Ukraine

Access to Internet content in Ukraine remains largely unfettered, in part as a consequence of the 2005 Orange Revolution in which communication technologies played a significant role. Ukraine possesses relatively liberal legislation governing the Internet and access to information. A number of state initiatives aimed at controlling electronic media have emerged, including regulations to exercise surveillance over Internet content in order to "protect national security" and limit other forms of "undesirable" content. These regulations embody the potential for expanded formal and informal controls, although they are unlikely to be enacted in the near future.

Background

Among the countries of the CIS, Ukraine is second only to Russia in the size and strength of its IT establishment. Ukraine was the birthplace of Soviet computing and Kyiv remains a major center for IT development. Ukraine is an early adopter of policies aimed at supporting ICT, considered by the government to be a main pillar of national development. The state has demonstrated the political will to undertake vital reforms

RESULTS AT A GLANCE					
Filtering	No Evidence of Filtering	Suspected Filtering	Selective Filtering	Substantial Filtering	Pervasive Filtering
Political	●				
Social	●				
Conflict and security	●				
Internet tools	●				

Other Factors	Low	Medium	High	Not Applicable
Transparency				●
Consistency				●

KEY INDICATORS	
GDP per capita, PPP (constant 2005 international dollars)	6,529
Life expectancy at birth (years)	68
Literacy rate (percent of people age 15+)	100
Human development index (out of 179)	82
Rule of law (out of 211)	152
Voice and accountability (out of 209)	114
Democracy index (out of 167)	53 (Flawed democracy)
Digital opportunity index (out of 181)	90
Internet users (percent of population)	14.6

Source by indicator: World Bank 2009a, World Bank 2009a, World Bank 2009a, UNDP 2008, World Bank 2009b, World Bank 2009b, Economist Intelligence Unit 2008, ITU 2007, Miniwatts Marketing Group 2009.

in the telecommunications sector, although much remains to be done to promote a favorable environment for developing the Internet, fostering e-commerce, and introducing e-governance. In 2008–2009, Ukraine moved up in the global ranking of the Networked Readiness Index to 62nd from 75th place—a notable improvement.[1]

In early 2000, the government invested in developing the country's ICT infrastructure extensively, but more recently the government has deprioritized ICT development. This policy change explains the low position of Ukraine in two separate rankings, both carried out by the World Economic Forum in 2009: "Government Prioritization of ICT" (ranked 110th out of 134 countries) and "Importance of ICT to Government Vision of the Future" (ranked 114th).[2]

The January 2005 Orange Revolution—when opposition groups successfully challenged the outcome of the November 2004 presidential elections that were allegedly unfair—highlighted the latent political power resulting from the "convergence" of information infrastructures (cell phones, Internet, and independent media) and political mobilization. The opposition made full use of these technologies to mobilize and direct supporters in acts of civil disobedience, sit-ins, and general strikes. Although the Internet did not play a determining role in the success of the Orange Revolution, its use by the opposition helped to foster the perception that these technologies served an important strategic role in organizing political opposition (which observers have termed "hyper-democracy").[3] This perception, in turn, prompted neighboring authoritarian governments such as Belarus to crack down on Internet openness.

Following the Orange Revolution, Ukrainian society has become more aware of its power to bring about political changes. Political parties and the government have started using the Internet as an effective tool of political competition while employing techniques such as online political games, unofficial voting, e-meetings, and blogs.

Internet in Ukraine

The partly liberalized Ukrainian telecommunications market is not fully developed. Fixed-line penetration remains low (27.8 percent),[4] and the telephone system requires modernization. The demand for mobile services has expanded rapidly, to reach a penetration of nearly 50 percent. The largest telecom and top-tier ISP, Ukrtelecom, has 92.86 percent state ownership. President Viktor Yushchenko has announced the forthcoming privatization of the state-owned telecom operator Ukrtelecom. The sale of the operator, however, has been delayed a number of times. The government envisages that 50 percent of the shares will be sold for USD 3 billion, though analysts predict a much lower figure. The outdated equipment of Ukrtelecom makes the company less attractive to investors.[5] The state monopolies Ukrtelecom and Utel, the latter controlled by Ukrtelecom, together own 95 percent of the long-distance and international call market.[6]

State-owned Ukrtelecom is the largest ISP in the country, but it does not decisively control the other major ISPs. Ukrtelecom dominates the fixed-line sector[7] and possesses Ukraine's primary network, trunk, and zone telecom lines. Alternative telecommunications providers are dependent on leased lines, because Ukrtelecom owns the majority of the infrastructure and many alternative providers do not have sufficient resources to build their own networks and consequently have to rely on Ukrtelecom's infrastructure. Prices for long-distance and international calls of local operators made over Ukrtelecom lines were regulated by the Order of the Ministry of Communications of November 21, 1996, No. 234, on the basis of revenue sharing (which depends on the number of lines, equipment used, and administrative costs). New interconnection rules were introduced in January 2007, under which interconnection fees are calculated on the basis of traffic volume.

Although ISPs have considerably reduced their access costs (by, for example, leasing outdated or redundant infrastructure from Ukrtelecom) and a few providers offer free access during the night, most Ukrainians cannot afford to use the Internet. Internet penetration increased to 14.6 percent in 2008.[8] With regard to frequency of connecting to the Internet, local sources[9] estimated that in March 2009 almost 8 million Ukrainian users accessed the Internet on at least one occasion over the course of the previous month.[10] There is a significant urban-rural digital divide: As of December 2008, 41 percent of Internet users lived in settlements with more than 50,000 inhabitants. The share of Internet users in rural areas is very low.[11] The majority of users are concentrated in large cities, with Kyiv accounting for nearly 60 percent of Internet users, and the next seven largest cities a further 30 percent of all users.[12] Obstacles impeding expansion include high access costs, poor infrastructure in the regions, high call rates, and low levels of PC ownership.

Men are more frequent users than women (59.3 percent), and most users access the Internet at the office, Internet cafés, or home. Various efforts have been made to boost Internet access at public Internet access places (PIAPs).[13] Pilot projects have also been launched in an effort to improve universal service provision in remote areas. There are more than 3,000 Internet cafés in Ukraine (or one for every 16,000 people in the country).[14] In 2007, 70 percent of all Internet cafés accessed the Internet through a dial-up connection, 20 percent through dedicated lines, and 10 percent through cable TV networks and others.[15]

There are about 400 ISPs in Ukraine according to the State Committee on Communication and Informatization.[16] As of March 2009, there were around 90 ISPs connected to the two Internet traffic exchange points. Ukrtelecom has recently taken steps to encourage massive use of broadband services, and the number of ISPs offering broadband access services has rapidly increased.[17] In March 2005, there were only 10,000 DSL lines in Ukraine.[18] At that time, DSLAMs were installed in 450 cities in Ukraine, and work was under way with Cisco to permit a 1,000 percent increase in DSL subscribers by the second half of 2006. In Ukraine, DSL is used by ISPs as high-speed leased lines. The most widespread technology used for this purpose is HDSL, reaching 2 Mbps data-exchange speeds in both directions.[19] By the end of 2008, there were approximately 1.5 million broadband subscribers (of whom about 500,000 were Ukrtelecom subscribers). Penetration of broadband access in the country exceeded 8 percent.[20]

The government, recognizing the need for attracting foreign investment and stimulating a favorable Internet environment, has also announced plans to provide low-cost access to the Internet in the major cities using WiMAX technology.[21] Indeed, the wireless broadband sector has experienced an increased level of activity as the number of Wi-Fi ISPs has been augmented.

Mobile operators plan to launch fixed-broadband services using frequencies previously used by analog mobile services. Although cable operators have a significant presence throughout the country, the lack of investment has prevented them from offering broadband and digital cable services in most places in Ukraine. A new DTH platform has been launched, and the Ukrainian broadcasting council has allocated Digital Terrestrial TV licenses, opening the way for new services.

There are a number of companies providing Internet access using satellite technologies in Ukraine (these include Ukrsat, Infocom-SK, Spacegate, Adamant, LuckyNet, Ukrnet, and Itelsat). With the exception of Infocom-SK, all these companies are private operators. Ukrchastotnagliad, the Ukrainian frequencies supervisory center, reports that 86 operators have licenses to provide satellite communications services in Ukraine. Despite the large number of operators on the market, however, satellite telecommunications is limited because of its high cost compared to the low average income in the country. The government is nevertheless deploying a digital satellite television and radio broadcasting system, which will also be used for Internet via satel-

lite. In 2007, there were five types of licenses for the provision of direct satellite communications services.

There are currently two industry associations in the Internet sector, the Internet Association of Ukraine,[22] which owns the Ukrainian Internet Exchange (UIE),[23] and the Ukrainian Wireless Association.[24] The Internet Association of Ukraine aims to safeguard the interests of all participants in the Internet market and has successfully ensured a reduction in the price of internal traffic in Ukraine.[25]

Since 2001, the Ukrainian national country code top-level domain (".ua") has been administered by LLC "Hostmaster" founded by representatives of the Ukrainian Internet community.[26] The number of domain names registered under ".ua" is steadily increasing. For example, under ".com.ua," the total number of domain names increased from 31,153 in 2004 to 145,114 in April 2009. The overall number of domain names under ".ua" had increased from 133,907 to 390,197 as of January 1, 2009.[27]

Blogging has also been on the rise. Ukrainian Internet users have opened more than 80,000 blogs on popular portals such as livejournal.com (35,000), liveInternet.ru (27,500), dnevnik.bigmir.net (11,000), drevo.uaportal.com (4,000), diary.ru (2,500), Jeans.com.ua/blogs.php (2,300), and Dnevnik.org.ua (1,200).[28]

The most popular search engines in Ukraine are Ukrainian-based BigMir.net and ukr.net, Russian-based Yandex and Rambler, and Google. The majority (60.3 percent) of online searches in Ukraine are performed through Google, followed by Russian and Ukrainian search engines Yandex (18.3 percent), ukr.net (2.64 percent), Rambler (2.16 percent), and Meta.ua (2.11 percent).[29]

Ukraine's mobile sector is very dynamic. There are six mobile providers in the country: UMS[30] (GSM-900/1800 and NMT-450i), Kyivstar[31] GSM (GSM-900/1800), Astelit[32] (GSM-1800), Ukrainskie Radiosystemy (GSM-1800),[33] and Utel (UMTS/WCDMA).[34]

Legal and Regulatory Frameworks

The Ministry of Transport and Communications (through the State Administration for Communications) is the policymaker in the electronic communications sector. The Law on Communications (2003) established the sector regulator—the National Communication Regulation Commission (NCRC), which was set up two years later. The law of 2003 does not guarantee the independence of the NCRC. Instead, a number of inconsistencies between sector laws have increased the uncertainty about who has the power to appoint the commissioners. The NCRC is responsible for licensing operators, monitoring the market, price regulation, frequency assignment, numbering, ensuring compliance with the legal framework, imposing sanctions, and resolving disputes when interconnection agreements are not reached between operators. The NCRC's work has often been obstructed by claims of unlawful appointments and operation.[35]

Under the Law on Communications, operators are required to have a license before starting activity.[36] License fees vary from around EUR 1.5 million for fixed international telephony down to less than EUR 1,500 for network capacity and 10,000 telephone numbers. A 15-year national license for VoIP costs EUR 150,000.[37] The law specifies that local, intercity, and international telecommunications services, as well as mobile telephone communications and television and radio broadcasting, must be licensed. The term of the license (except for IP-telephony) is determined by the NCRC and cannot be less than five years.[38] With the present government, Internet activity is not subject to licensing or other forms of regulation. Liberalization of the market has also led to a rapid increase in the number of ISPs.

The Law on Communications offers the NCRC a variety of tools to ensure competitive neutrality with regard to building communications infrastructure. According to the current legislation, all telecommunications operators have the right to build telecommunications networks in accordance with a plan that has been approved by the Ministry of Transport and Communications (MTC). Companies must submit their plans to Ukrtelecom or the local government to receive permission to develop telecom networks.

Monopolization by Ukrtelecom, lack of strategy for international telecommunications services market development, and the absence of long-distance and international traffic control mechanisms are major problems for the long-distance and international communications market. Interconnection is governed by Chapter IX of the 2003 Law on Communications and the subsequent NCRC Order on Interconnection and Calculation among Operators. Interconnection is very heavily regulated: the cost of calls from fixed phones to mobile phones is determined by a government decree, and the redistribution of incomes from such calls is based on agreements between Ukrtelecom and the mobile operators. This rate is currently UAH 0.6 per minute. These agreements between Ukrtelecom and mobile operators are signed on a yearly basis. At present, it is difficult to obtain data on interconnection between telephony operators because all parties have an interest in concealing actual conditions of their agreements.[39] There is also no public information available regarding the existence of complaints against interconnection regulation. For fixed-to-mobile interconnection, the termination fee is UAH 0.25 per minute. The price of call termination in the mobile-to-fixed market is decided by commercial agreement between the parties, but the tariff cannot be more than UAH 0.25. Mobile-to-mobile interconnection is negotiated between the parties.

The Law on Communications classifies market players in the telecom sectors as either ''operators'' or ''providers.'' Under Article 1 of the law, ''providers'' do not have the right to maintain or operate networks, or to provide channels. Operators are divided into mobile operators, landline operators, and landline wireless operators. Mobile

operators need to obtain a license for provision of phone services and for the frequencies they use. Fixed operators are required to have a license for local, national, and international services, while fixed wireless providers need a license for fixed operators as well as for the frequency they operate.

The legal status of VoIP providers has yet to be defined. Within the context of the current definitions, VoIP providers could be considered "operators" and therefore be required to undertake the same licensing procedures as the other categories of operators. Obviously there is a degree of uncertainty in the market. The losses from the illegal termination of voice calls in Ukraine have been calculated. Ukrtelecom offers a termination rate for IP calls of USD 0.75–0.77. It is not known how many (if any) IP telephony companies take advantage of this offer.

The country-code top-level domain (CC TLD) ".ua" is administered by the independent company Hostmaster. In 2008, there were two separate legislative initiatives proposing to establish governmental control over the administrative body. Oleg Shevchuk (Prime Minister of Ukraine, Bloc of Yulia Tymoshenko) suggested that the administration of the CC TLD be performed by a nonprofit NGO representing the IT sector. However, any final appointment decision would be enacted only after approval by a supervisory board, including representatives of the National Communication Regulation Commission (NCRC), the Anti-Monopoly Committee, and other central executive bodies.[40] Another draft law envisioned stricter measures.[41] According to the draft law, the administrator—a noncommercial organization—should be founded by associations of communication providers as well as authorized governmental bodies. The administrator would be approved by the Cabinet of Ministries following a proposal by the State Informatization Committee and the NCRC. Furthermore, the administrator's activity would be organized by a coordination council composed of executive bodies and self-regulated organizations. However, these two proposals were not successful.

At present, there are no controls on Internet access or content. However, this situation may be changing as government figures have made public calls for stricter regulation of the Internet, citing national security concerns.[42] Suggested measures include licensing ISPs, registering Internet resources, and monitoring content related to obscene or harmful material. The threat of Internet censorship was raised in 2005 when the Ministry of Transport and Telecommunications introduced, and subsequently withdrew, a decree regulating registration of Web sites hosted in Ukraine for the purposes of national security.[43] In 2009, the Ukrainian Security Service was instructed to prepare draft legislation that would obligate news Web sites to register as media.[44]

The Law on Protection of Public Morals of November 20, 2003, enacted during the term of the previous government, is still effective. It prohibits the production and circulation of pornography; dissemination of products that propagandize war or spread

national and religious intolerance; humiliation or insult to an individual or nation on the grounds of nationality, religion, or ignorance; and the propagation of ''drug addition, toxicology, alcoholism, smoking and other bad habits.'' (Article 161 of the Criminal Code provides for punishment for incitement of national, racial, and religious intolerance, and demeaning of national honor and religious beliefs.)

The National Expert Commission for the Protection of Public Morals (NECPPM) has the authority to monitor and evaluate media materials (including the Internet), issue conclusions on their compliance with the Law on Protection of Public Morals, and propose revocation of operators' licenses in case of violation.[45] The commissioners of the NECPPM are approved by the Cabinet of Ministries. Since 2008, the NECPPM has made several decisions about TV broadcasts, movies, and books that provoked significant controversy in the electronic media community. For example, in November 2008 the commission decided that the Russian-based social network ''V kontakte'' (vkontakte.ru) contained pornographic materials and instructed the Ministry of Foreign Affairs to address the embassy of the Russian Federation to Ukraine on this issue, in order to prevent further dissemination of such materials by the social network.[46]

Subsequently, on March 20, 2009, the Internet Association of Ukraine and the commission signed the Memorandum on Cooperation about Security Issues in the ''.ua'' Domain.[47] The association and its members took on the responsibility for monitoring the Ukrainian domain and preventing dissemination of materials violating the Law on Protection of Public Morals.

In September 2005, the Cybercrime Convention of the Council of Europe was ratified by President Yushchenko, with reservations regarding the possession of child pornography and misuse of devices. Ukraine has also signed and ratified the Optional Protocol to the Convention on the Rights of the Child on the Sale of Children, Child Prostitution, and Child Pornography. Prohibition of the importation, production, sale, and distribution of child pornography in Ukraine is detailed in Article 301 of the Ukrainian criminal code. However, there is no prohibition of the possession of such material.

In December 2008, the Ministry of Internal Affairs searched the premises of one of the most popular Ukrainian file-exchange networks (infostore.org) and confiscated servers and other equipment under the pretext that the network was hosting pornographic materials. The owners insisted they provided the required information beforehand and protested against the actions of the law enforcement authorities. Since this incident, infostore.org has been unavailable.[48] The ministry's actions were underpinned by a decision of the National Expert Commission for the Protection of Public Morals.

In October 2008, MP Pavlo Ungurjan (Bloc of Yulia Tymoshenko) submitted a draft law on combating child pornography.[49] He suggested imposing obligations on ISPs to

track URLs visited by subscribers and to inform law enforcement about users who attempt to open Web sites containing child pornography. The draft recommends blocking child pornography sites, and envisions criminal liability for ISPs that host such Web sites. The draft law has been widely criticized, but the author has not withdrawn it.[50]

The Supreme Economic Court accepted the 2004 Resolution on Certain Issues Concerning the Resolution of Disputes Related to Copyright and Intellectual Property Rights Protection, which provides procedures for the protection of intellectual property rights—in particular, sales of various computer software programs. Ukrainian legislation has been enhanced and brought into line with the TRIPS requirements by several laws amending Ukrainian Intellectual Property Laws.[51] However, most of the focus in Ukraine in relation to music and software piracy has been on offline infringements, because of the existence of large pirate CD plants in the country. New legislation adopted in May 2005 was intended to resolve legal loopholes with regard to piracy. In subsequent years, further legislation in this field was passed providing legal protection for computer programs, broadcasting and cable retransmission, databases, and resale rights, as well as adequate enforcement measures. According to the Ukrainian Ministry of Justice, around 80–90 percent of legislation in almost all key intellectual-property-rights fields corresponds to the EU *acquis communautaire*.[52]

In February 2007, the Verkhovna Rada adopted amendments to the Criminal Code. Now individuals charged with piracy can face three to six year imprisonment (up from the previous two-year sentence) or a fine that could reach a maximum of UAH 51,000 (USD 10,000).[53] Microsoft Ukraine stated that 80 percent of software used in Ukraine was unlicensed.

In 2004, the Regulation on the Fundamentals of Revealing General Crimes was adopted by Authorities of the Ministry of Internal Affairs. This regulation authorizes the use of the police database for crime-fighting purposes. The police database includes data on the crimes, the persons involved, the items installed, and other relevant investigative data. The regulation does not correspond to the personal data protection provisions of the Council of Europe Data Protection Convention of 1981. There are no national laws on data retention.

Surveillance

The Council of National Security and Defense is the main governmental body responsible for national security and defense. The Council monitors information security and coordinates the work of the other executive bodies in the field. The Security Service of Ukraine is empowered to initiate criminal investigations and use wiretapping devices on communications. Existing legislation has specified neither the circumstances that

justify interception of information from communication channels nor the time limits of any such interception. The recently established State Service for Special Communications and Information Protection implements governmental policy on protecting state information and confidential communication, and exercises control over cryptographic and technical information security.[54]

On June 17, 2002, the State Committee on Communications issued Order No. 122, which introduced mechanisms for Internet monitoring. The order required ISPs to install black-box monitoring systems in order to provide access for state organizations. The purpose of this monitoring was to control unsanctioned transmission of data containing state secrets. However, ''state secret'' is not clearly defined in current regulations, allowing authorities broad discretion in interpretation. The difficulties in separating state from nonstate users also expose the latter to monitoring. By 2006, a significant number of large ISPs installed black boxes, and the Security Service of Ukraine sent out letters to governmental authorities insisting they use their access services.

Under the pressure of public protests and complaints raised by the Internet Association of Ukraine and the Ukrainian Helsinki Human Rights Union, the Ministry of Justice abolished this order in August 2006. Some human rights groups claim the Security Service of Ukraine is keeping intercepted messages and carrying out Internet surveillance on a large scale.[55] Since the revocation of Order No. 122, the service has acted within the limits prescribed by the Law on Operative Investigative Activity. According to estimates from the Internet Association of Ukraine, the service may have the technological capability to do so in 50–60 percent of the cases.[56] The level of surveillance may rise up to 90 percent in regions where it is harder for access providers to oppose the Security Service and other law enforcement bodies.

To compensate for the lack of comprehensive legislative regulation of communication interception and surveillance, the Cabinet of Ministers adopted Order No. 1169 in September 2007. This order decrees that permission must be obtained from a judge or head of the respective Court of Appeals to carry out surveillance. Human rights groups, such as the Internet Association of Ukraine and the Ukrainian Human Rights Ombudswoman, protested against the order, claiming it legalized unlawful infringement upon the right to privacy. Notwithstanding the attacks against it, Order No. 1169 remains active.[57] Statistics also reveal the growing use of interception and surveillance by law enforcement agencies in Ukraine. According to the Supreme Court of Ukraine, the number of applications authorizing the use of monitoring and surveillance tools to the Ukrainian Courts of Appeals initiated by law enforcement bodies grew from 15,000 in 2005 to 19,989 in 2007 and reached 25,086 in 2008. In 2008, the Ministry of Internal Affairs made 14,815 submissions; the Security Service of Ukraine, 8,323; and the tax police, 1,655. It is not known how many submissions were granted, nor is it clear how many were directly related to electronic surveillance.[58]

ONI Testing Results

In 2007 and 2008, the OpenNet Initiative conducted tests in Ukraine from different access points on six main ISPs: Alkar, Intertelecom, Visti Net, Volz, Volia, and UkrTelecom. The ONI concluded that there is no filtering on the backbone in Ukraine. However, the ONI found that a number of U.S. military Web sites as well as one gambling site were subject to reverse blocking and hence inaccessible in Ukraine.[59]

Conclusion

The citizens of Ukraine enjoy unfettered access to the Internet. The country's Internet infrastructure is rapidly developing, and ICTs are beginning to have a more notable influence over the political process. The country possesses an Internet infrastructure that is more oriented toward European ISPs, and this orientation diminishes the influence of any filtering behavior on the part of Russian ISPs. The government has built up an intricate system of bodies and content regulations that can be geared toward surveillance of information carried on telecommunications networks, including the Internet.

Notes

1. The Networked Readiness Framework assesses the extent to which different economies benefit from the latest ICT advances based on three indexes: environment, network readiness, and usage. See World Economic Forum, *The Global Information Technology Report 2008–2009*, http://www.weforum.org/pdf/gitr/2009/gitr09fullreport.pdf.

2. Ibid.

3. Joshua Goldstein, ''The Role of Digital Networked Technologies in the Ukrainian Orange Revolution,'' Berkman Center Research Publication No. 2007-14, December 2007, http://cyber.law.harvard.edu/sites/cyber.law.harvard.edu/files/Goldstein_Ukraine_2007.pdf.

4. Paul Budde Communication Pty., Ltd., ''Ukraine—Key Statistics and Telecommunications Market,'' January 15, 2009.

5. World Dialogue on Regulation for Network Economies, ''Ukraine: President Signs Legislation to Privatise Ukrtelekom,'' January 26, 2007, http://www.regulateonline.org/content/view/918/79/.

6. Andriy Vorobyov, ''Ukraine Telecommunications Market Report,'' BISNIS, 2005, http://www.bisnis.doc.gov/bisnis/bisdoc/0602UkraineTelecomReport.htm.

7. As of April 2005, Ukrtelecom's overall telecommunications network consisted of 78,665 km of lines, of which 17,169 km were fiber-optic communication lines.

8. Miniwatts Marketing Group, ''Internet World Statistics: Ukraine,'' 2009, http://www.internetworldstats.com/europa2.htm#ua.

9. *Delo*, ''V Iyule Ukrainskaya Internet-auditoriya Uvelichilas na 3.2%'' [Ukrainian Internet Audience Increased by 3.2% in July], March 31, 2009, http://delo.ua/news/after/internet/info-45524 .html (accessed May 26, 2009).

10. *Delo*, ''V Ukraine Naschitali 8 mln Internet-polsovateley'' [8 Million Internet Users Estimated in Ukraine], May 27, 2007, http://delo.ua/news/103981/.

11. *Ekonomichna Pravda*, ''Maizhe Polovina Miskih Ukraintsev Koristuetsya Internetom'' [Nearly Half of Urban Ukrainians Use the Internet], December 15, 2008, http://www.epravda.com.ua/ news/494677832d2cd/.

12. ''Globalnaya Statistika Ukrainskogo Internet v Aprele 2008'' [Global Statistics of Ukrainian Internet in April 2008], http://www.slideshare.net/segal/2008-398609.

13. For example, the U.S. Embassy gave grants of more than USD 1.4 million (EUR 1.17 million) to provide Internet access in libraries in the period from 2001 to 2004. The UN Development Program and the German International Migration and Development Center have joined forces with local organizations to develop training and support for the creation of PIAPs in Ukrainian schools, the intention being both to boost IT in education and to improve the level of Internet access in schools. See German International Migration and Development Center, http://www.cimonline .de/en/index.asp.

14. ''Introducing All-Ukrainian Association of Computer Clubs,'' http://www.uacc.org.ua/en.

15. Lesya Potapenko, ''Copyright Attacks, Part II,'' *Ukrainska Pravda*, May 4, 2007, http://www .pravda.com.ua/en/news/2007/5/4/7658.htm.

16. *Delo*, ''Vo Vtorom Quartale Kolichestvo Abonentov Providerov Internet Uvelichilos na 6.4%'' [ISP Subscribers Number Increased by 6.4% in the Second Quarter], July 26, 2007, http://delo.ua/ news/after/internet/info-44242.html (accessed May 26, 2009).

17. Light Reading: IP & Convergence, ''Ukrtelecom Uses Cisco Routers,'' News Wire Feed, March 23, 2005, http://www.lightreading.com/document.asp?doc_id=70731; News@Cisco Press Release, ''DataGroup to Deliver DWDM Network in Ukraine with Cisco Optical Technology,'' February 15, 2006, http://newsroom.cisco.com/dlls/2006/prod_021506.html.

18. See Ukrainians Plan IP Explosion, http://www.lightreading.com/document.asp?doc_id=70732.

19. Paul Budde Communication Pty., Ltd., ''Ukraine—Internet, Broadband, and Convergence Overview and Statistics,'' November 9, 2008.

20. State Administration of Communications of Ukraine, ''U Sichni 2009 Roku Dohody vid Nadannya Poslug Zvyazku Sklali 3,6 Milliarda Griven'' [In January 2009 Communication Revenues were 3.6 Billion Hryvnia], http://www.stc.gov.ua/uk/publish/article/68241.

21. *Ukrainskaya Pravda*, ''Ministr Obeshchaet Pokryt' Ukrainu Internetom'' [Minister Promises to Cover Ukraine with Internet], January 18, 2006, http://www.pravda.com.ua/ru/news/2006/1/18/ 36834.htm.

22. Internet Assotsiatsia Ukrainy [Ukraine Internet Association], http://www.inau.org.ua/about.phtml.

23. Ukrainskaya set obmena trafikom (Ukrainian IXP), http://www.ua-ix.net.ua.

24. Wireless Ukraine, http://www.wirelessua.com.

25. For further information about the IA-IX Internet Traffic Exchange, see Ukrainian traffic exchange network at http://ua-ix.net/eng.phtml.

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27. Hostmaster Ltd, ''2008 God—Fakty I Kommentarii'' [Year 2008 Facts and Comments], http://hostmaster.net.ua/news/?.

28. Makson Pugobskiy, ''Ukrainskaya Blogosphere'' [Ukrainian Blogosphere], August 16, 2006, *ITC.ua*, http://itc.ua/article.phtml?ID=25235.

29. *Korrespondent.net*, ''Opublikovana Globalnaya Statistika Ukrainskogo Internet za Sentyabr'' [September Global Ukrainian Internet Statistics have been Published], October 3, 2008, http://korrespondent.net/tech/technews/603860.

30. MTS Subscribers, http://www.mts.com.ua/eng/main.php.

31. Kyivstar, http://www.kyivstar.ua/en/.

32. Life, http://www.life.com.ua/index.php?lng=uk.

33. Beeline, www.beeline.ua/index_ua.wbp.

34. Utel, www.utel.ua.

35. European Bank for Reconstruction and Development (EBRD), ''Legal Transition Program: Telecommunications Regulatory Development: Comparative Assessment of the Telecommunications Sector in the Transition Countries: Assessment Report Ukraine,'' December 2008, http://ebrd.com/country/sector/law/telecoms/assess/ukraine.pdf.

36. Law on Telecommunications of November 18, 2003. The law abolished the provisions of the 1995 Communication Law, including the charges for incoming calls for all kinds of telephone communications.

37. Law on Telecommunications of November 18, 2003. The law abolished the provisions of the 1995 Communication Law, including the charges for incoming calls for all kinds of telephone communications.

38. For each type of telecommunications service, the NCCR is obliged to issue special instructions on the technical and bureaucratic parameters that the enterprise should respect and on the documents needed to confirm that the parameters have been met.

39. The Law on Communications requires operators to provide other operators willing to conclude an interconnection agreement with the information required for negotiation and to offer

interconnection terms that are at least equivalent to those proposed to other operators (Art. 58). The NCCR is authorized to intervene in cases of failure by parties to negotiate (para. 19, Art. 18).

40. Proekt Zakonu pro Vnesennya Zmin do Zakonu Ukrainy ''Pro Telekommunikatsii'' 3460 [Draft Law No. 3460 Amending the Ukrainian Telecommunications Law], http://gska2.rada.gov .ua/pls/zweb_n/webproc4_1?id=&pf3511=33887.

41. Proekt Zakonu pro Vnesennya Zmin do Zakonu Ukrainy ''Pro Telekommunikatsii'' 3460–1 [Draft Law # 3460–1 Amending the Ukrainian Telecommunications Law], http://gska2.rada.gov .ua/pls/zweb_n/webproc4_1?id=&pf3511=34117.

42. The director of Ukraine's Security Service, Konstantyn Boyko, pointed out the imminent danger that the Internet may pose to the country, citing ''foreign political forces, intelligence departments and extremist organizations, which are able to direct resources and endowments of the Internet to harm our nation.'' See *Ukrainskaya Pravda*, ''SBU Ustroit Totalny Control?'' [Security Service to Take Totalitarian Control over Internet?], May 27, 2006, http://www.pravda .com.ua/ru/news/2006/5/27/41096.htm.

43. The decree asked for compulsory registration of Web sites and specified criteria that sites had to respect before being launched. International Press Institute, ''2005 World Press Freedom Review, Ukraine.''

44. *Sila Naroda*, ''Budet li Vveden Control nad SMI Ukrainy?'' [Will There Be Control over the Ukrainian Media?], March 2, 2009, http://www.silanaroda.com/index.php?itemid=8317&mode =full.

45. Natsional Expertna Komisiya Ukrainy [Ukrainian National Expert Commission], www.moral .gov.ua.

46. *Telekritika*, ''Natskomissiya Pitan Zahistu Suspilnoy Morali Hochet Zaboroni 'V Kontakte'?'' [National Commission for Public Morality Wants to Ban 'V Kontakte'?], November 28, 2009, http://www.telekritika.ua/news/2008-11-28/42297.

47. ''Natsionalna Ekspertna Komisia Ukraini z Pitan Zahistu Suspilnoy Morali,'' http://moral.gov .ua/_pidpisano_memorandum_pro_0_0_0_1147_1.html.

48. Alexey Mas, ''Syervis Infostore i MVD!'' [Service Infostore and MIA!], Alex Mas on the Internet, business and Infostore Blog, December 31, 2009, http://alexeymas.livejournal.com/.

49. Draft law No. 3271 amending the law on child pornography distribution prevention, http:// gska2.rada.gov.ua/pls/zweb_n/webproc4_1?id=&pf3511=33562.

50. Viktoriya Vlasenko, ''Pornographicheskiy Zakonproekt'' [Pornography Bill], *ProIT*, October 27, 2008, http://proit.com.ua/article/internet/2008/10/27/094219.html.

51. Laws on Several Amendments to Intellectual Property Laws No. 34-IV of July 4, 2002 (devoted to the protection of the copyright on the Internet); No. 850-IV of May 22, 2003; No. 1407-IV of February 2004; and No. 2734-IV of July 6, 2005: ''On amendments to the several acts regarding the production and import of discs, recording equipment, and raw materials.''

52. In August 2005, the Ukrainian Government introduced restrictions on unsolicited electronic communications, using Article 33 ("Responsibilities of users of telecommunications services") of the 2003 Law on Communications as their legal basis. The rules include obligations for consumers to be able to "opt out" of receiving messages, a prohibition of the falsification of network information, and obligations regarding the provision of a functioning e-mail address and the name of the sender.

53. Lesya Potapenko, "Copyright Attacks, Part II," *Ukrainska Pravda*, May 4, 2007, http://www.pravda.com.ua/en/news/2007/5/4/7658.htm.

54. The agency was established by the Law of February 23, 2006, No. 3475-IV. For excerpts of the law translated into English, see Yaroslav the Wise Institute of Legal Information, "The Law of Ukraine: On the State Service for Special Communications and Information Protection of Ukraine."

55. "Prava Lyudey v Ukraine—2006. V. Pravo na Privatnost" [Human Rights in Ukraine in 2006. V. Privacy Rights], http://www.khpg.org/index.php?id=1186147137.

56. Marina Pekarchuk, "Brigadir Domennogo Tsekha" [Head of the Domain Shop], *Vlast Deneg*, February 2009, http://www.vd.net.ua/rubrics-10/13538/.

57. "Prava lyudey v Ukraine—2007. V. Pravo na privatnost."

58. Information about court hearings on law enforcement investigating by wiretapping. See www.khpg.org/index.php?id=1241091796.

59. Reverse filtering occurs on the Web server hosting the content, as opposed to at a point along the way of the traffic flow, and is based on restricting requests based on geographical location of the originating Internet Protocol address. Copyright holders who want to restrict access to their content in certain markets often use reverse filtering. Examples include hulu.com, BBC.com, and other sites that syndicate commercial video and audio content that is subject to licensing. The ONI has detected that many U.S. military sites are inaccessible outside the United States. We strongly suspect that this may be as a result of reverse filtering.