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Wireless Internet Access: The Same Old Problem and the City's New Agenda

Fabio B. Josgrilberg

Over the last few years, the provision of wireless broadband internet access has become part of governmental agendas at all levels, and in many different locations (Middleton & Crow, 2008). This inclusion of yet another 'new technology' on the political agenda, however, belies its roots in an old problem and debate: uneven public access to society's technological developments. As the Universal Declaration of Human Rights, Article XVII, states: "everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits" (UN, 1948).

It is arguable that at this point in time local governments, and by this I mean municipalities working in tandem with state and federal agencies, have a key role to play

in the provision of wireless internet, particularly in Brazil. If there is debate, then it should be about the parameters of that role: when and how should public servants and politicians step in?

In Brazil, the role of government in the provision of Wi-Fi services was catapulted to public attention in 2008. The Brazilian federal government issued an announcement on October 10, 2008 (Nº 027/2008-MC), which aimed at hiring the services and equipment needed to provide "the implementation of a basic broadband Internet access communications infrastructure in municipalities, using wireless technologies to transmit data, voice and images, in order to support teleconferences, telemedicine and teleclasses at the national level" (MC, 2008b). Essentially, the idea was to equip 160 cities with corporate, communitarian or peer-to-peer networks, or even to develop a mix of the three. The imperative behind the project was the creation of "digital cities", an expression used in the call's text itself.

In 2008, in Brazil's most important industrial and financial centre of São Paulo city, Marta Suplicy, the Labour Party's (*Partido dos Trabalhadores*) candidate for City Hall, promised broadband wireless internet for the whole municipality (PT, 2008). Despite having not been elected, Suplicy succeeded in provoking a debate about wireless networks, digital inclusion and related issues. To provide a context for Suplicy's promise, São Paulo's population of 10,886,518 people (as of 2007) inhabit a 1,523 km2 area (IBGE, 2008).

Both projects became targets of strong criticism and the federal government's call was even cancelled by the end of October 2008. The lack of public debate before opening the call and the reliance on a sole technological model, that is, wireless technologies, were among the key objections. Despite the call's cancelation, the government announced a public forum to debate the project – the date for which has yet to be set (MC, 2008a). Suplicy's promise, in turn, garnered accusations of being unfeasible and driven only by political marketing.

What is clear is that broadband, wireless networks and digital cities have become central issues in Brazil at all levels of government. The hype surrounding broadband has produced some unusual outcomes. When he was Brazil's Culture Minister in 2008, Gilberto Gil, who is a major Brazilian singer and Creative Commons advocate, even launched a new album and tour called Banda larga cordel, in English Broadband cordel (a cordel is a pamphlet). For a better understanding of the song's title, see cordel literature at http://en.wikipedia.org/wiki/Cordel_literature and the Brazilian Cordel Literature Academy at http://www.ablc.com.br.

Video no longer available: Gilberto Gil, Banda larga cordel, live in Piraí 2008

Here are some verses:

Quem não vem no cordel da banda larga

Whoever doesn't join in the broadband cordel

Vai viver sem saber que mundo é o seu

Will live without knowing that the world is yours

And further in the song, Gil plays with the meanings of the word "banda"/"band," which in Portuguese and English, indicates both a group of persons and a range of frequencies in radio transmission:

Ou se alarga essa banda e a banda anda

Either this band is broadened and the band moves

Mais ligeiro pras bandas do sertão

Quicker to the backlands' bands [in the sense of a group of people]

Ou então não, não adianta nada

Or else, it doesn't matter

Banda vai, banda fica abandonada

The band goes, the band stays by itself

Deixada para outra encarnação

Left for the next incarnation.

The song did not reach the top of the charts. And although it may carry a great deal of political marketing, as the composer was the Minister of Culture at the time, the lyrics captured some popular sentiment surrounding the key issue of digital inclusion.

While 2008 was an interesting and important year for public discussion of urban wireless networks in Brazil, the digital city debate in Brazil can be traced back to the mid 1990s. To understand the local history of these issues I will now briefly outline three well-known, pioneering cases in Brazil: Piraí, Sud Mennucci, and Tiradentes, located in three different parts of the country.

Back in the mid 1990s, in Piraí, the privatization of a Brazilian power company led to 1,200 job cuts among 22,500 habitants, and forced the municipality to rethink its local development plan. Among the many dreams and projects that were proposed, the community envisaged one key objective: in any and all cases it should go digital. The first infrastructure deployment, aimed at universal access goals, began in 2002. The goal was to provide an infrastructure capable of transmitting data, voice and image.

At first, the Piraí went totally wireless with a public fee for different bands ranging from 128 kbps to 512 kbps, with prices between R$ 39 and R$ 90. The cost of the network and a two-year legal dispute with Anatel, the Brazilian telecom regulatory agency, led the managers to opt, in 2007, for a free public hybrid infrastructure. At the centre of this infrastructure, 13 towers spread all over the city, operating at 5.8 Ghz, were extended by complementary cables that provided access to additional sites depending on geographical and architectural contingencies. After Anatel's ruling, the provision of free

internet had to be limited mostly to public facilities, including telecentres, kiosks, and a few hotspots and residences in low-income areas.

Video no longer available: "Bandalargar o Brasil" meeting, in Piraí-RJ, produced by Fábrica do Futuro in partinership with Cultura Digital

The second representative case in Brazil is Sud Mennucci, a small city in the North East of São Paulo state, with only 7,714 inhabitants, 85% of whom live in the urban area. The city covers an area of 591 km2 (IBGE, 2008; Okajima, 2007). Agribusiness and the cattle industry are the municipality's main economic activities.

The first studies on the deployment of Sud Mennucci's Muni-Wi project started in 2002. The initial motivation was the need for an Internet connection to supply municipal administrative demands in order to reduce the costs of an interurban dial-up connection. Initial studies were conducted by City Hall's IT technicians and IT managers from the local alcohol industry. From this first evaluation, optical fibre and Wi-Fi appeared to be the best choice; the latter, however, was the cheaper solution.

In 2003, as the local government realized that there was more bandwidth than needed by administrative public services, the signal was opened to the community. The new goal was to bridge the digital divide, as interurban calls to regional Internet Service

Providers (ISPs) were too costly for local residents. By September 2003, the city had 10 registered users. These were comprised of business and residential users, and did not include schools, libraries and other public facilities, which already had some form of access. In a turn of events that prompted an agenda-setting study, a 2005 article published in a national newspaper provided a crucial boost to the population's interest in the network (Gaspari, 2005). Now, in 2008, almost a thousand residences and business offices are registered in this municipal network.

The residential and business wireless network uses Wi-Fi at 2.4 GHz, in a point-to-point network design, with 64 kbps access per point. Signals, from a 40 m antenna, reach a radius of 10 km (314 km2), but city managers claim to be ready to expand the networks with new cells. The internet link is provided by Telefônica. The population must acquire antennas from private stores, costing from R$ 200 to R$ 300, and have these installed on their houses or offices in order to access the municipal network. However, if someone is near to the central antenna or to an existing residential antenna, with no physical interference, he or she may have access to the network.

The last important case is that of Tiradentes, a small town in Minas Gerais state, with 6,547 inhabitants spread over 83 km2 (IBGE, 2008). In Brazil, the region is known for its historical architecture, which makes tourism and handicraft products some of its main economic activities alongside agribusiness. Tirandentes's geography is full of hills

and mountains, therefore presenting a particular challenge to wireless network deployment.

Thanks to a partnership between the municipality, the Brazilian Ministry of Communications and private companies such as Cisco, Telemar and Metasys, the city launched its project, Tiradentes Digital, in 2006. The federal government invested R$ 560,000, leaving executive functions to the Federal University of Ouro Preto (Gomes, 2006; MC, 2007).

Video no longer available: Tiradentes Digital

The official launch date of the Tiradentes Digital project was March 24, 2006. As of April 2008, aside from schools and public buildings, the city had a 0.5 km^2 Wi-Mesh public wireless network covering its tourist centre with five antennas, with 2,900 monthly logs. The goal is to expand the network, adding other 11 antennas and covering a 5 km^2 area. Users within the network access it freely at 2 Mbps 2.4 Ghz frequencies; only the backhaul operates at 5.8 Ghz. The project uses an internet link provided by Oi/Telemar, a major telecom company in Brazil. Since the network's equipment was provided by Cisco, its software by Metasys, and its funding by the federal government, the municipality did not have to invest. The executive coordination, however, estimates

that the cost of network deployment has reached up to R$ 200,000 and that the monthly costs to maintain it are around R$ 30,000, aside from human resources.

Tiradentes Digital faced some specific difficulties in rolling the project out:

a. presenting the project to the population, since many local political interests are at stake
b. developing a local ICT culture
c. creating a sustainable model
d. dealing with restrictive telecommunications legislation

The hurdles faced by Tiradentes are neither new nor exclusive. The entry of local governments in the provision of wireless internet is far from reaching a consensus around the world, and Brazil is no exception. Will the municipality be able to sustain the project in the long run? Will the project interfere with local-sector telecom development? Does the local government have what it takes to deploy and operate the network? Despite these lingering questions, recent developments in Brazil illustrate an eager optimism toward **the establishment** of so-called digital cities.

The three examples above, especially Piraí's case, have set some degree of precedence for Anatel's recent rulings. As the main regulatory body for Brazilian telecom, Anatel (National Telecommunications Agency) approved the creation of a Limited Private Service (LPS or SLP in Portuguese) license in 2007, aimed at covering Brazilian municipalities' needs. The LPS licences demand free access for the population,

restricted to municipal services and to the city's territory. Local governments can also opt for a less restricted network and hire a private or public company with a Multimedia Communication Service license working under a market regime. Another regulatory move, under discussion at Anatel, is to clear the 450 MHz to 470 MHz band and make it available for more intense use in small or rural cities.

More recently, on November 3, 2008, Anatel launched a public consultation on the 3,400 MHz to 3,600 MHz bands' regulatory marks. The original text proposes to use the subbands from 3,400 MHz to 3,405 MHz and from 3,500 MHz to 3,505 MHz for public digital inclusion projects. With Anatel's efforts, but also despite some remaining regulatory, technological and possible economic restrictions, local governments across Brazil are launching their projects with more and more optimism. At times, projects are rolled out at state level, such as in Rio de Janeiro, Pará, Bahia or Amazonas states. and the dream of a digital city preoccupies a great number of politicians in Brazil. Not even bad news coming from cities in North America – for instance, Chicago, San Francisco and Philadelphia – reporting difficulties in maintaining their WiFi municipal networks, seems to slow down local ambitions in Brazil (Economist.com, 2007; Gardiner, 2007).

That the Internet's future is wireless is fast becoming fact. The role of local governments in this business, however, remains an open question. As usual, good reasoning calls for a balance between public, market and organized civil society actions. More generally, when the market fails to meet citizens' needs, governments should promote the creation of a new market or even offer solutions themselves. In regard to citizens' access to

digital technology, recent research indicates that in 2007 only 17% of the Brazilian population had home Internet access (CETIC.BR, 2007). Such figures should be more than enough to sustain arguments for municipal entry in this business and doubts concerning the municipalities' participation in the provision of wireless internet should not prevent them from doing so in countries like Brazil.

The argument for municipal entry in the provision of wireless internet is rather simple. In the so-called "Knowledge Societies," lack of broadband internet access constitutes part of any possible definition of poverty. In the very near future, this conception of broadband will be framed in terms of *wireless* broadband internet access. As George Santos precisely remarks, the definition of poverty is, above all, a political one and has to do with the goals a society sets to itself; it is not simply a matter of statistics (Santos, 1979). Although many factors influence poverty, connection to broadband internet seems to be a key issue for any given contemporary society. Since private broadband tends to be provided only where there is a market, that is, money, the government has a role to play in digital inclusion as mentioned earlier in this text, either by promoting the creation of new markets or by acting as an internet provider itself.

Traps, however, are spread across the terrain. Going totally public, which means free in Brazil according to Anatel's ruling, may result in inhibiting the local telecom industry's participation in projects and, consequently, the creation of new jobs in this sector. Critics also highlight the lack of technical expertise in many municipalities, the

challenges concerning the network's financial sustainability and upgrade in the long run, not to mention the possibility of slowing down innovation, which would benefit from market competition (Josgrilberg, 2008).

On the other hand, outsourcing a municipal network development or operation through public-private partnerships also carries its risks. The most serious of these threatens to put public values in danger – for instance, access universalization, freedom of access, etc – given existing private interests. In addition, the risk of getting tied up by contract to a single technological or management model could present a serious problem as wireless technologies evolve. Finally, public management may grow distant from the network's performance, and might as a result, miss opportunities and social needs, and even take too long to identify problems (Josgrilberg, 2008).

One should note that in either case, going public or developing public-private partnerships, all potential risks are manageable. It is a matter of reaching the best balance between the government, the market and organized civil society according to contingent situations. Nonetheless in both cases the local government should be held responsible for the project (Minow, 2007).

In conclusion, what is crystal clear is that, in Brazil, promoting, securing and sustaining universal access to technology remains a key problem. This issue is an old one dating back to the UN's 1948 declaration fashioned in the era of radio, television and the

landline telephone, and in Brazil it predates the public consciousness of these debates in 2008: only the technical objects have changed. Wireless broadband internet represents yet another challenge to be faced by public managers, servants and politicians alike. Despite possible criticisms, one cannot afford to ignore the central role that local governments do have to play, either as catalysts or as promoters of market-based and civil society initiatives, or in developing and managing their own municipal networks.

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Biography

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