A GLOBAL STRATEGY FOR PROMOTING UNLICENSED ACCESS TO THE RADIO SPECTRUM

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On 26 July 2004, Czech Civic Association "Places in the Heart" received a $7050 grant from the Open Society Institute "to devise an effective global strategy for promoting regulatory reforms so as to allow more unlicensed public access to the radio spectrum."

In the weeks since then we reviewed the literature of Open Spectrum (OS); discussed options and strategies with a variety of top experts; asked some of them to advise us on an ongoing basis; studied policymaking processes and venues; started researching the level of awareness about OS among media policymakers, journalists and politicians; designed a logo and a website, and began filling the latter with content; made public appearances to discuss our project; and generally came to a much clearer and deeper understanding of the policy landscape than we had in July. We appreciate the additional time that OSI gave us to prepare this ambitious global policy advocacy effort.

The narrative part of the report called for by our grant contract is this document. Coming separately are copies of a "flyer" we printed to announce our project, a presentation given at Ars Electronica in Linz, Austria, some pages from our website and other documents. Below is a summary of our findings and activities, and sketches of what we want to do.

Our strategy for promoting more open access to the radio spectrum is based on three elements:

1) multi-lingual public resources (web archive, articles for general readers and specialists);

2) campaigns to stimulate public awareness and active debate about Open Spectrum and the role of government licensing in wireless media, particularly in countries where these topics are unfamiliar;

3) regulatory interventions to promote freer access to more radio bands.

Specific Actions Proposed for the Next 12 Months:

- Organize a US-European experience-sharing workshop, preferably in Brussels, on strategies for reforming radio spectrum management in favor of more open access. Tentative title: "Transatlantic Dialogue on the Role of Licensing in an Era of Ubiquitous Networks."
- Use that event to generate more interest in Open Spectrum among media experts, journalists, and the interested public.
- Publicize the conference outcomes.
- Work with journalists employed in media with international outreach, and in target countries, supplying them with OS materials, helping them invent story ideas, and collaborating with them over the longer term.
- Write our own articles for publication in the Czech press, and for media with international reach.
- Help publicize parallel efforts and studies by colleagues like Julian Priest, New America Foundation, etc.
- Develop recommendations for Freedom House and other organizations on how Wi-fi's achievements and the OS agenda can contribute to the erosion of repressive regimes (e.g. Cuba, Belarus).
- Refine and expand our online bibliography of OS writings.
- Translate the most persuasive and informative texts about OS which have already been written, into Russian, Arabic and Chinese. (Add other languages as budget permits: Spanish, Farsi, etc.).
- Translate as much of our website into other major world languages as we can.
- Edit an anthology of OS writings by authors from outside the United States for publication as a book.
- Conduct a global survey of regulatory policies on bands for unlicensed communications.
- Add qualified foreigners to our Board of Advisors.
- Have at least one of our Advisors speak about OS at the ITU's Global Symposium for Regulators on 8 December 2004.
- Try to spark discuss of OS at other regional regulatory meetings like the Mideast/Asian IT Ministers Conference in Bahrain.

- File comments in the European Commission's current consultation on objectives that the EC should pursue at the World Radio Conference in 2007.

DISCUSSION OF FINDINGS AND ACTIVITIES

1) The two of us who proposed this project have neither enough hours in the day nor enough credibility with global policy institutions to undertake this project alone. So we asked six outstanding individuals to advise us and help implement our activities on a voluntary basis, and they agreed:

- *Dewayne Hendricks* – former head of the US Federal Communications Commission's Technological Advisory Council and member of the board of directors of the Wireless Communications Alliance.

- *Reed Hundt* - from 1993 to 1997, chairman of the FCC when it initiated the first auctions of radio frequencies. Now a senior advisor on the information industries for McKinsey & Co., he is the author of *You Say You Want A Revolution: A Story of Information Age Politics.*

- *Michael Marcus* - recently retired as the FCC's Associate Chief for Technology and Senior Technical Advisor to the FCC's Spectrum Policy Task Force. In 1979 Dr. Marcus proposed the allocation of bands for unlicensed spread spectrum communication – this became Wi-fi. More recently he worked for the rule changes that permit ultra-wideband signals.

- *Eli Noam* - Professor of Finance & Economics, Columbia University (USA); Director of the Columbia Institute for Tele-Information; member of the US President's Information Technology Advisory Committee and other prestigious panels and boards. Prof. Noam's articles on Open Spectrum in the 1990s pointed the way to what is now becoming an international movement.

- *Onno Purbo* - Indonesia's tireless promoter of wireless networking and local-language IT knowledge-sharing. He is credited with inspiring the creation of RebelNet, which now links over 1500 schools, 2000 cybercafes and more than 2500 outdoor WiFi "hotspots."

- *Kevin Werbach* - Assistant Professor of Legal Studies, Wharton School of Finance, University of Pennsylvania; formerly the editor of *Release 1.0*, a monthly newsletter published by Esther Dyson; and former Counsel for New Technology Policy at the FCC. In recent years Prof. Werbach has one of the most active spokesmen for Open Spectrum.

We feel extremely fortunate to have assembled such an all-star cast of advisors so quickly. A private discussion list has been created for them on "Yahoo" and regular email consultations have begun.

OS concepts first developed in the US, and we wanted the most experienced and respected OS veterans to be on our board. As a consequence, our board is overloaded with US citizens. Additional advisors will be chosen from other continents.

2) Wi-fi is not the same as Open Spectrum, but a familiarity with Wi-fi makes it much easier for nontechnical people to grasp the significance of OS and believe it can work in practice.

There is nothing in Wi-fi's specifications requiring that it be unlicensed, and indeed dozens of countries impose licensing or registration rules on it. So one should not confuse Wi-fi with OS. Wi-fi is a set of protocols for short-range wireless links. OS is an approach to regulation that is not based on static, exclusive licenses and that deals with interference through resilience rather than avoidance. The difference between OS and Wi-fi will be clearer as more new kinds of unlicensed devices become available. Intel asserts that soon, all computing devices will communicate and all communication devices will compute.[1] We believe that such comprehensive convergence makes it necessary to look beyond Wi-fi, to the general issues of spectrum sharing, interference management and communication rights, and consider whether we really want to require licenses for everything with embedded intelligence. The answer is clearly no, in our view, so the question becomes: what wireless communications *need* to be licensed and why?

As you know from our previous correspondence, our main goal is to reduce the ability of governments to block or censor communications – particularly private communications – by requiring licenses for specific channels. Licensing is usually claimed to be necessary in order to prevent interference. But once in place, licensing makes it easy to block connections that someone in power decides threaten public order – or moral values, or national security, or the phone company's profits from long-distance service, etc., etc. Even the fear of losing one's license is usually enough to trigger self-censorship. The licensing of publications (book and magazines) is now understood to be a violation of humans rights. The licensing of websites is also deprecated. We want to see the same rights extended to radio equipment that resists and minimizes interference without any special skills or user training.

Wi-fi's rapid spread, with few complaints of interference, has proven to regulators that it is possible to create conditions where licensing is not technically necessary. So we see the acceptance of unlicensed Wi-fi in a country as an essential first step for regulators to take OS seriously. This implies that we should work for Wi-fi's acceptance in countries that ban it, and for de-licensing in countries where it is licensed.[2]

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[1] "Integrating Radio in Silicon Everywhere," Intel Corp. - http://www.intel.com/labs/radio/
[2] See our webpage on "Countries that do not allow unlicensed Wi-fi" sent separately.

Which underscores the need for a global survey of regulations enabling license-free radio. A recent survey of unlicensed wireless communication in Africa[3] found that there is no comprehensive, publicly available database of such information now. We need a complete list of countries where Wi-fi is banned or licensed. Since that seems to be not available now, we are willing to collect that information, preferably in partnership with academic researchers or commercial firms with a stake in this issue. We have started gathering scattered clues already – see the "Country Links" on our website (http://www.open-spectrum-international.org/countries.html). But a global survey will enable us to focus our efforts intelligently. We cannot intervene everywhere and we do not want to intervene inappropriately.

3) Licensing is a national prerogative, but transnational organizations have a large - and growing - influence on spectrum policy.

Since the founding of the International Radio Union at the start of the last century[4] – with its regulations enshrined as global treaties – frequency allocation has been coordinated internationally, from the top down. Countries meet periodically to revise the ITU radio treaties, in what are now called World Radio Conferences. The last WRC was in 2003, and one of its notable achievements was a worldwide allocation of about 500 MHz for wireless LANs in the 5GHz band. The next WRC is in 2007, and we have begun exploring ways to get involved in the preparations, and in the conference itself, to promote more discussion of OS.

Last April, the European Commission's Radio Spectrum Policy Group (RSPG) invited public comments on what Europe should try to achieve at WRC-2007.[5] The deadline for comments is 22 October and we will almost certainly file ours just before the deadline. Nothing in the WRC-2007 agenda is directly related to OS, but there are some open-ended items that can encompass anything the ITU and its members decide is relevant.

The ITU's importance goes way beyond what it does. The paper mentioned above on unlicensed wireless in Africa noted that 59 percent of the countries surveyed claimed that their Wi-fi regulations are based on ITU recommendations – even though the ITU does not specify a licensing regime for Wi-fi. The ITU tends to be slow, cautious and biased toward overregulation, and nondemocratic countries have a great deal of influence in its activities, but they can legitimize a policy just by putting it on their agenda.

On 8 December 2004, the ITU will host a Global Regulators Symposium in Geneva on "licensing in an era of convergence." They have issued a call for "private sector" experts to apply to speak as panelists. The event will be attended by hundreds of telecom

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[3] Isabel Neto, Michael L. Best and Sharon E. Gillett, "License-Exempt Wireless Policy: Results of an African Survey," MIT Communications Future Program, May 2004 - http://itc.mit.edu/itel/docs/2004/ITS_paper_neto_best_gillett.pdf
[4] This institution merged with the International Telegraphic Union to form the International Telecommunication Union.
[5] See http://rspg.groups.eu.int/consultations/consultation_wrc07/index_en.htm

regulators from around the world. We have asked our board of advisors to apply en masse for this opportunity. If one of us succeeds in getting invited to participate, this will be a major breakthrough, a debut on the global policy stage at the highest possible level. It will open many more doors.

Regional organizations like RSPG play an increasingly important role in the process of preparing for WRCs and in spectrum management generally. They are venues for harmonizing and vetting national band plans and policies. Attendees trade ideas, share opinions, and negotiate with their peers. These regional bodies have more freedom to consider new policy approaches as they have no responsibility for licensing. Groups similar to Europe's RSPG include the Inter-American Telecommunication Commission (CITEL), the African Telecommunications Union, the Asia-Pacific TeleCommunity, the South Asian Telecommunications Regulators' Council, and the Regional Commonwealth of Communications in the CIS.

Interventions at the regional level have greater leverage and are easier than dealing with dozens of national agencies. We contacted Tattu Mambetalieva in Kyryzstan for help in approaching the RCC. (As you know, she is their NGO advisor.) We would also like to attend the Mideast/Asian IT Ministers Summit in Bahrain (21-23 March 2005), which will be partly open to the public. Meetings of the regional groupings of regulators are usually closed to outsiders except by invitation.

In contrast, Europe tries to give at least the appearance of openness. Unfortunately, this is also the most complicated regional radio policy system in the world, with multiple organizations having overlapping memberships and responsibilities.[6] We will cooperate with Julien Priest, Joe McNamee[7] and others to deal with this unwieldy apparatus. As you know, we emphasize Europe's importance because it so strongly influences regulatory thinking in neighboring regions, particularly among the former communist countries, the Middle East and Asia.

4) With demand for radio frequencies accelerating, and so much uncertainty about the impact of OS and other radical policy shifts, much more sharing of information and experience is needed at the international level – among regulators, and between regulators and the public.

We have come to an idea that practically everyone we discussed it with has supported: organizing a workshop for sharing experiences and strategies in spectrum management reform in the US and the European Union. Brussels is the logical place for such an event,

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[6] Aside from the RSPG, there is the Spectrum Interservice Group, the Radio Spectrum Committee, the Independent Regulators Group, the European Conference of Postal and Telecommunications Administrations, le Comite International Special des Perturbations Radioelectriques, the European Radiocommunications Office, the Information Society's Radio Spectrum Policy Unit, etc.

[7] A native of Ireland, Joe is a public interest lobbyist living in Brussels. He organized the European Parliament's Internet Group and was director of regulatory affairs for the European ISP Association.

and we think it can be done in partnership with the FCC and the Information Society Directorate General.[8]

The main purpose would be to bring into focus a divergence that dialogue might be able to resolve. (Failing that, it would at least clarify the policy options and the consequences of different choices.) Briefly, the EU proposes to increase "flexibility" in spectrum management by allowing licensees to use their channels for purposes other than those for which the license was granted, and sell their channels when they have unneeded capacity. The US, meanwhile, seems to be looking more at unlicensed commons and hardware/software-based solutions. These tendencies are somewhat in conflict (a "secondary market" for licenses would entrench the "property model" and hinder evolution toward unlicensed commons). Yet they may actually be complementary if applied to different types of services. In any event, dialogue seems to be the way to head off potential conflict. The workshop might be called a "Transatlantic Dialogue on the Role of Licensing in an Era of Ubiquitous Networks."

We might mention at this point that Petr Marek attended the first US National Summit for Community Wireless Networking at Urbana-Champaign, Illinois, last month. He was the only partcipant from abroad and his presence made the internationalization of OS a much-discussed issue there. After describing our aims in the session on spectrum policy, American experts on OS expressed strong interest in meeting and sharing experience with their European colleagues. New America Foundation representatives Michael Calabrese and Jim Snyder agreed to help prepare and participate in the Brussels workshop, as did Tim Pozar (former EFF chief technologist and co-founder of the Bay Area Wireless Users Group, "the first organization to promote community 802.11b networking"[9]). Sascha Meinrath, who helped organize the Summit, also offered to help.

We would also like to organize a conference in the former Soviet Union, with the help of Tattu Mambetalieva, the RCC, Andrey Richter (head of Moscow's Media Law and Policy Institute), GIPI coordinators, and maybe Sergei Stafeev (director of the Community Networking & Information Policy Study Center in St. Petersburg). So far as we know, Open Spectrum has not appeared yet on the NIS's radar screen. We would like to introduce OS ideas to policymakers, journalists, ICT firms and the public, while pursuing the more modest goal of legalizing Wi-fi in places like Belarus. Moscow, Saint Petersburg or Astana (Kazakhstan's new capital) seem like the most suitable locations.[10]

We have also received some other interesting and challenging offers. For example, at the meeting in Prague last week of the International Committee for Democracy in Cuba (initiated by former president Vaclav Havel), we were asked by the participants, and by the representatives of Freedom House, to prepare a study on how the OS agenda and Wi-

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[8] It happens that Ruprecht Niepold, head of the DG IS's Spectrum Policy Unit is quite fascinated by Open Spectrum, as is Michael Powell, chairman of the FCC. Our many advisors with links to the FCC can help us get high-level participation from that agency, we hope.

[9] Peggy Albright, "Free Community Nets Springing Up" *Wireless Week,* 18 March 2002 - http://www.wirelessweek.com/index.asp?layout=story&articleId=CA201269.

[10] We learned from the staff of the E-Government Academy in Estonia that Kazakstan's president, Nursultan Nazarbayev, personally ordered the legalization of Wi-fi last summer.

fi achievements might contribute to the erosion of repressive regimes (like Cuba and Belarus) and strengthen the struggle for democracy and freedom there. We are working now on our response for presentation in one month, and we would also welcome comments and opinions from the Open Society Institute.

5) There is a need for more public discussion of OS as it is an issue of social policy and values. Because it is a public policy matter we would focus on increasing interest in OS among journalists and media experts.

OS is hardly known to media professionals in Europe, let alone the general public. Therefore we must first gather basic information and disseminate it in well-targetted fashion to the professional public, and, in the second phase, to the general public. Our public relations effort will first:

- summarize the current status of OS;
- localize core information;
- identify the best channels for disseminating basic OS information; and
- start sending the message to the public.

Our period of preliminary research has already found valuable background information with which we are starting to address journalists and other professionals. We were recently contacted by the German magazine *Der Spiegel* and by Peter Green from the *International Herald Tribune*, with requests for information on Open Spectrum and for comments on its development. Because of Petr Marek's previous work as a journalist with the Voice of America, BBC, etc., and with Places in the Heart, we have an already-developed network of contacts with journalists and media professionals working in international media like the BBC World Service, Euronews, *The Economist*, CNN, VOA, *Frankfurter Allgemeine Zeitung*, etc. In addition, previous Places in the Heart projects gave us contacts with local media outlets in Russia, Central Asia and elsewhere in Eastern Europe.

Working with journalists and the media is a long-term involvement. We will continue distributing information about spectrum policy to our already-close colleagues, as well as to newly-identified ones; work with them on the invention of new story ideas and the preparation and placement of articles; and keep them up-to-date with new developments. We will prepare and publish our own articles and make our own media appearances, too. Petr Marek is now working on two articles for the Czech media; following those we will focus on media with international outreach, like the *International Herald Tribune*.

We will use events – especially our proposed workshop in Brussels – to attract journalists and media attention. The Brussels workshop will publicize Open Spectrum, although we expect the discussion to be far broader. But we will focus on the idea of freer spectrum as the point most interesting to the public and provide the journalists with newsworthy developments during and after the conference. The introductory workshop in the former Soviet Union will serve us in a similar way, helping to introduce the topic to the Russian

and NIS media. In the same way we will prepare our own coverage of the ITU Symposium in December, and help publicize parallel efforts and studies by colleagues like Julian Priest.

The aim of this publicity is to get the Open Spectrum agenda more into the public's eyes, to start more active public discussion about the social goals of spectrum policymaking.

6) OS benefits from "the rare and happy confluence of commercial interests with civil rights," as one of our advisors put it. Should we do the same?

There might be a few countries that modified their radio regulations to create unlicensed bands because the public asked for that. But many more countries did so because of pressure and encouragement from equipment vendors. Intel has been particularly active internationally in support of such bands.[11] Other companies like Atheros, Nortel, Wi-LAN and Cisco also work with regulators and standards bodies in order to be able to sell more products. Wireless LANs are already a very big business, with global sales last year totalling about $2.5 billion.[12] To the extent that we succeed in opening new countries and bands for license-exempt communication, our work – altruistic in motive – may yield income for equipment makers, vendors and others.

For this reason we wonder what relationship we should have – if any – with businesses active in this market. Our advisors are divided on this issue. Some say they will quit if we have any commercial ties, and some say we will be taken more seriously if we have business backing. We would very much like the OSI Information Program's opinion on this. Reliance on commercial rather than noncommercial funding might influence the choice of countries on which we focus. Our "natural" impulse is to focus on the former communist countries, Africa and the Middle East. But a commercial sponsor might encourage us to focus on countries offering larger potential markets (e.g. China, India, Indonesia).

Before launching Open Spectrum International, we planned to become a membership-based organization with two classes of members: ordinary citizens and large technology firms. The former would pay a small token fee while the latter would pay more, and have correspondingly greater benefits and rights. Now we think it might be better to seek corporate sponsorship only for specific projects, so that our overall orientation is not affected. Your views?

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[11] The overall corporate project is called Radio Free Intel, which is described at http://www.intel.com/labs/radio/ . For a concise statement of their aims see "Intel's Call for Worldwide Spectrum Reform" by Peter Pitsch (he is Intel's Director of Communications Policy) - http://www.rieti.go.jp/en/events/03120401/pdf/ws-pitsch_e.pdf

[12] Estimate from Infonetics Research's *Quarterly Survey of Wireless LAN Hardware*.

7) Most of the technical and policy aspects of OS have already been thoroughly explored and persuasively argued in English-language texts written during the past 10 years. We don't have to reinvent the wheel.

We spent most of the past 6 weeks reviewing the already extensive literature of Open Spectrum (OS), to "get up to speed," learn how, where and by whom the issues have been articulated, and discover what texts are most worth publicizing and citing. We consider ourselves fortunate in not having to reinvent the wheel, but there is still a need to re-adapt this rich trove of material for new contexts (non-western countries with radically different literary norms, for filing in regulatory consultations, public speeches, articles for popular periodicals, etc.).

Our website now features an online bibliography with links to key OS texts. Called "Good Reading," it is posted at http://www.open-spectrum-international.org/library.html. We want to continue refining and expanding this list in the months ahead, to help newcomers also "get up to speed" quickly, and to strengthen the credibility of OS among regulators, intellectuals, engineers and telecom professionals.

Along the way, we made an interesting discovery: apparently, none of the major OS texts in English has yet been translated into Russian, Arabic or Chinese.[13] Nor have we found any discussion of OS in those languages. The same can be said of many other languages used more locally, like Romanian, Farsi, Kongo, etc.

On the other hand, we have found dozens of articles in Japanese, Italian, German, French and Spanish which quote, summarize or parallel the American OS literature. That, plus a few dozen blog entries, seems to be the entire non-English inventory of writing on this topic. Clearly regulatory reforms reflecting OS principles cannot occur without access to OS ideas and arguments. Thus, there is an obvious need to translate the most essential and persuasive documents into the major languages of Russian, Chinese and Arabic. We would like to undertake similar translations into other languages, but the 3 languages just named are our main priority.

We recently asked our advisors to tell us what texts they think are the most worth translating. The nominees so far are:

- Kevin Werbach's essay "Here's a cure for the Bandwidth Blues" (ZDnet, 2001)
- "Some Economics of Wireless Communications" by Yochai Benkler, *Harvard Journal of Law & Technology* (Winter 2002-3)
- "Overcoming Agoraphobia: Building the Commons of the Digitally Networked Environment," by Yochai Benkler (*Harvard Journal of Law & Technology*, 1998)

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[13] After weeks of research using a variety of techniques and channels, we found only one Chinese-language text – a single paragraph – summarizing a Japanese essay on Open Spectrum. However, some of the technologies that make Open Spectrum practical – software defined radio, smart antennas, signal encoding techniques, etc., are known to Chinese and Russian researchers. But the policy implications seem to be unappreciated.

- "Cartoon Guide to Federal Spectrum Policy" by Jim Snyder, New America Foundation (this needs to be "internationalized" – we have initiated discussions with them on how to do that).

We also have an idea for something that does not yet exist but which would be quite useful: a book-length anthology of OS writings by authors based outside the United States. That will probably be easier to do a year from now, if we succeed in stimulating wider interest in the subject.

8) This compilation of ideas is probably more than we can do in the next 12 months. We must either postpone implementation for some of them, or consider hiring more staff. The choice depends on the level of financial support we can attract.