**The story behind the development of ClubHub Technology**

*Pat Steusloff, CEO and Founder of Kinetek Sports, discusses how ClubHub technology came to life and his goal in developing the most comprehensive swing analysis and shot tracking tool in golf.*

**When did you fall in love with golf and what is your background with the game?**

I fell in love with golf at a very early age. I grew up in a very small town called Jackson, Michigan and my dad would drop us at the golf course and we’d play 9 holes for 25 cents. We’d spend all day there in the summertime.

**You have a Master’s Degree in Bioengineering and Biomedical Engineering and had a very successful career in those fields, so what drove you back to school in 2006 to earn an Associate’s Degree from the Golf Academy of America?**

It was more of a hobby that I was pursuing but I always knew it could lead to some kind of occupation. I just didn’t know what it would be. I knew I was probably not going to end up giving lessons all day somewhere, but having engineering training it was kind of inevitable that it would cross with the golf training I would receive at the Academy. I’ve found that unique opportunities often come from crossing disciplines of training that initially may not seem to fit. I knew that when I graduated from the Golf Academy, I would come out recognized as a qualified, trained golf person and then I could also use my engineering background. I was the oldest guy in my class by a long shot, but after 18 months I earned an Associate’s Degree in Golf Operations Management.

**As the developer of ClubHub, can you explain exactly what its capabilities are?**

ClubHub has been called a “Trackman in your pocket.” It’s a system comprised of 14 sensors (one for each club), a phone app and a web portal. Its unique design allows it to be used on the course as well as on the practice range, making it unlike other swing analyzers. Each shot taken is automatically analyzed and recorded, and can be reviewed on the phone app. All swing data is also pushed to the Cloud and can be reviewed by the player and shared with their instructor. The player can see trends in their swing and compare results since all swings are permanently saved. In addition to swing analysis, it automatically tracks shots on course—the club used, the location and distance of every shot, along with scoring stats such as fairways hit, greens in regulation and putts. ClubHub is superior to other shot tracking systems due to its ability to automatically discriminate a golf swing from other non-swing movements and impacts with a club. Its fully automatic, powers itself on when a club is pulled from the bag and turns itself off when the club is put back in the bag. It uses a standard coin cell battery. That battery, with typical use, will be replaced every six months to a year

**You obviously love golf, so did you have any concerns about developing such a high technology product for a game with such pure elements like walking off yardages and throwing blades of grass in the air to judge wind direction?**

We were very cognizant of the nuances that make golf so special as we developed ClubHub. In fact, they shaped our efforts. Internally, we’ve coined the phrase: “Set it and forget it,” meaning we do not want to slow down the game of golf or intrude, just let the user go play golf. You can still walk off yardages and play as quickly as you’d like. You just launch the app and then play the game the way you’ve always played the game. Nothing else is required. When you’re done playing the game the way you’ve always played it, you can go back and look at the results of your swings on the course. The reason this product is different from everything else on the market is that from the start we designed ClubHub with the golfer’s experience in mind. We’re not shoehorning technology into an athletic endeavor like golf. We’re providing automatic and high quality feedback to the player in a seamless design because we want golfers to play golf and enjoy themselves. We certainly don’t want to get in the way; we want to enhance the experience and help you improve your game.

**How did your background in developing medical technology products help you achieve that seamless design?**

When I worked in healthcare automation, I was developing nursing workflow products. Nurses are some of the busiest people on earth, making split-second decisions that can save lives, so when you impose a product on them it has to be seamless and make them more productive. We never wanted to hinder a nurse’s productivity in order to use the product we developed. When we developed the ClubHub product, I kept that same philosophy and that was the minimum requirement—once the user launches the app and sticks the phone in his or her pocket, they just play golf. To meet that requirement was difficult and we needed to fully understand the action of the golf swing. So you really have to have a deep knowledge of the environment you’re going into and understand what it will take to be unobtrusive to it, and I’m proud to say that we’ve accomplished that

**How did attending the Golf Academy shape that understanding of the golf swing?**

The Golf Academy was critical for me. Specifically, understanding the swing and how it’s taught and variations of how it’s taught. Also, the significance of timing, connection, balance and path in making a golf swing led me to the concepts used in ClubHub. The rules of golf are important in this product as well. I needed to be a player at a level that I could understand how hard it is to get better. I was just below an eight handicap at my best, but think I will get better when I have more time to play and can utilize ClubHub. My relationships from the Golf Academy have also helped in our product development. I’ve recruited some of my classmates to record swings and that allowed us to put the product in the hands of knowledgeable golfers from an early stage in the development.

**There are a few somewhat similar products on the market but none of them record both swing analytics and shot-tracking data on the golf course. How were you able to differentiate the ClubHub product from those competitors?**

Our device monitors and reports key swing parameters like tempo, club head speed, angle of attack, face angle at impact and more. When you attach the sensor to the club it senses that the club is in play but then looks for the motion signature of a golf swing, so the computing that this little device on the end of your club does is quite elaborate. It captures sensor data and then looks at that data and quickly asks if it matches what a golf swing should look like based on the sensor patterns. If it detects that it does, then it communicates the data to the phone, but only if it matches a golf swing. All that is happening in less than one second. It can also analyze everything from a full swing to a chip or putt. So it knows what the motion signatures of all of those actions are. That means it also has to be able to quickly reject other non-swing actions like tapping sand off of your shoe with your sand wedge or two clubs clinking together in your bag or your hand. The heavy math goes on in the phone where all swing parameters except tempo are calculated, but the analysis for the detection of a swing occurs in the ClubHub sensor and in its ability to comprehend the swing data.

**What potential does ClubHub have to make an impact on golfers who work with an instructor?**

We believe it has huge potential. ClubHub is the first product that really provides an opportunity to extend your lesson from the range to the golf course. There are benefits not only to the golfer, but also to professionals giving the lesson. The instructor can now have a more robust relationship with their students by seeing in-depth analysis from their students’ rounds on course. If you’ve ever had a golf lesson you’ve likely experienced what it’s like to finish a range session with your instructor and be at a point where you’re making what felt like a very unnatural move but with great results. Then, when the teacher goes away and you try to repeat it on the course, you have limited success. You ask yourself: What was that move I was making with my swing? The instructor takes you to this place of motion that feels strange and you try to repeat and groove it, but all you have to rely on is your memory or a friend to observe you. With ClubHub, for example, your instructor can say I want your takeaway to be this speed and your downswing to be this speed for this tempo number. The ClubHub sensors and your phone in your pocket on course allow you can see what’s different from the range to the course and identify what to be working on.

**What was it like the first time you tested the product?**

It was really fun. Three years ago we first tested swing analysis and getting that data requires a mathematical model of the golf swing. We developed our model using PC tools like Excel and we sought some University help to put that model together. We’ve refined it, but the basic model has held up really well over the years. The first time we were looking at our own numbers, the thing caught my eye was timing of my swing—the timing of the backswing, then the timing of the downswing from the transition. It was very cool to see the phone reflect what I was doing in my swing and the timing of the backswing and downswing really affected the rest of my swing and where the ball went.

**What have been the reactions of people who have tested it for the first time in front of you and then seen the data that is collected?**

Their heads explode. Generally, when you tell them what it does, it doesn’t make an immediate impact, but when you show them they are blown away. When I demoed it to a group of investors, I predicted changes in the swing analysis parameters based on changes I made in my swing and was then able to show them on the phone. People are amazed that the swing matches the phone. And then our “3D Man” showing the graphic of what happened with your swing is a real eye-opener for most people.

**Were there things you learned the hard way in developing the ClubHub product that were difficult to foresee? And how did you overcome challenges?**

The technology is new, of course, but the tortured path you have to take to develop a product is not new; this has been a classic high technology experience. The people that succeed don’t ask: What have I got myself into? They research what the requirements and challenges will be before selecting a solution. Part of the reason we’re sitting here with a ClubHub product that works so well is the grey hair on the heads of me, Tom Lupfer (CTO & co-Founder) and Mike Kurtz (VP of Software Development). Each of us has been in technology development for more than 20 years. I’ve been doing it for 35 years. Our experience, and the experience of some others that have helped along the way, is what has made this possible. In combination, we get through the challenges that come up.