THE ENTERPRISERS PROJECT

CIO STRATEGIST

CIO ROUNDTABLE:

Winning in the Age of the Mobile Mindshift

Smartphones are becoming an extension of our brains. When we don't immediately find what we want, we turn to our phone or tablet and look for an app or a service to help. This change in behavior creates a series of mobile moments during which companies can create loyalty or get shut out by a more nimble, mobile competitor. By 2017, companies will spend as much as $189 billion a year to redesign business processes for the mobile mindshift, according to Forrester.

Where are Enterprisers seeing the mobile mindshift at work, and how are they responding? The Enterprisers Project asked a group of leading IT professionals what they are doing to meet – and stay ahead of – customer expectations in their organizations.

From conducting internal experiments to building for a mobile-first reality, learn how these forward-thinking IT leaders are approaching the mobile mindshift. Here are some highlights from our conversation.

Panelist Profiles

TOM SODERSTROM
IT Chief Technology Officer
Jet Propulsion Laboratory

CURT CARVER
Vice Chancellor and CIO
Board of Regents of the University System of Georgia

RAJESH WUNNAVA
Former Senior Director – Product Management
Warner Music Group

THE ENTERPRISERS PROJECT (TEP): To kick off, what's a recent example in your industry or your company of mobile technology really empowering customers?

Tom Soderstrom

TOM SODERSTROM: We build specific applications for the scientists and engineers at Jet Propulsion Laboratory. We also build other apps for the public, and those tend to be mobile. We've found that our scientists and engineers like going to those public apps more.

> *If we think mobile first, that means we do what startups do: Build the mobile application first, and if there is money left over, build a website.*

As a result, we're taking those mobile apps and making them dual-purpose. So on the one hand, the apps can serve the public. On the other hand, the same app using different data can serve our internal needs. All of a sudden, the deployment is so much easier. If you can run the app on any device already because it's public, then you can let the engineers and scientists have a choice of mobile devices as well. If our engineers and scientists really need very sensitive data, they can VPN in and use data from another more sensitive cloud. This has been a really positive mindshift for us.

CURT CARVER: To follow up and accent that point: Pretty much everything we're doing these days is mobile-first. If you look at our learning management system, which is our core system where the students are consuming content, it's based off our private cloud. It's Software-as-a-Service. All of the content is delivered to students' mobile apps, and that's where the access is taking place.

> *Pretty much everything we're doing these days is mobile-first.*

In fact, we've had some instructors come back and say, "We've got a little bit of a problem here; the kids are taking the quizzes on their mobile devices while they're stuck in traffic jams in Atlanta." And that was not the type of behavior that we endorse or encourage. But it does kind of shatter this stereotype that all the learning and all the access is taking place in the classroom. It's not; it's taking place everywhere and at every possible time.

Even finding maintenance windows is tricky. Students don't want maintenance windows. They want to be able to access content and work and learn and study whenever possible, and it's increasingly through their mobile device.

RAJESH WUNNAVA: We know that more and more of digital content is consumed on mobile as opposed to desktop. The iPod generation played a role in starting this, and the shift toward access versus ownership is very profound today. Digital content needs to be optimized for mobile. That includes metadata and how it's styled. Guidelines from the likes of Apple and Spotify and others need to be followed. Metadata and digital apps need to be optimized for mobile to drive that experience and make sure content is monetized.

When you look at entertainment, it's all about the engagement and the user experience. Everything must render well on a traditional device, and it's just not one mobile device. It's also a mix of Android and iOS, and others. Each device drives a different experience, so it's not just one single mobile device we're talking about; we're looking at a whole family of devices being used by everyone.

Building for a mobile-first reality

TEP: What do organizations need to do to prepare for the mobile mindshift, if they're not there already?

TOM SODERSTROM: Boy, there's a lot. For starters: We have to think of people as being on travel as soon as they're away from their desk. It's the same. So essentially they're always mobile. They need to be able to work with anyone, from anywhere, with any data, at any time. And so everything we do now needs to enable that.

Then, as Rajesh said, we need to think mobile first. If we think mobile first, that means we do what startups do: Build the mobile application first, and if there is money left over, build a website.

The solution we came up with is quite simple: You use the cloud to store the data, and now you can do whatever heavy-duty processing you need, because the computing and storage resources are there and don't need to be on the mobile device. Then you use the mobile device as a way of accessing and interacting with the data. If you do that, all the security problems go away, because the data doesn't live on the mobile device, it lives on the cloud, and

you can secure both much easier. In addition, you can distribute different access to different types of employees or the public. Once the data is in the cloud, you can reuse it on any device and you can recombine it with any application. So separating the data from the application, which is part of the whole big data movement, has some tremendous benefits.

We need to retool everybody from being able to write only web apps to write mobile apps (that also work on the web), either in HTML5 or in native code. We're in the midst of this shift, and it's going well.

TEP: Curt and Rajesh, you both have largely Millennials as your core audience, so there must be a lot that has needed to happen in terms of systems and processes and technology.

> *"Each device drives a different experience, so it's not just one single mobile device we're talking about; we're looking at a whole family of devices being used by everyone."*

CURT CARVER: One of the other things that was a seismic change is that change management and application longevity are on a markedly different scale. The old waterfall model is not going to work—it's got to be spiral, or it's got to be agile, or it's got to be a peer development, where you're sitting down with your business partner to make sure that the application is aligned with the real needs of the customer.

Rajesh Wunnava

RAJESH WUNNAVA: I always look from a consumer outside-in perspective. As consumers, all of us have very short attention spans now. I see how my kids use mobile devices, and sometimes I feel they have a fraction of a second in terms of attention. They're processing at light speed—what's a good app, what's a good site, are they going to spend, is it going to be sticky, is it going to be engaging? So to me, the biggest thing is the user interface, which I think was an afterthought in the enterprise applications. But in mobile you have to lead with the UI driving the experience; otherwise you could have everything else and still no one uses it.

TEP: Can you all talk a little bit about ways you've overcome challenges such as design, adoption, and stickiness in making the organization more mobile-friendly?

TOM SODERSTROM: User experience and user expectations are really key. We can learn from startups: They create a minimum viable product and quickly throw it out in the wild. If people come, they keep it; if they don't, they change it. That's very different from enterprise development cycles. Setting the right expectations, using agile development, and involving the end users are very important, all with rapid iteration.

Another best practice is to think hard before starting with a legacy application because that application has had years and years to mature on its platform. By starting with new apps, especially something mobile tied to the cloud, you can quickly deliver a new user experience. Once you are successful with that, you've started changing the enterprise expectations. At that point you can take the same approach on a legacy application, which will probably have a bigger payback.

We have found that we must include our security personnel up front. Security is the one thing that can shut it all down, so our security team are now involved in every experiment.

> *"In mobile you have to lead with the UI driving the experience; otherwise you could have everything else and still no one uses it."*

We think in terms of prototypes: prototype it first; iterate it quickly; if users get excited, evolve it into a pilot through the normal investment process; then create the production version.

CURT CARVER: That's a great framework. The other thing that I guess we're blessed in, is that we have senior executives that, given their preference, will ignore their 24-inch monitor and their shiny laptop and do everything mobile. So we can accelerate the movement by engaging strategic decision makers, saying, "What is causing the most pain in your life that you would like delivered on a mobile application and how can we make that happen?" We've been able to go in and do contract renewals and approvals using that process.

The second part is working together with your business partners. We sit down with our business partners, we roll up our sleeves, and we develop initiatives jointly. They bring in the requirements. We say, "What do you think about this?" They change it, and we're sitting there right next to each other trying to work together to figure out how to deliver content in such a way that it's compelling to the functional user.

As you're doing all of this, build appropriate expectations because there's the opportunity to become a victim of your own success. Then you have 400 really good ideas and not enough staff to handle those 400 good ideas. So make sure you scale that out and determine which is going to have the highest impact across the organization.

RAJESH WUNNAVA: We all made decisions in the past where the enterprise applications would only work on certain platforms, and now we are in an era where, whether it's a desktop or a mobile device, it needs to be cross-browser, cross-platform. Your core remains the same so that you're not investing efforts to build a mobile application or a site from scratch. As agile as we want to be, there is some healthy planning that needs to go in from a architecture standpoint.

> *"The old waterfall model is not going to work – it's got to be spiral, or it's got to be agile, or it's got to be a peer development..."*

Internal experiments, external value

TEP: How about optimizing mobile experiences for internal audiences such as sales and engineering teams? Have these efforts uncovered some new functionality that surprised you?

TOM SODERSTROM: For a long time we treated IT not as "information technology" but as "innovating together." And the whole development cycle for mobile is primed for that especially with the new generation. We've come up with several mobile game-changers. One is telepresence robots. Initially, we used them as a way of keeping in touch with people. Now they're used in missions. The "Flying Saucer" JPL launched this summer used telepresence robots so people from across the world could log in and using their own browser, iOS device, or Android and drive it around JPL, talk to the engineers, and participate in staff meetings. That was a huge insight that started as an experiment in our IT petting zoo, but is used now all the time.

Another mobile game changer is augmented reality. You can already interact with models of our spacecraft by downloading the free Spacecraft 3D app on iOS or Android. But it's only a start. Augmented reality will soon be used for engineering, troubleshooting, quality assurance, training, etc. We will combine it with wearable devices, so it's ultra-mobile. It's enabled completely hands-free access through gestures and talking to your computer, almost like on Star Trek.

We're innovating together with our end users every day now are coming up with new capabilities in weeks that would have taken years before, from idea to production.

Curt Carver

CURT CARVER: With a lot of our services what we're trying to do is look at the location and see if there are added services that are of value from that location? One of the things we do is run a very large private cloud across the state, and previously everyone was an alien, everyone was treated as being suspect – going back to earlier comments on security. What we're trying to do is move toward being cognizant of the environment that the user is computing in, based not only on their computing device but their location and their expectations or needs. We're really starting on that part of the journey right now. We've had a great deal of success in our opening moves of identifying what things we could deliver to a mobile platform that provides value. We've gone back to a lot of our legacy interfaces and made them mobile-friendly and computing.

The other consideration is making those interfaces accessible for folks who have disabilities. Within education, we have to be very cognizant of that. For any of the services that we're deploying to students that may have disabilities, we have to build in a mechanism to address their needs and make sure that it's attuned with the student being able to readily gain access to it.

Catching the next mobile wave

TEP: In conclusion, how are you thinking about and empowering more mobile moments? And on a broader level, how are you working together to think about who you're serving in a mobile world?

TOM SODERSTROM: It isn't just mobile devices. It's the behavior of always being connected, having access to huge amounts of data, and always being able to participate. It has driven, for instance, our physical space. For instance, right now all of our conference rooms are becoming wireless so everyone can display their pictures or presentations from their mobile device, directly on the large screens at the same time, which changes the collaboration behavior from serial to parallel.

We will build maker spaces, where we will have open-source software, open hardware, and people who can help end users build mobile applications and access and analyze big data data from our clouds. By combining open hardware like Arduino, Raspberry Pi with a variety of mobile device, and very, very smart people in an engaging maker space, we are future-enabling our enterprise.

> *"Security is the one thing that can shut it all down, so our security teams are now involved in every experiment."*

CURT CARVER: We're currently running a massively open online course called "Inventing the Beyond: Looking at Education in 2030." It's not really a course – it's really a global experience to try to crowdsource what people think education in 2030 is going to look like, and then what are the intermediate steps that get us to that point. We've opened it up to the world, it's being hosted by one of the larger learning management systems for free, but it really is trying to stretch the envelope by giving everybody a seat at the table to contribute to that experience.

Finally, I think when you're looking at mobile services, you need to look at building more adaptive interfaces that can be used for predictive analytics. In other words, there's a value-add on the knowledge side in terms of what data is being presented to the users. We've got 31 schools within our university system and right now, 18 of them are in various stages of pilot or production with predictive analytic systems that inform faculty, students, and administrators. And I think you're going to see more and more of that kind of value-add. I liken it to the Amazon experience – there's a lot of code running and capturing each customer interaction and experience and presentation of material based on that. We must do the same thing in higher education. Each of our students learn a different way; we need to present material that's conducive to how they learn, not how the instructor prefers to teach.

> *"We need to retool everybody from being able to write only web apps to write mobile apps (that also work on the web), either in HTML5 or in native code."*

TEP: Great discussion. Thank you for your insights, everyone.

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