United Nations Conference on Trade and Development

E-COMMERCE AND DEVELOPMENT
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CHAPTER 1.
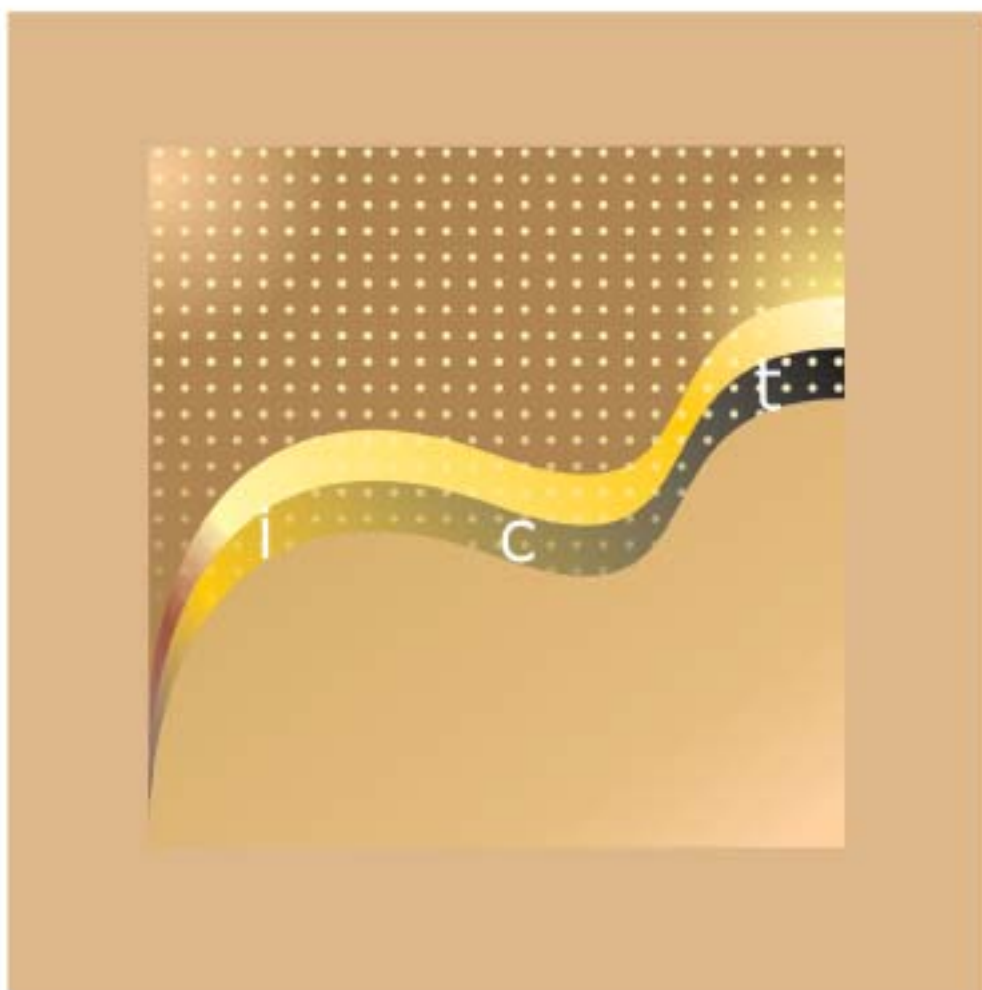
Chapter 1

INFORMATION AND COMMUNICATION TECHNOLOGIES FOR ECONOMIC DEVELOPMENT: ISSUES FOR INTERNATIONAL DIALOGUE

In line with the practice of the previous editions of the *E-Commerce and Development Report*, the purpose of this introductory chapter is to provide some background and context to the analysis contained in the chapters that follow, by describing some general facts and trends in the area of information and communication technologies (ICTs) and its application to economic activity that shape the environment in which the developments addressed by the Report take place.

In order to do so, this chapter will update the information on the conditions prevailing for the adoption of ICTs in developing countries and consider some of the processes through which policies addressing the ICT-related needs of developing countries can be conceived and carried out, particularly as the international community takes action to implement the action plan adopted at the first phase of the World Summit on the Information Society (WSIS), held in Geneva in December 2003. Accordingly, this chapter has two separate parts: the first one presents information, mainly of a quantitative nature, about the recent evolution of the basics facts of Internet access and its commercial applications; the second one deals with issues linked with the ICT-for-development debate, as seen from UNCTAD's perspective.

The member States of UNCTAD have mandated the organization to "contribute to the implementation of the WSIS Declaration of Principles and Plan of Action in the area of UNCTAD's competence, including as regards key development aspects of issues pending from the first phase of WSIS and in preparation for the second phase scheduled in Tunis in 2005".[1] Among the issues that were discussed more intensively all through the WSIS process but were left pending for further work following the conclusion of its first phase, the questions of the governance arrangements that should be applicable to the Internet and the

financing of ICTs for development have attracted particular attention across the whole spectrum of actors involved in the process. In accordance with the mandate received from UNCTAD XI, this chapter therefore presents some preliminary thoughts of the secretariat concerning the issue of Internet governance from the point of view of maximizing the benefits for the economies of developing countries. It also formulates some more general proposals as to how the broader questions concerning the economic aspects of the information society could be addressed by the second phase of the WSIS, to be held in Tunis in 2005.

A. The reach of the Internet and the growth of e-commerce

1. How the net is spreading

At the end of 2003, nearly 676 million people (or 11.8 per cent of the total population of the world) had access to the Internet, according to estimates by the International Telecommunication Union (ITU).[2] This represents an increase of 49.5 million people or 7.8 per cent compared with the figures at the end of 2002. Although the 2003 figures were only partially available when this chapter was being drafted, there are signs that the growth of the world's "Internet population" is slowing down – most of those who want to have Internet access in the developed world, and many of those who can afford it in developing countries, are now connected. However, the existence of a large potential demand in developing countries will ensure the addition of large numbers of new users to the global Internet in the short and medium terms. Table 1.1 shows the growth in the number of Internet users in the world for the period 2000–2003.

Table 1.1

Internet users worldwide (thousands), 2000–2003

	2003	2002	2001	2000
Thousands	675 678	626 579	495 886	387 532
% change	7.84	26.36	27.96	..

Source: ITU (2004).

From the point of view of the relative positions of developed and developing countries, the situation has continued to move towards a growing presence of developing countries on the Internet, although this remains largely concentrated in a relatively small number of nations. Five countries (China, Republic of Korea, India, Brazil and Mexico) account for 61.52 per cent of all Internet users in the developing world. At the end of 2003, almost three out of four Internet users in developing countries lived in the developing countries of Asia, as did two thirds of all the new Internet users in the world. Table 1.2 shows the distribution of Internet users between the developed and the developing countries and the recent evolution of the number of Internet users by region.

Bearing in mind the fact that the data for 2003 are still incomplete, it should be noted that much

(74.8 per cent) of the recorded growth in the number of Internet users in the world occurred in the developing world, and that the rate of growth of its Internet population (17.5 per cent) is eight and a half times higher than that of developed countries. Thus, according to ITU estimates, at the end of 2003 developing countries accounted for more than 36 per cent of all the Internet users in the world, and the share of developing countries in the Internet population of the world grew by nearly 50 per cent between 2000 and 2003 (see chart 1.1).

More detailed information is provided for a number of individual countries in table 1.3. The countries listed there have been selected on the basis of either their demographic and economic weight in their respective regions or of their above-average performance.

Table 1.2

Internet users by region, 2000–2003 (thousands)

	2003	%Growth	2002	%Growth	2001	% Growth	2000
Africa	12 123	21.38	9 988	63	6 119	34	4 559
Asia	243 406	15.25	211 202	40	150 535	38	109 257
Europe	188 997	7.24	176 232	23	143 584	30	110 824
Latin America and Caribbean	44 217	4.19	42 439	45	29 224	65	17 673
North America (2002)	175 110	0.00	175 110	12	156 823	14	136 971
Oceania	11 825	1.88	11 607	21	9 601	16	8 248
Developed countries	396 754	2.06	388 746	15	339 427	19	285 480
Developing countries	246 290	17.53	209 556	50	139 317	48	94 352
Others	32 634	15.41	28 277	65	17 142	123	7 700
Total	675 678	7.84	626 579	26.36	495 886	27.96	387 532

Source: ITU (2004) data and UNCTAD calculations.

Chart 1.1

Internet users in developed and developing countries, 2000 and 2003
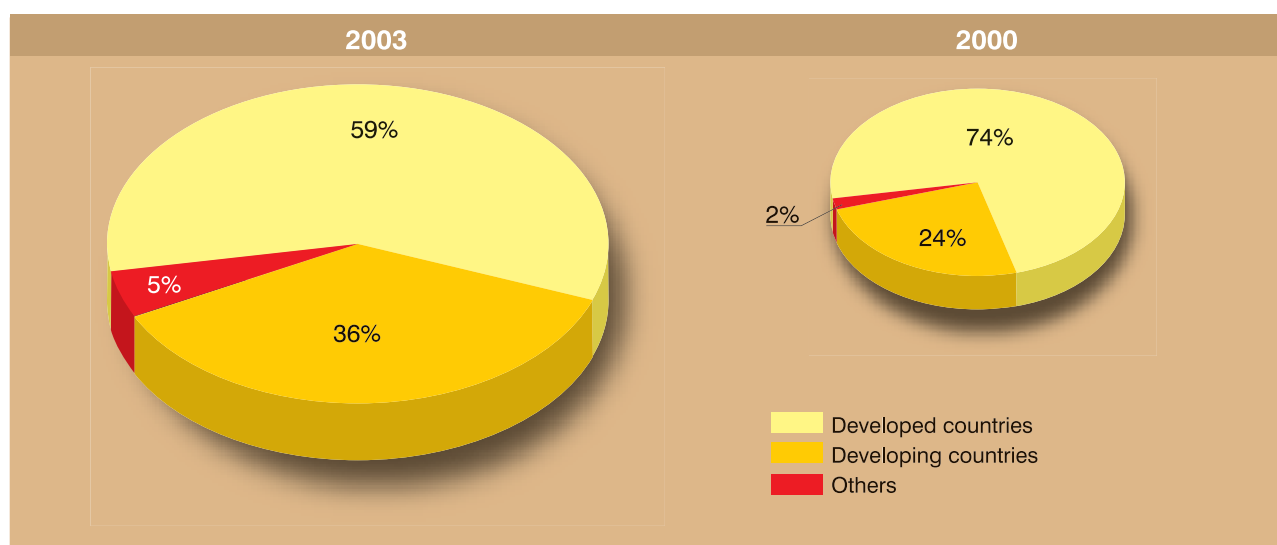
Source: ITU (2004) data and UNCTAD calculations.

Table 1.3

Internet users in selected economies *(thousands)*

	2003	2002	2001	2000	Change 2003–2002	Change 2003–2000	% change 2003–2002	% change 2003–2000
Africa	**12 123**	**9 988**	**6 119**	**4 559**	**2 134**	**7 564**	**21.37**	**165.92**
Algeria*	500	500	200	150	..	350	..	233.33
Egypt	2 700	1 900	600	450	800	2 250	42.11	500.00
Kenya*	400	400	200	200	..	200	..	100.00
Morocco	800	700	400	200	100	600	14.29	300.00
Nigeria	750	420	115	80	330	670	78.57	837.50
South Africa*	3 100	3 100	2 890	2 400	..	700	..	29.17
Togo	210	200	150	100	10	110	5.00	110.00
Tunisia	630	506	410	250	125	380	24.63	152.00
Zimbabwe*	500	500	100	50	..	450	..	900.00
Others**	2 533	1 763	1 054	679	770	1 854	43.70	273.21
Latin America & Caribbean	**44 217**	**42 439**	**29 224**	**17 673**	**1 778**	**26 544**	**4.19**	**150.20**
Argentina*	4 100	4 100	3 650	2 600	..	1 500	..	57.69
Brazil*	14 300	14 300	8 000	5 000	..	9 300	..	186.00
Chile*	3 576	3 576	3 102	2 537	..	1 038	..	40.92
Colombia	2 732	2 000	1 154	878	732	1 854	36.61	211.18
Mexico*	10 033	10 033	7 410	2 712	..	7 321	..	269.89
Peru	2 850	2 400	2 000	800	450	2 050	18.75	256.25
Venezuela*	1 274	1 274	1 153	820	..	454	..	55.41
Others***	5 352	4 756	2 756	2 325	596	3 027	12.53	130.17
North America*	**175 110**	**175 110**	**156 823**	**136 971**	**..**	**38 139**	**..**	**27.84**
United States*	159 000	159 000	142 823	124 000	..	35 000	..	28.23
Canada*	16 110	16 110	14 000	12 971	..	3 139	..	24.20

Table 1.3 *(continued)*

	2003	2002	2001	2000	Change 2003–2002	Change 2003–2000	% change 2003–2002	% change 2003–2000
Asia	**243 406**	**211 202**	**150 535**	**109 257**	**32 204**	**134 149**	**15.25**	**122.78**
China	79 500	59 100	33 700	22 500	20 400	57 000	34.52	253.33
Hong Kong (China)	3 213	2 919	2 601	1 855	294	1 358	10.07	73.18
India	18 481	16 580	7 000	5 500	1 901	12 981	11.47	236.02
Indonesia*	8 000	8 000	4 000	2 000	..	6 000	..	300.00
Israel*	2 000	2 000	1 800	1 270	..	730	..	57.48
Japan*	57 200	57 200	48 900	38 000	..	19 200	..	50.53
Korea, Rep. of	29 220	26 270	24 380	19 040	2 950	10 180	11.23	53.47
Malaysia	8 692	7 841	6 347	4 000	852	4 692	10.86	117.30
Philippines*	3 500	3 500	2 000	1 540	..	1 960	..	127.27
Singapore*	2 100	2 100	1 700	1 300	..	800	..	61.54
Taiwan P. of China	8 830	8 590	7 820	6 260	240	2 570	2.79	41.05
Thailand	6 031	4 800	3 536	2 300	1 231	3 731	25.65	162.23
Others**	16 639	12 302	6 751	3 692	4 337	12 947	35.25	350.71
Europe	**188 997**	**176 232**	**143 584**	**110 824**	**12 764**	**78 172**	**7.24**	**70.54**
France	21 900	18 716	15 653	8 460	3 184	13 440	17.01	158.87
Germany	39 000	36 000	31 000	24 800	3 000	14 200	8.33	57.26
Italy	18 500	19 900	15 600	13 200	-1 400	5 300	-7.04	40.15
Netherlands	8 500	8 200	7 900	7 000	300	1 500	3.66	21.43
Poland	8 970	8 880	3 800	2 800	90	6 170	1.01	220.36
Russian Federation*	6 000	6 000	4 300	2 900	..	3 100	..	106.90
Spain	9 789	7 856	7 388	5 486	1 933	4 303	24.61	78.44
Sweden*	5 125	5 125	4 600	4 048	..	1 077	..	26.61
Turkey	5 500	4 900	4 000	2 000	600	3 500	12.24	175.00
United Kingdom*	25 000	25 000	19 800	15 800	..	9 200	..	58.23
Others**	40 713	35 655	29 543	24 330	5 057	16 382	14.18	67.33
					0	0		
Oceania	**11 825**	**11 607**	**9 601**	**8 248**	**218**	**3 577**	**1.87**	**43.37**
Australia*	9 472	9 472	7 700	6 600	..	2 872	..	43.52
New Zealand	2 110	1 908	1 762	1 515	202	595	10.59	39.27
Others**	243	227	139	133	16	110	6.86	83.12

Source: ITU (2004) and UNCTAD calculations.

* 2002.

** Includes countries reporting data for 2003 and 2002.

*** Includes countries reporting data for 2003, 2002 and 2001.

These data indicate that in demographic terms the presence on the Internet of the developing countries as a whole is already large enough to represent a significant factor in the development of global, ICT-based social and economic exchanges. The picture looks less impressive, however, when relative magnitudes are considered. The low figures for Internet penetration (number of users as a share of the total population) indicate that the depth of penetration of ICTs into the social fabric remains, in most of them, far more limited than in industrialized nations. In spite of rapid rates of improvement in the penetration ratios of developing countries, these are ten times lower than the average of the developed world. Table 1.4 and chart 1.2 summarize information in this regard. Table 1.5 provides information for a number of selected countries, including countries that are not included in table 1.3 because of their small size but which have achieved penetration rates above the average of their region.

Table 1.4

Internet users per 10,000 people by region, 2002–2003

	2003	2002	% change
Africa	148	124	19.62
Asia	674	584	15.40
Europe	2 373	2 212	7.29
Latin America & Caribbean	832	808	2.97
North America*	5 476	5 476	..
Oceania	3 764	3 705	1.60
Developed countries	4 495	4 474	0.48
Developing countries	501	429	16.78
Others	1 000	837	19.50
World	1 108	1 028	7.77

Source: ITU (2004) and UNCTAD calculations.
* 2002.

In addition to this demographic approach, another way to look at the growth of the Internet is to consider the evolution of the number of hosts that are connected to it. According to a survey sponsored by the Internet Systems Consortium and produced by Network Wizards, the number of Internet hosts worldwide grew by 35.8 per cent between January 2003 and January 2004, reaching a total of over 233 million.[3] This rate of growth is more than twice as rapid as that observed in 2002 and is similar to that of 2001 (see chart 1.3 for details of the growth over recent years).

Because the majority of existing hosts belong to generic top level domains (TLDs) such as .net or .com, which cannot be linked to a specific geograph-

ical location, and because even hosts using country code TLDs (ccTLDs), for example .ad for Andorra or .zw for Zimbabwe, are not necessarily located physically in the corresponding country,[4] it is difficult to draw conclusions about the ranking and performance of countries in terms of their absolute and relative number of hosts. However, it is possible to detect some trends in terms of the growth in the use of particular ccTLDs that could be indicative of the attractiveness of a particular TLD. Such attractiveness may, at least in part, be indicative of the prevailing conditions for the spread of the Internet in the territory in question, although of course the regulatory and commercial environment under which a particular generic or country code TLD operates may be equally or even more significant.
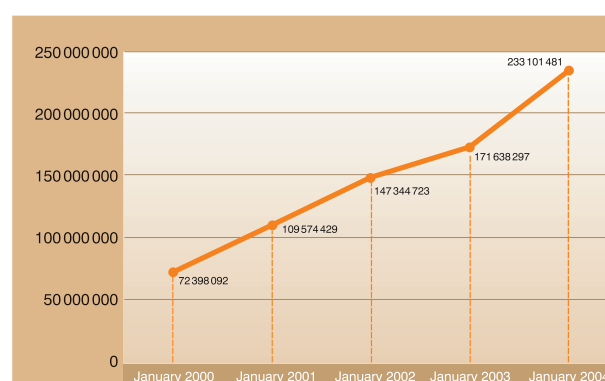
Chart 1.2

Internet users per 10,000 people, 2003

Source: ITU (2004) data and UNCTAD calculations.

Chart 1.3

Internet hosts, 2000–2004

Source: Internet Systems Consortium (2004).

Table 1.5

Internet users per 10,000 people, selected economies, 2001–2003

	2003	2002	2001
Africa**	**148**	**124**	**78**
Algeria*	160	160	65
Botswana*	349	349	297
Cape Verde	444	355	271
Egypt	393	282	93
Gabon	262	192	135
Gambia*	188	188	139
Kenya*	127	160	64
Lybian Arab Jamahiriya	289	225	36
Mauritius	1 229	1 033	883
Morocco	266	236	137
Namibia	338	267	246
Nigeria	61	35	10
Sao Tome & Principe	987	728	600
Senegal	217	104	102
Seychelles*	1 452	1 452	1 099
South Africa*	682	682	649
Swaziland	259	194	137
Togo	420	410	316
Tunisia	637	517	424
Zimbabwe*	430	430	87
Latin America & Caribbean***	**832**	**808**	**563**
Antigua & Barbuda*	1 282	1 282	904
Argentina*	1 120	1 120	1 008
Bahamas	2 649	1 923	551
Barbados	3 708	115.24	559.08
Belize*	1 089	1088.53	699.55
Brazil*	822	822	466
Chile*	2 375	2 375	2 014
Colombia	624	462	270
Costa Rica*	1 931	1 931	934
Guyana*	1 422	1 422	1 149
Jamaica*	2 285	2 285	383
Mexico*	985	985	738
Peru	1 039	897	766
Saint Kitss & Nevis*	2 128	2 128	781
Trinidad & Tobago*	1 060	1 060	923
Uruguay [2001]	1 190	1 190	1 190
Venezuela*	506	506	466
North America*	**5 476**	**5 476**	**4 964**
Canada*	5 129	5 129	4 500
United States*	5 514	5 514	5 015
Asia**	**674**	**584**	**417**
Bahrain	2 819	2 456	2 034
Brunei Darussalam (2001)	1 023	1 023	1 023
China	632	460	257
Hong Kong (China)	4 692	4 301	3 868
India	175	159	68

Table 1.5 *(continued)*

	2003	2002	2001
Indonesia*	377	377	191
Israel*	3 014	3 014	2 766
Japan*	4 489	4 489	3 842
Jordan	834	577	452
Korea, Rep. of	6 034	5 519	5 211
Kuwait	2 308	1 058	879
Lebanon*	1 171	1 171	776
Macao (China)	2 687	2 604	2 313
Malaysia	3 453	3 197	2 656
Oman*	709	709	484
Philippines*	440	440	256
Qatar	1 974	1 134	670
Singapore*	5 044	5 044	4 115
Taiwan Prov. of China	3 900	3 814	3 490
Thailand	965	776	577
United Arab Emirates	2 748	2 709	2 571
Europe**	**2 373**	**2 212**	**1 798**
Austria	4 620	4 147	3 922
Belgium*	3 283	3 283	3 104
Cyprus*	2 937	2 937	2 175
Czech Republic	2 683	2 563	1 467
Denmark*	5 128	5 128	4 295
Estonia*	3 277	3 277	3 005
Finland*	5 089	5 089	4 303
France	3 656	3 138	2 638
Germany	4 727	4 362	3 760
Iceland	6 747	6 479	5 993
Ireland	3 130	2 803	2 331
Italy	3 367	3 524	2 689
Latvia	4 057	1 331	723
Luxembourg*	3 700	3 700	3 640
Malta*	3 030	3 030	2 526
Netherlands	5 219	5 063	4 905
Norway*	5 026	5 026	4 642
Poland*	2 325	2 300	984
Russian Federation*	409	409	293
Slovakia	2 559	1 604	1 253
Slovenia*	3 758	3 758	3 008
Spain	2 391	1 931	1 827
Sweden	5 731	5 731	5 163
Switzerland*	3 510	3 510	3 070
Turkey	805	728	604
United Kingdom*	4 231	4 231	3 296
Oceania**	**3 764**	**3 705**	**3 124**
Australia*	4 817	4 817	3 972
New Zealand	5 262	4 840	4 612

Source: ITU (2004)
  * 2002.
  ** Includes countries reporting data for 2003 and 2002.
  *** Includes countries reporting data for 2003, 2002 and 2001.

Table 1.6
Number of hosts advertised in the Domain Name System

		2004	2003	% change
Networks	net	100 751 276	61 945 611	62.64
Commercial	com	48 688 919	40 555 072	20.06
Japan	jp	12 962 065	9 260 117	39.98
Educational	edu	7 576 992	7 459 219	1.58
Mistakes	arpa	6 146 841	6 387 463	-3.77
Italy	it	5 469 578	3 864 315	41.54
United Kingdom	uk	3 715 752	2 583 753	43.81
Germany	de	3 421 455	2 891 407	18.33
Netherlands	nl	3 419 182	2 415 286	41.56
Canada	ca	3 210 081	2 993 982	7.22
Brazil	br	3 163 349	2 237 527	41.38
Australia	au	2 847 763	2 564 339	11.05
Taiwan Province of China	tw	2 777 085	2 170 233	27.96
France	fr	2 770 836	2 157 628	28.42
United States	us	1 757 664	1 735 734	1.26
Sweden	se	1 539 917	1 209 266	27.34
Denmark	dk	1 467 415	1 154 053	27.15
Belgium	be	1 454 350	1 052 706	38.15
United States Military	mil	1 410 944	1 880 903	-24.99
Mexico	mx	1 333 406	1 107 795	20.37
Organizations	org	1332978	1 116 311	19.41
Poland	pl	1 296 766	843 475	53.74
Finland	fi	1 224 155	1 140 838	7.30
Spain	es	1 127 366	1 694 601	-33.47
Switzerland	ch	1 018 445	723 243	40.82
Norway	no	1 013 273	589 621	71.85
Austria	at	982 246	838 026	17.21
Argentina	ar	742 358	495 920	49.69
United States Government	gov	676 595	607 514	11.37
Israel	il	634 001	230 167	175.45
Russian Federation	ru	617 730	477 380	29.40
Hong Kong, China	hk	591 993	398 151	48.69
Singapore	sg	484 825	338 349	43.29
New Zealand	nz	474 395	432 957	9.57
Turkey	tr	344 859	199 823	72.58
Czech Republic	cz	315 974	239 885	31.72
Hungary	hu	313 576	254 462	23.23
Portugal	pt	299 923	291 355	2.94
South Africa	za	288 633	198 853	45.15
Republic of Korea	kr	253 242	407 318	-37.83
Unknown	..	250 416	236 291	5.98
Greece	gr	245 650	202 525	21.29
Chile	cl	202 429	135 155	49.78
China	cn	160 421	156 531	2.49
Romania	ro	141 202	91 670	54.03
Colombia	co	115 158	55 626	107.02
Estonia	ee	113 154	109 643	3.20

Table 1.6 (continued)

		2004	2003	% change
Ireland	**ie**	111 467	97 544	14.27
Malaysia	**my**	107 971	86 285	25.13
Iceland	**is**	106 296	68 282	55.67
Thailand	**th**	103 700	100 132	3.56
Slovakia	**sk**	98 788	80 660	22.47
United Arab Emirates	**ae**	97 200	56 679	71.49
Ukraine	**ua**	96 214	62 714	53.42
Uruguay	**uy**	87 630	78 660	11.40
India	**in**	86 871	78 595	10.53
Peru	**pe**	65 868	19 447	238.71
Dominican Republic	**do**	64 197	45 508	41.07
Indonesia	**id**	62 036	61 279	1.24
Cocos (Keeling) Is.	**cc**	58 296	35 684	63.37
Croatia	**hr**	53 333	40 933	30.29
Bulgaria	**bg**	51 424	29 257	75.77
Lithuania	**lt**	44 664	37 840	18.03
Philippines	**ph**	27 996	38 440	-27.17
Subtotal		**232 470 584**	**171 150 038**	**35.83**
World		**233 101 481**	**171 638 297**	**35.81**

Source: Internet Systems Consortium (2004).

Table 1.6 compares the number of hosts advertised in the Domain Name System (DNS) in January 2003 and in January 2004 for domain names accounting for over 99 per cent of all the hosts counted by the Internet Systems Consortium. Most of the top positions in the table are occupied by generic TLDs, under which the majority of hosts based in the United States and, increasingly, other countries operate. In January 2003, the only TLDs corresponding to developing countries that ranked among the first 40 by number of hosts were those of Brazil (.br), Taiwan Province of China (.tw), Mexico (.mx), Argentina (.ar), the Republic of Korea (.kr), Hong Kong (China) (.hk) and Singapore (.sg). By January 2004 the ccTLDs of Turkey (.tr) and South Africa (za) had joined the top 40 of the Internet Domain Name Survey of the Internet Software Consortium (ISC).

In terms of rates of growth, of the 26 TLDs that experienced above-average growth, 12 correspond to developing countries and another four to countries of Central and Eastern Europe. The ccTLDs of Peru (which more than tripled its host count) and Colombia (which doubled its host count) are among the top performers. At the other end of the ranking, of the five TLDs that recorded a decrease in the number of hosts in 2003, two correspond to developing countries (.kr of the Republic of Korea and .ph of the Philippines). The most likely explanation for these movements is a migration towards generic TLDs, as other indicators (such as the number of Internet users and of computers available) in these two countries continued to grow in 2003.

The difficulty of drawing conclusions about the geographical distribution of hosts is illustrated by table 1.7, which contains data from the ITU (which in turn uses in part data from the ISC survey) and shows numbers that are rather different in several respects, notably the total number of hosts (which would have declined in 2003 by almost two thirds). The most likely explanation of this apparent contradiction seems to be the elimination from the data of information concerning generic TLDs which had until now been attributed to the United States, leading to a 98 per cent decrease in the number of hosts in the North American region.

Table 1.7

Internet hosts by region

	2003	% change	2002	% change	2001
Africa	348 699	43.40	243 171	-11.20	273 836
Asia	18 211 053	36.00	13 390 474	23.88	10 809 244
Europe	22 338 832	21.68	18 358 407	19.87	15 315 888
Latin American and Caribbean	5 897 866	38.79	4 249 420	24.92	3 401 580
North America	4 967 745	-95.80	118 305 940	8.45	109 083 612
Oceania	3 360 659	10.75	3 034 390	11.10	2 731 107
Developed countries	41 022 171	-72.08	146 943 541	10.79	132 631 004
Developing countries	11 457 617	32.19	8 667 836	17.71	7 363 438
Others	2 645 066	34.24	1 970 425	21.57	1 620 825
World	**55 124 854**	**-65.02**	**157 581 802**	**11.27**	**141 615 267**

Source: ITU (2004) data and UNCTAD calculations.

The main ways in which most Internet users use the Internet for business purposes are exchanging e-mail, accessing the World Wide Web (www) for information or transactional purposes or setting up a company website. Websites represent the main gateway to the Internet for both business-to-consumer and business-to-business transactions. The evolution of the number of www servers in the world therefore has some usefulness as an indicator of the growth of e-business. A regular survey conducted by the company Netcraft.com[5] found that as of June 2004 there were over 51,635,000 websites worldwide. This represents an increase of 26.13 per cent compared with the same month in 2003. The nearly 10.7 million new sites added to the Web in just one year represent a significant acceleration when it is remembered that the Web took 21 months to grow from 30 to 40 million sites. The number of active sites grew slightly faster – by 26.39 per cent–in the 12 months to June 2004.

One indicator of the use of the World Wide Web for business purposes is the number of websites using the secure socket layer protocol (SSL), which supports secure transactions (although most businesses use the Web for other purposes). According to another Netcraft survey, this grew by 56.7 per cent in the 12 months between April 2003 and April 2004, thus reaching 300,000.[6] Servers using SSL are used mostly for e-commerce, e-payments and e-banking transactions, as well any other transaction in which there is a need for secure exchange of information. Table 1.8 shows the changes in some of the aspects measured by the Netcraft surveys between 2003 and 2004.

Table 1.8

The World Wide Web, 2003-2004

	2003	2004	% growth
Host names (June to June)	40 936 076	51 635 284	26.14
Active sites (June to June)	17 284 461	21 846 167	26.39
SSL servers (April to April)	191 449	300 000	56.70

Source: Netcraft.com (2004a), (2004b).

2. Summing it all up

The paragraphs above show different angles from which one can evaluate the possibility of accessing and using ICTs, and particularly the Internet, in the various parts of the world. Attempts have been made to aggregate this information in e-readiness indicators, some of which were commented on in chapter 1 of the *E-Commerce and Development Report 2003*. More recently, the ITU has launched its digital access index, which aims at measuring the overall ability of people to access and use ICTs. It synthesizes information about eight variables corresponding to five categories (infrastructure, affordability, knowledge, quality and usage).[7]

Some interesting results of this exercise include the fact that three developing economies (the Republic of Korea, Hong Kong (China) and Taiwan Province of China) rank among the top ten, and above the United States, which ranked only eleventh. Of the five economies that had improved their performance most between 1998 and 2003, four (the three previously mentioned plus Singapore) were developing countries in Asia. Of the four categories of digital access into which countries were grouped according to their index (high, upper, medium and low), countries from Central and Eastern Europe, the Caribbean, the Gulf States and some emerging Latin American countries are predominant in the second one. Other developing countries ranked in the lower two categories, with the lowest five places corresponding to Africa, which only had one country (Mauritius) in the "upper access" category. A conclusion drawn by the authors of the ITU classification was that limited infrastructure could no longer be considered the main barrier that developing countries face with regard to ICTs. Affordability and education, two factors in which public policies can make a significant impact, are equally important factors. The good performance of several Asian countries would also point to the possibility of achieving high levels of accessibility to and use of ICTs without widespread familiarity with the English language, which is another factor commonly quoted as a bottleneck for the increased adoption of ICTs in developing countries.[8]

A more comprehensive approach has been taken by Orbicom, the Network of UNESCO Chairs in Communications, with which UNCTAD is now associated.[9] Starting from a project to devise a Digital Divide Index, which would track the diffusion and uptake of ICTs, Orbicom's project has developed into a model based on a conceptual framework that incorporates not only considerations concerning connectivity and e-readiness, but also ICT-relevant skills and the use that people and companies make of them. This is reflected in a country's *Infostate*, which aggregates *Infodensity* (available stocks of ICT capital and labour, including networks and ICT skills), and *Info-use* (uptake and consumption flows of ICTs as well as the intensity of their use).

A crude summary of the findings of the initial application of Orbicom's model would be the confirmation of the gap that separates the most ICT-advanced countries such as the United States and Canada, a number of Western European countries (all the Scandinavian countries, the Benelux countries, Switzerland, the United Kingdom and Germany) and a number of economies in Asia and the Pacific (Japan, Republic of Korea, Hong Kong (China), Singapore, Australia and New Zealand), all of which have attained very high *Infostate* (200 compared with a world average of 100), from the lowest-ranking group of mostly African countries (Chad, Ethiopia, Central African Republic, Eritrea and Malawi) and Asian countries (Myanmar and Bangladesh) with *Infostates* as low as 5. Both *Infodensity* and *Info-use* were found to be contributing to the digital divide between countries. From the point of view of the evolution of *Infostates* over time, all countries seem to be improving, but at widely varying paces. While the international digital divide seems to be closing, this is happening only at a slow rate and for the most part is attributable to countries towards the middle of the rankings, while those in the most difficult situation are not seeing much progress. While income levels and higher *Infostates* show a positive correlation, notable exceptions exist: countries with similar levels of gross domestic product (GDP) show very different *Infostates,* and vice versa. ICT policy choices can make a noticeable difference.

The data discussed above consistently point to the increasing availability of the material and immaterial basis on which e-business and e-commerce can grow, including in many developing countries. The effects of the crisis of confidence of 2001 in the potential of the "information economy" seem to have completely dissipated, and the conditions

for the growth of a digital economy are therefore more and more consolidated. The next section provides some information about the pace at which this is happening in the trend-setting e-commerce markets.

3.   The growth of e-commerce

The situation in the leading markets

Several chapters in this Report, as well as in Reports of previous years, refer to the rarity of statistically significant measurements of the value of e-commerce transactions in most countries, and particularly in the developing world. As the situation in this regard has not changed sufficiently to warrant a revision of the remarks made in the introductory chapters of the previous two Reports, this chapter will limit itself to a brief summary of the evolution of the value of e-commerce transactions in the world's earliest and largest adopter of e-commerce, the United States, which

represents by far the largest share of all e-commerce in the world and continues to set the trends which e-commerce and e-business follow. This information is complemented with a reference to a few notable elements of the statistical evidence recently published by Eurostat concerning the adoption of e-business in the European Union.

According to the United States Census Bureau, business-to-consumer (B2C) e-commerce sales in the first quarter of 2004 amounted to 1.9 per cent of total retail sales, a proportion that is nearly twice as large as that of 2001.[10] The annual rate of growth of retail e-commerce in the United States in the year to the end of the first quarter of 2004 was 28.1 per cent, while the rate of growth of total retail in the same period was only 8.8 per cent. On current trends, retail e-commerce in the United States could amount to $100 billion by mid-2006, at which moment it could represent between 2.5 and 3 per cent of total retail sales in that country. Table 1.9 summarizes B2C sales in the United States over the last three years.

Table 1.9
B2C sales in the United States, 2000-2003
(millions of US dollars)

	2003	% growth	2002	% growth	2001	% growth	2000
E-commerce	55 996	26.44	44 287	27.91	34 623	23.65	28 000
Total retail	3 399 544	5.25	3 230 122	2.32	3 156 754	2.82	3 070 186
E-commerce as a per cent of total retail	1.65	20.14	1.37	25.01	1.10	20.26	0.91

Source: US Census Bureau (2004b).

As for business-to-business e-commerce (B2B), the United States Census Bureau reports that in 2002 e-commerce represented 16.28 per cent of all commercial transactions between enterprises, and that B2B amounted to 92.7 per cent of all e-commerce in the United States.[11] In a sluggish economic environment that resulted in a decrease of 1.3 per cent in total B2B transactions (traditional and electronic) compared with 2001, e-commerce B2B grew at a annual rate of 6.1 per cent. This superior performance of e-commerce B2B compared with "traditional" transactions occurred in all the major economic sectors.

By sectors of activity, the weight of B2B e-commerce was highest in manufacturing, where it represented 19.6 per cent of the value of all shipments. E-commerce represented 10 per cent or more of shipments in 15 of the 21 industry groups into which manufacturing is divided

Table 1.10 compares the dollar figures for e-commerce and total commerce in B2B and B2C in the United States in 2001 and 2002.

Information compiled by Eurostat indicates that e-commerce sales made through the Internet by enterprises located in the European Union reached €95.6 billion (or $86.04 billion at 2001 average exchange rates) in 2001.[12] These sales would represent only 20 per cent of total e-commerce sales: according to the Eurostat survey, Internet sales amounted to 1 per cent of total sales, while electronic data interchange (EDI) and other non-Internet sales represented 4 per cent of total sales in 2001. This would bring total e-commerce sales in the EU to about $430 billion, less than 40 per cent of the total e-commerce sales estimates for the United States for the same year.

Table 1.10

US shipments, sales, revenues and e-commerce, 2002 and 2001
(billions of dollars)

	Value of shipments, sales, or revenue						Year to year % change		% distribution of E-commerce	
	2002			**2001**						
	Total	E-commerce	%E-com-merce/ total	Total	E-commerce	%E-com-merce/ total	Total	E-com-merce	2002	2001
Total	14 675	1 157	7.88	14 585	1 080	7.40	0.60	7.10	100	100
B2B	6 582	1 072	16.29	6 672	1 010	15.14	-1.30	6.10	92.7	93.5
Manufacturing	3 840	752	19.58	3 971	724	18.23	-3.30	3.80	65	67
Merchant wholesale	2 742	320	11.67	2 701	286	10.59	1.50	11.70	27.7	26.5
B2C	8 093	85	1.05	7 913	70	0.88	2.30	21.40	7.3	6.5
Retail	3 230	44	1.36	3 157	34	1.08	2.30	29.30	3.8	3.2
Selected services	4 863	41	0.84	4 756	36	0.76	2.20	15.00	3.5	3.3

Source: US Census Bureau (2004b).
See www.census.gov/eos/www/papers/2002/2002finaltext.pdf for applicable notes and definitions affecting the interpretation of data.

Even when allowance is made for methodological differences and the existence of gaps in the data available for the EU (no information is available on the percentage of e-commerce sales in total sales for Belgium, France and the Netherlands), the difference in the significance of e-commerce for the two largest developed single markets remains considerable. This is in spite of the fact that ICTs have reached very high penetration levels across the EU, with 94 per cent of all enterprises using computers, 81 per cent having an Internet connection and 67 per cent having a website or a homepage. Of all enterprises, many more used the Internet to make purchases (24 per cent) than sales (10 per cent). Of the latter, 83 per cent made less than 10 per cent of their total sales through the Internet, and 46 per cent made less than 2 per cent of their total sales using the Internet.

From e-commerce to e-business statistics

The above discussion shows the scarcity of reliable data on the value of e-commerce, and not only in developing countries. Furthermore, the available data from the United States and the European Union show that while the value of online transactions is increasing, it is not increasing at the speed at which businesses connect to the Internet. This leads to a number of suggestions.

First, the focus on measuring e-commerce transactions might divert attention from measuring other uses of ICTs in businesses and therefore provide only limited information on the adoption of ICTs by enterprises. Therefore, more and more attention is being paid by statistical offices to the measurement of e-business – or more broadly the use of ICTs in enterprises for a variety of business activities that go beyond e-commerce. This is important since many of the efficiency gains related to the adoption of ICTs result from changes in business processes using ICTs, ranging from customer relationships and supply chain management to marketing, logistics and distribution.

Second, experience from measuring e-commerce in developed countries (and in a few developing countries; see chapter 2) has shown that in most cases, businesses are unable to specify the value of online purchases and sales, but are willing to provide information on whether they conduct business online. Therefore, the quality of data on the value of e-commerce transactions is unlikely to improve considerably in the near future.

Third, in developing countries, many companies are starting to use the Internet for various business functions, although they are not yet engaged in online transactions. This information needs to be

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Box 1.1

Partnership on Measuring ICT for Development

Recognizing the need for improved data and indicators on information society developments, a global initiative has been launched that brings together key stakeholders involved in the statistical measurement of ICTs to create a partnership that will contribute to closing the data gap at the international level, and in particular in developing countries. On the basis of the commitments of the partners, which include the ITU, OECD, UNCTAD, the UNESCO Institute for Statistics, the UN Regional Commissions, the UN ICT Task Force and the World Bank, the partnership will work towards defining and collecting a set of common ICT indicators and assisting developing countries in their efforts to produce information society statistics. This will be crucial to measuring the socio-economic impact of ICTs and their potential contribution to the implementation of the Millennium Development Goals (MDG), which is a major objective of the global "ICT for development" community.

The Partnership was officially launched during UNCTAD XI, held in São Paulo, Brazil, from 13 to 18 June 2004. Further information on the partnership is provided on the web site *measuring-ict.unctad.org*.

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captured in an analysis of the adoption of ICTs by businesses and its impact on development.

The WSIS Plan of Action points to the need to develop statistical indicators for benchmarking and performance evaluation, to follow up the implementation of the objectives, goals and targets of the Plan of Action and to track global progress in the use of ICTs. International cooperation is necessary for the setting up of coherent and internationally comparable indicator systems, taking into account different levels of development. Better data on ICT readiness, use and impact are needed in order to design, implement and evaluate ICT development policies.

Currently, there is no international database that provides information on the use of ICTs in enterprises in developing countries. The Organisation for Economic Cooperation and Development (OECD) and Eurostat have been compiling information for their respective member countries for a couple of years, following the collection of such data by national statistical offices.

Although some developing countries have started to collect ICT indicators through their official statistical systems, the data are not always comparable across countries, or with those of developed countries. This calls for collective action at the international level to coordinate the methodological work and to work towards a global database on ICT indicators. The UNCTAD secretariat has thus launched a new data collection exercise to compile e-business statistics from developing countries and make them available in its annual *E-Commerce and Development Report*. This is part of a global initiative among international and regional organiza-

tions to enhance the availability of ICT statistics in developing countries (see box 1.1).

At the time of completion of the draft of this Report, e-business statistics had been received from Argentina, Chile, Colombia, Morocco, Peru, the Philippines, Romania, the Russian Federation, Singapore and Thailand. Some of the results are presented in annex I. The tables feature the results of only a limited number of countries and few indicators, and thus provide neither a comprehensive overview nor comparable data on the use of ICTs in enterprises. However, they demonstrate that developing countries are increasingly becoming aware of the importance of collecting ICT indicators and statistics for policy-making, and for monitoring and benchmarking their information society developments.

Of course, any efforts such as those discussed above, undertaken at the international or national levels to ascertain the extent to which, and the ways in which, ICTs are affecting economic and social development, are justified only insofar as they provide inputs for ICT-for-development policy-making. Although this is an area in which the evolution of technology is a powerful factor of change that to some extent at least remains a given for developing countries, the choices that individuals and societies make have an equally important role in determining outcomes in terms of the impact of ICTs on development. The second part of this chapter looks briefly at some of the policy issues with an international dimension that developing countries and the international community in general should pay attention to in the coming months, particularly in the run-up to the second phase of the WSIS.

B.   The dialogue about ICT-for-development: Some suggestions

1.   The question of Internet governance

Given the profound impact of the Internet on multiple aspects of society, the debate about its future evolution and the role that different social players should have in deciding the direction it will take is bound to be an intense one. In such a debate, the technological implications of the issues involved are likely to be interpreted, to some extent at least, in the light of the real or perceived conflicts of interests – political, economic and cultural – regarding the development of what has become a global resource.

Even though there is no agreement among the participants in the debate about the exact delimitation of the processes that the term "Internet governance" designates, the discussions throughout the WSIS process made it clear that a majority of developing countries feel that the status quo does not serve their interests well and needs to be reformed. The establishment of some sort of intergovernmental mechanism has been proposed. Furthermore, the lack of satisfaction with current arrangements is not limited to the Governments of developing countries, although the analysis of what is not working and the solutions proposed may differ significantly among critics.

From another viewpoint, the rapid expansion of the Internet across the world, which is probably faster than that of previous technological revolutions, and the phenomenal growth of its commercial applications would support the view that the structures that underpin the development of the Internet serve their purpose well. According to this viewpoint, given the evolutionary nature of such structures and the extent to which they rely on coordination and cooperation among the members of the Internet community, the safest means to ensure the balanced growth of the Internet is to allow the evolutionary process to move on freely, avoiding as much as possible control that goes beyond monitoring and minimizing governmental involvement. From this viewpoint, some of the objections to the policy-making and coordination arrangements of the DNS and the root server system may concern more the processes through which these governance mechanisms operate than their outcome.

It may be true that there are not many examples of significant direct damage to developing-country economic interests caused by the operation of such systems as they stand today (a partial possible explanation being that most developing countries have so far had a shorter and narrower exposure to the Internet). However, in order to be effective in the long term, governance mechanisms must rely on their acceptance by the governed. Technical effectiveness alone does not necessarily provide legitimacy. While the very success of the Internet would point to the existence of a fundamental consensus among the original Internet community, such consensus is rapidly eroding. It is only a matter of time before a system lacking political support becomes a technically dysfunctional one. It is also important to keep in mind that the past is not always a reliable guide to the future and that changes in both the demand and the supply side of the market for Internet services may well render obsolete the arrangements that were so useful during the earlier phases of the emergence of the Internet.

The concerns of developing countries

The weaknesses of some of the governance structures of core aspects of the Internet are not merely a matter of principle or perception. The dominance by one or a few countries of core Internet resources can generate concerns about the potential for discriminatory treatment of other countries. For instance, it has been pointed out that some universities in the developed world hold more Internet Protocol (IP) addresses than many developing countries (and earn money renting them out). Legal mechanisms based on the enforcement of private contracts (to be carried out essentially by the national courts of one country) are not necessarily the optimal way to settle international public policy issues. As the Internet penetrates almost every aspect of social life, Governments are justified in seeing it as a type of vital international public utility, which cannot be managed without regard to internationally accepted principles such as the sovereign equality of States.

Also, measures intended to achieve desirable aims, such as the empowerment of private players and the reduction of undue governmental control, can go too far and result in the extension of neo-corporatist approaches and the predominance of special interest groups that may seriously undermine transparency, openness and the democratic

process. Since the Internet plays a growing role in the implementation of national development strategies, Governments as the only players in the development process that enjoy full democratic legitimacy have a clear interest in ensuring that the Internet evolves in a direction that is compatible with their development strategies and the protection of the public interest, for which – unlike any other actors – they are accountable to their populations. Unless globally endorsed responses are provided to these questions, societies that feel that their political, economic or cultural interests are not considered or are even at risk might develop their own individual responses, thus jeopardizing the greatest potential of the Internet as a tool for development, namely its universal reach.

The first step that needs to be taken in order to move the discussion forward is to ensure that all participants share some fundamental understanding of the nature of the arrangements being discussed, and of the interests at stake. In this regard, it is important that the position of the proponents of change be articulated beyond matters of principle and process, so that a discussion can be started in terms of specific interests, problems and impact on the ground, and a practical work programme. The fundamental interest of developing countries is to ensure that their specific needs and concerns are taken into consideration in any decision-making that will affect the evolution of the Internet and in particular its application to development problems, including those that may impact on the supply capacity and the competitiveness of their economies.

Governance "of" the Internet versus governance "on" the Internet

Once it is recognized that a political answer to these questions needs to be found, it is also necessary to admit that there are not many examples of concrete policy areas in which responses require the development of new Internet-specific international institutions, especially from the viewpoint of economic competitiveness. In fact, if there is the political will to tackle the issues, existing systems of international coordination, cooperation or rule-making appear to be sufficient to deal with many if not most of the governance problems posed by the development of the Internet. In this regard, a distinction has been suggested between "governance of the Internet" (that involves the

physical and logical infrastructure of the Internet, and would probably be more appropriately referred to as the management of the core resources of the Internet) and "governance on the Internet" (which concerns the activities that take place over the Internet, particularly the exchange of information, goods and services).

Of course, it is not possible to establish a clear-cut separation between all infrastructural/technological matters on one hand and political and socio-economic questions on the other. Policy decisions very often have technological implications, and vice versa. A crude device to categorize the public policy issues that need to be addressed and the responses that could be explored in each case could be to distinguish between the management of the Internet as a global utility and the international governance issues posed by the use that people make of that utility.

Concerning the group of issues that could fall into the "governance on the Internet" category, the most commonly quoted include matters such as content regulation, intellectual property (although these are also affected by the operation of the Internet Corporation for Assigned Names and Numbers (ICANN)), jurisdiction, competition policy (particularly in connection with the question of Internet interconnection costs and the imbalances in the relationship between tier 1 backbone operators and developing country Internet service providers (ISP) and smaller backbone operators), e-commerce taxation, consumer protection, security and spam. For most of these examples, international governance instruments already exist or could easily be devised. For example, the United Nations Commission on International Trade Law (UNCITRAL) and the Hague Conference on Private International Law provide forums that are suitable for addressing legal issues raised by the conducting of commercial or private transactions on the Internet. In other cases, efforts have already been undertaken at the regional level (for example, the Convention on Cybercrime of the Council of Europe), and if they are built on, a global international framework could be devised without major conceptual difficulties. In other cases, the nature of the problems is such that the optimal solution may involve a mixture of international law-enforcement cooperation and end-user awareness and action (for example, with regard to spam). In all these cases, the substantive character of the issue in question, rather than the

fact that the Internet is the medium through which the problematic activity is conducted, should be the determinant criterion as to what level of "governance" (from consensus building and cooperation to rule-making) and what instruments should be applied.

The problem of the imbalances in the distribution of the cost of international Internet interconnection systems exemplifies the situations in which existing frameworks may not be fully satisfactory, while the creation of specific Internet-focused governance instruments may not be a better option. The case for intervention in this area rests on the possible existence of restrictive business practices (RBP) by large backbone operators, resulting in unfairly high costs for developing country ISP and developing country Internet users, which thus aggravate the international digital divide. The problem being essentially one of international competition policy, its treatment presents well-known difficulties, particularly when it is developing countries that suffer the effects of the RBP and therefore stand little chance of benefiting from the activity of the competition authorities of the major players. In any event, an improvement in this situation is more likely to result from measures that address the general trade and development issues connected with competition policy in a manner that is consistent with the interests of developing countries than from the establishment of a comprehensive Internet regulatory system. The issue in the case of this example is therefore not so much the need for a new intergovernmental organization to deal with the issues raised by the Internet as the inadequacy of some aspects of the multilateral trade framework for dealing with the concerns of developing countries.

Reform, stability and performance

The management of the DNS that is performed by ICANN and the operation of the root server system that is in the hands of a small group of public and private sector entities are at the core of the "governance of the Internet" in the narrow sense. Equally important are a number of mainly membership-based organizations that support the development of many of the standards and policies that provide the "logical" infrastructure of the Internet. Setting out their strengths and weaknesses, and in particular those of ICANN, is beyond the scope of this section; but the fact that many developing countries are not at ease with

the limited influence of Governments in ICANN and in particular with the purely advisory role of the Governmental Advisory Committee (GAC), must be recognized and addressed. In this regard, reaching a common definition of the interests of the international community that must be served by the system of Internet governance, and agreement about the way in which Governments should be involved in it, is probably the most important aspect of the work to be done before the second phase of WSIS. Although at this stage of the discussion it is too early to make concrete institutional proposals, some of the features that they should have can be distinguished.

First, it must be recognized that whatever the merits of the case for their reform, the loose constellation of organizations that have so far underpinned the development of the Internet have achieved remarkable success in ensuring the stability and unity of a highly decentralized network of networks, with no centre and no strong rule-making authority. For any reform proposal to be viable, not just technically but also politically, it must provide strong evidence that it will ensure the continued stability and quality of service of the Internet, prevent its fragmentation and maintain the "bottom-up" processes through which standards and policies have been developed so far.

Second, no one-size-fits-all solution is likely to emerge. In addition to the management of core resources (IP addresses, DNS, root servers, protocols), a number of questions in which technological and policy issues are particularly intertwined are likely to be best treated within an network of international frameworks (as opposed to a unified, structured organization) of cooperation and coordination for the development of the Internet. These include, for example, the regulation of the Whois database (in connection in particular with privacy protection concerns), security (from the viewpoint of the network and from the viewpoint of the user, which may sometimes enter into conflict), the dispute resolution system and the problem of multilingualism. In such a cooperative framework, flexibility should be a paramount consideration. For instance, not all stakeholders need to play an equally relevant role in addressing every matter, and some problems may require hard-and-fast rules and formal structures while others may not. Structural flexibility and lightness are also needed in order to prevent governance

solutions from being rendered obsolete by technological evolution.

Third, evolution is more likely to produce results than a voluntarist top-down approach. The current system of management of core Internet resources is the result of a process that has taken place over a remarkably short time. It is clear that this evolution has not yet reached a stage of maturity that is acceptable to all its stakeholders. Also, it must complete a process of genuine internationalization (which is not necessarily equivalent to full-fledged intergovernmentalization, but implies representativeness requirements beyond the participation of individuals/organizations of various nationalities). In the completion of that process it is essential to reconcile demands for change with the need to ensure the continued delivery of the critical services that ICANN and the root server system provide to the Internet community. If, as argued above, technical effectiveness alone does not confer legitimacy, ineffectiveness can ruin it.

Supporting the dialogue

The evolution of the governance framework towards a system that is more development-friendly would be facilitated if developing country players (both governmental and non-governmental) would identify concrete policy issues (as opposed to broad policy areas) in which their concerns and interests are not being considered adequately. Developing countries need to assess the implications of different Internet governance models, including in terms of their impact on the capacity of their economies to benefit from the adoption of e-commerce and e-business practices. This is an undertaking to which UNCTAD could contribute within the limits of its mandate in the trade and development area.

A sustained capacity-building effort of for Internet policy-making is needed so that the majority of the developing countries can effectively participate in the management/governance systems that may emerge from the WSIS process. This is another area in which UNCTAD can make a contribution within an international framework in which the United Nations ICT Task Force could play an important coordination role.

2. ICTs and economic development in the run-up to the next phase of the WSIS

The Plan of Action adopted at the WSIS in December 2003 includes a comprehensive list of "action lines" to be carried out by Governments, the international community, the business sector and civil society. All aspects of the information society, ranging from economic, legal, health and education matters to media, culture and the environment are addressed by the Plan of Action.[13] As the focal point in the UN system for the integrated treatment of trade and development and the interrelated issues of finance, technology investment and sustainable development, UNCTAD is involved in the dialogue concerning those matters in the WSIS Plan of Action that have a trade and development dimension. Thus, at its eleventh session, held in São Paulo in June 2004, a discussion took place concerning the trade and development aspects of the Plan of Action that should be acted upon before the next phase of the WSIS in November 2005.[14] On the basis of the outcome of that discussion, the next paragraphs will make a few suggestions about the ways in which the WSIS process could contribute to the progress of the economic dimension of the information society.

The Plan of Action emphasizes the role of national e-strategies as key instruments for the advancement of the information society in developing countries. It also calls for action to promote development-oriented ICT applications for all, in particular the use of ICTs by small and medium-sized enterprises (SMEs) to foster innovation, achieve gains in productivity, reduce transaction costs and combat poverty. Underlying this call for action is the assumption (supported by a growing amount of evidence) that the increased diffusion of ICTs makes a positive contribution to economic growth and development. The treatment of these issues in the WSIS context should contribute to the emergence of a consensus about the national policies under which, and the international environment in which, a higher degree of ICT take-up and use can result in faster, more equitable economic growth.

ICTs can open up new opportunities for developing countries' exports of goods and services. The available data show that international trade in ICT goods and services has grown in recent years at a

faster rate than total international trade and that it remains robust. Reductions in transaction and information-gathering costs make it easier for developing-country enterprises to broaden their customer base and to participate in international supply chains. The possibility of delivering services online rather than through a physical presence allows developing countries to benefit from their comparative advantage in some ICT-enabled labour-intensive services. Thus, those countries are gaining a world market share in the export of computer-related services, communication services and financial services. However, in order to extend the reach of the positive effects of ICTs on the economic growth of the majority of developing countries an enabling environment for ICTs needs to be created at the national and international levels.

At the national level, the promotion and the facilitation of the adoption of ICTs by the SMEs are likely to play a major role in this regard. Among the particular challenges that SMEs face in the use of ICTs for business development, aspects such as awareness, skill-building, access to finance for investment in ICTs and the possibility of using online payment facilities need particular attention

Changes are necessary in productive processes at the firm level, where the full effects of ICTs in terms of productivity and hence competitiveness often cannot materialize unless their adoption comes together with structural transformation. Such changes may impose costs on workers and should therefore be facilitated through mechanisms that ensure an equitable distribution of the costs and that help workers and firms to adjust to the new environment. ICT-for-development policies should include measures to help people face the cost of adjustment to the widespread use of ICTs.

To maximize the positive impact of ICTs on economic performance, the adoption of the technology must be supported by previous cultural change throughout the economy, and especially among the managerial levels of the enterprises. Such cultural change is necessary in order to implement the structural transformation without which ICT investments will not bear all their fruits. Because these transformations can be profound, rapid and costly for some of the people affected it is important to involve all social players

in ICT policy formulation. Such participatory approach should aim at making compatible the desired effects of ICTs on productivity and competitiveness with the attainment of social goals in terms of equity and integration.

In brief, in order to go further in its treatment of the economic aspects of the information society, the second phase of the WSIS could explore answers to questions such as the following:

- What effects, positive or negative, are ICTs having on the economic prospects of developing countries? What lessons from available experience can be applied to ICT policy-making in the areas that affect trade, enterprise development or employment?

- What strategies have proved successful in terms of enabling enterprises (especially SMEs) to become more competitive through the use of ICTs?

- How can ICTs be used to facilitate the participation of the SMEs of developing countries in national and international supply chains?

- What effects will ICT-induced changes, at the level of the firm and of the whole economy, have on labour markets? What policies may facilitate equitable outcomes for these processes?

These and other questions are to be addressed at a thematic meeting on the economic and social implications of ICTs as part of the WSIS II preparatory process that will be held in the first half of 2005. The outcome of this event is intended to provide the WSIS with suggestions on policies and programmes that can help countries to utilize ICTs for effective poverty eradication through the growth of economically sustainable enterprises.

In order to achieve this, sound analysis will be needed concerning how SMEs in developing countries are actually using ICTs, what benefits they obtain from them and at what costs, and how government policies can enhance the effectiveness of their investments in ICTs. Chapter 2 of this Report provides some answers to these and other questions as a contribution to a debate that should reach at the Tunis Summit some conclusions that can be translated into reality.

Annex I

ICT usage in enterprises in selected countries

Table 1.11

ICT usage in enterprises, 2002 or latest available year
(percentage)

Indicator	Argentina[1,3]	Chile	Colombia[1,3]	Morocco	Peru[3]	Philippines[3]	Romania	Russian Federation	Singapore	Thailand
Proportion of businesses with PCs	..	62.7	76.6	..	80.0	87.8	16.1	81.1	83.3	67.7
Proportion of employees using PCs	..	..	19.7	..	..	..	11.6	27.5	..	..
Proportion of businesses with an intranet	35.6	..	14.4	7.0	25.4	22.0	..	41.6	32.1	..
Proportion of businesses with an extranet	11.0	..	9.7	..	19.8	7.5	..	7.2	15.6	..
Proportion of businesses with Internet access	86.9	46.9	53.7	42.0	64.2	62.4	7.5	37.7	78.3	38.3
Proportion of employees using the Internet	..	10.3	9.0	..	25.4	..	5.9	6.4	..	..
Proportion of businesses with a website[2]	56.5	12.6	25.7	11.0	22.6	..	2.0	11.6	..	14.3
Proportion of businesses receiving orders over the Internet (i.e. Internet sales)	14.6	..	6.5	..	..	1.9	0.5	9.0	..	9.9
Proportion of businesses placing orders over the Internet (i.e. Internet purchases)	..	..	..	8.0	..	2.5	0.4	10.1	..	..

Source: National Statistical Offices.

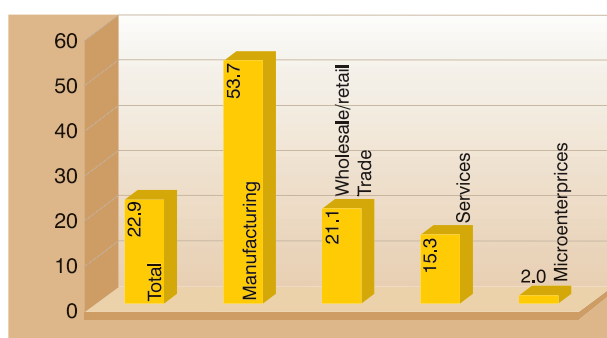*Note:* Microenterprises excluded

[1] Manufacturing sector only

[2] Colombia: of enterprises with Internet access

[3] Data for 2001.
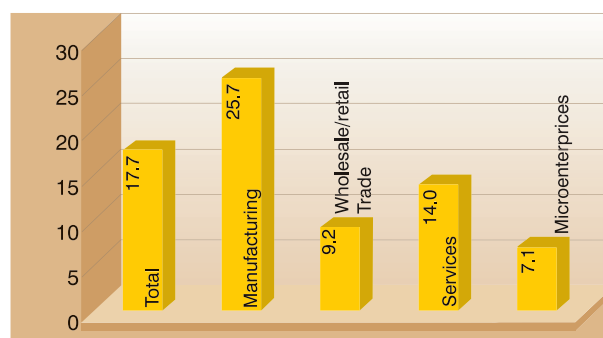
Chart 1.4

Proportion of businesses with internet access (%) Colombia, 2001

Source: National Statistical Office.
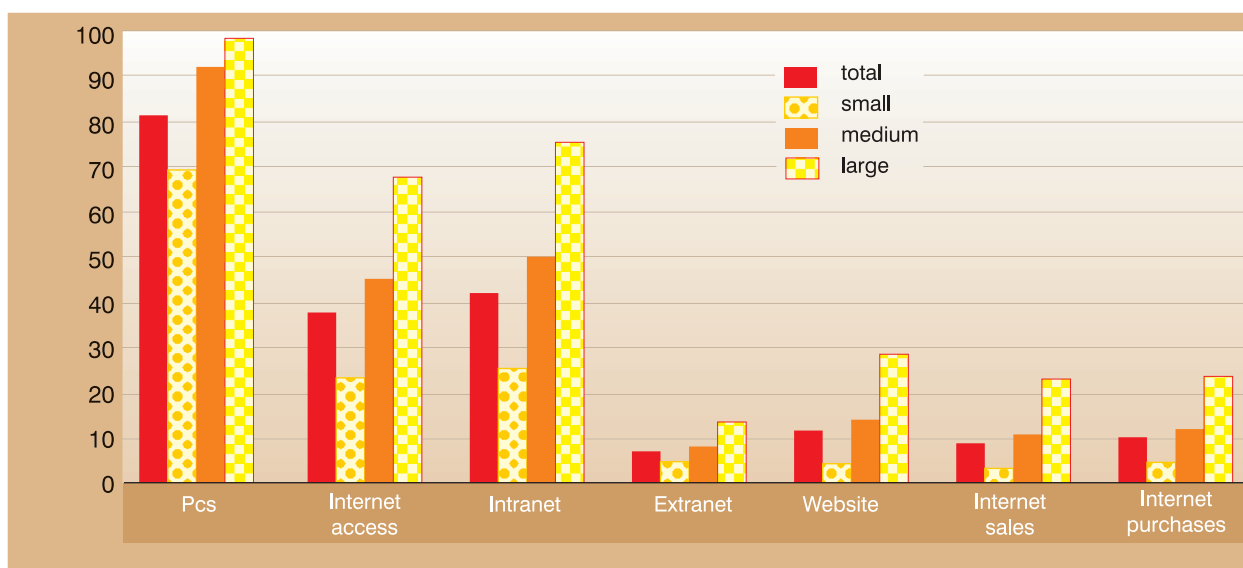
Chart 1.5

Proportion of businesses with a website (% of those with internet access) Colombia, 2001

Source: National Statistical Office.
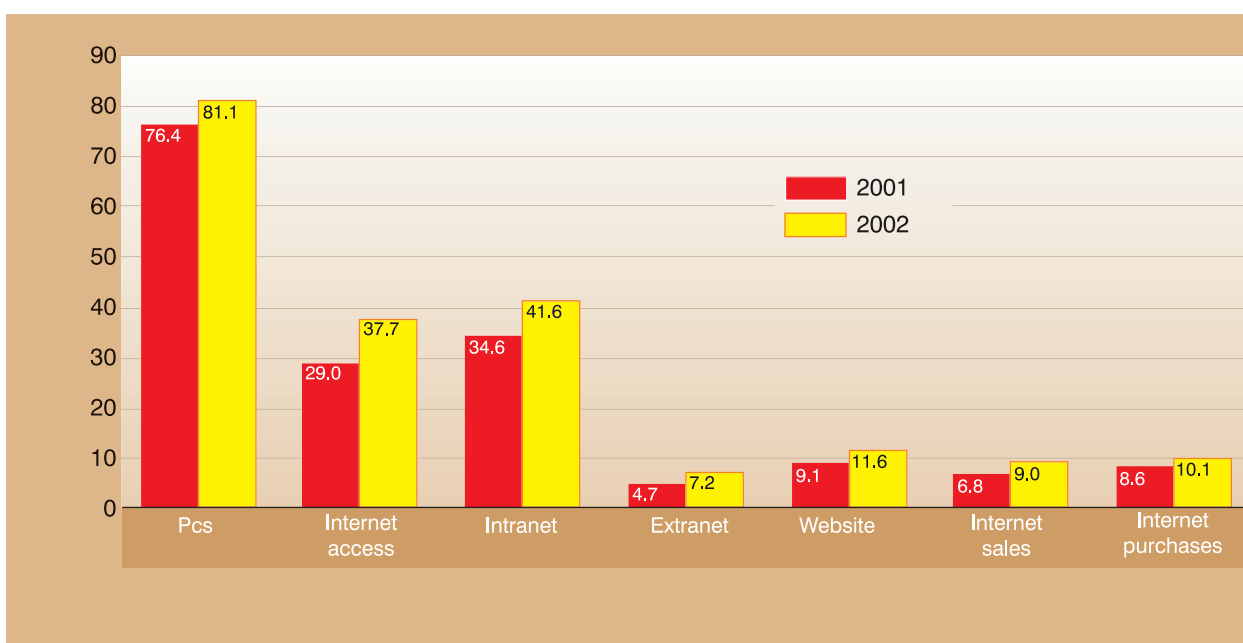
Chart 1.6

ICT usage by size of enterprises: Russian Federation, 2002
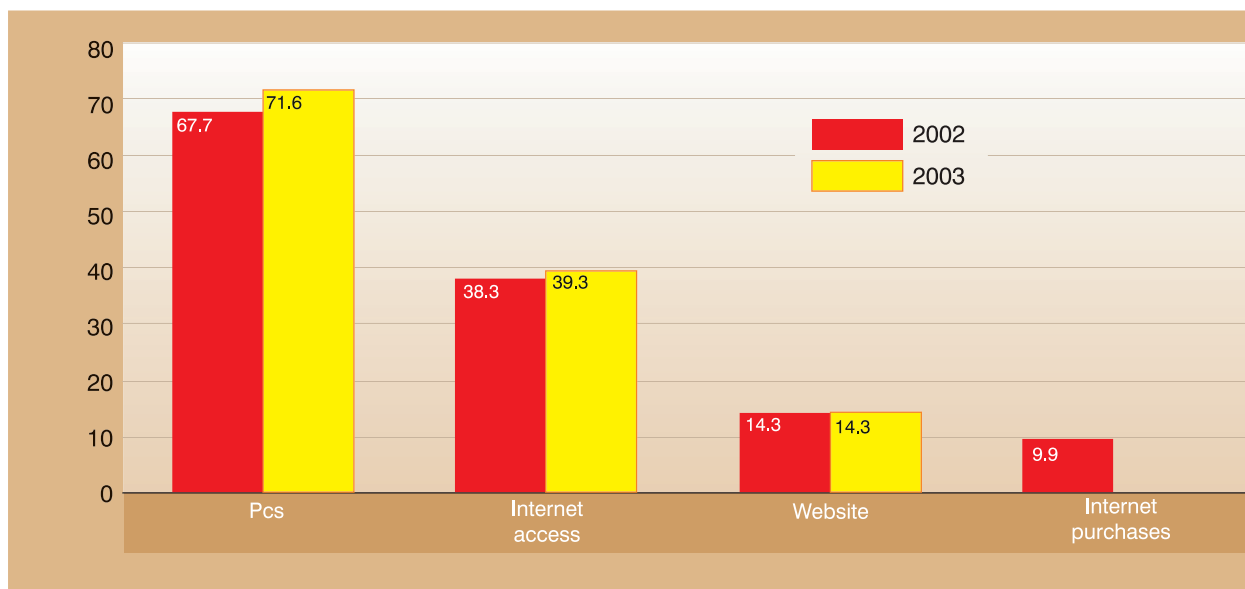

Source: National Statistical Office.

Chart 1.7

ICT usage by of enterprises (%): Russian Federation, 2001–2002

Source: National Statistical Office.

Chart 1.8

ICT usage by enterprises (%): Thailand, 2002–2003

Source: National Statistical Office.

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Notes

1. See paragraph 62 of the São Paulo Consensus, TD/410 25, June 2004, adopted by UNCTAD XI, São Paulo 13–18 June 2004.

2. See ITU (2004).

3 See http://www.isc.org/ for details about the methodology of the survey.

4. It is also possible for the same computer to operate several virtual hosts, not all of which, theoretically at least, need to use the same TLD.

5. See Netcraft.com (2004b).

6. See Netcraft.com (2004b).

7. See ITU

8. Market size considerations are relevant in this context, as smaller markets may, among other things, be unable to support local-language versions of commercial software. Free and open-source software solutions may play a useful role in this regard.

9. See Orbicom (2003)

10. See United States Census Bureau (2004b)

11. See United States Census Bureau (2004a)

12. See Eurostat (2004).

13. See World Summit on the Information Society (2003).

14. See www.unctadxi.org/templates/Event____69.aspx for the full report and documentation of the thematic session of UNCTAD XI that dealt with ICTs as enablers for growth, development and competitiveness.