest.

Mike:
One comment along those lines in terms of the initial part of your talk, was the funding. When the oil and gas industry looked at using immersive environments to help plan their well drilling, the thing that really drove it was that it cost them $11 million dollars to drill a well in the wrong spot. So if they can prevent doing that with these technologies, you can imagine how much funding they have for these types of projects. In medicine, if we can prevent complications, we can have a huge impact on the Medicare tab and the cost for providing healthcare. So there are a lot of people who are interested in this and I think, in taking it to Congress, and in taking it to those people who can appropriate funds for these projects that that's a big thing we have on our side.

Butch:
And Mike, just to illuminate what you said, ladies and gentlemen, those 98 thousand deaths are deaths not from other complications but there's a price tag of 60 billion dollars to our healthcare system to illuminate the data that supports what Mike said.