**2016 KT Conference:**

**Communication Tools for Moving Research to Practice**

The App Factory: An innovative approach to development of mobile accessibility and assistive technology apps

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>> Ann Outlaw: Okay, well welcome back, everybody. Our next session, from Mike Jones and John Morris of the Shepherd Center, is called the app factory, innovative approach to the development of mobile accessibility and assistive technology apps.

Are you ready to begin?

>> John Morris: We are.

>> Mike Jones: We are.

Just jump into it?

>> Ann Outlaw: Sure, yeah.

>> Mike Jones: Okay. Hi, this is Mike Jones.

>> John Morris: John Morris here. You can tell is apart.

He's the more handsome, I'm the one with the better voice.

Clearly a face for radio as well.

Thanks for allowing us to participate in the effort. We're honored to be involved.

We're going to talk about a project that is probably a little bit off topic in terms of communication tools for moving research to practice, but I think it's a good example of how tech transfer can take place, so in that regard, it does fit.

If you flip over, let's see, we control the slides.

>> Mike Jones: You can mute us?

>> John Morris: Give us a second, we're just getting the technology sorted out here.

We probably will not take the entire time, so hopefully there will be plenty of time at the end for questions and answers.

We would also encourage if you have questions, we're not clear on any particular point, by all means, jump in and we'll try and answer as we go along.

I'm going to start by giving a broad overview of the challenges that led us to adopt this approach to the development of apps, I’m going to give you a bit of background of the process, the model we use for this, and the preliminary success we had in the first three to four years of using this approach.

Then I'm going to turn over to John Morris to really provide some examples, including some videos to illustrate some of the apps that have been developed by this project, so it will be a bit more entertaining but also I think give you a good sense of the quality of some of the work that's been developed from this process.

Let me start by thanking our sponsor. This work was done really under two different rehab engineering research centered grants that we have. The wireless RERC and the recently funded LiveWell RERC, both of which are supported by NIDILRR.

The wireless we started as a partnership between Georgia Tech and the Shepherd Center, really built off five years of work we had done prior to in the telerehab and telehealth world. As all of the technology world and information technologies was moving to wireless technologies, certainly, NIDILRR at the time recognized the importance of making sure those technologies were accessible to people with disabilities and could be used. That was the basis for the grant and also one of our two primary missions.

We wanted to promote access to and use of devices by people with disabilities, making sure as devices were developed they could be used. And also wanted to serve as a resource for industry and encouraging them to adopt Universal Design design practices and approaches as they continue to develop and refine wireless technologies, both devices, handheld as well as the operator system.

It's important to emphasize the center was started in 2001 because you may recall that in 2001 there was no smartphone. It wasn't until 2008 the iPhone actually hit the market. A lot of these were exciting ideas on the forefront, I think it's a good example to illustrate how fast some of this technology has been developing, and that's really one of the core reasons we develop the app factory.

The LiveWell RERC just received funding for October of 2014 in some respects represents a continuation of the work of the wireless RERC.

It brings you in partners, we’re now working with Duke University and North Eastern University in Boston, and going beyond the software to look at the hardware as well.

More importantly, we're all familiar with the term internet of things. As more and more of our world becomes connected, how we make sure those connections work for the benefit of people with disabilities, and how we exploit the technologies to improve independent living and increase participation in the community, and this is really the mission of this new RERC.

Let me spend a bit of time talking about the challenge, what led us to develop or create the app factory approach.

As I said, there's no way in a five-year project, and these RERCs are funded on five-year cycles, really no way to predict what the technology is going to look like in five years. You can make an educated guess, but invariably you miss some technology developments that come to fruition, invariably some ideas just don't pan out.

So while in the context of doing a proposal for a five-year RERC you can lay out certain plans for research and development projects, a lot of these can waylay those plans.

That was part of the issue, how we keep up with the speeding bullet of technology, especially in the wireless space and make sure we are doing projects from a research and development standpoint that really are current, really are relevant and taking advantage of the greatest and latest technology.

One of the things that kind of ascended during this during our second cycle, and when we came upon the idea of the app factory when blank our 2011 2016 grant cycle, was the notion of APIs, that you could take an existing platform and build applications using application programs interfaces that would run on that platform.

This is exactly what we have with smartphones. You know, the two really primary being iOS for apple and the android platform, allow for, as we all know, there are now hundreds of thousands of applications that have been built to run on those platforms. The vast majority of those applications have been developed by third-party application developers.

This is the technology that has allowed us to really look at pursuing this app factory concept.

What really pushed us over the edge was the third point you see here, and that's the challenge of doing rapid technology development and using really cutting edge technologies, most importantly getting those in the commercial application by academic developers.

What do I mean by academic developers? Most RERCs are funded at University settings, first and foremost the university's mission is to train, educate new engineers and practitioners. A term used in Canada, qualified professionals, EQPs.

>> Mike Jones: HQPs, highly qualified professionals. That's the first mission. Getting products to market is not their first mission and may not even be a secondary or tertiary mission.

The experience we had certainly with the wireless RERC and others can point to the same problems, is that you would identify a project area, you would allocate funding that would then go to one of the co-investigators and his lab, and you really had no control over whether they developed the final product or not because that really was not their bailiwick.

Oftentimes our money would be invested, I call it the Bell Lab strategy where you invest in the lab, you hope good things come out but you really had no control whether those things make it to market or not.

So those were the factors that led us to kind of arrive at the app factory model.

>> John Morris: Can I add one point?

>> Mike Jones: Sure.

>> John Morris: I don't know if it's a challenge exactly, but the other thing in addition to sort of the availability of these programming interfaces, was also the availability of a ready-made commercial channel to market via the app store and now the Google play store et cetera. I think that was something we also thought, oh, not really a challenge.

>> Mike Jones: You're absolutely right. One. Great things about the APIs and the mobile platforms that support these is that there is an existing marketplace, there's a direct line towards technology transfer.

Another factor certainly that we were aware of is that while there are hundreds of thousands of apps out there, most of those apps weren't designed for people with disabilities. Many of them have real issues in terms of overall usability, again another factor that led you to go in this direction.

What were our goals? One is to bring in highly talented outside third party app developers, folks with a strong track record of actually developing apps that make it to market. They may not have the background in disability needs but we can certainly work with them to make sure those apps meet the needs of persons with disabilities. I'll explain how we do that in a moment.

Secondly to establish a pay performance mechanism to be sure we get what we're paid for rather than giving a lump sum subcontract to either a co-investigator or outside developer and hoping they develop a product, we have this notion of only paying them once they meet certain milestones with the final milestone being commercialization of that application.

Again we'll describe more about that in a molt.

Then a third really complementary objective is to really bring consumers into this process. As I say many of these outside third party developers may have had little if any experience working with people with disabilities or little experience developing applications for that marketplace. So a part of our strategy was to put those developers in contact with people with disabilities. And John Morris can elaborate in a moment about our whole consumer advisory network for doing that. So they actually can make sure that they are meeting the needs of those consumers, engaging those consumers in usability studies to validate the app before it goes into the marketplace.

That's the model. What were the criteria in terms of the determining what sorts of apps would we develop through this process?

Well, again, we wanted things that would not, were not likely to be developed in the commercial space because they were first and foremost being developed for the needs of people with disabilities.

So the app must address an important accessibility or assistive technology need for a targeted population. By accessibility, we mean it needs to either make the device more usable, so it might be a different interface for a mob device, a smart phone that makes it more usable by someone who has a hearing or vision or physical disability, or it's a particular application or use app, if you will, that meets the needs of persons with disabilities that might not currently be available. Some sort of unique timing device that might facilitate somebody doing their weight shifts in a wheel cheer.

Again John Morris will describe some examples of those sort of specific ATs that we have developed to meet those needs.

As I say, it would be something not developed and typically going to be developed in the commercial marketplace because wire talking about a very small market and meeting a niche need, what might be considered an orphan application.

Third, the application would have to be technically feasible, something that could be developed given the existing and available technologies.

Fourth, the lifetime of the app would need to be long enough that it justifies the expense. We don't want something that's going to only be a viable application for six months or so and cost, you know, tens of thousands of dollars to develop in terms of a very limited market. So some reasonable lifetime.

Finally, it shouldn't be duplicating any existing app. Unless it is say a refinement on the app that meets the usability needs of a target population.

Now we left it up to the app developers to explain to us whether it does or does not meet that. We didn't have the resources to really exhaustively research all the duplicate apps that may be out there but we did do a cursory look to make sure there was not an app that already met this need.

>> John Morris: I'm sorry.

>> Mike Jones: The process by which we selected apps was, we did this once every year of the grant, put out a request for applications. As part of that we would identify some priority needs that our user groups had told us were important for them. But we also, basically the app could address a need that was identified but the developers, sort of a field-initiated approach, but it did meet a particular user need, citing the number of folks that would benefit, the target the population and what their particular needs were.

We would review these with an app council, a collection of individuals with expertise in the technology, expertise in different disability groups, and also could give a good sense of whether there was an app already on the marketplace that met this need. So it included existing app developers, disability experts, members of our research and development teams, as well as members from our consumer advisory group.

In those applications, so they would submit a proposal, and it would have to demonstrate the need, why does this have importance for the targeted consumer group. They would have to verify with some evidence the app does not exist already. They would have to demonstrate that they have the capability technically to do the app given the amount of money that they were requesting and the amount of time available.

Typically we would limit the development cycle to one year. Sometimes it went over, sometimes we would grant multiyear, but most of these were apps that could be development within a one year cycle.

They had to demonstrate they had expertise based on apps developed previously using the same technology, and they would have to show us the efforts they would go to do make sure the app met the user need, was it indeed usable by consumers. They would have to propose some kind of testing protocol. They would have to commit satisfaction data and explain why this would be a lasting app and what they would do to ensure its longevity in terms of upgrades, et cetera.

Anything to add?

>> John Morris: I wanted to give more detail on the duplicative aspect. Some people did have a competing solution in one of the app stores, but you know, had to be then some distinctive quality to that.

So as an example would be that ideal currency identifier which was an app on android for free. Two important qualities. That could read U.S. currency. You know, heavy U.S. currency paper bill going back like three generations of U.S. currency.

There were already currency identifiers on the marketplace, but there was not a robust, at the time there was not a robust android app currency identifier. And what there was on the apple app store, it cost $10.

We thought well, $10 might be a barrier to using that app, so we thought okay, this was a low cost, you know, project anyway. And it had these other qualities. Even though basics functionality duplicated something that existed before.

>> Mike Jones: And this was an example where the Department of Treasury approached us as including this as part of the app factory because they wanted a no-cost app that met the needs of people.

This is probably going to be difficult to read the slide, but this is basically the tech transfer process for apps coming from idea to the marketplace. I'll go through each of the steps, kind of highlight each step after I put on my reading glasses and I can read these.

>> John Morris: Assistive technology.

>> Mike Jones: First identify app needed. As I mentioned in the RFA we would identify through our user needs research a list of priority apps that consumers were requesting, either didn't exist or were unsatisfactory in terms of the existing applications.

We would include that in the RFA and that gave us a good basis for the user needs.

We would solicit proposals and they would have to justify all the point I just mentioned in terms of the need, the competitive landscape, does this app not already exist, technical feasibility, budget, time lines, et cetera.

Through our app council, we would review and then select apps based on priority ranking of those that were judged to be the most important or most impactful in terms of development.

We would then negotiate with the app developer a budget and specific milestones, deliverable quantifiable milestones by which payments would be made. Typically at least three, sometimes more. And they would more or less get the payment of about one-third of the overall subcontract amount for meeting each of those milestones.

What that means is that we're holding back because the final milestone was actually publishing the app commercially, we would be holding back about a third of the overall payment that would only be delivered once they had actually made it into the marketplace with their app.

Step four, project management, actually, John Morris and the project manager for this app factory would go through the negotiation contract, execute the contract, we would monitor against milestones, and then deliver payments once they met those milestones.

The final one of those being launching it into the marketplace and then ensuring some maintenance over time to make sure the app remains current.

It also involved our tracking of the impact of this app. And John Morris is going to talk a bit more about the challenges with that a little bit later and also kind of the steps we have taken to address some of those challenges.

So let me kind of give you sort of a broad overview of what we accomplished in the first three years of this project, and I can do this because we just have a publication coming out in the Journal of Assistive Technology, that presents much of the information I'm going to share with you here.

In each of the first three years, we put out an RFA and received anywhere from 25 30 responses to that in terms of applications. We typically funded 4 6 apps per project year.

The budget for these apps ranged from 5,000 to $30,000.

The average of the 16 we funded in the first three years, I believe, right around 20,000.

The apps were split roughly 70/30 percent between developers in the private sector, commercial apps developers, and those academic developers. That ratio has probably changed a bit in recent years, but in the first two years, in particular, part of the money we had set aside for our developers at Georgia Tech, as well as other academic settings, so we definitely had more academic developers in those first couple of years.

Out of 16 projects funded in the first three years, 11 of those actually made their way to the marketplace, were commercially published and available to consumers.

Interestingly, the five that did not were all application developers in academic settings.

In terms of the breakdown of accessibility apps versus assistive apps, seven were apps that made the phone more usable by people with specific types of disability. Nine were kind of applications that were of benefit to people with disabilities.

In terms of a measure of impact in the first four years, those apps developed in those first three years resulted in over 600,000 downloads. That's a very impressive number, but let me just emphasize that there was a lot of variability. One app, in particular, accounted for over 500,000 of those downloads and I'll explain on the next slide.

I'll start and turn over to John Morris. Again a slide you might have difficulty reading on the screen, but it lays out for those first 16 apps, those that made it to market and those that didn't. It's laid out kind of tiered by years one, two,y.

You can see the range of costs, 5,000 to 20,000 I think the highest.

These are the costs paid out to those apps. Some, for example, the mobile assistive listening system during year one, it notes under downloads, an exploratory app. We only made a partial payment to the developer because he wanted to determine if in fact what seemed to be a very promising technology would indeed pan out. We funded his first milestone. After that, he said look, I don't think I can really do this realistically as a mobile app, so we terminated the project at that point.

Others, I believe four more on this list, Georgia ReadMore, ASL, year one, PicTalker in year two by Duke, and tear two year three, none of these made their way into the marketplace and listed as beta.

A lot of these stalled in terms of making it into commercial application and those recipients never got their final payment.

One in particular, the Duke University app, while it did become presumably a commercially viable product, the developers had a difficult time get Duke University’s approval to use Duke's name on the apple app store.

There are challenges beyond their knowledge and ability to get things into the marketplace, other barriers that might exist that really preclude doing this kind of development work by developers in the academic marketplace.

John Morris, anything else you want to add on that?

>> John Morris: Yeah, well you know, not to talk about the Duke one, but it was a completed solution as was for Georgia ReadMore, ASL, kind of an ASL overlay, so when signing ASL over some Children stories told by famous Georgia, you know, personages and personalities, this was a few years ago. I think the example of say Duke University not having sorted out branding, et cetera, I think probably those issues may be resolved. But this was fairly early on in that kind of app revolution.

>> Mike Jones: Let me make another point in terms of the downloads. This table also shows the number of downloads at the time this was published, which was basically by the end of year four. So you're looking at the first four years. The first four apps developed in year three, that would be one year's worth of downloads, not the entire amount.

But if look at the fourth item, the IDEAL group's accessible app installer k you can see it had the highest number of downloads by a tremendous margin. A couple of reasons for that.

One, basically this was the tool that would allow consumers to download other apps developed by the IDEAL group. Kind of an overlay. That's why the cost was quite inexpensive from a development standpoint. But this was also something that Sprint picked up and actually published as part of their mobile accessibility solution for Sprint customers. It was highly publicized, available for free for all Sprint users with disabilities, and resulted of course in a very high rate of downloads as a consequence of that.

If we include that app in the development, we're looking, or in the total, we're looking at an investment of about $220 thousand in direct costs or close to 600 thousand downloads, comes out to about 16 cents a download. Still about $3 a download, which may benefit people with very unique needs, still I would consider to be a value.

You can see some of the apps had very low download rates but were judged to be highly satisfactory. Again, these would be what I would characterize as orphan apps, not meeting, never going to have a large number of downloads, but if they have become a real go to app for a user, in fact, make their phone usable when it wouldn't be otherwise, certainly it becomes a very very important app.

We don't have a lot of evidence to support its importance, but one thing we can look at is the kind of duration of use of these apps. And it does look like most folks that are downloading some of these low volume downloads do stick with that app for some period of time. So it clearly is meeting their needs.

John Morris, you want to talk about kind of our work span in terms of the last two years?

>> John Morris: Yeah, if I can read the slide number. Slide 12. App factory for the last two years. Just to put it in some context.

The five-year cycle ended this past September 30, so we just finished our fifth year for the wireless and have just finished the first year of the LiveWell RERC's app factory.

For the wireless, we approved funding for nine app projects, eight of those completed. In that case interestingly the one that was not completed was a commercial developer in the assistive technology space.

You know, they spanned the different types of disabilities, hearing, dexterity, cognitive, developmental disabilities. The budget range was consistent with early experience, 12 24,500.

For the LiveWell, kind of an important operational detail for launching this sort of project, is that in the first year when you proposed, hey, we're going to have this RERC and this particular development project, you have to seed it with something because it's not a whole lot of time to run an RFP and collect proposals and review the proposals, et cetera.

So in our proposal both in the 2011 wireless RERC proposal and in the 2015 LiveWell project, we said here's a set of projects we're going to run with.

The first year at LiveWell we identified three projects, three more but these were the three we decided to focus on. Anyway, we completed that year. We still have to actually wrap up work on two of the projects, but they will be done in the next month or so. Then in year two we issued the RFP last late spring and had people submitting proposals by the end of August. We're still reviewing all those proposals and we expect to make a decision in the next, by the end of October anyway.

So that's our status with that.

Then the next couple of slides might be a little repetitive, but they may still be worth highlighting?

>> Mike Jones: Yeah, I want to emphasize a couple of things. I think what this approach has certainly demonstrated, we can get apps out in an expedient way. The development and deployment cycle is less than a year for most of these and they are clearly becoming commercialized.

We're taking advantage of existing marketplaces, direct line, direct pipeline, if you will, to tech transfer.

I think the pay for performance model clearly works. I mean, there's no question that if you are holding out that less penny until they get it into production, people are going to respond. And that's what we have seen.

Kathleen's comment about the low volume of apps still being useful, that seems to be the case. Some of the apps had very few downloads but based on the evidence currently available, no question it's meeting an important need, so that's important.

I think engaging consumers helps improve the relevance of the apps, and therefore leads to greater says.

Certainly, we have gotten feedback from the developers that it was a great assistance to them to have, to be put in touch with consumers that could help them refine aspects of the apps, and in some cases, the feedback resulted in pretty significant modifications before published in the marketplace.

The final point I wanted to note here, the content of secondary disbursal of grant funds. We went out on a limb and took a gamble the reviewers would like the idea when we proposed. Each year of the five-year funding cycle we set aside $100,000 more or less and said we're not going to tell you what we're going to do with this, but we called it an app factory model, a factory because it's open to anyone, kind of an open shop if you will, and we'll fund what's relevant based on the use of customers and what technologies are now available.

This work exceedingly well. Also as we mentioned earlier in terms of the currency reader, it allowed NIDILRR or treasury through NIDILRR to provide some assistance, and they came and said we'd like an app in this area and here's some additional funding to support this.

This secondary dispersal notion would allow a grantor like NIDILRR, rather than set in stone what an RERC is going to do over five years, we'd like to have discretion as new technologies emerge and opportunities arise to kind of influence the direction you might go with your efforts.

It's the model that we, actually John Morris and I were just in Montreal last week visiting with a group from the age-well the National Center of Excellence of Canada has a model for National Centers of Excellence funded into the same basic concept.

A group gets together and proposes a Centers of Excellence in a topic area, identify broad areas within the topic where they are going to do research, but they don't define the specific research or development to be done. That's determined later in concert with the Canadian government as needs arise, technologies evolve, et cetera.

>> John Morris: A couple of points, Mike Jones.

Yeah, the thing about the orphan apps and the possible low number of downloads, that was part of our thinking, right? Well, we want to sell the apps in the marketplace and serve people.

The other point, the cost of these projects is that in some cases we kind of experienced this more and more as time went on, is that developers fairly regularly brought their own money to the payable as well. So they were like well, I'm this far down the road, I need a little more money to complete this project.

>> Mike Jones: A great point, yep.

Some limitations, obviously, some apps are successful. Those are the downloads. And John Morris will talk about this. Really started ways to get a better measure of what would be a success than just downloads. While that is important, there's more to it.

Limited shelf life, this is true of all apps in general, especially platforms constantly being refined, maybe more of an issue on the android platform because there are so many different combinations of devices and software versions that really limit the shelf life of the app or the cost of maintaining those apps on many different platforms.

We have already mentioned the notable difference in the success of private sector versus academic developers. Nothing against academia, but clearly there are some challenges for developers in an academic setting.

And it's also true that as a grantor, a contractor giving some contractors contracts, that can be a challenge as well. We had originally proposed the app factory reside at Georgia Tech, not at Shepherd Center, but because of so many challenges in doing multiple contracts with multiple vendors for short-term projects, it simply was way more than Georgia Tech could handle. So that was all being done at Georgia Tech and certainly it's been, while we have the capacity to do it having a little as a matter shop and better control or better communications with our financial services department, it can be a challenge for a lot of settings in managing these contracts.

>> John Morris: Yeah, it's a lot of work.

>> Mike Jones: So challenges in measuring impact, John Morris.

>> John Morris: Okay, you know, the previous slide that showed the number of downloads and costs, et cetera, probably raised some questions. Well, you know, is that the only measure of success. Of course, it certainly isn't. Especially given that maybe we're going after small markets anyway.

But you know, downloads don't, you know, necessarily indicate use. We had kind of, as we were requesting data from our external developers, we were asking about, well, do you have other data like average monthly users or average monthly use time could also be a better indicator of whether people are using these things or not.

I know from my own experience, I've got 150 apps on my phone and probably use a fraction of those.

Those are some additional data that we, you know, like to collect and we have collected in some cases. But that, you know, it's just a bigger effort to collect those data.

Also as was noted before, we talked about it, that potential user base may be small, so total downloads may not really be a great indicator.

Then as I had just mentioned, projects developed by external teams, in those cases we had to basically individually ask them to log on to their developer accounts on the app store or on Google play and download the data and give them to us.

We're working on a potential solution which is using a third party app tracker service and ask the developers to include the code for our account so we can automatically generate those sort of impact data.

It would be a lot easier than going to, you know, each individual developer and ask for their data.

>> Mike Jones: Jeff has a question. Some programs ask buyers if they are willing to submit feedback or allow use or crash data to be shared with developers.

You know, as we're refining this model, one of the things we're building into contracts now is a requirement that developers are indeed either giving to us the capability of going directly to the consumers to request feedback, or building in satisfaction surveys as part of that, as well as collecting use data on, usability data, tracking that as part of the metric.

Any more on that?

>> John Morris: Yeah, we're in the process anyway. There were concerns about that data and using third parties and what happens if the party is acquired by another company, you know, confidentiality of data, that's still in force or not.

So we're in the process of more discovery and implementing, but that's where we're headed anyway.

Seems another question from Kathleen. Have you been able to ensure the apps are accessible.

Great question.

In some cases, we have actually done the direct testing ourselves here in Atlanta with users, if you will. And in some cases, we rely on the developers themselves to tell us they have tested their solutions with target users.

In many cases, I think again more recently we have had a number of small shops, AT developers apply for support. Clearly, it's their business. And we have seen their solutions so we can see how they address that.

Thinking particularly of the one, and we have a short video of that, the Pow!r Mount app.

BlueSky Designs are in the business and have demonstrated.

Mike Jones is giving me the high sign. I have ten minutes, do I not?

Okay, I'm on slide one of my five.

Anyway, so if we scroll to the next slide, which is a couple of examples of just some milestones that we have built into our contracts.

First one is for Zyro math made by Zyro biotics, a specialty AT shop that grew out of an incubator at Georgia Tech. They have an integrated switch accessible runner game for children that keeps them motivated while learning basic math.

We looked the a the proposal, suggested some milestones and talked to Zyro biotics and said this is what we think, does it work for you, or do you want to specify a framework of three or four milestones, some other structured payment.

Sort of in direct conversation this is what we came out with. Typically the first milestone is completing some sort of interface design, wire frame diagram, work flow, et cetera, get them going as sort of an initial payment to support the developer.

Then typically milestones two and three, if there's four, kind of developing a functional beta version, then doing some testing, then finally milestone 4 or 3, the final milestone is always product launch.

Next slide, Mike Jones, very similar. Just thought I would give two examples. This is Smart Steps, enhancements to Smart Steps.

We funded this in year five, the enhancements. In year two or three we funded the original Smart Steps. It's a problem-solving app for people with developmental disabilities. Reduce anxiety and solve everyday problems while out in the world to develop independence.

Three milestones for them. Typically payment fairly evenly distributed. We kind of have evolved to making the last payment a little bit bigger than the other ones. Maybe to provide additional focus. But there you go. Some additional functionality in this case and some more functionality for milestone two and final beta testing and release through the appropriate app store.

So now these are examples of this kind of a preview into our videos. So we had originally were going to show the Tetra Alarm guided by therapists at the technology department, and Pow!r Mount in Minnesota, and also the BreatheWell, a project that grew out of the shepherd's wounded warrior program, whether we call the Share Initiative. Coaching for deep slow breathing for people with PTSD.

That's what we're going to scroll to the next, just a preview, going to show a few videos.

This is where we choose the video player to please play the first, which is Pow!r Mount.

>> Mike Jones: The Pow!r Mount is a noted mounting system developed by BlueSky Designs. It comes in various configurations.

Dual arm, single arm and hybrid consisting of a manual mount and single powered joint.

The system is controlled with a Pow!r Mount app.

Here the home screen shows three main functions.

Target positions, adjust and settings along the top.

It can be accessed directly through touch or through switch access plugged into the end cap.

For example, with a single switch, you have timed scan. One and two switch step scanner also available.

You can go to the adjust screen to adjust the individual joints.

(Buzz of movement).

Target positions allow you to go quickly from one position to the next. If it's in the use position, and I press drive, it moves to a position (buzz) that's good for driving.

Because the Pow!r Mount can be set up with different devices, the app allows you to save different groups of positions.

Right now we're set up for tablet, but we can switch to a group with positions for the phone.

The app can be customized with app settings.

You can limit or expand access for a user, add audio feedback, change the scan rate, or switch to a high contrast theme.

Thanks for checking out the Pow!r Mount.

Feel free to download the app from the Google store and play with the app in demo mode.

>> John Morris: Okay, we have a question from Catherine. I don't know if we want to address that.

>> John Morris: Yeah, Catherine asked has anyone ever donated an app, say I pay for me and then pay for download someone else could use.

Great idea. Again, except for the ones we developed internally here, they are all free.

>> Mike Jones: The majority are free. Relatively small payment.

>> John Morris: I would think it would be up to the developers to promote that concept, but I think it's a great idea and certainly will encourage that as possibly one of the selection criteria, looking at apps in the future.

>> Mike Jones: Yeah, no.

>> John Morris: Make them no cost or have the opportunity to share some of the costs.

>> Mike Jones: Yeah, pay it forward or whatever, help someone else out. That sounds great. Great idea.

So now I guess we'll play the other, we'll play only the second of the three videos because I think I burned too much daylight speaking.

So the video player could please play the BreatheWell on watch, that would be great.

Android smart watch.

>> John Morris: This is BreatheWell demonstrated on the LG you are bane smart watch.

BreatheWell is an app developed to assist people in performing deep also diaphragm attic breathing to reduce stress. The user has the option to select the stress level before beginning the exercise.

They can read the onscreen instructions that tell you to swipe left or right to increase or decrease the time of inhalation and exhalation while performing the exercise, and also swipe up or down to change the number of cycles.

>> Mike Jones: Begin to breathe well by slowly drawing air into your mouth. Exhale slowly, pushing breath all the way out. Inhale, belly rises.

>> John Morris: The heart rate is displayed.

>> Mike Jones: Exhale, relax.

Breathe in, belly rises.

Exhale, relax (music from pink Floyd in background).

>> John Morris: Afterwards user can rerate their stress level. User also has option to program reminders to program during periods of low stress to help them perform the breathing technique effectively during periods of high stress.

The settings offerings a number of ways to customize the experience. The user may remove the stress rating if they like. They can pre-set the number of breathing cycles even though those are adjustable during the exercise.

They can add a hold after inhalation as well as one after exhalation and select the number of seconds that they are going to pause and hold.

They have the option of playing the sound through the phone or ear buds.

They can also add custom music, as we showed today, but the app itself comes with a selection of different sounds already preloaded, which include ambient noise as well as relaxing tones and songs.

Finally, the user also has the option to select female or male voice guidance or turn off the guidance altogether. They also can select to choose turning off the music altogether as well.

>> Mike Jones: Okay, everybody need a little wake-up alarm after that?

Great, that was, sorry, BreatheWell on the watch.

Again with the two videos, I think we saw some of the accessibility, you know, solutions were pretty evident, and without much left time left I think I'll move on.

Quickly mention the alarm developed here at Shepherd Center in our AT center.

It gives a single screen that allows people who may have dexterity limitations to set multiple alarms for different things. Again multiple ways to get the alert via sounds or visual alert.

Again it's a quick way to help our patients, particularly who have alarms for all sorts of stuff, weight shifts, medications, et cetera.

With that, I'm going to wave my hands at that one and move on

>> John Morris: Actually, excuse me for interrupting.

We have been hearing a lot of great things about your videos. So they would like to see the third one. We do have about five minutes left, so there's time if you don't mind.

>> Mike Jones: Okay, let's do it.

Can I pre-warn people, they start the video straight from the screen, so it looks great, but there's very little to know audio on it.

So you may just have to sort of, you know, sort of watch and see how they do it. There is some online instructions that are geared to the user.

With that, if we can roll the tape.

(Video).

>> Video Female Voice: Take your medication.

(Ringtones).

>> Mike Jones: Okay, thanks for bearing with us for the three minutes of silence.

We're going to go one more slide, FYI, as we mentioned this is done through an RFA process.

So if anyone on the phone is or knows a developer that might be interested in funding through the app factory, or if you are someone who works with people with disabilities that would like an app to be developed, we could possibly connect you with an app developer.

You'll see the link here to the RFA currently in place. We just closed that.

>> John Morris: We closed a couple months ago and we anticipate having a new call sometime late March, early April.

>> Mike Jones: Okay, certainly go to the site if you want to download and see what the application looks like. You can send a note and we'll make sure you're on the list to receive notification of the next RFA.

>> John Morris: Most definitely.

>> Mike Jones: Think that's it. We have a thank you slight at the end there, Mike Jones, with the contact info.

We thank everybody for bearing with us and listening to our pitch.

Questions or comments, we'll turn it back to the moderators, I guess.