THE GARTNER FELLOWS | INTERVIEW

MORE INTERVIEWS
Read more interviews conducted by the Gartner Fellows . . .

LEARN MORE ABOUT THE GARTNER FELLOWS

Connectivity for the World: Our Interview With Amir Alexander Hasson of United Villages — Amir Alexander Hasson is founder of United Villages, an innovator of low-cost Internet access for remote villages in developing nations. In this Gartner interview, he discusses plans to connect 2 billion currently unserved people to modern networks.

Amir Alexander Hasson was interviewed by Gartner Fellow Jackie Fenn on January 30, 2007

The Advent of Drive-By Wi-Fi

Gartner:

Could you start out by telling us about the initiative that you pioneered - the idea of drive-by Wi-Fi?

Amir :

Let's rewind to 2001. I'm at MIT Sloan School of Business and I take a class called Developmental Entrepreneurship, taught by a professor named Sandy Pentland, who was a director of the Media Lab at that time, and I wanted to just take one of his classes. I was plodding along my normal path at Sloan, and this class literally changed my life.

Our final project was a business plan for a new technology that would fundamentally impact the developing world. And we took on this problem of 2 billion people who have never picked up a phone. This was the same time that Wi-Fi was coming out, and we just had this cute little idea in one of our group sessions, and said "What if we put one of these Wi-Fi boxes on the back of every bus? Everywhere the bus drives, it can pick up and drop off data at wireless broadband speeds. And no, it's not real time, but maybe there are interesting kinds of services that we could deliver to get these populations started - to give them some basic kind of access.

Now, the trick in this class was not only making some kind of social impact, but making money. You had to make sure that there were strong economics behind the idea, so that you could generate returns that would satisfy investors, and so on. We looked into it, and - to make a long story short - the infrastructure costs for this type of a store-and-forward drive-by Wi-Fi network are extremely low. In rural areas, it's not economical to provide cellular coverage and traditional forms of telecom infrastructure, because as you move further out from cities and towns, the population density keeps dropping, and income per capita keeps dropping. So, dollars or Indian rupees per square kilometer go downward very quickly. And, at the same time, the cost of connectivity per kilometer increases geometrically.

So, you have these two very conflicting curves that result in a digital divide, which is what telcos typically call the "last-mile problem." What we've said is, if you can get the infrastructure costs low enough, then you can actually turn a profit at very low rates of adoption, and very low ARPUs (average revenue per user).

The Importance of Prepaid

Gartner:

How does that work in practice — making the financials succeed with the drive-by approach?

Hasson:

The way it all comes together is through prepaid cards. The cellular revolution in developing countries has, in no small part, been a consequence of prepaid cards. Lines of credit are very poor in these parts of the world, and so the prepaid card tackles that problem. It enables vendors to deal with customers on a real-time transaction basis. In other words: you give me the money; I give you the card; you have stored value in your account which deducts over time.

Gartner:

And that, presumably, becomes a business for the card holder to provide service and charge others in even smaller slices.

Hasson:

Exactly. Actually, we're shifting from a technology company, to a distributor of prepaid cards - prepaid cards that only work with our technology, and technology that only works with our prepaid cards. For instance, in India we have built out networks starting in the state of Orissa, which is along the northeastern part of India. We go out to the villages that are along the bus routes and that are usually beyond cellular coverage, and we find merchants - people who sell Coca Cola or tobacco or fix motorcycles - and we interview and recruit someone who has some basic computer skills, and we train them. They take a loan out from a bank - a microfinance institution - to get a PC and other equipment that costs about $500. And then, once they're ready, we launch on the bus route. We have about 10 villages per bus route. We sell them the prepaid cards at about 70% of their face value, so they make a little money, and ultimately provide a service that villagers usually have to travel to another area for.

Ultimately the reason why this works as a business is you're saving people time and money. You're not asking them to spend more. I always hear: "These are poor people. They don't have any money. How are you going to make any money off them?" We're talking about people who have incomes from $200 to $1,000 per year, and this segment typically spends about 5% of their income on information- and communication-related services, whether it's mail, newspapers, going to a phone booth - wherever they can get one - and so on.

What we're expecting, more than anything, is to provide a substitution cost for them. Instead of paying 30 rupees to take the bus and another 7 rupees to make a call, they can, for 2 rupees, send a voice mail to a phone number anywhere in India.

The Offline Internet

Gartner:

What do you see in terms of what people are using it for?

Hasson:

You have to remember you're in an offline environment. So, the trick of our technology is, how do you make the Internet work in an offline environment? Initially, we started with just e-mail, because e-mail is a killer app, right? That's what we've done in Cambodia for over 100 village schools for an NGO (nongovernment organization) called American Assistance for Cambodia, which is funded by the World Bank and Asian Development Bank. They had computers and solar panels in all these schools, and teachers teaching English on computers, but no Internet - almost completely off the grid.

So we went there and said, "Hey look, we think we have a solution for you." There was one satellite set up at the provincial capital, a very remote part of Cambodia, and we took the bandwidth that was available at that satellite and extended it out to these villagers on a motorcycle. We put our little mobile access points on the back of the motorcycle, wired into the motorcycle battery. The teachers learned how to do e-mail, and then they taught the students, and then that got shared with the rest of the village. So, those communities are able to do e-mail in English, and do Web searches offline in English.

The way the Web search works is a customer does a search for, let's say, malaria, through a standard kind of browser. The motorcycle drives by and picks up all the searches and takes them back to the Internet connection, which sends it to our server. Our server goes to Google and some of the other engines, and figures out the top 20 results on malaria, and then takes those results and the links - the actual pages behind them - strips out unnecessary ads and things like that, and compresses it and sends it back out.

Gartner:

You'd better hope you didn't misspell, right?

Hasson:

Well, this is not an ideal way to browse the Web. However, it's a lot better than nothing. And what you find, actually, is that person will get those pages back and can browse through them, and can, if they want to pay more, request more links deep. So, they can, effectively, get a whole Web site, a whole series of Web sites that they can browse through. And if they get to a link that is not there, it says, "Do you want this?" and it gets it the next time. And the turnaround time in some places is fairly rapid.

In India, in Orissa, where we have our network, and we put our mobile access points on the public buses (and also some private buses), they do three round trips per day. And the routes are mostly linear, so it's actually passing by six times a day. So they'll frequently get queries back in the same day. And the nice thing is that if someone comes and does a search for malaria tomorrow or next week, it's already there. What we're finding - especially in Cambodia, where we've had these villages going for over two years - almost three years now - is that they are doing the same searches over and over again. This village is interested in the rubber tree plantation, because they have rubber trees - you know, where can they sell the rubber that they've collected? They want to go to Angkor Wat someday, so they do a search for Angkor Wat - do the cricket scores, soccer and football scores.

Gartner:

You maintain the information on your server?

Hasson:

What we're doing is giving them that data on all the computers, because there's this idea that five years from now, when you buy a computer - because storage is getting so cheap - you're going to have 20% of the Web already stored on your computer. And then you'll update the content that you need. So what's the 0.1% of the Web that rural Cambodia or rural India cares about? That's what we're starting to figure out.

From Web to Voice

We then realized in Cambodia that what a lot of people wanted was a phone number. I read this interesting article from The Economist that said there are all these companies and agencies running around setting up computers in villages all over the world, and it's this new craze, this new hysteria, that's an extension of the dot-com boom. All the dot-com-ers who went bust are saying, "What's the next big thing? Let's put computers in the villages."

And I actually suffer from this syndrome, because I was a dot-com entrepreneur in New York City from 1998 to 2001, before I got my act together and went to business school, thinking I would end up doing something normal. But look at me now. The interesting thing from that Economist article is it says computers are great, but this whole village telecenter kiosk thing is a new bubble, and what people really want are phones.

So, I read that article and I said we've got to figure out how to provide phones and phone numbers through this system. That was about two years ago, and now we have what we call voice mail over IP. You've heard of voice over IP? This is voice mail over IP. We're able to plug up to 16 phones into each of these kiosks, and the kiosk operator can then provide you with a phone number, which is essentially a voice mailbox, and a $12 cordless phone that we're just getting off the shelf. That's been a kind of gateway service for us. In a lot of villages they don't know anyone's e-mail address; they don't know anything about computers; but they want to get a message to their uncle in Delhi, and they know his phone number.

Gartner:

So, people use the kiosk phones to leave a message or pick up a message?

Hasson:

Exactly. We can only currently support 16 phones per kiosk, but the kiosk also is its own public phone. A villager puts in a number, records a message, authenticates, and the kiosk sends the message to the motorcycle or the bus when it drives by. And if someone leaves them a message back, the villager gets a notification that they have a voice mail, and so, they check it. This is something we've found people are really ready to pay for. In India, for instance, the pitch is "only 50 rupees," which is about $1.10, "for a lifetime phone number, lifetime e-mail, no monthly fee, and you get 10 rupees of talk time." Then we charge 1.9 rupees for voice mail, outgoing (incoming is free), 1 rupee for a text message, 1 rupee for an e-mail without attachments, 3 rupees with attachments. Web searches are free, because we see that as a way to draw people in.

Adding E-Commerce

We're also launching an e-commerce service called E-Shop, which enables villagers to buy and sell goods through our networks. What we've started with are the top 20 products that are most demanded in these villages that they have to go to the big city to get.

We have just built a little online storefront, identifying each of those products. They order medicines, music, even things like flowers and fertilizers, and the price comes off their

prepaid account. So the prepaid account is not only good for sending voice mail, but also for buying some local goods. That sends an order to our hub office in the city, where we have our Internet connection, and one of our guys goes to one of the suppliers that we've identified, gets the medicine, and puts it on the bus the next day. We've partnered with these bus companies. So, we advertise on the bus. They sell our prepaid cards on the bus, and they deliver goods for us. They get a little piece of the action too, obviously, but they're our partners in this.

So, they deliver the medicine to the kiosk guy, and the villager goes to the kiosk and picks up his medicine. On the reverse side - we haven't launched this yet - but we're going to enable villagers to sell their goods. Go to the United Villages India Web site and buy stuff from these villages, which will bring more money in for them. We're also interested in how we can leverage this network to attract revenue from customers in more developed environments, because the customers earn more money.

Gartner:

Sounds like Overstock's Worldstock site that promotes purchasing from villages.

Hasson:

Exactly. And another service we're looking at is to enable you to go to our Web site and add money to your friend's or relative's account from your credit card. This starts to tap into the remittance market, which is huge, and is very inefficient. You'll be able to charge up someone else's account remotely, and they can use that not just for communication services, but for some initial set of goods that are important to them.

There are some regulatory issues that we're dealing with, because regulators are deciding whether or not we're a bank if we do this. In each country it'll be different, but it's something we'd really like to do - to bring in revenue from urban customers to help pay for the services. But our break-even point is about 83 cents per month, per user, from about 5% of the village.

Gartner:

Where are you in the route to making money? Are you already profitable?

Hasson:

Well, we just launched our network in Orissa about two months ago, and we're already at about 41 rupees per user, which is almost a dollar. The average revenue per user figure is the key thing that investors are interested in. Because if you can do that in one village, or two villages, or however many villages, it's easy to extrapolate.

Gartner:

I presume it's easier where you're leveraging existing infrastructure, such as buses, rather than having to provide your own infrastructure, such as motorcycles - that must take the price up.

Hasson:

Well, even in Cambodia, they're not our motorcycles. They're just motor taxi guys who are going back and forth. And so, we're all about just finding the existing transportation infrastructure and turning it into a network. Our solution costs about $100 total in infrastructure per village, which is just orders of magnitude lower than any other alternative. If you distribute that across 50 to 100 users, it's not too hard to pay it off. The other key dynamic is our merchant at the kiosk in the village, who we sell these prepaid cards to - he has to be able to pay his loan and make some money.

Leveraging the Model

Gartner:

What's your longer-term vision? Where do you want you, your company and your capabilities, to be in, say, 10 to 15 years?

Hasson:

Our mission is to provide 2 billion villagers with an e-mail address and a phone number, and basic Web access. So, in 10 or 15 years, I would hope to be a good half-way through that vision - at least. And we think we can get there with a combination of two approaches - direct and indirect. The direct approach is what we're doing in India. United Villages provides the seed funding, the technology, the management time - that is, someone like me, who's willing to go halfway across the world for months on end to set up a company, get the initial mix of partners, build out the initial network, and then attract the additional capital that's required to build out. We want to offer this direct model through our subsidiaries in about seven or

eight countries, with the largest disconnected rural populations - countries like India, China, Brazil, Nigeria, Indonesia and Tanzania, where it makes sense to have overhead of an operator.

Just to give you a sense of scale, in India there are 660,000 villages, and we think about one-third of them, or 220,000, are on bus routes or vehicle routes, and "weatherable," motorable roads, and are outside the range of current and projected cellular coverage. To do those 220,000 villages would require $30 million in fundraising, which may sound like a lot of money, but actually in telecom terms, for 220,000 villages, which is about 300 million people, $30 million is a drop in the bucket.

The indirect approach is a way to deal with the requests we get from all over the world. We just did a network in Paraguay, there was another network we did in Costa Rica - basically smaller countries where there's a need for this technology, but we can't fly everywhere and set up networks. Our new strategy has just been to look for the right partners within each of these countries. Typically it's a cellular company, or an ISP, or even sometimes an NGO. We give our software away for free; sell our mobile access points at cost and they get the Wi-Fi equipment and the PCs locally. The trick is that it doesn't work without our prepaid cards. We want to enable these companies to start up these networks at a very low cost, but we want to take a piece of the service, the transaction revenue. So we'll sell prepaid cards to all these different operators in different countries, and take a percentage of their face value.

Keeping the upfront costs as low as possible is really the key to unlocking this market. People don't have the capital to make those kinds of investments at this size of the market.

Thinking Globally, Acting Locally

Gartner:

What about the user needs? How do you see that developing?

Hasson:

While we're focused on broader sets of basic telecom services, like e-mail and voice mail, we've seen that there's a real need for application-specific content and services, to get people's attention. So one of the things we're doing to drive traffic into India right now is enabling people to book railway tickets through our system. That's a reason for them to use e-mail.

About half the e-mails that are getting sent right now are to book railway tickets, or to do a job search. Otherwise, people say, what the heck am I going to do with e-mail? So then, it's not e-mail, it's job search.

We did another project in Karnataka with the Karnataka state government, which was working on digitizing all the land records in the state of Karnataka. They'd built this centralized database, but the villagers had to go to the district headquarters to do anything with their land, even just to get a print-out of their land. They wanted a way to decentralize their database back out to the villages, but there was no connectivity. So we said "We can be your connectivity." And so we put our boxes on the public government buses in Karnataka, and picked up and dropped off land records, and set up these computers in the village. All they did was give you your land record, or help you execute a land record transaction. So, the villagers didn't think of it as a computer, they thought of it as the land record machine.

I think we have to get out of the PC environment that we've grown up in here in the U.S. and just really look at needs-based services that are locally relevant. That's the tricky part, because you want to do something that's across the board, that'll work for 2 billion people right? But in each place, what everyone wants is a little different. That's one of the reasons you need the community itself to be part of the process of determining what the services are, or what people are going to pay money for. So our approach has just been, "Let's just get something that's so low-cost out there, and let people play with it, and iterate it, and try to support that."

Gartner:

But it really takes off when somebody picks up that one application that's going to save people time and money.

Hasson:

We could have never figured out railway ticket bookings. It just came, because one of the guys in the villages says, "Is there someone who can book my ticket?" And we said, yeah. It started with: "Just e-mail our guy at the office and he'll book your ticket for you." Ta-da! It was so simple.

Gartner:

Amir, thanks so much for your time, and we wish you all the best in your initiatives.

Hasson:

Thank you.