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TO GROW OR NOT TO GROW, THAT IS SLOPRO[1]

Building an App is one thing… Building a Company and an enduring business is an entirely other and much more complicated thing! Building a socially networked community of registered users with a resulting enterprise value is a third thing.

Jon Lund, a mechanical engineer with a hobby building mobile applications for the mobile device community on the new Apple App Store, had just hung up the phone with his brother-in-law after discussing what to do next. His company, started in his spare time, was now two companies with several different partnering relationships all bootstrapped from the early successes his apps had had in the marketplace.

Jon's first app was a financial calculator that he built in his spare time based upon a spreadsheet calculator he built to help at work. Mostly, he just wanted to see if he could teach himself how to build an iOS app, get it accepted in the Apple Store, and generate revenue from the app. The resulting app actually had a number of unique advantages and quickly began generating downloads. This mild success encouraged Jon to create more financial apps. He partnered with friends and family to bootstrap a few additional apps while working full time at his day job in aircraft engine manufacturing. As revenue grew, he quit his day job and began to focus on apps that tapped into GPS (global positioning system) and smartphones' capabilities to map their individual location. Jon enjoyed the outdoors and was interested in the intersection of geo-positioning on all kinds of outdoor activities and sports. Almost by accident, he came across an unexploited functionality in the new iPhone 4S that allowed the camera to actually record twice as many frames per second (fps) as the Apple software on the phone allowed. He and his team realized that an app that enabled that functionality would be very interesting to a community of users that were adopting their iPhones as their principle video capture device. And, many users in that community were also outdoor enthusiasts – it seemed like a perfect fit.

From that realization grew the group's most successful app, SloPro. It had just passed the 6 million user mark and was the most significant source of revenue for his companies. But competition to SloPro was growing on all fronts – including ten ton gorilla Apple itself – and some of his past decisions had actually opened the door for more competition. Meanwhile, Jon and everyone else in the business were busy – in most cases doing everything but focusing on SloPro. What should he do? Hire more resources? Spin off the company? Concentrate on one app or diversify across multiple app segments?

Jon Lund

SloPro was generating a healthy revenue stream that not only made the partners comfortable with what they had but also nervous about making any changes. At the same time, other app companies were taking a different approach – they would focus on amassing huge numbers of users without any concern for bottom line financials. News of some mobile apps selling for billions of dollars left small development studios licking their chops for the big bucks. Not lost on Jon was the fact that Instagram with 40 million users and no significant revenue just sold for $1 billion to Facebook[2]. Did that mean SloPro was worth $140 million or so? That kind of value seemed to mean social networks, investor money, and acquisitions. Growing SloPro seemed to mean moving to where the talent and the investors were in the San Francisco Bay area. Since founding the company in 2008, Jon had always struggled to balance the risk and the reward, singular app focus and multi-app diversity. His products ranged all the way from a card game to geo-positioning to slow motion video, so it seemed to him they had favored the safer, diversified route. Was it time now to focus on just one path, one app, and go big?

Engineering and the Day Job

Jon studied mechanical engineering at Brigham Young University for his undergraduate and graduate degrees. There was quite a bit of latitude in the engineering program to choose a specialty and Jon found that he had a knack for programming. In his day job at the Provo Postal Credit Union, he started tinkering with JavaScript out of his love for programming and ended up developing a risk analysis program that they used for many years even after he left.

Jon began using more and more of his free time to write programs and started exploring ways to make money from his new skill. In all of his attempts, he found that the most difficult part—and also the part he enjoyed the least—was actually distributing the program to people. Challenges like gaining market awareness, handling the transaction, and just generally having an environment where people were comfortable spending money proved to be too much for Jon's hobby attempts.

His programming skills improved a great deal through his graduate degrees and internships where he was able to find a place for programming at all of them. He used C programming in his internships at Pratt and Whitney and GE and also developed his Flash and server-side programming skills at night with his side projects. He had some coaching from his programmer father, but, for the most part was self-taught using books and the Internet.

After returning to BYU for an MBA he was hired by Belcan Engineering to manage their new Provo office where he hired BYU undergrads and trained them to write plug-ins to CAD systems. It was during this time that the iPhone was announced and Jon was one of the first customers to have one.

Experimenting with Apps

Web Apps

On June 11, 2007 Steve Jobs introduced the concept of web apps for the iPhone. Web apps weren't much more than a standard way of creating a webpage so that it would display nicely on an iPhone. Apple even included a way for web app icons to remain on the iPhone home screen. In and of itself, this was not much more than just having a browser bookmark. Some people even created workarounds that would encode an entire PDF and base 64 in a URL solely so they could store the entire “app” on the device. In

[2] Rusli, E. M. (2012). Facebook buys Instagram for $1 billion. *The New York Times*, 9

spite of the Apple launch "buzz", the software community was a little unsatisfied with web apps and the industry did not see a great deal of initial activity.

Nonetheless, Jon took interest in the capabilities of Web apps mainly because he had an iPhone and was a technology enthusiast. One of his first apps was a super-lightweight Scriptures viewer that made use of Ajax and gzip compression to deliver the Bible and Book of Mormon in a very responsive way over an "Edge" cellular network connection. Another app he created was an entire end-to-end system that allowed Jon to stream his movies from his home computer to his iPhone at three different bandwidth levels depending on the speed of his connection. Because of all this tinkering, Jon was anxious for the next announcement from Apple – hoping that they would really open up to third-party development.

App Store

On March 6, 2008 Apple announced that they would start to allow third-parties to develop apps for the iPhone. As part of this launch, Steve Jobs announced the Apple App Store and how it would work. Developers would write their own apps, set their own price, submit them to Apple who would make them available to all iPhone users and take a 30% commission on gross revenue. (see Exhibit 1)

Jon recalls watching the broadcast of this announcement:

> "I was really excited to hear that they were going to start letting us develop apps for the iPhone. After all this time struggling with web apps we were finally going to get some real power. Network speeds at the time were pretty bad so one of the most exciting things was just the fact that we could store stuff on the device."
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> "The other thing I was really excited about was the App Store. Because of all my failed entrepreneurial attempts, I gained an appreciation for the power of the distribution channel. I like to program but I hated doing all the other stuff. This [the App Store] was going to give me the opportunity to do what I like to do and Apple would take care the rest. A lot of people complained about the 30% commission that Apple would retain but I had no issue with it whatsoever. I knew that for me to put together a global distribution channel would cost me way more money than that, and, this way, I could do it with zero risk."
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> "So the first thing I did was organize a phone call with some of the people that I trusted the most. It was an odd group. Looking back on it, most of them didn't know each other and I really didn't get the response I was hoping for. Most of it was probably because they were all busy following their career paths and weren't in a position to do anything major at the time. I remember that one of the apps I proposed to them would have been an enormous undertaking and is still one of my favorite ideas that I haven't gotten around to."

Getting into Business

Partnering Up

Jon decided to tiptoe into development and selected a couple of ideas that he wanted to work on in his spare time. Spencer Smith was a coworker that had been an especially fast programming learner. Jon suggested that Spencer should buy himself a MacBook and that they should go into business together building apps. On a student budget, Spencer's wife was reluctant to agree to the purchase of an expensive laptop and made the comment that his "app sales probably wouldn't even be able to pay back the cost of an Apple laptop".

Using his experience at the credit union Jon put together a Loan Calculator app in a fairly short amount of time. Spencer took the lead on a birthday organizer app and by the time the app store went live they had two apps ready to go. They paid their $99 for an Apple developer account and registered under the name of Garafa, which was an LLC Jon had created originally for selling Flash websites for photographers. The name meant nothing—it was simply a variation of the co-founder's favorite word in Portuguese since every other domain name seemed to be taken. As Jon said,

> "I remember the development environment being quite rough back then. You couldn't just 'Google' your problem because nobody was doing iPhone development before that. One night, Spencer and I were on a business trip and we were coding in the hotel room when we ran into a problem we just couldn't figure out. It was pouring rain that night and we drove all over town hitting all the bookstores in an attempt to find any kind of objective-C or Cocoa programming book that could help us out. Today that same problem would take about one minute to figure out."

First Sales

On June 19, 2009, almost 2 years after the release of the first iPhone, the app store went live. Jon was in line at the AT&T store the entire night before so he could purchase an iPhone 3GS.

> "I remember going to the mall to check with the AT&T people about how the sale of the iPhone would go. When I got there I saw a few people start to form a line and so without any preparation I parked my car and stood in line. It was a really fun night because everybody there was a buzz of excitement about the new phone. I was proud to tell people that I had two apps in the app store and was excited that at least a few people committed to download them."

> "I remember Spencer called me a few times that evening to update me on what he was seeing in iTunes©. Apparently, you could purchase apps through iTunes© that night even though you couldn't actually put them on your phone yet until you had the new operating system. Also for that small amount of time, iTunes© would actually tell you how many downloads an app had received. You can imagine we were really excited when we saw that our app started to get downloads. At that time there were only 500 apps total and it blows my mind looking back that we had two of them which was .4% of all available apps!"

At a price tag of $0.99, Loan Calc made over $10,000 in its first month and Jon and Spencer started to wonder if this could really take off. Birthday's Organizer had done even better (although the details are a little unclear since the reporting from Apple back then was much harder to manage). They both had families to take care of so they decided to proceed very conservatively and stay at the day job while building apps in their spare time at night. After all, how long could this last before the market was saturated with apps ?

GPS Kit

Jon was a bit of an outdoor enthusiast and was very excited about the fact that his iPhone 3GS had real time GPS (geolocation through global satellite positioning) built-in. He owned a nice Garmin GPS radio and figured that he could create the same functionality on his phone while improving the data upload/download experience using its Internet connection. He enlisted another friend from work and the three of them got to work building the first third-party GPS app. It would not even have a map but just six data readouts that could be configured from several options, such as speed, odometer, trip time, and latitude/longitude. (See Exhibit 2)

After many weeks of late night programming GPS Kit hit the App Store. Because it would be the only one of its kind and they felt like it required much more advanced programming, they set the price at

$9.99. On its first day, sales blew Jon and Spencer's minds with a whopping $4,600 in revenue after Apple's cut. For the first time it occurred to them that building apps might be able to turn into a "real career".

The team began to work on GPS Kit version 2 which would include a map and tracking capability. The map would be a simple sketch of the path the GPS had taken with no background imagery. Tracking introduced a host of new challenges such as filtering noise, slower performance, and decreased battery life. Other factors made development arduous. The build process was slow. Because the GPS functionality could only run on the Apple device, they could not use the off device iOS software simulator. In addition, compile times were a minute or more every time. To simulate "mobile", the team would periodically pile into a Honda Civic with all their laptops and drive around while they tested. Apple did not have any mechanism for background geolocation tracking at that time. This presented a "huge" usability problem for long range tracking and a very time consuming process for code development and testing.

Hacks

At this point, other iOS developers were starting to show up on the web and the possibility for collaboration started to pay off. The team noticed an app that somehow made use of the proximity sensor to shut off the screen when held up to your face, just like the normal phone operation. Again, by tapping into the worldwide web developer community they discovered that this was accomplished using a private API (application programming interface)[3]. This Private API was a function used internally by Apple but not made available to developers. The team figured out how to use the proximity sensor's Private API and drastically improved the ability to track the phone's location while moving over long distances by simply putting the iPhone into a pocket while the screen was still on. The proximity sensor would blank out the screen, save battery power, and block any inadvertent touches.

The team also discovered that as long as they kept a sound playing the OS would permit the app to continue to run after the home button was pressed and the app was put into the background. This still didn't overcome the potential problem of the sleep button being pressed by the user. The sleep button (top right of the phone on the iPhone 4 and 5) would shut the screen off entirely. To cope with this and poor battery life they initially added a lock feature that would cover the screen with a black image and the screen would reject any taps until a finger was used to slide the icon to the right to remove the image and resume normal operation.[4]

Competition and the App Gold Rush

At this point, the team's approach to app software development was very crude. Jon and Spencer learned how to program but knew nothing about formal software development. They knew nothing of version control, test plans, or quality assurance. And, their focus was on the technology rather than other major business factors such as exploiting the full potential of the App Store ecosystem. Their singular technology focus, while a potential downfall, was also a competitive advantage from their point of view. As a

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[3] Web API: An API that exposes backend systems over the Web, using the HTTP protocol, specifically to facilitate the creation of Web, mobile and cloud applications - See more at: http://www.apiacademy.co/lessons/api-strategy/what-api#sthash.Z3lvCMBH.dpuf

[4] As a side note, the team found that these workarounds made the app much better from a technical standpoint but tended to confuse the average user and resulted in poor user ratings on the app store. Also, Apple would later ban the use of private APIs but in some cases (like that of the proximity sensor) they would migrate them to public API availability.

small team, they felt their focus eliminated distractions and kept them unbiased and nimble. After all, acting as a tight, nimble, technology focused team they had been one of the first in the App Store and the first independent app to GPS.

But, they were also exhausted. They had been burning the midnight oil for several months and they were tired. Plus, it was ski season and they lived only a few minutes from Sundance. A third partner Brett, left the team to focus on building a house.

At the same time, word was getting out about apps making money. The stories about teenage kids making thousands of dollars were gobbled up by the press and encouraged many new entrants. At the time, the App Store listings were sorted by time with the most recently updated apps at the top. One trick to boost sales was to continually put out updates so that you would be near the top in app store searchers. Suddenly, with all the new apps showing up it was getting more and more difficult to get discovered in the noise.

Inevitably, after a few months of GPS Kit being the only app of its kind, another GPS integrated app showed up on the app store called Motion-X GPS. It was listed at a much lower price ($2.99) than GPS Kit and also offered a free version with limited functionality that the creators used to promote sales of the paid version (this was long before in-app purchases were made available by Apple).[5]

Ratings and Reviews

At this early stage in the app store, the review system was still fairly unregulated. It wasn't as bad as at the beginning, when you could review an app you had not even purchased. But, there were no controls in place to prevent competitors from attacking your reviews and your "star" rating. To its chagrin, Garafa found that the star rating and the most visible reviews made a big impact on sales.

For example, after one competitor's GPS app had its initial success and then saw a dip in sales, GPS Kit mysteriously began receiving lots of negative reviews that said all kinds of wild claims. Some of these claims included such things as "running GPS Kit deleted all the contacts on my phone" and "I'm running GPS Kit and it's messing up the phone entirely". The impact on sales was immediate as from one day to the next, GPS Kit's income dropped $1,000/day. Fortunately, Garafa believed it was able to prove that these reviews were coming from the specific competitor and submitted their findings to Apple in the form of a "Report Concern" link. Unfortunately, there was never any response or action from Apple to remove the damaging reviews.

Another important lesson for Garafa regarding software development came from user reviews. A user that went by the handle of "DoctorKen" would repost his negative review every time a new version of GPS kit was released. The phrase he used every time was "not ready for primetime" and it became commonplace among the Garafa team to use this term when referring to any kind of bug. It was painful, but, in the long run was very helpful for them as the negative reviews motivated the team to institute more effective approaches to bug-free software quality assurance.

The team summarized their ratings and reviews lessons learned as follows:

- Most importantly, drown out the bad reviews with good ones. Proactively prompt your users to give you a review at a moment during their app experience when they are likely to give you a

[5] This approach would come to be known as a "Freemium" model where users could try a less powerful version of the app for free and then pay to add features or to release "watermarks" or to eliminate advertisements.

good review. In the iTunes app store there is no way to respond to negative comments so it is best to just bury them with great reviews.

- Be aware that paid apps are rated more harshly than free apps. The Freemium model, at the very least, allows your customers to try before they buy and should improve their reviews of your paid version – if your app really does what it promises to do.

- When a new version of your app comes out make sure you proactively prompt lots of users to leave reviews so you don't lose your place in the rankings by having no reviews on your newest version of the app.

- Set your customers' expectations appropriately using your description. Don't overpromise or they will punish you with poor reviews.

- And, give the user some other outlet for their frustration. For example, always provide a support link or e-mail address they can use to get a hold of you to resolve an issue without having to leave a negative review. The feedback you get from them can be invaluable. Whether you change the app or not as a result of the feedback, make sure you respond to the user who complained.

Initial Growth

Quitting the Day Job

For the last year, Jon and Spencer were building apps and still working full-time at their engineering jobs. They both were married and had children so a stable source of income was always a priority. Slowly, steadily however, they had reached the point where the income from apps was exceeding that from a pay-check and it looked to be something they could rely upon for the immediate future.

Jon recounts:

> "I was actually really happy with my engineering day job. I had been very lucky to be in the right place at the right time to get such a great opportunity. I really liked the people I worked with and I liked the company I worked for. In all honesty, I think half of the reason why the company set up that office in Utah was so that they would have an excuse to come out skiing. When executives visited, we would barbecue on the roof and ski wherever there was fresh powder. Plus, ninety percent of the leadership in the company was retirement age so upward mobility looked really good.
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> At the same time, though, I had always wanted to run my own business and the app stuff was probably going to be the best opportunity I would have to do it without taking too much risk.
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> Another thing that made it difficult for me was the fact that I was the manager and also handled a lot of the business development. I didn't want to leave the day job if that meant my friends were all going to lose their jobs. It took some time before I felt like that wasn't going to be the case."

After quitting the day job, Jon and Spencer began working full time from Jon's basement. They enjoyed the new sense of freedom and the extra time they were able to dedicate to app building (and possibly some snowmobiling).

New Partners

In order to spend more time on their apps, Jon and Spencer brought on a couple more members of the team to take care of the contracting obligations. Joe was a graphic designer that they had been sub-contracting with for a while and Kevin was Jon's brother-in-law and was writing apps at a nearby firm. (see Exhibit 3)

Their four-way partnership started in May, 2010, with Spencer and Jon each owning 30% of the equity and Joe and Kevin owning 20% each. This began to work well and they saw their revenue stream begin to grow. However, at the end of the year the new partners looked at the financials and were a little disappointed that a 20% share of the profits was not quite as much as the salary plus benefits of Kevin's last job. Also, Joe was getting tempted to pick up outside contracting on the side.

In addition, there was not a clear division of work between who was working on their proprietary apps and who was working on any contracted app development work they might pursue. Would the unequal ownership split make sharing work more difficult? Would it ultimately split the partnership? GPS Kit sales had improved and it felt like they were all working as one equal team. Considering all these factors Jon and Spencer discussed how they were concerned about Kevin and Joe not making enough money. The original founders considered giving the two new members a bonus to top them up to a $100,000 salary but in the end they decided to just change the ownership to be an even four-way (25% each) split.

The most important ground rule in making this arrangement work was that all decisions would be made unanimously. It also greatly helped that Jon had written their own accounting system and it had the capability of assigning a percentage value per owner to every journal entry. This way, if somebody wanted to buy a piece of hardware, like an iPad for example, without consulting the rest of the group he could do so and simply sign to acknowledge that transaction was to be his alone. The accounting system was more than capable of generating a standard set of accounting statements for the combination of the group or for each person individually.

The team began to realize that contracting was not as fun as building their own apps. Also, building their own portfolio of apps had the benefit of an ongoing residual revenue stream. So the team set the goal at the beginning of 2011 to make enough money from their proprietary apps that they did not need to accept any contracting jobs. They worked backwards from there and decided on different levels of income for which to shoot. They all agreed that $1000 a day was the minimum level for achieving their revenue goal. (see Exhibit 4)

With their new goal, they set out to grow their app store income. They decided that they would divide their time into three parts until they met their goal:

1. 33% contracting
2. 33% new apps
3. 33% “milking” their existing apps

A Renewed Focus

The question that continued to come up was whether they should build lots of little apps or if they should focus on big apps. In part, due to their contracting experience, the team found that they were very efficient at building “smaller” apps and could put an entire app together in a week or less.

One example of such an app was “Road Trip Weather” – an app they designed to help the user decide when to leave on a road trip based on weather conditions. Because of their experience pulling weather information from public government sources in GPS kit, the team was quickly able to put together Road

Trip Weather. Once the user specified an origin and destination, the app calculated the route and then pulled weather information along that route at the specific time that you reach each point along the route. The weather info was then colored to show a "driving quality" scoring algorithm.

The development cycle for Road Trip Weather spanned approximately 3 weeks but did not require the entire team for that whole time. They estimated that it only took 1-1.5 weeks' worth of their combined time. Additional time was also required for some level of maintenance over time as the APIs from the service providers of weather and route calculation changed. Each new version of Apple's operating system required enough attention to merit an update to Road Trip Weather.

Another example of a small app the team developed was called "Geohash+". Geohashing is an outdoor activity similar to geocaching that was made up by the author of a web comic (www.xkcd.com). Geohashing challenges a user to reach a new location chosen by the program at random every day. The team was excited to develop Geohashing as an app but when they investigated the phenomenon fully they became aware that most people had never heard of it before. In spite of this intelligence, they went forward with Geohash+ development based on two rationales:

1) that it had not caught on yet because the existing user experience was too cumbersome and with an app that could be alleviated to some extent, and,

2) they were sure that it would not take more than a week.

In the end, this small app was pretty much a failure as far as being a business venture was concerned.

A third example of a small app Garafa developed was called "Track Editor". It was simply a utility to edit GPS tracks. If the user forgets to turn off the GPS tracking at the end of a route the speed and elevation statistics will be affected as the app continues to record. A user who loads her bike on the car and drives away without ending the GPS tracking will suddenly corrupt the use statistics. Track Editor gave the user an ability to go back and delete the offending portions of the track and recover the original route. In developing this app, the team had to make an interesting choice as to whether they should include this as a feature of their GPS Kit app or whether they should provide it as its own app so users who use other GPS apps could make use of it. Ultimately, they decided to go the second route because it would enable them (in theory anyway) to also attract users to their GPS Kit app who were currently using something else. Again, this app was built with about one week's worth of team effort over the span of a couple of weeks and offered on the app store straightaway.

By comparison, an example of a really big app that they developed was GIS Kit and GIS Pro. Since they offered the most expensive, high-end GPS app on the market they started to discover that many of their users were using it for professional applications. Many of the more professional users suggest on the Garafa support line that they would be willing to pay a much higher price for a professional quality app. The same users would also typically request many more features from the app not used by the standard user of the app. With the introduction of the iPad, Jon suspected that the professional market segment would grow significantly and that this segment would be willing to pay a higher price for high-end software. Coincidentally, the team also discovered that there was a huge industry in GIS (geographic information systems) that was highly antiquated and was in desperate need of newer and simpler technology. These factors led to the separate development of GIS Kit and GIS Pro - essentially the same product with different pricing for different features to accommodate different use cases. GIS Pro allowed users to collect data in the form of geospatially referenced points, lines, and polygons and attach all types of information to these objects. Unlike small app development, this large app development required more research, more programming, more intense testing and debugging, and took many more programming weeks of effort

over several months. The team began to realize that a "bigger app" with an expensive price tag required a very different more expensive approach and incurred much more risk with a failure.

Part of the justification for doing this large project came from discussions with two specific potential customers that were supposedly going to spend lots of money on the final product. In the end, these professional customer commitments did not materialize – at least not right away—and the product performed relatively poorly compared to the amount of effort required to build it. In part, the team realized that the slower adoption of professional users was partially due to the fact that businesses take longer to make decisions. Over time, the GIS Pro product sales improved and became a stable contribution to their combined revenue and justified the risk they took in its development.

By the end of the year, Garafa's combined portfolio was meeting the minimum income level requirement they had set for being able to stop all contracting. At the beginning of 2012 they celebrated with a company party and established a new set of goals and decided that they would turn down all contracting from that point forward. They also set a new target of $1 million in annual revenue from App Store sales.

SloPro

Driven by their new goal, Garafa started the New Year with lots of new ideas and motivation. They would now change their time breakdown from three parts (with contracting) to two equal parts: 50% of their time spent doing new apps and 50% of their time maintaining and enhancing their existing app portfolio.

One of the new apps that Jon wanted to build was a more convenient video camera app for filming soccer games. He thought of this while trying to video his kids playing soccer, where it was a challenge to film all of the best moments from the soccer game without completely filling up the storage space of the iPhone. The way he planned to solve this was by recording in a lower resolution (smaller file size) and also by providing the user a way to record continually but, in real time, be able to discard the recording if nothing cool happened.

As Jon started building the new product, he became familiar with the iPhone camera APIs and started exploring the possibilities. Jon decided to follow the sage advice of "Dilbert" cartoonist Scott Adams who says, "Engineers believe that if it ain't broke it doesn't have enough features yet." Jon saw that there was a setting for frame rate and so he thought he would see what happened if he gave it a higher number than the standard 30 frames per second (fps). At the time he was using an iPhone 4S and when he set it to 60 fps it still did 30 fps. He searched the Internet to see if 60 fps was possible with the iPhone camera and the consensus seemed to be that it was not. Not satisfied, he thought he would keep testing settings just to see if he could get something to happen by trying all different fps rates. When he tried 59 instead of 60 he was not completely sure but thought that the camera looked to be actually recording at 59 fps. So he loaded a "build" onto his phone and went outside to test in the sunlight.

> "I remember the first video I recorded at [essentially] 60 frames per second. I was pouring water on the stone wall outside of my house and the screen looked like it was recording into the future because it was actually displaying 60 frames per second. It seems like the video image had more life to it than the actual thing. I started freaking out and told the other guys that they had to come and see it."

Jon had just discovered a feature of the hardware not exploited by any other software – including Apple's own camera app. After loading the results on the computer and verifying that it was indeed 59 frames per second (which for all intents and purposes they would call 60 from this point out) they decided to abandon the camcorder project and build a slow-motion app – SloPro was born.

About this time a state run competition was being held and they decided to enter. Jon submitted an early version of what would become SloPro the night it was due and they later heard that they were selected as finalists. In the meantime they were developing their app and having a lot of fun testing it in all sorts of settings, such as skiing and motorcycling at the sand dunes.

App Design

Garafa's philosophy of how to build excellent apps had always been to use their apps in the environment a customer would use them. So, they set to "work" doing all sorts of outdoor activities and using their beta builds of SloPro to film them. This proved to be invaluable because one of the first things they discovered was the processing of the image shot was preventing instant user gratification. The initial version of SloPro that they were testing would actually process the video immediately after shooting. This was problematic for two reasons: 1) if you wanted to film again in rapid succession it was not possible because you had to wait for the processing to finish, and 2) if you wanted to review your footage (which you always did) you also had to wait for the processing to finish. This was very frustrating and the team knew right away that they had to find some way to provide what they called instant user gratification. In-use testing was essential to building apps customers would use right out of the box.

Branding

Because this app was going to be so drastically different from the GPS apps they were selling at the time, and especially since GIS kit and GIS Pro were targeting commercial businesses, they thought it would be best to create another company and brand that they could use to sell consumer focused apps. They decided to name the new company *Sand Mountain Studios* after Sand Mountain, the biggest hill climb at the Little Sahara Sand Dunes recreation area outside of Provo, Utah, where they would ride motorcycles and four wheelers together.

Pricing

The team decided that they wanted to use a freemium model since they anticipated that the app had widespread market appeal and that many of their potential customers would be younger and less willing to purchase an app. It also seemed to be a successful model that was gaining popularity with app developers.

The challenge was to determine at which point in the app usage the up-sell would be made. They learned from their previous experience with app store customers that once you gave something to them it was very difficult to take it away or make them pay for it. They also wanted every user, whether paid or free, to be able to use the full coolness – real-time slow motion video – of the app without "crippling" the selling feature in any way.

The team felt very good about what they finally settled upon. They decided that those users that would not pay for the upgrade would be required to keep a SloPro banner (aka watermark) at the bottom of their recorded video and would be able to share their videos only on social networks. The philosophy behind this was that SMS (Sand Mountain Studios) would trade them free use of the app for the user video essentially advertising SloPro to everyone who saw it. The up-sell would cost $0.99 and would remove the watermark from the video and allow the user to export their video to the camera roll.

The day finally came when the app was ready and it was time to present at the Utah state business competition. The grand prize was $10,000 in cash as well as other in-kind services. The team was required to describe how they would use the prize money, and they said that it would be put into a big publicity event for product market launch. The judges not only gave them the grand prize but were genuinely excited about the app. Interestingly enough, one of the questions the team was asked during the competition was how they ever planned to "monetize" the value of their business. The judge asking the question cited In-

stagram as an example of a failed business model with many users and no revenue suggesting it would never be able to monetize its app. Ironically enough, only a week later Instagram with 40 million users and nearly no revenue was bought for $1 billion by Facebook.

Launch Plans

A popular YouTuber with the username *devinsupertramp* was from Provo and was an MBA classmate of Jon's brother. Devin's videos were all action-packed, high-energy and had a focus on high quality cinematography so it seemed like a match made in heaven for the launch of SloPro. At the time however, Devin was very busy and was gaining popularity very fast on YouTube and most of his time was occupied by flying around the world to shoot cool videos. Arrangements were made for them to meet and the SloPro team hoped to get featured in one of Devin's videos. At the time he had 500,000 subscribers so this would provide a substantial way to launch their app.

Unfortunately, a video with Devin never materialized and as the launch date got closer for SloPro the pressure increased to find a consumer attention grabbing way to launch the app. The team talked with other youtubers but was unsatisfied with the results of the negotiations.

The team finally accepted that they would have to make their own video. Joe had significant experience in video production but mostly all in filming and post production from a technical standpoint rather than script writing and directing. In addition, his wife came down with bacterial meningitis right before the app launched so Joe was at the hospital and was unable to help with a video. Separately, Kevin had a commitment and so Jon and Spencer we left to come up with some kind of video to announce the product. As Jon recalled,

> "The way that day went was pretty unbelievable. We had some leftover passes to The Canyons ski resort and so we thought we would head up there and try to record something. The stroke of genius was that we realized we didn't need to film ourselves and instead we just needed to find someone else who looked like they knew what they were doing. On our first run we skied down the terrain park and stopped at the top of a large jump. Spencer got out his phone and we briefly ran through how we might stage the video and narration. I got out my phone to film him and just then some snowboarder started coming down the hill so we both started recording.
>
> What happened next was unbelievable - the timing was perfect. The snowboarder did a cool 360 and the lighting and angles of both cameras were just right. When we stopped recording, I looked at Spencer in shock and said, 'I think we got it!' Sure enough, we reviewed the footage and it was perfect. I just could not believe that we pulled it off at all let alone on our first take! The rest of it we shot for background purposes at the exclusive Stein Ericksen lodge on the slope where we just pretended to fit in so they wouldn't throw us out. We barely scraped up enough quarters to pay even a meager tip for the mandatory valet parking."

When the app launched, Joe was in the hospital and was able to spend a lot of time sending out tweets and emails to different tech blogs. It made a pretty good story because we were essentially announcing new hardware specs for the iPhone. Prior to this nobody knew that it could do (almost) sixty fps. Several tech blogs picked up the story and SloPro began to take-off.

SloPro 2.0: Features and Marketing the App

The team quickly began working on a second version that would include the ability to use the plus button of the phone to start and stop recording and the minus button to toggle slow-motion on and off. The team also started thinking of ideas of how they might find other ways to monetize the app. They wanted people to be able to spend more time in the app and be inspired by ways to make and share cooler videos.

One idea they came up with to accomplish these goals was to create a video feed. They knew that companies like Fieldwood featured videos created by other users and that they formed deals with companies like Sunmountain to feature specific videos and to potentially promote their videos. The SloPro team reached out to a connection at Redbull at the time and they began trying to make contacts at a local company, Skullcandy, in the hopes of making some type of mutually beneficial arrangement that leveraged the a SloPro enhanced video feed using those products to co-market to users.

In order to promote version 2, the SloPro team decided it was important to make another YouTube video. This time they went to a local recreation facility that had a Flo Rider surfing simulator/trainer set-up. The SloPro team had just hired a marketing intern – Nate – and his first day on the job would be surfing for the camera. It also happened to be his first time surfing – ever. The video turned out well and they decided to launch version 2.0 even though the co-marketing was not in place. Unfortunately, the video feed approach was a little bit of a disappointment. They had moved quickly with really nice new features but there were not nearly as many views as they had hoped and they only were able to generate moderate interest from potential co-marketing sponsors.

SloPro 3.0: iOS Migration

Things were going well for SloPro and the team started to worry that the loophole they had found that allow them to use 60 frames per second would not survive the next version of the operating system, iOS 6 or a new iPhone. Historically, Apple was very successful at migrating users to their new operating systems and there was little doubt that Apple would add their own software to exploit whatever level of fps capability they built into the new phone. It was not an option for the SloPro team to remain complacent and simply hope that their users would not upgrade.

In addition, they were surprised to find out that many of their users were happily using the app on Apple devices that could not even shoot at 60 fps. At the time, only the iPhone 4S was capable of this recording level using SloPro (or any other software). In fact, users seemed to be bothered only when the app would present them a dialog telling them that they were not able to shoot 60 frames per second. Otherwise it seemed that for the most part "ignorance is bliss". Nonetheless, the team needed to prepare SloPro for the future versions of iOS and for the next iPhone.

Optical Flow for SloPro 3.0

So in order to insulate against the potential loss of their unique 60 fps advantage to a new iPhone, the team began working on an algorithm called optical flow. Optical flow uses mathematical calculations for motion estimations and video compression to ideally increase the effective resolution of individual images in a sequence. Particularly in a device without the technical capability for more than 30 fps, an optical flow capability promised to simulate in the app software a slow motion frame resolution. Ideally, Jon believed that increasing relative optical flow capabilities in the SloPro app would improve the user experience over a wide range of devices.

The team needed some help on the math involved. Fortunately, they were able to pick up an intern from the University of Utah who was a computer science major and who said on his resume that he loved math. He did not know Objective-C, which was the native programming environment for apps on the iPhone, but he was very familiar with OpenGL, which is the language used for computations done on the graphics card.

Jon had done extensive research in optical flow and video processing techniques and really wanted to be able to integrate performance calculations right off the graphics card due to the significant performance advantages. He was able to set up a programming environment where Derek, the new programmer intern,

was able to mostly program in OpenGL. The task was expected to take a couple months. Jon's recollection of what happened next was the following:

> "After about two days of working on optical flow, Derek came and stood behind me as he did when he wanted to ask a question. He was very timid guy and so he would just stand there because he did not want to interrupt my work. I remember turning around and asking if there were something I could help him with and he said, 'I think I'm done'. Everybody overheard this and turned around incredulously. We all gathered around Derek's computer and sure enough he demonstrated to us a beautiful example of optical flow. It blew our minds".

Unfortunately, Derek had to learn the pains of professional software development, which is that the devil is in the details. It was another two months before optical flow was "ready for primetime", but it was a thing of beauty. Because of their GPU (graphics card) approach the algorithm not only was fast, but it was faster than Apple's own implementation running on a desktop computer! In all the tests they ran the results were even higher quality than Apple's.

Importing

With the ability to slow down non-60fps videos solved, the team decided to add the ability in SloPro 3.0 to import videos. Customer feedback online indicated that this feature was in high demand. Also, many of the videos in the action sports category were being filmed with small point-of-view (POV) cameras such as the GoPro. Once shot, those videos could be uploaded to the mobile camera roll and, ideally, imported to SloPro for further editing.

Jon's former boss, Dave Rodney, was a GoPro user that was really frustrated with the experience. In all of GoPro's promotional videos it would show moments of super-slow motion. The reality was that the super-slow motion was only accomplished using optical flow post-processing with expensive third party software like Twixtor that cost a minimum of $299. This unmet demand for a low cost slow motion video editor on a mobile device created significant motivation for the team to add the ability to import videos and even prompted discussions of building a desktop version.

Price Change

The other big change was a change in price of the in-app purchase from $0.99 to $3.99. Jon's brother, Barney, was doing an MBA with a marketing emphasis and suggested they raise their price. The team assigned Nate, the marketing intern, to analyze all the data and determine a recommendation for the optimal price. Nate claimed that there was both a psychological and material reason to increase the price. Materially, Nate found that many apps that provided a utility, versus a gaming, capability were priced in the $1.99 to $9.99 range. He claimed $0.99 was considered cheap by the consumer while $3.99 was considered a point where the consumer perceived a value for price trade-off. Nate's conclusion was that a significant increase in price would have a positive effect on net income, so the team decided to go with it. Sure enough, the net result was very positive and they began making significantly more money.

Launch

The team decided again to make their own high energy video to promote the new, improved version 3. One of devinsupertramp's most popular YouTube videos was filmed at a nearby pond and featured young people jumping bikes into the water from a huge dirt ramp. The SloPro team picked a nice day to go to the pond and to their surprise there was already a fairly large group of teenagers there doing jumps into the water.

Again, they decided it might be better to put all their effort into filming others rather than being the subjects themselves. However, toward the end of filming they took turns jumping their "SloPro bike" into the pond themselves. Derek took everyone by surprise. As Jon recalled,

> "I'll never forget this - it was one of the coolest moments of my life. To fully appreciate this you need to know what Derek was like. He was super quiet. He stuttered when he talked and he carried a Nintendo DS around in a holster on his hip. When we were almost done filming he picked up the bike and said, "I-I-I'm going to go." We all thought he was taking the bike and heading back to the truck so we didn't think too much about it except "that was weird". The next thing we knew, we looked up the hill at the place where you start from to get speed and there was Derek and the bike! He was wearing flip-flops and we all thought he was going to die, but we caught it on video. He hit an amazing jump and there is a great tribute to this moment on YouTube and we featured it within the in-app feed. We were proud of Derek. He had done a great job with the internship and now he was that much cooler to us. The next year after he graduated we were able to help him get his dream job as a computer game programmer. Great guy."

As expected, Apple announced iOS 6 and the early beta that was released to developers appeared to kill the loophole that allowed 60fps recording. This was very bad news for Sand Mountain Studios because in their minds it was that loophole that was the foundational feature of the app. They had imagined this day and had done everything they could to prepare for the worst. With iOS6 out some complaints began to come in, but, to the team's surprise, sales actually increased! SloPro 3.0 still provided an editing and slow motion capability not found elsewhere in the app store – SloPro remained relevant.

iOS 7 & Native Slow Motion

The team attended Apple's Worldwide Developer Conference (WWDC) in San Francisco in June of 2013. There they met the Apple team of engineers responsible for video and Kevin, Joe, and Jon (Spencer wasn't able to attend) all agreed that there was a weird vibe. The Apple engineers seemed to know who they were and they all exchanged funny glances as if there was something they weren't telling the Sand Mountain Studios team.

Rumors were flying around the conference that Apple would be releasing their own version of slow motion and the beta libraries contained mysterious function calls referring to "mogul" regions of videos. Once again, Sand Mountain Studios thought they were doomed. Surely the public would prefer to use Apple's slow motion software because inevitably it would be tightly integrated into the operating system and provide a simple, consistent experience.

At one of the breakout sessions it was announced that the APIs would now include function calls to be able to shoot video in 60fps. This would not be available on the iPhone 4S but the new Apple devices would have all the functionality previously exploited by SloPro. The team remained very suspicious that Apple still had something they were not saying. Their official guesses were that 60fps would be available on the iPhone 5 and iPad mini and the new iPhone would be capable of 120fps with native support for slow motion.

When the iPhone 5S was announced, it was as they suspected. iPhone 5S supported 120fps recording and had built-in support for slow motion. As a result, slow motion became very popular. What SMS did not expect was that slow motion would only be available on this new device and most users of existing iPhones would not be able to replicate the 5S experience without some sort of app. So, in the short term at least this was the best thing that had ever happened to SloPro. Almost overnight, sales doubled and held strong. That Christmas sales increased once more and again to their surprise continued to hold strong. (See Exhibit 5)

With so much success, the team was hesitant to rock the boat with addition modifications to SloPro. They began pursuing other ventures and attempting to "hit a home run" with other apps. Jon did a word game called "Word Morph" with his brother and the other three members of the team built an app called "Studio Design" with the help of an incubator group and, eventually, investment money. The word game failed miserably and Studio Design was still underway at the time of the case.

Jon recognized that all the success achieved to date resulted from fundamentally sound apps that users found useful and worth the time, effort, and energy to download. He credited his own intuition into what might be an interesting app for users for many of their designs. And, to a great extent, he recognized that his choices were not always part of any grand plan but instead took advantage of opportunities and insights as they presented themselves. He wondered if now, though, he should create a master plan for new app creation and existing app extension.

Current Issues

Jon was now at a critical juncture. His personal time was split between three businesses. His partners were making commitments away from their co-owned properties. He needed to decide where to focus, what to grow, and what to sell. He outlined the following current issues.

Partners and Ownership

With two companies and a four-way partnership, Jon was not sure that anyone was still focused on the core apps responsible for generating the majority of the revenue. Did it makes sense to consider selling one or both of the companies and going back to what he loved doing – developing his own apps? The team effort had created something that would have been difficult for any one of them to do on their own. On the other hand, did it make sense trying to exert his will over his friends and get them to follow his interests? Was he willing to put his own intuition and independent nature aside and follow them?

App Diversification vs. Concentration – Own vs. Others

Jon credited his disciplined engineering background for his creation, through some trial and error, of a specific app development process that he felt could be used by others. As he documented the process, an opportunity to use the process and hire out his services to one or more companies – initially in the medical device market – looked to provide a steady stream of income and a way to cover overhead. Was it smart to build apps for others and earn a one-time fee or should he demand a piece of every sale made with one of his apps? Competitors were gaining ground competing against his most lucrative app while he worked on others' apps – did that make sense? And now, the military was calling to have Jon modify his GPS apps for their purposes.

Pricing

He also wondered about the different pricing models for apps that had crept into the market. Which model was likely to drive the most interest and the most revenue? What about the long-term responsibilities he was assuming to maintain and update the software for the growing customer base? Who was going to address customer service issues and conflicts with various operating systems and smartphones as they evolved? When does free app download become a premium purchase? Is there any way to drive recurring revenue? Angry Birds was discussing the elimination of all app purchase cost because advertising and merchandising (including movies) was generating more revenue than the app purchase itself – why stop anyone from getting and using the app if they automatically become consumers of all the rest? Could he find advertising and merchandising streams of revenue for his apps? Would his customers put up with either?

Enterprise Valuation, Social and a User Community

Jon knew that interest in great apps was very high in the investor community. He watched a number of high priced purchases of the most attractive apps by the Googles, Yahoos, Amazons, Microsofts, and Facebooks of the world. He was acutely aware of the recent purchase of Instagram with just one app, no revenue, and 40 million users for $1 billion by Amazon. More recently WhatsApp sold for an incredible $16 billion. He wondered what it would take for his SloPro app with its 6 million users to attract even a fraction of that valuation. Was it about being social? What was social anyway? His users shared their videos via Youtube – was that social enough? Did it need to be a network of users spending time on his app daily? Was there a magic number of users that created the enterprise valuation multiple? As he pondered the powder out his cabin window at Sundance, Jon had some decisions to make.

Author Biographies

Matt Mullarkey is a Visiting Professor in the Information Systems and Decision Sciences department at the University of South Florida. He holds a Ph.D. in Business Administration (Information Systems) from USF, a BS, Engineering, from the United States Military Academy, an MS, Systems Management, from the University of Southern California, and an MBA from the Moore Business School, University of South Carolina. A veteran of the US Army, Matt has more than 20 years of experience as President, CEO, COO, and SVP in the automotive, applied materials and medical device industries with P&L responsibilities globally. Matt is focused on practice inspired, theory ingrained research from the perspective of an executive who has built businesses, grown sales, driven profits and delivered strategic approaches that transform organizations. His principal research interest are the impact of social networking in and between organizations, monetization of companies' data streams, and the impact of technology on innovation in products, operations, customer acquisition, and business growth.

Jonathan Lund is the CEO and cofounder of Garafa and Sand Mountain Studios. He is a self-taught programmer with BS and MS degrees in mechanical engineering from Brigham Young University. He developed software for CAD systems at General Electric and Pratt & Whitney before returning to Brigham Young's Marriott School of Management for an M.B.A. He worked at Belcan Engineering as the Provo office general manager before starting Garafa and later Sand Mountain Studios. His two companies combine to rank in the top 1% of app firms in the App Store.

Grandon Gill is a Professor in the Information Systems and Decision Sciences department at the University of South Florida. He holds a doctorate in Management Information Systems from Harvard Business School, where he also received his MBA and BA. His principal research areas are the impacts of complexity on decision-making, the diffusion of academic research findings and applying the case method to STEM education. He is currently Editor-in-Chief of *Informing Science: The International Journal of an Emerging Transdiscipline* and an Editor of the *Journal of IT Education.* He is the founding editor of two discussion case repositories: *Journal of IT Education: Discussion Cases* and *Informing Faculty*.

Exhibit 1: The Apple© iOS© App Store

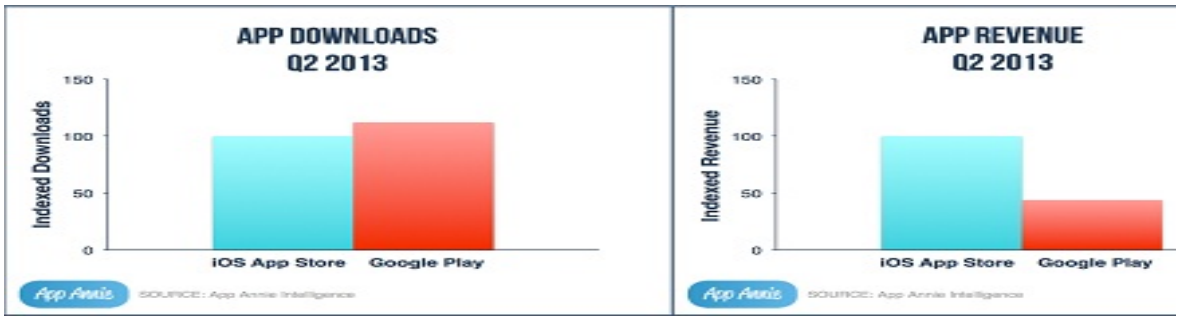
The Apple App Store was an innovation for a device manufacturer but certainly not the first attempt to facilitate consumer access to media that ran on a given device. The success of the Apple App Store was founded in the success of Apple iTunes. Steve Jobs chose iTunes creator Eddy Cue in 2008 to quickly establish a software store for downloadable applications to the recently announced Apple iPhone. Jobs realized that in spite of the hype surrounding the user friendly interface of the iPhone, without a significant number of applications to expand the use of the phone beyond its calling and email capability, the growth of sales of the mobile device would be limited.

Eddy Cue quickly created an app store that facilitated independent app development with an open interface (API) and an Apple sponsored developers center with all the tools needed to create apps for the iPhone using the latest iOS (see https://developer.apple.com/devcenter/ios/index.action). Unlike the most popular mobile device makers at the time – RIMM (Blackberry), Nokia, and Microsoft – Apple created an open marketplace to go with the app development tools and traded proprietary ownership of individual apps or software licensing for a percentage of sales of apps sold on the store. (Macmillan, Burrows, Ante, "Inside the App Economy", Businessweek, March 9, 2009) The resulting revenues and payments to app developers are indicated in the charts below.

Apple's payments to App Store developers

Date	No. of months	Total payments ($,M)	Payments per period ($, M)	Per month ($, M)	No. of Apps (K)	No. of iOS devices (M)	Total downl. (M)	Downl. per period (M)	Downl. per month (M)
June 7 2010		1000			225	100	5000		
July 7 2011	13	2500	1500	115	425	222	15000	10000	769.23
Oct. 4 2011	3	3000	500	167	500	250	18000	3000	1000.00
Jan. 31 2012	4	4000	1000	250	550	315	23000*	5000	1250.00
Jun 11 2012	4	5000	1000	250	650	390*	30000	7000	1750.00

Other manufacturers worked to catch up to Apple's lead in this newly created app category with the creation of at least a dozen rival app stores. By far the most effective rival in number of devices, downloads, and revenue was Google's Android based Google Play store. [6] Nonetheless, in terms of pure revenue, the market leader remains the Apple Store by a factor of two as indicated in several of the more recent charts below.



In July 2013, Apple itself celebrated the success of the Apple App Store with a timeline for the key milestones in the first five years of its existence as shown below.

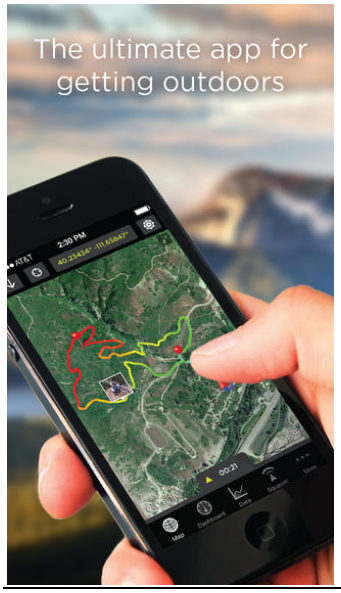
[6] Butler, "Android: Changing the Mobile Landscape", Pervasive Computing, IEEE CS, January-March, 2011, pp. 4-7

Source: www.apple.com July 10, 2013.

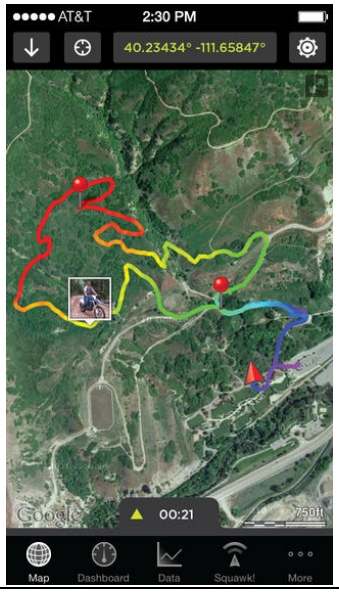
Exhibit 2: Screen Shots of Various Apps

GPS Kit iOS App Example Screens

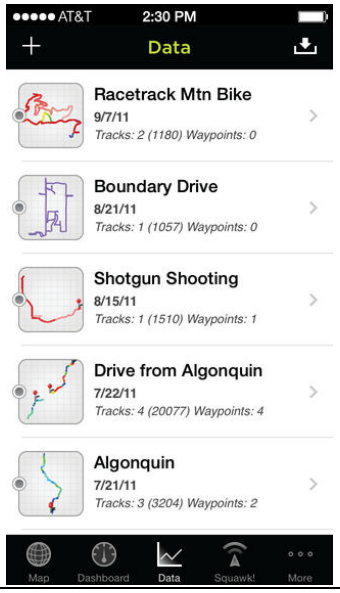
On the App Store:



User Interface:

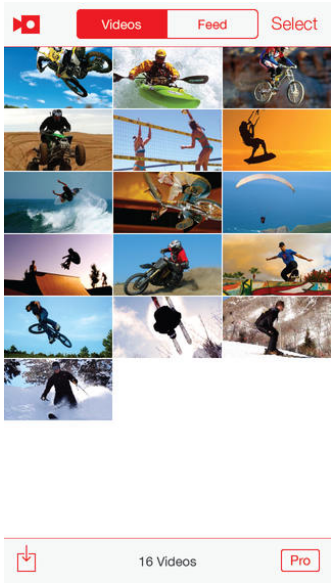


Saved Data:



SloPro App Example Screens

Recorded Videos:



Editing User Interface:

Pseudo-Social Feed:

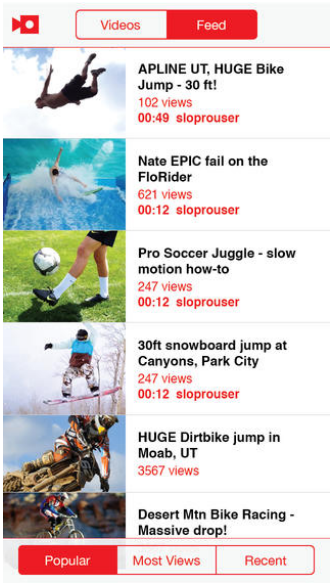


Exhibit 3: Ownership Structure Diagram

Partners left to right: Joe Wilson *(Designer + Marketing)*, Spencer Smith *(Programmer + Finance)*, Kevin Heap *(Programmer + Operations)*, Jon Lund *(Programmer + CEO)*

Exhibit 4: Contracting your skills to others

Contracting and Sub-Contracting

Jon Spencer began to get requests to build apps for other companies. One of the first of these requests was from a botanical garden in Manhattan that wanted to use an app as a tour guide of their garden area. Garafa agreed to do the app and offered the job to one of their Friends and colleagues, Drew. Based upon his managerial role in aerospace engineering, Lund was familiar with the kind of margins that a company often requires when they are a contractor but he and Spencer saw no reason why Drew should not keep most of the money. So they billed the customer $75 per hour and paid Drew $70 per hour.

This particular job included some sophisticated technology such as precise location pinpointing using the strength of nearby Wi-Fi signals. Unfortunately, the customer did not purchase the routers that Garafa recommended and had tested their system with. Instead the botanical gardens bought a type of router whose signal strength fluctuated sinusoidally. Of course, the positioning algorithm did not function properly under these circumstances. The customer did not accept the responsibility for this system failure so they left Garafa with an unpaid invoice worth $4,000. Jon and Spencer learned an important lesson about risk and margins from this because they have already paid Drew for his work and he had left to do a Master's degree at Stanford. They either had to ask for money back from a starving college student or absorb the loss themselves (which they did).

Deprivation of GPS Kit

Through word-of-mouth, Garafa was asked to do an app for a local company that built flash presentations for medical device manufacturers. After a very successful initial project, this company asked them to do a second app and then a third app that turned into a steady ongoing relationship. The team at Garafa were proud of themselves because they were doing work for a Fortune 500 company. They felt it also sounded a lot more legitimate than just saying that they built their own apps when talking about their work to other people. One reality they did begin to recognize was the lack of residual income. Unlike their own apps, once the contract was paid for an app they built it was the customer and not Garafa that continued to see the income from the growth of the app. Contracting felt like "one and done" and Jon in particular was not thrilled to lose the long term revenue benefit.

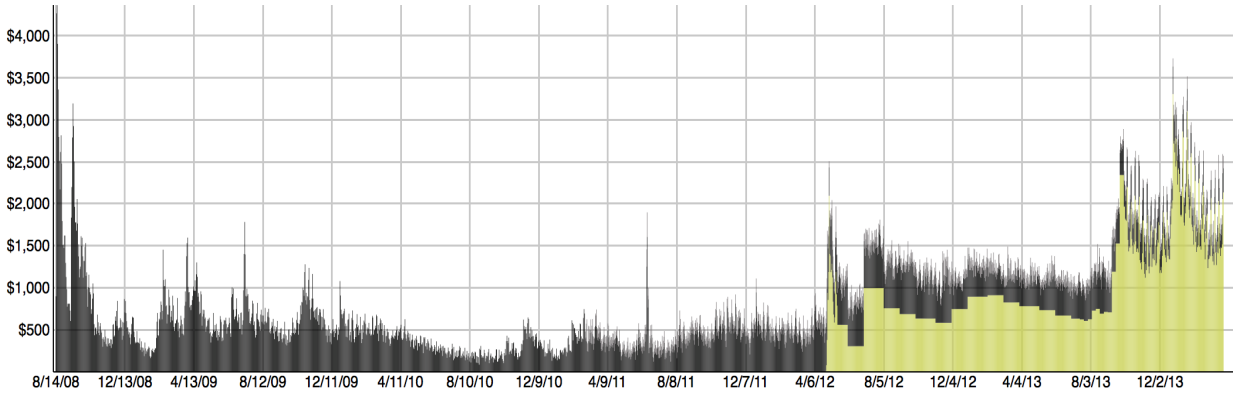
At this same point in time, one of Jon's high school friends worked for the state in a position where he would give advice to small business. Ryan offered to pay a consulting visit to Garafa. He would sit with the team and conduct his standard small business assessment and make recommendation for continuous improvement. Jon recalls:

"I think the consultation exercise we got from him was pretty good. We went through the steps of putting on different colored hats and imagining our business from various perspectives. However, I think Ryan was very accustomed in his job to shooting people's ideas down. In our case we already had quite a bit of success from the sales of GPS kit. Ryan's underlying message to us was that we were soon going to saturate the market. Or, in other words, he thought we were about to run out of iPhone owners who were interested in GPS. I pushed back against this a lot because I neither believe it nor wanted to believe it but I think it still had an effect on us. We were worried that the success we were seeing with GPS kit was going to die off and so we started looking for ways to diversify. In retrospect, this may be the worst thing we ever did. We could have made millions with GPS kit had we just quit the day job sooner, ignored the contracting cash and put all our effort into GPS kit."

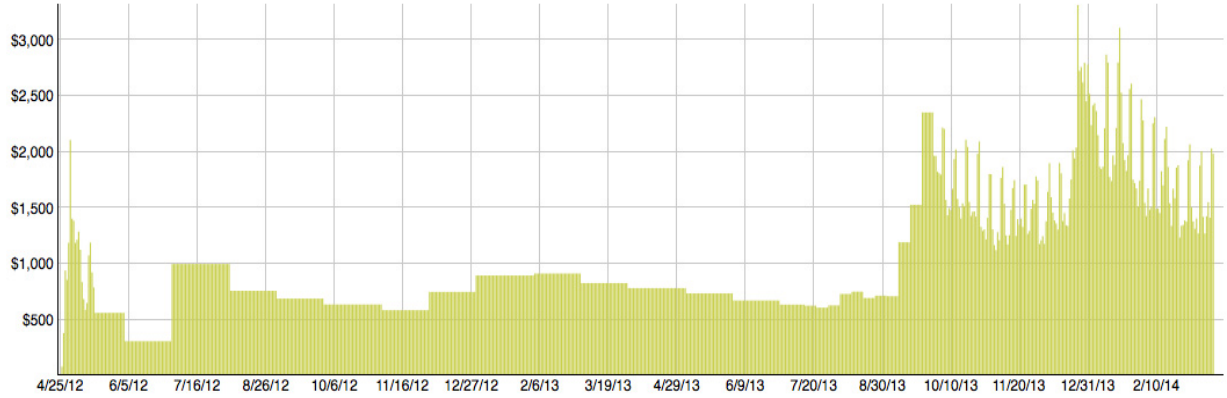
During the months following this meeting Jon and Spencer started picking up more contracting jobs and dabbling with other apps while rivals like Motion-X GPS stole more and more of their market share. Eventually they realized their mistake and decided that it was time to return to GPS Kit and give it more attention.

Nonetheless, they did learn many important lessons about doing business through their contracting efforts. There were several occasions where they lost money and each time they reflected on the experience and learned something from the expensive lesson. The key benefit from contracting themselves out others was that they developed an app product development process that worked so well with others that they adopted it and the discipline it imposed for all of their internal projects.

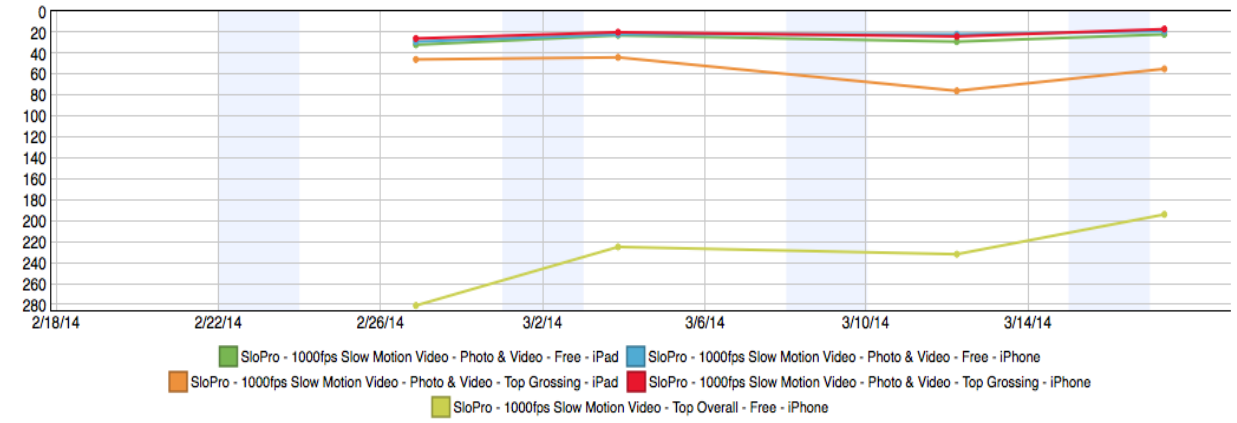
Exhibit 5: "Investor" Charts and Graphs



Stacked Bar of Daily Revenue (Black: GPS Kit, Yellow: SloPro)



SloPro Revenue Over Time (square areas just have fewer data points). Peaks left to right: initial launch, version 2, Christmas 2012, Apple releases their own slow motion, Christmas 2013.



Recent SloPro Rankings in the App Store