Russia Equity Research

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Russian technology

In the crucible

- With this report we revisit the Russian technology sector, defined to include information technology and the Internet economy. Although the anticipated public equity transactions did not happen in 2000–01, both due to global and country-specific factors, we maintain that Russia possesses a unique intellectual capital that should translate into exciting investment opportunities in the years to come. In this report we focus on the structural changes that we believe are preconditions for these opportunities materializing.

- In our view there are four areas to monitor in the medium term in order to assess the likelihood of the industry moving to a new level of development: the academic and scientific backdrop, entrepreneurship, venture capital, and proactive government support.

- In particular, we would watch for "hot topics" such as industry consolidation, a concerted effort by the main players to create demand (both domestic and offshore), government initiatives, and the emergence of success stories as reference points for the industry, the state and investors.

- We estimate the Russian technology sector generated revenues of $2.5 bn in 2000 or 1.1% of GDP, up 19% year-on-year. We forecast a 2000–03E CAGR of 23%, varying from 9% for Internet access services and 15% for the PC market to 39% for enterprise management software and over 100% for e-commerce.

- In this report we concentrate on four segments that we consider the most important in terms of their current size or growth prospects—the PC market, enterprise management software, offshore programming and the Internet economy. These four segments cover 70% of the Russian technology sector.

Four factors of tech innovation

Factor	Strength in Russia	Hot topics to watch
Academic/Scientific backdrop	√√√	Brain drain/influx State and corporate R&D spending
Entrepreneurship	√	Consolidation, industry association Success stories
Venture capital	√√	Investment recipients able to absorb VC VC-type commitments by Russian investors
Proactive government support	√	"Electronic Russia" and other programs Legislation on electronic signature

Source: UBS Warburg, Brunswick UBS Warburg

Traded companies mentioned in this report

Company	Price, $	Price target, $	Upside to target, %	Rating	Ticker
Golden Telecom	13.6	n/a	n/a	Spec. Buy	GLDN
Kamaz	0.2825	n/a	n/a	Hold	KMAZ
Magnitogorsk Iron & Steel	50	n/a	n/a	Hold	n/a
Megionneftegaz	3.4	n/a	n/a	Sell	MFGS
MGTS	4.53	4.5	-1%	Spec. Buy	MGTS
Lukoil	12	13	8%	Hold	LKOH
PTS	0.36	n/a	n/a	Hold	SPTL
Rostelecom	0.67	0.7	4%	Hold	RTKM
Severstal	34.8	50	44%	Buy	CHMF
Sibneft	0.65	0.75	15%	Hold	SIBN
Surgutneftegaz	0.26	0.38	46%	Buy	SNGS
UES	0.109	0.14	28%	Buy	EESR
Yukos	4.03	6.5	61%	Strong Buy	YUKO

Source: Brunswick UBS Warburg estimates

Contents

One year on

In this report we focus on the anticipated structural changes in the sector

- A year ago in our "IT and Internet Economy" we initiated coverage of the Russian technology sector, defined to include information technology and the Internet economy. In this report we revisit the theme, highlighting the main trends that have emerged and focusing on the structural changes that we see as preconditions for the industry to move to a new level of development.

Corporate IT spending and state orders are likely to drive demand

- On the demand side, we expect corporate IT spending and state orders to be the main drivers, while the consumer tech industry—also growing rapidly from a low base—is still far from the mass-market stage. With regards to potential technology exports (through offshore programming or selling end products and technologies), we believe Russia presents a win-or-lose case, depending on whether it manages to capitalize on its vast intellectual resources.

Consolidation and success stories are likely to be instrumental on the supply side

- On the supply side, we view the generally underdeveloped level of business culture in the Russian tech sector and the resulting high fragmentation as the main obstacles to ramp up growth. We expect consolidation to gain momentum and see the emergence of the first success stories as instrumental for the sector being recognized by investors, the state, the market and prospective talent.

- Evolution in the above areas is likely to determine which model of technology sector development Russia follows—whether it is spurred by domestic demand (the so-called "national" model), based on software outsourcing (the "Indian" model), or selling end-products and technologies on global markets (the "Israeli" model). For now, there are examples of each—system integrators (IBS, I.T. Company) and online businesses (Golden Telecom, eHouse) within the national model, offshore programmers (LUXOFT, Terralink) within the Indian model, and successful niche projects (Cybiko, NewspaperDirect) within the Israeli model.

We focus on four key segments of Russia's $2.5 bn tech market

- We estimate the Russian technology sector generated revenues of $2.5 bn in 2000, up 19% year-on-year, and we forecast a 2000–03E CAGR of 23%. In this report we focus on four segments that we consider the most important in terms of their current size or growth prospects—the PC market, enterprise management software, offshore programming and the Internet economy.

Before eventual IPOs, traded telecoms provide the only limited exposure to the sector

- Contrary to our expectations, public equity transactions did not materialize in 2000–01 both due to the unfavorable global environment and the above-listed structural problems in the Russian tech industry. However, certain companies have announced that they have advanced significantly in preparing for eventual IPOs. At this stage, traded telecoms such as Golden Telecom, Rostelecom, and cellular operators provide limited exposure to the Russian tech sector on the Internet side.

The Russian tech sector: in the crucible

Before proceeding with a bottom-up analysis of the Russian technology sector, we lay out our basic framework for examining the sector. We describe what in our view are likely to be the main domestic demand drivers over the next several years, evaluate the chances of Russia emerging as a center of tech innovation able to compete globally, and also discuss the main supply side trends.

1. Domestic demand drivers

Corporate

Russian corporate IT spending is insulated from the global cycle

Unlike the flat-to-negative trend in IT spending in developed countries, Russia is on the upswing of the corporate spending curve. While elsewhere corporate profitability is the key driver of IT services spending, in Russia corporate demand is still at least partly driven by structural change.

IT spending appeared on the radar in 2000–01, but is still only 2%–3% of revenues

In the past, the country's business managers were largely preoccupied with establishing control over assets and the extensive strategic repositioning required by economic reforms. More recently, direct investment in efficiency—and hence technology—have begun to accelerate as the business paradigm shifts. However, Russian companies on average still spend only 2%–3% of revenues on IT—including in-house—substantially lower than the 10%–15% in developed markets.

A breakthrough in awareness and higher transparency should boost demand . . .

In our view, this low level of spending has little to do with the lack of funds, as we estimate most companies could afford much higher IT spending. Rather, we believe it is the limited awareness of the benefits of technology products, the immaturity of organizational structures and business processes, and the lack of willingness to adopt more transparent standards (with regard to the public, employees, service providers and the authorities) that are holding back corporate demand for IT products.

. . . provided IT vendors and the government are proactive in creating and shaping the market

We argue that while rising corporate IT spending is all but inevitable given the above paradigm shift, the pace of this growth and its pattern largely depend on IT vendors' ability to create this market for themselves. We strongly believe there must be a concerted effort by Russian IT companies—possibly with government support—to accelerate a breakthrough in awareness. The leading IT vendors currently offer high-quality products but are often unable to move from pilot projects to mass installation, solely due to a lack of communication, sometimes coupled with corporate customers' past negative experiences with low-quality Russian offerings.

Consumer

Aside from PCs and gaming software, the consumer tech industry is still far from the mass-market stage

Consumer demand—for PCs, software, Internet access, and B2C e-commerce—is growing rapidly from a low base, driven by rising disposable incomes and the gradual adoption of technology products. However, aside from PCs and gaming software, the consumer tech market is still far from the mass stage, and while recognizing its potential, we admit that before higher public awareness is bred by product and service providers, the scale of consumer-oriented tech business is likely to remain limited.

Infrastructure remains a problem, but should catch up quickly as demand for tech products evolves

Underdeveloped infrastructure remains a constraint, with fixed-line, PC and mobile penetration of 20%, 5.1% and 3.4% respectively, a digitalization rate of 25%, and an immature banking system and inefficient postal service. We nevertheless maintain that it is demand for technology products that drives infrastructure development, rather than the other way around. In fact, in Russia this phenomenon is taking place at a time when technology itself is cheaper and more useful than it was when the US or Europe were at a similar stage. For example, when many Russian consumers first access the Internet they do so at high speed, in a public-access or institutional setting, creating habits and business models different from the home dial-up experience that predominated in early stages elsewhere.

Government

The government accounts for at least 25% of total IT spending . . .

While we believe the government's main task should be to create a favorable environment for the development of the technology sector, rather than providing financing *per se,* state orders represent an important component of demand for IT products. Unfortunately, there are no official statistics available to quantify this, other than that the government and academic institutions are estimated to account for 40% of PC demand in 2000, on par with corporate demand.

. . . which should increase going forward, favoring domestic IT product vendors

IDC states that the government's share in total IT spending increased over 2000–01, and we expect this trend to continue. While it is difficult at this stage to predict the exact cash amounts that will be produced by the announced government initiatives for the tech sector (see pp. 9–10), we believe they should generally be supportive. Notably, contrary to corporate demand, state orders deliberately favor domestic hardware producers, software developers and service providers over importers.

2. Will Russia emerge as a center of tech innovation?

Countries that have emerged as global centers of tech innovation have four features in common

According to our global technology team, countries that generate tech innovation often have four elements in common: a strong academic and scientific backdrop, a culture of entrepreneurship, a healthy venture capital market, and proactive government support. Below we examine Russia against these criteria to assess its potential for becoming a technology exporter.

In our view Russia is a win-or-lose case as an exporter of technology

Overall, we believe Russia presents a win-or-lose case—either it manages to tap into the global tech market (through offshore programming or selling its own end products and technologies), even in the currently tough global environment, or it remains stuck within its national—albeit not insubstantial—borders. For now, we refrain from assigning probabilities to the two scenarios, instead focusing on "hot topics" to use over the next couple of years to assess which way Russia is going.

Four factors of tech innovation

Factor	Strength in Russia	Hot topics to watch
Academic/Scientific backdrop	√√√	Brain drain/influx State and corporate R&D spending
Entrepreneurship	√	Consolidation, industry association Success stories
Venture capital	√√	Investment recipients able to absorb VC VC-type commitments by Russian investors
Proactive government support	√	"Electronic Russia" and other programs Legislation on electronic signature

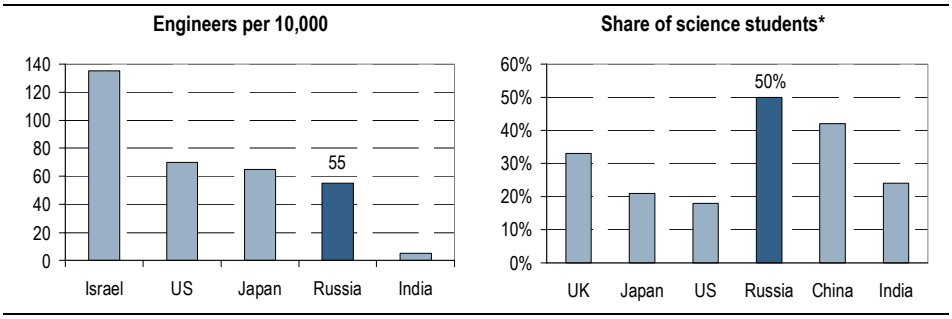
Source: UBS Warburg, Brunswick UBS Warburg

Factor #1: Academic/Scientific backdrop

Russia has one of the most remarkable intellectual resource pools, particularly geared towards fundamental research and complex R&D projects

Russia is renowned for its R&D tradition and impressive pool of scientists, engineers and technical professionals. Despite the brain drain of the 1990s, Russia is still among the world's leaders in terms of engineers per 10,000 members of the population, with 55, and science students still make up a record 50% of total graduates. Russia currently accounts for 4% of the global programmer workforce, on par with India. Notably, since Soviet times the country's educational system has been geared towards fundamental sciences, solving abstract problems and handling complex R&D projects, often in multiple disciplines and technologies.

Russian R&D potential



* includes students in engineering, natural science, mathematics, computers, social and behavioral science
Source: UBS Warburg, Nasscom, the American Chamber of Commerce in Russia, Brunswick UBS Warburg

R&D spending in Russia totals 1.3%–1.4% of GDP, largely financed by the private sector

Total R&D spending in Russia fell over the past ten years from 2.5%–3.0% of GDP to 1.3%–1.4%, reaching about $4 bn in 2001. Significantly, there has been a distinct shift towards R&D being financed by the corporate sector as opposed to the government. Likewise, of this $4 bn, the state only allocates about $1 bn for civil R&D, with the balance contributed by large companies. As a result, while applied research is likely to be relatively well financed in the future, spending on fundamental sciences and education—necessary to ensure the country's intellectual capital is replenished over the long term—is an area of concern.

Factor #2: Entrepreneurship

Unlike in brick-and-mortar sectors, the paradigm in the Russian IT business is still not always about making money

We believe the main reason Russia's vast intellectual capital is underutilized is the generally underdeveloped level of business culture in the Russian technology sector. Among the first to embrace the free market economy in early 1990s, Russian IT entrepreneurs since fell behind traditional economy companies in terms of applying business processes to product development. While brick-and-mortar companies—through fair and unfair competition—have generally evolved over the past five years to the point where the focus is on maximizing profits, many IT entrepreneurs still concentrate more on personal recognition, whether monetarized or not.

Innovations are not making it to the market due to individualism and a lack of concerted efforts

Our monitoring of innovative start-ups often reveals undifferentiated players making small revenues from occasional orders, turning a marginal profit due to their very low cost bases, and expecting to become market leaders through raising money to hire an additional sales force. Of the tech businesses started by traditional companies, many still derive a sizeable portion of their revenues from their parent companies and—similarly to spin-offs of the Japanese *kereitsu*—are unable to tap other distribution channels but unwilling to expand their boundaries otherwise. This

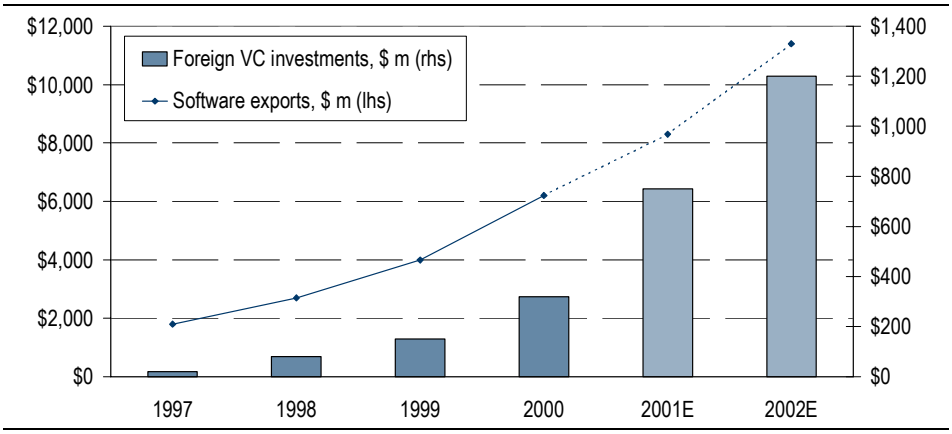
mindset is in stark contrast with the Israeli example, where there appears to be very little desire to "protect" companies from M&A. When a good deal knocks, entrepreneurs respond, with confidence that other great ideas will naturally spring from the networking.

Factor #3: Venture capital

Entrepreneurship cannot bloom without VC funding

Without VC financing there is little room for entrepreneurship to blossom—the two tend to exist in a symbiotic relationship over the longer term, although occasionally they may get out of sync. Despite common difficulties such as increasing competition to invest, challenges to finding management and a precarious exit environment, VCs have been and remain instrumental to the emergence of countries such as India and Israel as centers of tech innovation.

Foreign VC investment and software exports in India



Source: Nasscom, UBS Warburg estimates

Just over $100 m of institutional money has been invested so far in the Russian tech sector

The VC industry in Russia is still in its infancy. We estimate that just over $100 m of institutional capital has been invested into the Russian technology sector so far, largely on the wave of the global tech hype. We also believe that about as much again could still be available for investment from Russia-dedicated venture and private equity funds and overall view Russian IT as a buyer's market on the capital market side. We believe VC's limited involvement primarily stems from the above underdevelopment of business culture in the sector leading to VCs having to do a disproportionately large amount of management coaching for projects.

Russian corporate and individual money is likely to play an important role in the medium term

The above numbers exclude in-house investment by Russian corporations and high net worth individuals—something that may or may not be classified as VC (even in the case of spin-offs), but a key contributor to the build-up of the Russian tech industry. We believe investment by Russian companies and individual entrepreneurs has been at least of comparable size to VC inflows, and in our view is likely to remain critical over the next 1–2 years. Again similarly to the case of Japan, the question is whether this will be an effective form for tech innovation.

Factor #4: Proactive government support

The emergence of countries as centers of tech innovation has generally been backed by governments

Tech innovation in countries such as Israel, India, Ireland and South Korea was largely made possible by the government nurturing the technology sector, primarily through creating an environment that stimulated interaction between science, entrepreneurs and capitalists. In developed countries this generally went hand in hand with the overall promotion of entrepreneurship and investment through measures such as tax breaks and favorable legislation.

The tech sector appeared on the agenda of the Russian government in 2001 . . .

Justifiably or not, development of the IT sector has so far not been on the government's list of priorities. However, following a landmark meeting of President Vladimir Putin with the leaders of the Russian tech sector in April 2001, the first indications have started to appear that the government may be taking a greater interest in promoting information technology. Currently at least three programs are being considered by various state bodies, targeting a broad range of issues from online/anytime government services to setting up a VC fund with state participation similar to Israel's Yozma. The Russian Duma is also expected to pass a long-awaited bill on electronic signature in the near future.

Announced governmental initiatives for the technology sector

Program	State body	Budget	Goals
Electronic Russia	Ministry of Communications Ministry of Economic Development and Trade	$2.5 bn over 2002–10	Improving internal processes through information technology Improving government accessibility and transparency Stimulating awareness and demand for IT products as a result
On the development of a single information environment	Ministry of Education Ministry of Industry, Science and Technology	$1.9 bn over 2001–05	100% computerization of educational institutions Achieving 50%–100% Internet access at education institutions Supporting Russian PC assemblers as a result
On supporting the Russian software industry	Ministry of Communications Russian Academy of Sciences	under discussion	Amending tax legislation to provide tax benefits Setting up a government-backed venture fund (incubator) Stimulating demand for domestic software

Source: Government of the Russian Federation

. . . and we cautiously wait for the initiatives announced to materialize

Given that the above initiatives are at the planning stages, it is too early to project their potential impact on the development of the Russian tech sector. We consider them plausible, but are taking a cautious approach, as plans laid out by the government may not materialize in their initially planned form or may benefit individual companies and state bodies rather than create an equally favorable environment for the industry as a whole.

3. Supply-side trends

Russia was relatively insulated from the tech bubble bursting, but never saw cheap capital

The direct impact on Russia of the global tech bubble bursting was limited, with no traded companies either then or since, and a relatively limited dependence on external capital, with the exception of a few Internet projects. However, at the same time, the growth of the Russian tech industry has not been underpinned by the cheap capital of the tech bubble that US and European companies enjoyed.

In our view, the fragmentation of the tech industry is the main factor hampering rapid expansion . . .

Partly for this reason, but also due to the generally underdeveloped level of business culture discussed above, the Russian technology sector remains very fragmented, with the leading players such as IBS accounting for less than 10% of the market. In our view, this fragmentation is the main factor negatively influencing the industry's capacity to ramp up growth with a concerted effort to create demand, proactively enter export markets, and raise capital (including through public equity).

. . . and M&A is just starting to heat up, making the future structure of the industry uncertain

So far we have only seen the first signs of consolidation, mostly in sectors such as Internet access services and Internet media, where it was forced by low profitability or outright losses. Given that most IT companies in other segments are at least marginally profitable and generally reluctant to engage in M&A, it is not yet clear if Russia will end up with a limited number of players with dominant positions or with many smaller boutiques and niche players.

Established companies—in both IT and traditional businesses—are likely to dominate over start-ups

Largely as a result of these financing and marketing constraints, we believe the leaders in Russia tend not to be independent start-ups but established players—both traditional IT and bricks-and-mortar companies—with capital and business systems in place. Notably, having an in-house IT function still remains widespread, as there is a reluctance to surrender strategic control over this area of the business. IT departments of Russian corporations are comparable with large IT companies, although the latter clearly start developing first-hand experience of best practice, establishing a base for more outsourcing in the future.

We are now more cautious about defining best of breed . . .

Generally, we have become more cautious about defining best of breed. Primarily, this is due to the fact that we only consider it relevant if the company can actually survive. While sectors such as software, with a near-zero marginal cost of sale, indeed create the possibility for successful companies to reap much larger returns than comparable high-fliers in more traditional industries, given the likelihood that most will fail, it may not make sense to try to pick the winners. In addition, we believe that having a high share of today's limited IT markets may have little meaning aside from brand formation, which may not carry any weight when the mass-market stage arrives.

. . . but cannot overestimate the importance of success stories for the future of Russian tech sector

Paradoxically, we assign a very high importance to success stories that emerge during the next years. We believe that similarly to the Israeli and Indian examples, successful and well-publicized stories will be instrumental in the technology sector becoming recognized by the state, investors and prospective talents as the next land of opportunity. These stories and the transactions that surround them are also likely to become reference points for entrepreneurs for the future.

Overview and segmentation

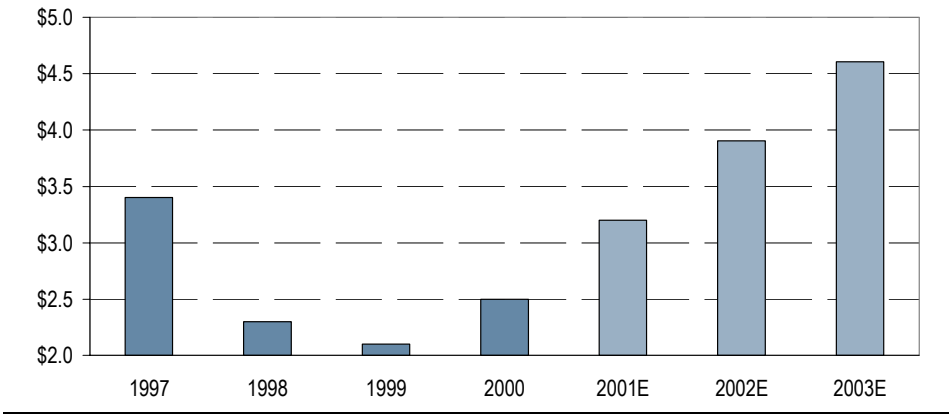
We define the technology sector as a combination of the IT sector and the Internet economy

We reiterate our definition of the Russian technology sector as information technology—hardware, software, and IT services—and the Internet economy—access, online business, and support services. For simplicity we use the labels "tech sector" and "IT sector" as synonymous. This definition excludes telecommunications (both hardware and services), cabling, and enterprise hardware.

The Russian IT market is expected to grow at a 2000–03E CAGR of 23% from $2.5 bn, becoming less skewed towards hardware

We estimate the Russian tech sector generated approximately $2.5 bn in revenues in 2000, up 19% from $2.1 bn in 1999, in line with our expectations. This year we expect the historical peak level of $3.4 bn in 1997 to be approached and we forecast the Russian IT market will grow at a 2000–03E CAGR of 23% to $4.6 bn. Notably, while the industry remains skewed towards the hardware business, its share is rapidly falling—from 79% ($2.7 bn) in 1997 to 68% ($1.7 bn) in 2000, and we expect hardware to contribute 60% of total sector revenues in 2003E.

Russian IT sector, $ bn

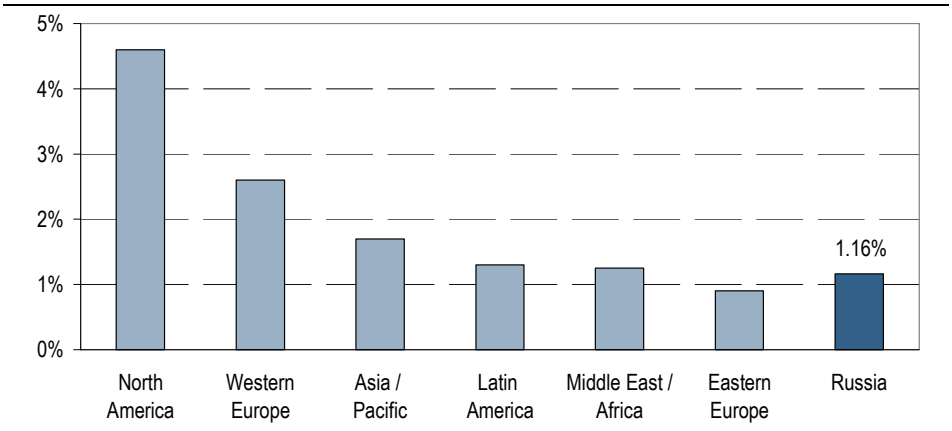


Source: Brunswick UBS Warburg estimates

The contribution of the Russian IT sector to GDP is in line with emerging market levels

In 1999–2000 the Russian IT sector accounted for about 1.16% of the country's GDP. This is generally in line with emerging market levels. The government program "Electronic Russia" envisages a 2% contribution by 2010, which should translate into over $10 bn in revenues based on our macroeconomic forecasts.

IT sector as % of GDP, 1999



Source: IDC, Brunswick UBS Warburg

We focus on four segments of the Russian technology sector in this report

Below we set out forecasts for PC and Internet penetration as the two key macro metrics underlying the development of the technology sector, and then focus on the four segments that we find most important in terms either of their current size or growth prospects. These four segments cover 70% of the Russian technology sector.

1. **Hardware (PC market)**
2. **Enterprise management software**
3. **Offshore programming**
4. **Internet economy**

System integration stands at the overlap of several segments of the tech sector and beyond

Contrary to our approach last year, this time we do not separate out system integration as a distinct segment, as it essentially represents a mix of several services within the tech industry—hardware reselling, IT consulting, and software development. Integrators also have revenue streams that lie beyond our definition of the technology sector, such as cabling and enterprise hardware. Depending on the definition used, estimates of the overall size of the Russian system integration market vary between $300 m and $600 m.

PC and Internet penetration

PC market overview

The Russian PC market grew 21% in 2000, the most dynamic in Europe

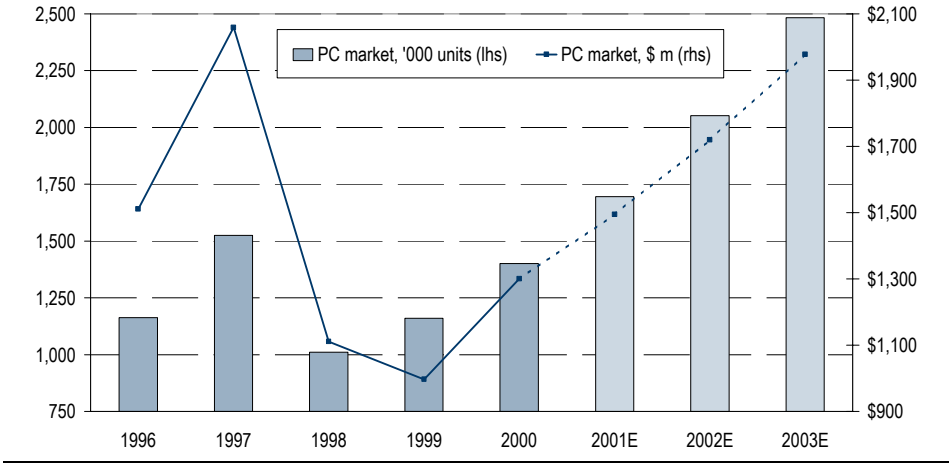
In 2000 the Russian PC market was among the most dynamic in Europe, with PC sales up 21% year-on-year in terms of units, compared to 7%–10% in Eastern and 4%–8% in Western Europe. Some 1.4 m computers were sold, for a total value of approximately $1.3 bn—slightly ahead of our forecast. This growth was driven by the overall improvement of economic conditions, resulting in buoyant demand from businesses and households, as well as the government, and the active marketing and product policies of Russian PC vendors.

We expect PC sales to increase from $1.3 bn in 2000 to $2.0 bn in 2003, backed by strong demand and declining prices

The Russian PC market bottomed out in 1999 and is likely to exceed its 1997 high of 1.5 m units this year. However, the dollar value of the market is unlikely to return to its 1997 peak of $2.1 bn in the next two years, due to downward global pressure on PC prices. We forecast that 2.5 m PCs will be sold in Russia in 2003, for a total value of $2.0 bn, based on the two following assumptions:

- a 20% annual growth rate in real terms, ahead of the 4% CAGR predicted for real GDP, as IT spending becomes a priority for corporate users and more individuals start using the Internet;
- a 5% average annual decline in PC prices, as value shifts away from the hardware sector and competitive pressures lead to increased functionality for less money.

Russian PC market, 1996–2003E



Source: Dataquest, IDC, Brunswick UBS Warburg estimates

PC penetration and PC base forecasts

PC penetration was 5% in 2000, with a third of the PC base connected to the Web

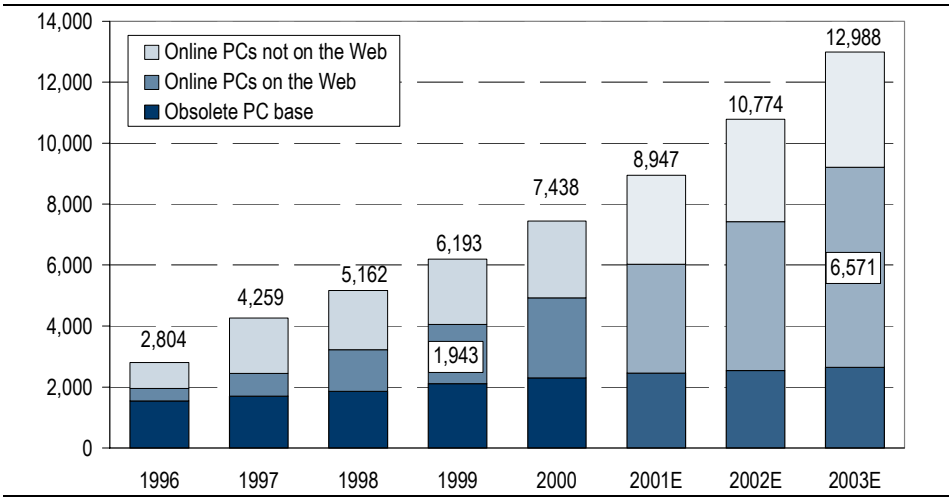
As of 2000 there were about 7.4 m computers installed in Russia, suggesting PC penetration of just over 5%—only a fifth of the European average, although similar to the level of Latin America and Eastern Europe. Of this 7.4 m, about 5.1 m PCs were modern enough to be connected to the Internet, with roughly half of these or 2.6 m actually logged on to the Web. Thus two thirds of PCs acquired in 2000 got connected to the Internet in Russia.

We forecast PC penetration of 9% in 2003, with half of the PC base logged on to the Internet

By the end of 2003, we forecast PC penetration will increase to 9%, with 51% of the total 13.0 m PC base—or 6.6 m computers—connected to the Web. We have arrived at the above numbers assuming that:

- 6.2 m PCs are sold in Russia over 2001–03E (see p. 13 for details), while 2.5% of the PC base is discarded every year;
- 75%–85% of computers sold have modems and Internet applications;
- 70%–80% of newly installed PCs that could technically log on to the Web do so.

PC base in Russia, 1996–2003E ('000 units)



Source: Exact Data, IBS, Brunswick UBS Warburg estimates

Internet audience

Offline surveys indicate that Russia had 3.2 m Internet users at the end of 2000, implying Internet penetration of 2.2% . . .

In our view, offline surveys remain the best available source of information on the number and profile of Internet users, due to the lack of more advanced auditing tools such as panels or Web audience measurement software. While the numbers revealed by different polls vary significantly due to methodology, they result in a fairly uniform estimate if adjusted for differences in definitions and coverage. We define an Internet user as somebody who has logged on to the Web at least once in the last three months ("quarterly reach"), regardless of age and region. On this basis, we believe 3.2 m people could be considered Internet users at the end of 2000, implying Internet penetration of 2.2%.

Russia's Internet audience according to the latest offline surveys, m

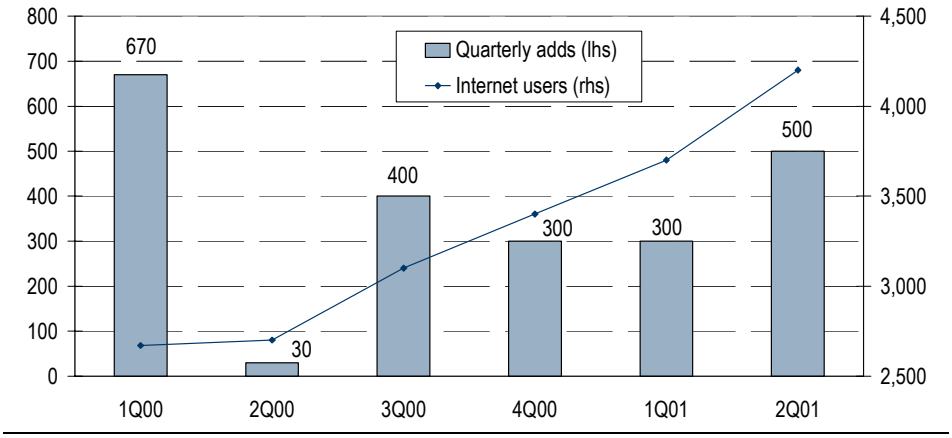
Company	Definition	4Q99	4Q00	% chg, y-o-y
COMCON-2	quarterly reach urban (>250,000) 10 years and older	2.0	3.4	70%
Gallup Media	monthly reach urban (>100,000) 16 years and older	1.4	2.4	71%
Monitoring.ru	weekly reach urban and rural 18 years and older	1.8	2.5	39%
Public Opinion Foundation (FOM)	self-definition urban and rural 13 years and older	n/a	3.3	n/a

Sources: Company data

. . . with 0.3–0.5 m users added every quarter

Likewise, according to quarterly survey results released by COMCON-2, Russia is currently adding between 300,000 and 500,000 new Internet subscribers every quarter. The quarterly growth of the Russian Internet audience averaged 7%–10% over the last two years.

Results of quarterly surveys of Russia's Internet audience by COMCON-2, '000 users

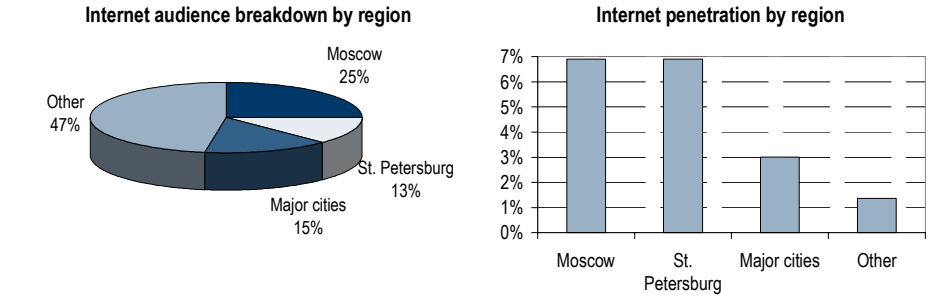


Source: COMCON-2

Moscow and St. Petersburg enjoy Internet penetration more than triple the Russian average

Moscow continues to account for about 20%–25% of total Russian Internet users, followed by St. Petersburg with 10%–15%, according to different estimates. Novosibirsk and Yekaterinburg each account for about 5%, with a cluster of industrial cities (Nizhny Novgorod, Samara) and towns with large universities or scientific centers (Tomsk, Omsk) also contributing. The above suggests Internet penetration in Moscow and St. Petersburg of about 7%—triple the Russian average but still far from saturation, in our view. Notably, as with mobile communications, Internet penetration added is starting to accelerate in the regions and we are likely to see the above pattern change.

Breakdown of Russian Internet users by region, 2000



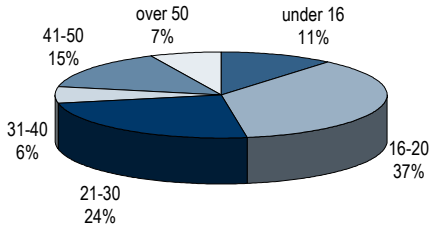
Source: Public Opinion Foundation (FOM), Brunswick UBS Warburg

Growth is driven by young people, with the under 21s contributing nearly 50% of the 2000 increase

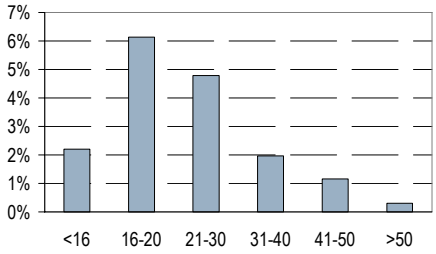
In general, the average profile of Russia's Internet users remained unchanged over the last year with the majority still men, predominantly educated, young and with above-average incomes. One of the most notable developments during 2000 was the increased youth audience—of the total 1 m increase in the number of Russian Internet users, those under 21 years old contributed 48%, while the number of under-16s increased 2.4 times to about 190,000. Internet penetration among people between 16 and 21 is now 6.1%, nearly triple the Russian average, with students accounting for about 25% of the Russian Internet audience.

Young people are driving Internet growth

Breakdown of 1999–2000 Internet audience growth



Internet penetration by age group, 2000



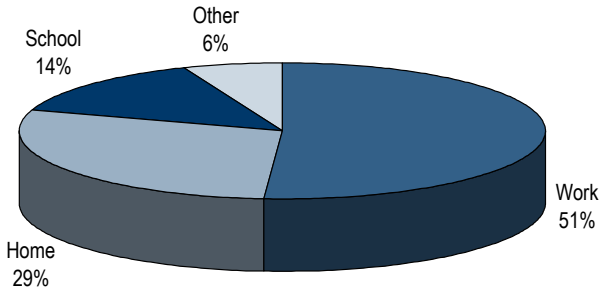
Source: Public Opinion Foundation (FOM), COMCON-2, Gallup Media, Brunswick UBS Warburg

Internet penetration forecast

The user-to-device ratio remains low, as the Internet has not yet been developed into a mass product

While our 2000 forecast of the Russian PC market and hence the PC base proved accurate, the number of Internet users at year-end was 17% short of our estimate of 3.9 m. In our view, this was due to the fact that content and e-commerce providers failed to develop the Internet into a mass product. In terms of metrics, this translated into a lower-then-expected user-to-device ratio. While this ratio increased from 1.13 at end-1999 to 1.22 a year later, it remains very low compared to international levels of 1.8–3.0. In effect, this number means that each Internet subscriber is essentially the only Web user from that computer, with educational institutions and Internet-cafes—a service that exploded in Russia in 2000–1H01—forming natural exceptions.

Internet access location, end-2000



Source: Public Opinion Foundation (FOM)

Internet penetration should take off once Internet economy players start offering quality products

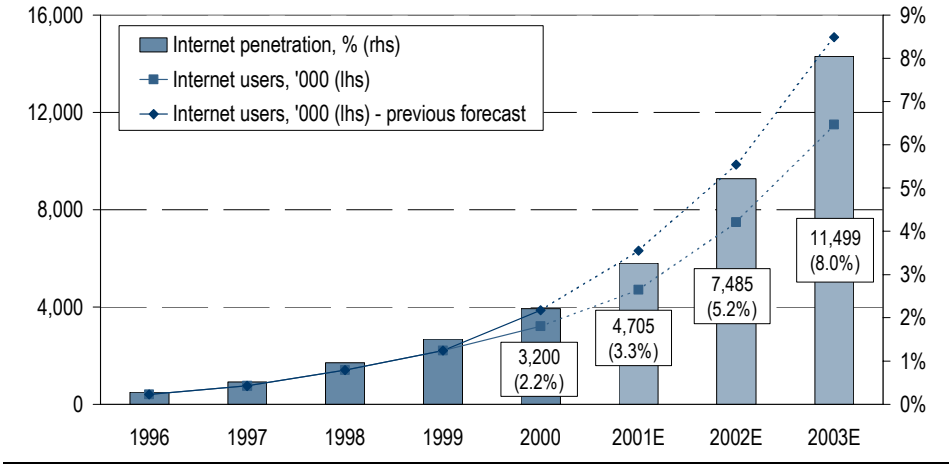
In other words, while it is natural for a person that buys a computer to start using the Internet, the initial motivation is still buying a computer. When motivation to start using the Internet becomes more important, people first start using the Internet where available—through family members, friends, school, or work—translating into a rising user-to-device ratio and accelerated Internet penetration growth. This analysis disregards the appearance of alternative access devices (net computers, TV set-top boxes, palm-tops, and mobile devices), which are currently marginal in Russia.

We forecast Internet penetration of 8.0% by end-2003, or 11.5 m users

Our forecast of Internet penetration in Russia is based on estimating PC penetration, the proportion of PCs connected to the Web, their location (home, work, school, and other), and the respective user-per-device ratios (see our previous report, "IT and Internet Economy" of June 8, 2000 for details on methodology). As outlined on p. 14, we forecast 6.6 m PCs will be connected to the Web in 2003 and that the

user-to-device ratio will increase to 1.75 in 2003. As a result, we expect the number of Internet users to reach to 11.5 m in 2003, implying Internet penetration of 8.0% and a 2000–03E CAGR of 53%.

Internet penetration in Russia, 1996-2003E



Source: Brunswick UBS Warburg estimates

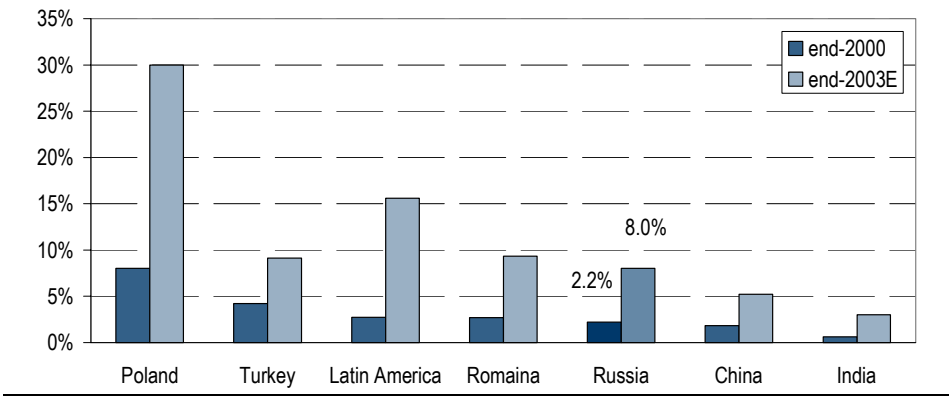
4 m people indicate that they have both the intention and the opportunity to start using the Internet

As a reality check, we refer to a survey by the Public Opinion Foundation (FOM) in 4Q00, which revealed that there were 4 m people in Russia that were both willing and able (in terms of available and affordable access) to start using the Internet. This would not even require an expansion of the online PC base, implying that our end-2002 estimate of 7.5 m—up from 3.2 m at the end of 2000—may actually be conservative.

Russian Internet development fits well into the emerging market picture

We also maintain that there is little fundamental reason why Russia should differ from the rest of developing world in the medium term, and expect Russia to follow the global pattern, with Internet penetration expected to increase 2.2–5.8 times over 2000–03.

Internet penetration by country



Source: UBS Warburg, Brunswick UBS Warburg estimates

Hardware

PC assembly remains the only fully-fledged sector in Russian hardware

While some players, such as Sistema and the EBRD, have made statements about their planned investments in computer component production and microelectronics, PC assembly remains the only fully fledged hardware sector in Russia and accounts for 76% of total hardware revenues. Other markets in this area—peripherals, networking and enterprise hardware—are dominated by imports.

Domestic producers account for over 85% of the $1.3 bn PC market . . .

Three categories of PC manufacturer sell to the Russian market, estimated at $1.3 bn in 2000. These consist of 5–10 foreign brands, 15–20 Russian brands, and dozens of lower-quality local producers, usually referred to as "red assembly." The two categories of Russian vendors together account for over 85% of the PC market as they offer lower prices—often resulting from "gray" customs clearing schemes. Imported brands cover a secure 10%–15% market niche (down from 23% in 1997) selling to corporate clients, mainly multinationals.

. . . and rapid industry consolidation is driven by strengthening Russian brands

As expected, the establishment of Russian brands—defined by consistent quality and the presence of a customer relations policy—led to consolidation of the PC industry in 1999–2000. In fact, the pace of consolidation was surprisingly rapid, due to the leading Russian PC vendors expanding marketing efforts and distribution networks. While the industry remains fragmented, with only one company—Formoza—accounting for over 10% of the market, the top ten vendors covered 50% of the market in 2000, up from just 35% in 1999.

Russia's top ten PC vendors, 2Q01

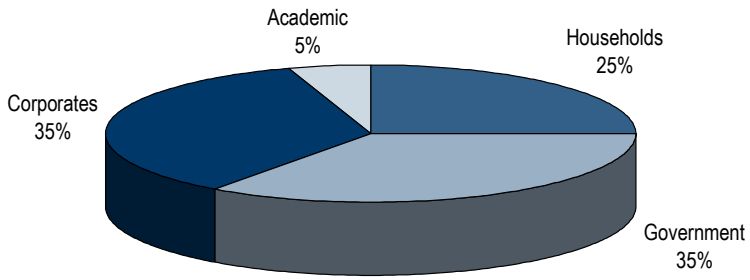
	Sales, units	Market share, %
Formoza	59,500	13.3%
R&K	37,491	8.4%
Aquarius	25,545	5.7%
Bely Veter	18,786	4.2%
R-Style	17,412	3.9%
Inel	14,641	3.3%
Techmarket	13,731	3.1%
Hewlett-Packard	13,406	3.0%
IBM	12,461	2.8%
Compaq	11,275	2.5%
Top 10	**224,248**	**50.1%**
Total Russia	**447,498**	**100%**

Source: Gartner Dataquest

State orders favor domestic producers

Contrary to large corporations that have traditionally preferred branded imported products, government bodies and state enterprises—estimated to account for about a third of the total Russian PC market—tend to favor domestic producers. Underlining the importance of state orders, Hewlett-Packard and Aquarius (one of the leading Russian PC vendors) are now setting up assembly of HP-branded computers at two of Aquarius' facilities, one of which—NII Voskhod—is a leading PC supplier to state organizations and entitled to certify hardware delivered to defense organizations.

PC demand breakdown, 2000E



Source: IDC, Brunswick UBS Warburg estimates

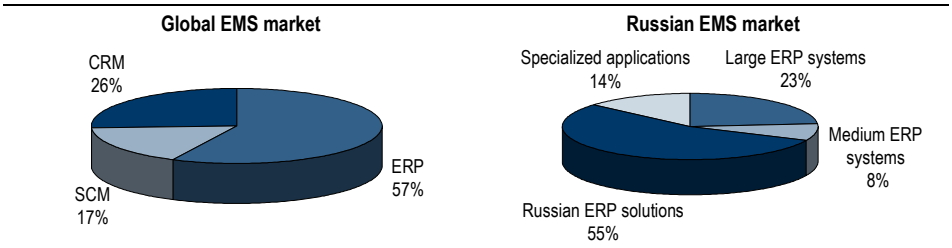
Enterprise management software

Enterprise management software is the broadest and most mature segment of the global software industry

The enterprise management software (EMS) market is the broadest and largest software segment globally. It is also the most mature, reflected in the multitude of dedicated vertical solutions and complexity of applications. We define enterprise management software as applications that are licensed by individual companies to provide a comprehensive and consistent database across their organizations, to manage and optimize internal business processes, and to facilitate electronic interactions with business partners on the supplier and customer side. We identify three main segments of the overall enterprise management software market.

- **Enterprise resource planning (ERP)**
- **Supply chain management (SCM)**
- **Customer relationship management (CRM)**

Enterprise management software market, 2000E



Source: AMR, UBS Warburg, Brunswick UBS Warburg

The Russian EMS market totaled $110 m in 2000, represented by traditional ERP systems and specialized solutions

The enterprise software market is also the single largest and fastest-growing segment of the software industry in Russia. We estimate the EMS market totaled $110 m in 2000, accounting for 31% of the software sector. Broadly, this includes integrated ERP suites and, as a subset of ERP, specialized applications covering individual areas within traditional back-end systems. The market for SCM and CRM software is so far negligible in Russia—together totaling $2 m in 2000, according to IBS' estimates.

Main enterprise management software solutions on the Russian market

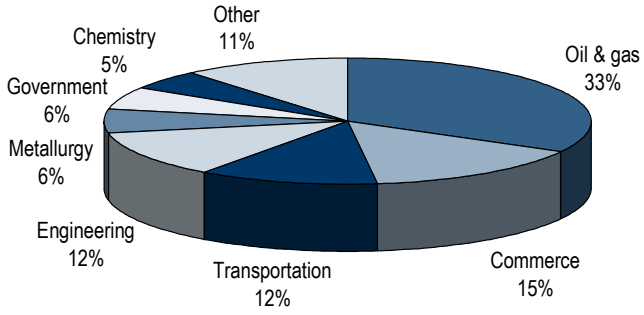
Solution	Installations (spring 2001)	Main vendor	Clients
Large ERP systems (over $500,000)			
SAP R/3	200	SAP CIS	TNK, Surgutneftegaz, Alrosa, Rostelecom, Ministry of Railways
Baan IV	44	Alfa-Integrator	SUAL, ZapSib, Kamaz, IAPO, Ilim Pulp & Paper
Oracle Applications	40	Oracle CIS	Magnitogorsk Iron & Steel, OMK
Medium ERP systems (over $200,000)			
Concorde XAL	70	Columbus IT Partners	Europe-Plus, Saint Spring, Gallina Blanca
Axapta	30	Columbus IT Partners	NaftaTrans, LC Group
SyteLine	27	Fronstep CIS	Rosar, Ochakovo Brewery, Konfi
Russian ERP solutions (over $50,000)			
Galaktika	4,505	Galaktika	Yukos, Rostelecom, MGTS
Etalon	704	CEFEY	Mezhregiongaz, Severonickel, Uralelectromed
BOSS-Korporatsiya	515	I.T. Company	Orenburgneft, Krasnoyarsk Aluminum, Ice-Fili
Parus-Korporatsiya	252	Parus	Slavneft, UES, Lukoil
Specialized applications (up to $50,000)			
1C, Info-Bukhgalter	4,083	1C, Info-Bukhgalter	Various

Source: Company data, Market-Visio/EDC, Brunswick UBS Warburg

SAP R/3 accounts for 70% of large ESP installations

Large ERP systems accounted for 23% of the total EMS market in 2000, represented by high-end Western solutions, with SAP R/3 accounting for 70% of all installations to date. Large ERP systems are deployed and supported either by consulting companies such as Arthur Andersen, PricewaterhouseCoopers, and Unikon/MS, or system integrators such as IBS (SAP), I.T. Company (Oracle Applications), and TopS (Baan). While the oil and gas industry has so far been the leading buyer of large ERP systems, ERP vendors have generally seen very little difference in the propensity of large companies in different sectors to use these products.

SAP CIS revenue breakdown by industry

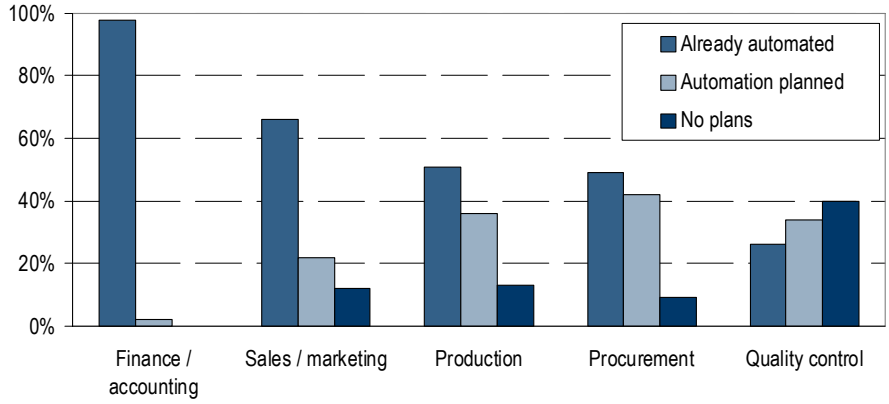


Source: SAP CIS

Russian solutions account for 55% of the EMS market, valued for functionality covering certain areas within back-end systems

Russian ERP solutions do not necessarily meet the characteristics of integrated ERP suites but are valued by smaller companies for good functionality within certain ERP areas such as finance (Galaktika), procurement, sales, and e-commerce (Etalon), wages and human resources (BOSS-Korporatsiya), or logistics (Parus-Korporatsiya). We estimate Russian solutions are the largest segment of the Russian EMS market, accounting for 55% of sector revenues. Galaktika is the leading product, with 75% of all installations to date.

Business process automation level in Russia, 1Q01



Source: Expert RA

The focus of competition is shifting from pricing to customer relationships and specific expertise . . .

The above market structure primarily resulted from the fact that until recently competition was mostly based on pricing, with larger enterprises installing Western systems and smaller companies focusing on cheaper domestic solutions. We believe this is set to change, as the fundamental competitive strengths of an EMS vendor are its customer relationships and specific areas of expertise (whether in a vertical market or a particular functionality).

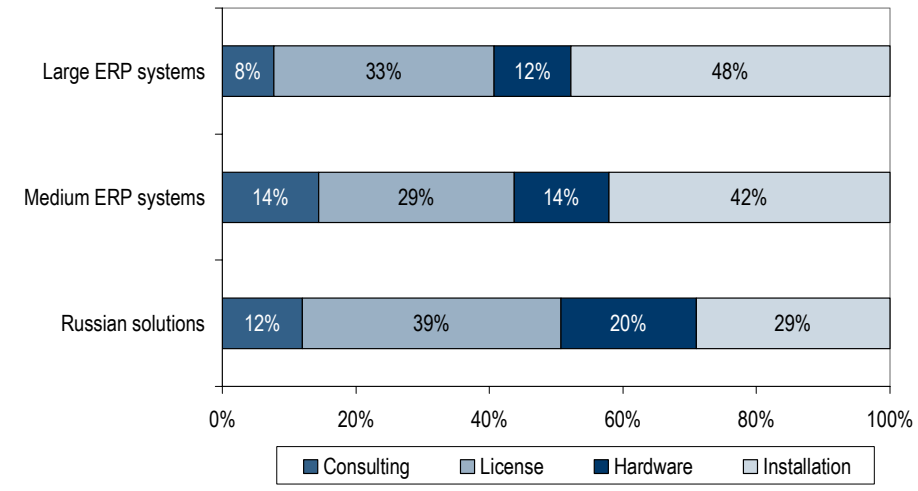
. . . and is mostly in the mid-market segment

While we do not see Russian software houses entering the market for large ERP systems, we believe there is room for competition in the mid-range segment—both between domestic providers and from the SME solutions of global providers such as SAP, Oracle and Baan. We also expect the trend towards integration of Russian and Western software to gain momentum, primarily to build better fitting and branded modules by Russian programmers onto high-end ERP platforms. For example, Nizhfarm, one of the leading pharmaceutical companies in Russia, uses wages and HR modules by 1C on top of the rolled out Baan IV system.

The service component accounts for 40%–60% of project values

Our estimate of the total size of the EMS market measures total vendor revenues, including license cost, hardware, and services. Services such as consulting, configuration, and training account for between 41% and 57% of the total cost of a project incurred by the end user, depending on the size of the system. Full integration of a solution can take from several months to two years. All of this generally corresponds to the cost structure of similar projects elsewhere in the world.

Breakdown of total rollout costs, 2001E

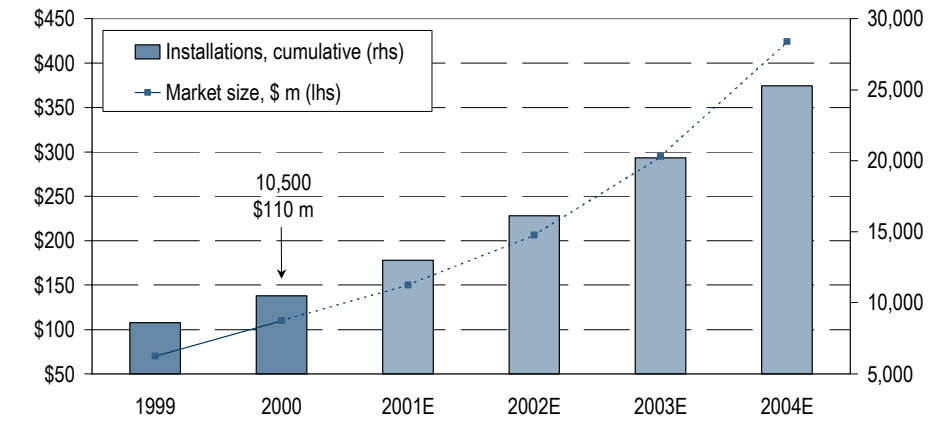


Source: Market-Visio/EDC

We expect the Russian enterprise management software market to reach $424 m in 2004E

Overall, we expect the Russian EMS market to grow at a 2000–04E CAGR of 40% to $424 m, driven by increasing software installations and Russian enterprises moving to more complex and expensive systems. Interestingly, this compares closely to the growth we expect globally from the most buoyant segments of the EMS market—SCM and CRM (41% and 30%, respectively).

The Russian EMS market



Source: Market-Visio/EDC, Brunswick UBS Warburg

Offshore programming

Sector overview

The offshore programming industry started emerging in 2000 . . .

The emergence of the offshore programming industry has been one of the most discussed topics in the Russian IT sector over the past eighteen months, partly because of disenchantment with ideas such as consumer Internet, and partly driven by the well publicized example of India. In our view, it is still premature to talk about Russian offshore programming as a fully established sector, although we believe all the prerequisites are there.

. . . through spin-offs and start-ups

We broadly distinguish between two groups of participants of the Russian offshore programming market, neither of which has any dominance at this stage:

- **Units of companies with a core business in developing software for domestic clients or other segments of the IT sector such as system integration** Such units are either separate from the parent companies (e.g. LUXOFT, a part of the IBS group) or integrated with the core activities (e.g. the programming unit of Parus).

- **Companies focusing specifically on offshore programming (although usually handling some orders from domestic clients as well)** Such companies range from small teams of programmers with little organizational structure to relatively established entities with offices in several countries.

Offshore programming is heavily concentrated in Moscow, St. Petersburg and Novosibirsk

Geographically, the bulk of Russian offshore software development is performed in Moscow, St. Petersburg and Novosibirsk, where the leading universities providing skilled programmers are located. Nizhny Novgorod, Yekaterinburg, and Perm also host computer specialists involved in offshore programming, although these are often contract workers attracted by the companies based in the three above-mentioned centers.

Several in-house local development centers have been set up by multinationals

Outside marketable programming services, multinational companies such as Intel, Motorola, and Siemens have set up in-house development centers in Russia (see table below). The first two—as well as Sun Microsystems—also use contract workers extensively. In addition, Los Alamos and Lawrence Livermore laboratories run "Open Computing Centers" under the Russo-American Open Cities Initiative program aimed at developing the commercial opportunities of formerly closed cities. Due to their in-house nature, we do not include the revenues of foreign development centers into our calculation of the size of the offshore programming market.

Onshore development centers in Russia

Company	Location	Focus
Intel	Nizhny Novgorod	Performance tools, software for wireless telecoms
Motorola	St. Petersburg	Telecom software, simulation tools
Los Alamos Laboratories	Sarov	Software development, mathematic modeling, graphics applications
Lawrence Livermore Laboratories	Snezhinsk	
Siemens	St. Petersburg	Localization of mobile telecom software

Source: Company data, the American Chamber of Commerce in Russia

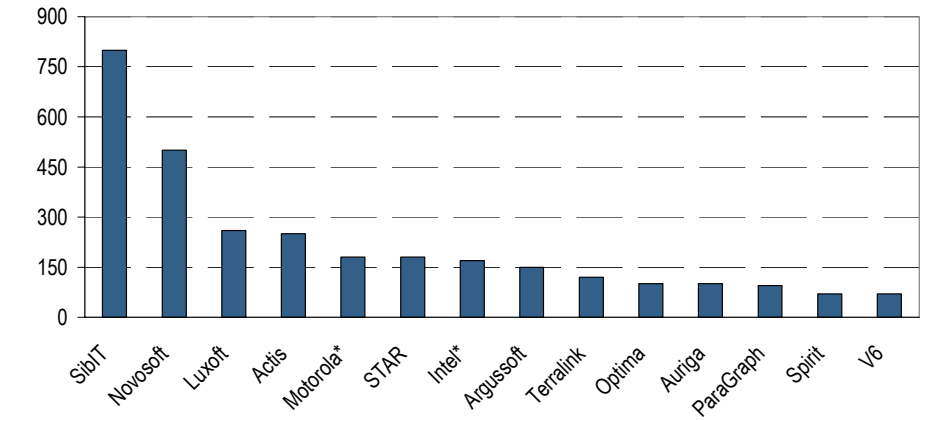
So far, Russian offshore programmers have not developed specific acknowledged areas of expertise in particular product groups. Areas most often sited by companies are databases, document flow solutions, networking software and B2B systems.

Estimating the size

Total offshore programming revenues of about $80 m are shared between many players and employees

As a result of the above industry structure and low transparency, it is nearly impossible to give an accurate estimate of what revenues the Russian programming industry generates and how many people it employs. Estimates of the overall market size in 2000 vary between $70 m and $120 m. Our screening of companies involved in offshore programming suggests the lower end of this range at $80 m. Estimates of how many people are involved in offshore programming vary even more widely from 3,000 to 10,000. In any case, we believe the above $80 m is shared by an excessively high number of companies and employees. We know of just a handful of companies that have generated over $1 m in offshore programming revenues during 2000 and estimate the average revenue per employee at $10,000–15,000 per year.

Workforce of Russia's leading offshore programming companies

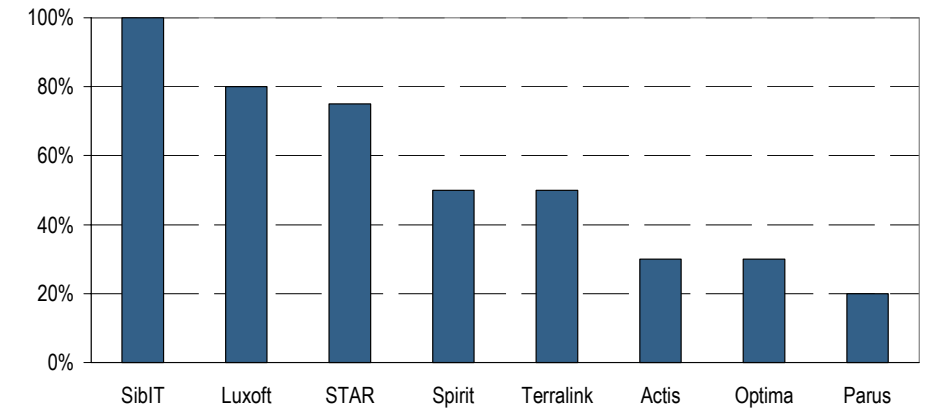


* excluding contract workers
Source: Company data, EDC Research, Brunswick UBS Warburg

Foreign orders account for about 65% of the total outsourcing revenues of Russian companies

Offshore programming is a subset of a wider outsourcing business that also includes programming for domestic clients and on-site IT services. The share of foreign orders varies from 20% to 100% of the total outsourcing revenues of the key companies. All in all, we estimate offshore programming accounts for about 65% of the $125 m Russian outsourcing services market in 2000.

Share of offshore programming in total outsourcing revenues



Source: Company data, EDC Research, Brunswick UBS Warburg

Growth prospects

Key players are very positive on the industry's prospects, expecting annual growth of 50%–60% over the next several years

Participants of the Russian offshore programming market are generally very positive on the industry's prospects, expecting annual growth rates of 50%–60% over the next several years. Based on a survey by EDC Research, 71% of Russian companies involved in offshore programming indicate that they plan to increase their workforce in the next two years, which usually translates into managers' expectations of higher revenues. Notably, a third of these companies expect to increase headcount more than twofold by 2003.

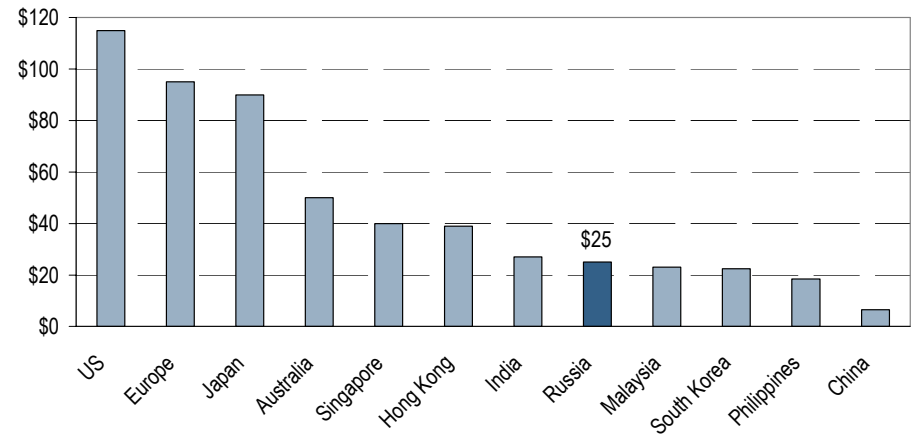
In our view, Russian offshore programming will either succeed or go nowhere, depending on the attitude of key players and the government

While a multiple-scenario approach should probably be used for forecasting the revenues of any segment in the tech sector, in our view Russia is in a win-or-lose situation with offshore programming. As we outlined on pp. 7–9, Russia possesses unprecedented intellectual capital; however, whether it manages to tap into the extremely tough offshore programming market—and further into selling its own end products and technologies—mostly depends on subjective factors, such as a proactive stance by market participants and governmental support.

The cost advantages over other emerging exporters of offshore programming services are limited

We argue that Russia is not competitive on costs alone. While Russian billing rates for outsourced programming are indeed just a fraction of those in the US or Europe, the latter countries are customers, not competitors. Meanwhile, Russia's cost advantage over other emerging exporters of offshore programming services is limited. Russian houses charge $25 per hour on average compared to $22–32 in India and $20–25 in South Korea.

Average billing rates in offshore programming, $/hour



Source: UBS Warburg, Brunswick UBS Warburg

There is a mixed picture with regard to other competitive factors . . .

The picture is mixed with regard to other competitive factors. On the positive side, aside from its R&D tradition and pool of well-educated human resources, Russia enjoys relative proximity to Europe—often viewed as the target market for Russian offshore programming. The challenge is to make these resources work together and to sell the Russian product. While it is currently fairly easy to find a programmer for a job, there is a shortage of qualified IT project managers. Further, with the current fragmentation of the industry and lack of government support, it appears difficult at this stage to market Russia globally and attract investment.

Strengths and weaknesses of offshore programming in Russia

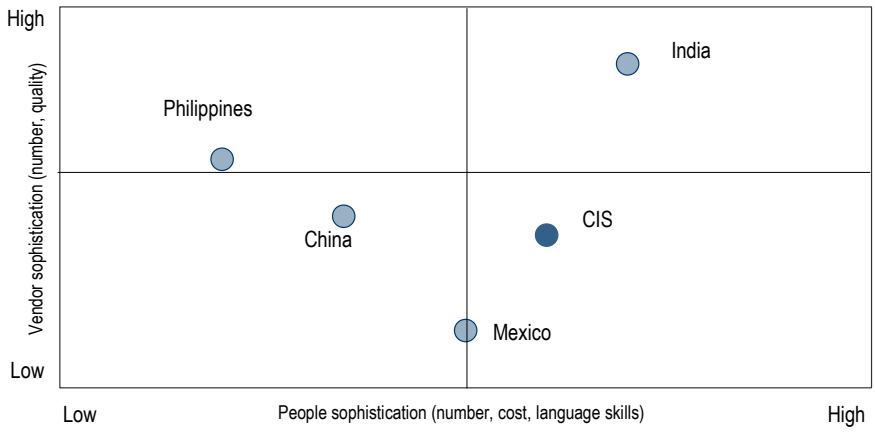
Advantages	Obstacles
R&D tradition and resource pool	Inexperienced management
Education geared to solving complex abstract problems	Problematic quality control, lack of certification
Proximity to Europe	Lack of government support and joint marketing efforts
Relatively low cost	Language
	Bandwidth cost and quality

Source: Brunswick UBS Warburg

. . . putting Russia on par with competitors such as China, Mexico, and the Philippines

The diagram below by McKinsey & Co. supports our view that while Russia is generally competitive as far as people sophistication is concerned, it has still a lot to achieve to with regards to establishing efficient business and distribution structures. Overall, Russia is positioned to compete on par with such emerging players as China, Mexico, the Philippines, Malaysia, and Eastern Europe.

Countries' relative positioning on the offshore programming market



Source: McKinsey & Co.

Five "hot topics" for Russian offshore programming are consolidation, industry association, government support, the Russian diaspora and success stories

We believe success or failure depends on developments in the five key areas identified below during the next two years:

- **Consolidation** With the largest players' annual revenues in the region of $10 m, there is no critical mass for establishing a name, attracting a sustainable order flow, securing investments, and financing global marketing efforts. We expect two trends to dominate consolidation of the Russian offshore programming industry—a preference for hiring people away over M&A and the relative strength of established players over start-ups, both due to the inefficiency of existing business structures.

- **Industry association** While tighter cooperation is instrumental in all segments of the IT industry, in our view it is critical in offshore programming. A foundation similar to India's Nasscom is probably the most efficient way to ensure a collective marketing effort, share promotion costs, and lobby the government. The creation of the Association of Software Developers (ARPO)—still in the process of formation—may bring certain results.

- **Government support** As discussed above, no country has emerged as a center of tech innovation without government incentives, such as tax breaks, establishing "technoparks" with high-speed access and other infrastructure, and export and marketing assistance. Notably, financing *per se* is not a necessity; and can even become a restraining factor.

- **Russian diaspora** While roughly half of India's outsourcing exports are estimated to be initiated through Indians living overseas, the vast Russian overseas community (3 m in the US, and over 40% of high-tech employees in Israel) is just starting to solidify.

- **Success stories** As outlined above, we believe that similarly to Israel or India, successful and well-publicized stories will be instrumental in the Russian offshore programming industry becoming recognized by the state, investors, graduates, and entrepreneurs at home and abroad. So far only a few companies have started establishing a track record with solid Western clients, such as IBS (Boeing, IBM) and I.T. Company (Fujitsu, General Electric Medical Systems).

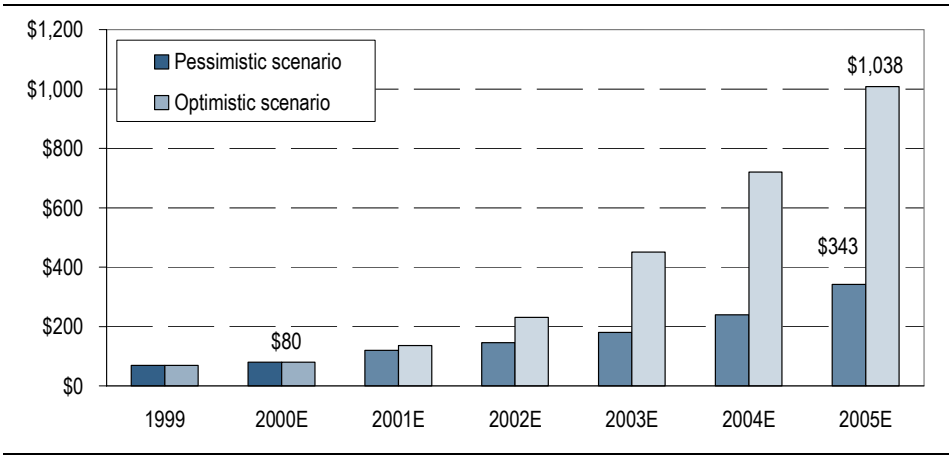
Under our optimistic scenario, we see Russian offshore programming revenues exceeding $1 bn in 2005

Based on the above, we envisage two scenarios for the development of the Russian offshore programming industry. For now, we refrain from assigning probabilities to the two scenarios and suggest instead focusing on monitoring the above key areas. Under an optimistic scenario we predict offshore programming revenues will total $136 m this year and rise at a robust 2001–05E CAGR of 65% to reach $1 bn. This compares to the 45% CAGR we expect in India, from its higher base, and also corresponds to the upper range of the target set by the "Electronic Russia" program ($1–2 bn of IT service exports in 2010).

Alternatively, Russia may remain on the sidelines of global markets, making $343 m in offshore programming revenues in 2005

However, if Russian offshore programming service providers fail to stand together on the global markets, orders are likely to continue coming in on an ad hoc basis. Under this scenario we assume the sector grows in line with our estimate for the global offshore programming industry with a 2001–05E CAGR of 30%, and predict offshore programming revenues will total $120 m this year and nearly triple to $343 m in 2005. This is significant growth from a low base, but no qualitative leap.

Russian offshore programming revenues, $ m



Source: Brunswick UBS Warburg estimates

Internet economy

We have refined our definition of the Internet economy and estimate the sector generated $256 m in revenues in 2000

We have refined our definition of the Internet economy, limiting access revenues to dial-up services and redefining e-commerce revenues as the gross profit of online intermediaries (as opposed to turnover, which represents the total value of all goods exchanged via online transactions). We also continue to leave certain segments, such as online information and financial services, beyond the scope of our analysis. We estimate that under this definition the Russian Internet economy generated approximately $256 m in revenues in 2000, up 33% year-on-year.

Internet economy breakdown, 1999-2000E

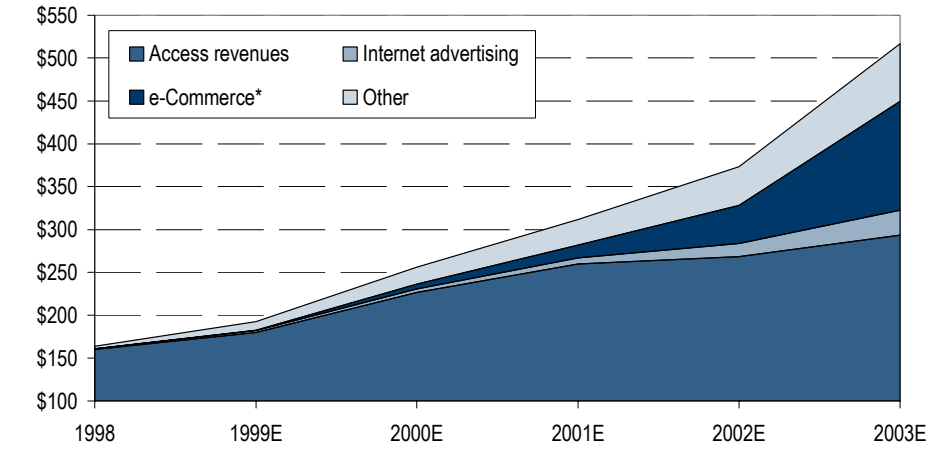
	1999E	2000E	% chg. y-o-y
Dial-up access revenues	$180 m	$227 m	26%
Internet advertising	$2.0 m	$3.5 m	75%
e-Commerce gross profit	$0.4 m	$5.6 m	>1000%
Support services*	$10 m	$20 m	100%
Total	**$192 m**	**$256 m**	**33%**

* Internet applications, Web design and e-consulting
Source: Brunswick UBS Warburg estimates

Access services contribute 89% of total revenues but value is slowly migrating to online business

The Russian Internet economy remains heavily skewed towards access services, which in 2000 contributed 89% of total revenues. However, we maintain that the anticipated migration of value into online business is likely to materialize in the years to come. Likewise, in 1999 access services accounted for as much as 94% of the sector's revenues, which we predict will fall to 57% in 2003, with e-commerce revenues—currently all but negligible—expected to rise to 25%. Notably, we are generally skeptical about the prospects for online advertising before wider broadband adoption.

Internet economy revenue forecasts, $ m



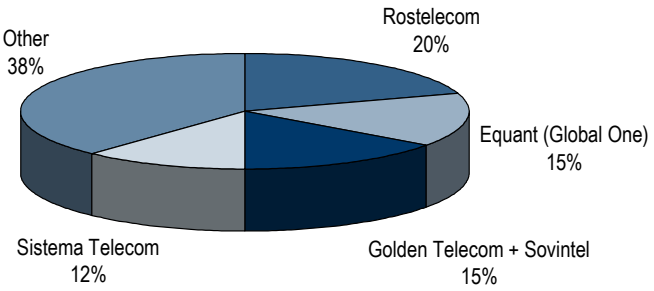
* gross profit of online intermediaries
Source: Brunswick UBS Warburg estimates

Internet access services

The Russian ISP market is very fragmented with 200–300 active providers

The Russian market for Internet access services remains very fragmented, with as many as 316 new licenses issued by the Ministry of Communication to Internet service providers (ISPs) during only the first five months of 2001. We believe roughly 200–300 ISPs are actually active, ranging from interregional providers, generating the bulk of their revenues through leasing lines to other ISPs, to small LAN operators and pools of asymmetric digital subscriber lines (ADSL) users.

Total Internet access market breakdown, 2001E



Source: Global One

We focus on Internet access services to end customers, as opposed to selling data capacity to secondary providers

Below we focus on dial-up Internet access services to end customers—both individual and corporate—as opposed to selling data capacity to secondary providers or providing dedicated line services to large corporate users. In our view, the latter two are closer to traditional telecom services, although in many ways these areas are determined by end-customer demand for Internet access. Aside from the retail dial-up access market, we also review the current stage of broadband rollout in Russia.

Dial-up access revenues

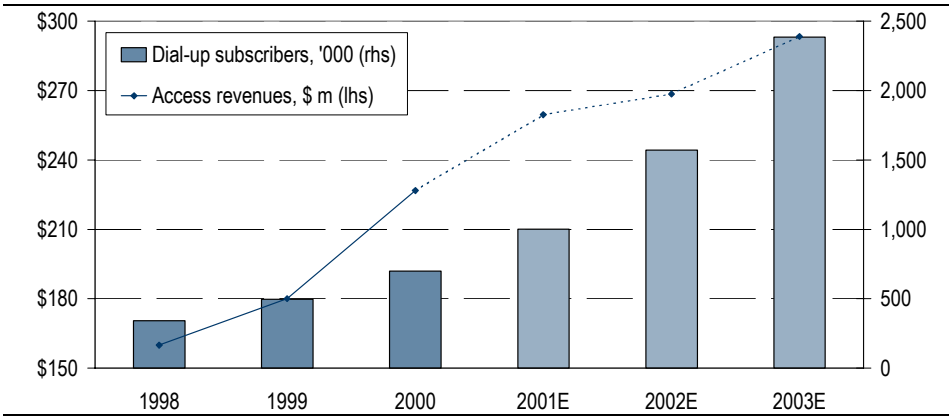
The Russian dial-up access market grew 26% in 2000 to $227 m, with access rates falling . . .

The Russian dial-up Internet access market is estimated to total $227 m in 2000, up 26% from $180 m in 1999. There were about 700,000 dial-up subscribers at the end of 2000, up 41% year-on-year. Meanwhile, as expected intensifying competition among ISPs has led to the average access fee falling from $1.2 to $1.0 per hour. According to COMCON-2 the average user spent 380 minutes per week on the Internet in 4Q00, translating into an average monthly ARPU of $27 for ISPs.

. . . but we expect it to grow at just 9% annually over 2001–03E to $293 m, as ARPU declines

We maintain our view that access provision is likely to be the slowest-growing segment of the Internet economy, and forecast access revenues will grow at just 9% annually over 2000–03E to $293 m. On the one hand, we are quite aggressive on our assumptions for the expansion rate of the subscriber base, predicting that the number of dial-up Internet subscribers will increase 3.4 times over three years to 2.4 m, suggesting that 20% of new Internet users will actually be new subscribers (as opposed to additional users of the same dial-up accounts). However, for the reasons examined below, we expect ISP's average monthly ARPU to decline to just $10 in 2003, or 38% of last year's level.

Dial-up Internet subscribers and access revenues



Source: Brunswick UBS Warburg estimates

We expect access rates to decline 10%–15% annually over 2001–03E

Firstly, although the concept of free Internet access is questioned worldwide, access rates are likely to remain under pressure as price competition increases with the unbundling of local loops. As shown in the table below, prepaid access rates already average $0.91 per hour in Moscow and $0.72 in St. Petersburg. We stick to a more optimistic scenario, with ISPs lowering their fees by 10% annually (with the exception of 2002 where we expect a 15% fall due to introduction of time billing). By contrast, certain market players expect a 20%–25% annual decline.

Dial-up Internet access fees (peak rates), $

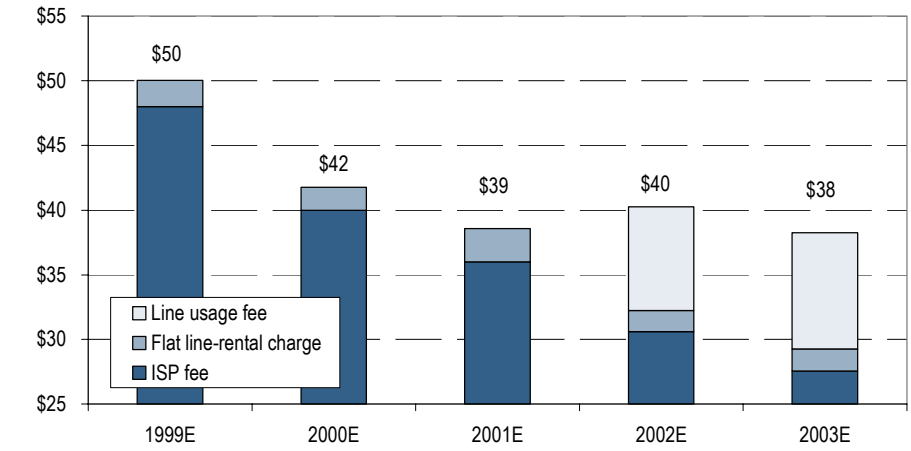
	Base rate, per hour	Prepaid, per hour	Unlimited access*, per month
Moscow			
TeleRoss (Russia-on-Line)	0.60	0.40-0.50	-
Cityline	1.25	0.62-0.90**	58.8
MTU-Intel	1.20	0.75-1.10	-
Zenon N.S.P.	1.80	1.50	-
Demos-Internet	1.50	1.00	200
Elvis-Telecom	-	0.50-0.90	-
Relcom	1.50	1.00	200
St. Petersburg			
TeleRoss (Russia-on-Line)	0.60	0.40-0.50	-
Cityline	0.60	0.30-0.67**	55
Peterlink	1.20	0.35-0.58	99
Web Plus	1.20	0.50-0.80	99
West Call	1.50	1.29-2.50	-

* excluding sign-up fee
** excluding free hours at night
Source: Company data, Brunswick UBS Warburg

The introduction of time billing is likely to reduce average time spent on the Internet

We do not believe that the planned introduction of time billing in 2002 will seriously affect the spread of the Internet. Our model suggests that—coupled with a 15% drop in access charges—time billing is likely to result in just a 2%–4% increase in actual access costs, which we find reasonable given the Internet's addictiveness. However, we expect average time spent on the Internet to decline at a greater pace than otherwise, with new users generally less active, similar to mobile communications. While according to COMCON-2 average time spent on the Internet declined about 15% during 2001 to 337 minutes per week in 2Q01, we expect a 23% year-on-year fall in 2002.

Cost of dial-up Internet access for active users (40 hours per month), $



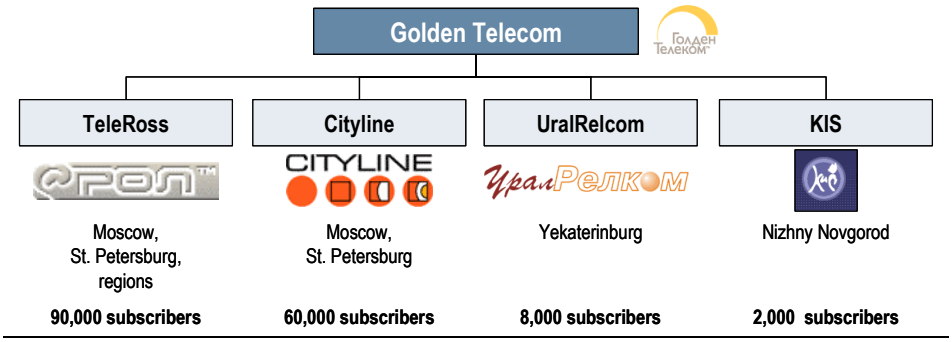
Source: Brunswick UBS Warburg estimates

Competitive landscape

Golden Telecom emerged as Russia's most geographically diversified ISP, with 18% of the country's dial-up market

The vast majority of Russian ISPs provide their services locally. Through a series of acquisitions—topped with the takeover in 2Q01 of Cityline—Golden Telecom has become Russia's most geographically diversified ISP. As of mid-2001, its nearly 160,000 subscribers included about 135,000 subscribers in Moscow, 15,000 in St. and 10,000 in the regions (mainly Yekaterinburg and Nizhny Novgorod). We expect the company to cover about 18% of the Russian dial-up market by end-2001.

Golden Telecom's ISP companies

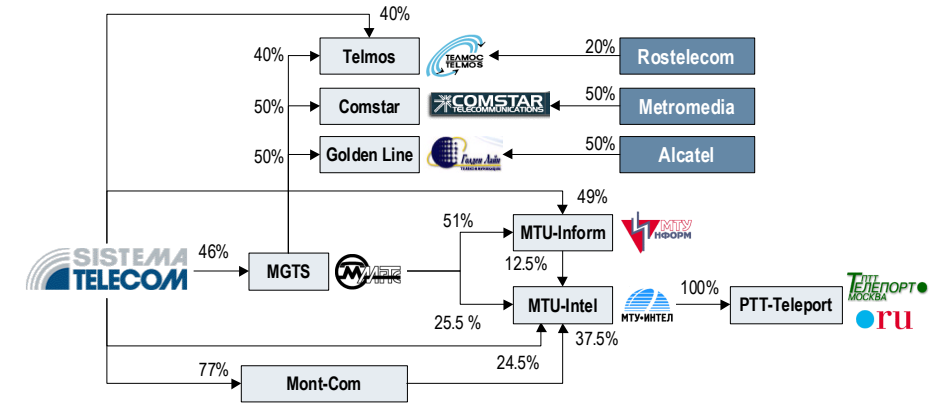


Source: Company data, Brunswick UBS Warburg

Golden Telecom and Sistema Telecom dominate the Moscow market . . .

Golden Telecom is also one of the two leading ISPs in Moscow, the other being Sistema Telecom through its subsidiary MTU-Intel (merged in September 2001 with PTT-Teleport). We estimate that the two control about 60% of the Moscow dial-up market, followed by a handful of other established ISPs such as Zenon N.S.P., Elvis-Telecom (51% Telenor, 49% VimpelCom), Demos-Internet and Relcom, which together have a 30% market share.

ISP and CLEC companies affiliated with Sistema Telecom

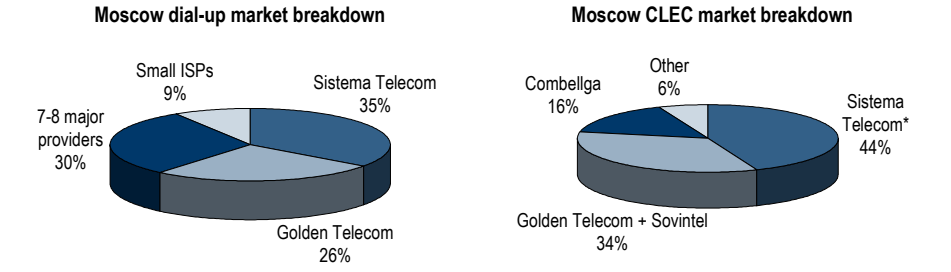


Source: Company data

. . . suggesting that consolidation is happening around incumbent and alternative telecom operators

Through MTU-Inform, Comstar, Telmos and Golden Line, which it has announced plans to merger, Sistema Telecom is also the Moscow's leading competitive local exchange carrier (CLEC), with an estimated market share of 44%. Golden Telecom follows with 34% (after it is merged with Sovintel). In our view, the ongoing consolidation of Internet access businesses around incumbent and alternative telecom operators is a trend reflecting the competitive pressures on standalone ISPs—especially in the light of the forthcoming introduction of time billing. Renting data capacity at market rates accounts for up to 50% of retail ISPs' cost base, which squeezes them out of business or turns them into acquisition candidates as offering little value on their own.

Moscow CLEC and dial-up access markets

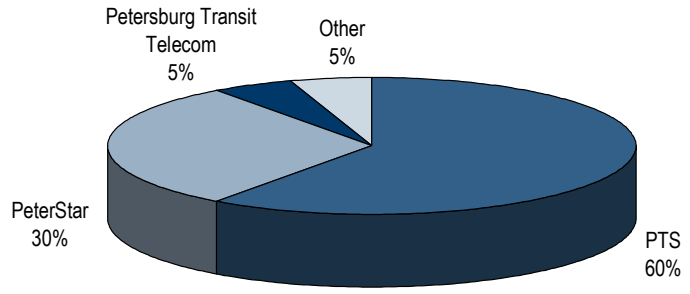


* Comstar, MTU-Inform, Telmos and Golden Line
Source: Company data, Brunswick UBS Warburg

St. Petersburg is set to follow suit, with Telecominvest seen as the most likely consolidator

While reliable statistics on the breakdown of the St. Petersburg dial-up market are not available, we believe the above trend is also gaining momentum here. Telecominvest owns ISPs such as Web Plus and BaltTelecom and controls Petersburg Transit Telecom (100%) and PeterStar (29%, a joint venture with Metromedia), which together operate 35% of the modem lines in the city. Other ISPs either rent them from these two or from PTS. Notably, while previously PeterStar was solely involved in reselling its data capacity to secondary ISPs, in July it moved into the retail market and raised its wholesale tariffs, further spurring consolidation.

Ownership of modem lines in St. Petersburg



Source: Company data, Brunswick UBS Warburg

The regions are picking up speed, with regional telecom operators in the lead . . .

Moscow and St. Petersburg are estimated to have accounted for 70% of Russia's total dial-up access revenues in 2000—in stark contrast to their 38% share of total Internet users—suggesting that Internet usage by households is much higher in the two cities. However, an increasing portion of growth is coming from the regions. So far only a few Moscow ISPs have entered the St. Petersburg market (Golden Telecom, Zenon NSP) and even fewer the regions (Golden Telecom, MTU-Intel). Most regional telecom operators are the largest Internet access providers in their operating areas.

. . . and providers with national ambitions will have to find ways to cooperate with them

We believe that ISPs with national ambitions from Moscow or St. Petersburg run the risk of finding themselves in a position similar to that of standalone ISPs in the two capitals. Unless they find some added value (such as strong brands or national roaming capacity) to offer local telecom operators, we see very little reason why the latter would want to share revenues instead of squeezing competitors—national or local—out by pushing up their costs.

RTComm.ru has unique potential to become a national ISP if it manages to capitalize on its position

One company that in our view has a fundamental advantage in the regions and therefore the potential of becoming a national ISP is RTComm.ru, a venture still in the process of the formation, which is to be 26% owned by Rostelecom and 26% by Sviazinvest, with the remaining 48% held by regional telecom operators. While RTComm.ru itself is to take over Rostelecom's current wholesale Internet business, it is also to form a series of joint ventures with Sviazinvest's regional subsidiaries to provide retail access services on a national basis under a single brand. Potentially, synergies between long-distance and international capacities and last-mile access could create a unique competitive edge in our view. However, at this point we have reservations about delivery—while RTComm.ru was set up in February 2000, so far its only functioning project is Data Center, launched in January 2001, which provides hosting, co-location and related services. Also, local telecom operators and Rostelecom may be unwilling to share margins by charging the joint ventures high rates.

Broadband access

Globally, broadband rollout is happening more slowly than expected

We expect the move to broadband to be one of the most significant technology drivers over the next decade and believe that so far the industry has barely scratched the surface. The rollout of broadband—ADSL, cable TV, and broadband wireless—has been mediocre at best even in developed countries and is still in its infancy in Russia.

Over 2% of Russian Internet users may be enjoying broadband access by the end of 2001, largely through corporate ADSL clients

We estimate that around 15,000 customers may be subscribed to broadband services by the end of 2001, more or less equally split between ADSL, CATV, and asymmetric satellite. However, given that 75% of ADSL clients are corporate users, we estimate that up to 100,000 actual Internet users, or just over 2% of the total Russian Internet audience, may be using broadband access by the end of the year, ADSL leading with about 80% of these users. This could translate into aggregated broadband service providers' revenues in the order of $10 m.

Main broadband service providers in Russia

Provider	Technology	Location	Comments
MTU-Intel (Tochka Ru)	ADSL	Moscow	1,500 subscribers as of mid-2001
Web Plus	ADSL	St. Petersburg	600 subscribers as of mid-2001
Golden Telecom	ADSL	St. Petersburg	Service launched in April 2001
Golden Telecom (KIS)	ADSL	Nizhny Novgorod	Service launched in July 2001
Uraltelecom	ADSL	Yekaterinburg	Russia's third-largest ADSL network
ComCor-TV	cable TV	Moscow	Network rolled out in three pilot areas
Pentacom	cable TV	Moscow region	Network rollout started in April 2001
Telix (65% Telia)	cable TV	St. Petersburg	Network being rolled out in one pilot area
NTV-Internet	asymmetric satellite	Moscow	Expansion suspended due to internal restructuring
Omicom (Europe-Online)	asymmetric satellite	Moscow	Service launched in April 2000
Web Media Services (Helios Net)	asymmetric satellite	Moscow	Service launched in mid-2000
Moscow Teleport (Deutsche Telekom)	asymmetric satellite	Moscow	Service launched in 1999

Source: Company data, Brunswick UBS Warburg

Broadband adoption is limited by the low quality of content and suppressed competition

The above is far from a mass market. The two main problems inhibiting widespread broadband usage are the low priority the average user places on high-speed access, and prices (especially with regard to installation costs). While we believe the former is likely to disappear once content requiring high-speed access (such as multimedia or e-commerce) appears on the Russian Internet, the latter largely depends on a change in the competitive environment, with the expected unbundling of local loops over the next couple of years.

In Moscow ADSL services are offered by MTU-Intel on the basis of MGTS' network

For example, ADSL in Moscow is only offered by MTU-Intel, which uses the network being rolled out by Moscow's incumbent operator MGTS. This network currently covers about a third of the Moscow's 400 switches, which the company intends to expand to the entire city by mid-2002. Due to low penetration levels—partly driven by personnel constraints, as installation is a slow and expensive process requiring an engineer to visit individual premises—ADSL access is still too expensive to become a mass-market phenomenon. The installation fee (with leased equipment) amounts to $399, while the average monthly bill based on a modest 300 Mb of traffic is $99.

In St. Petersburg, CLECs are in the lead, while in the regions incumbent operators are launching pilot ADSL projects

In St. Petersburg, ADSL services are provided by two operators—Web Plus and Golden Telecom—although both use the network of alternative operator Petersburg Transit Telecom (both Web Plus and Petersburg Transit Telecom are subsidiaries of Telecominvest). In the regions, incumbent operators such as Uraltelecom have also launched pilot projects to provide ADSL services. Installation fees vary between $90 and $199 (with leased equipment or excluding equipment), while the average monthly bill based on 300 Mb of traffic is $59–63, some 35%–40% lower than in Moscow.

Indicative pricing of ADSL services, $

	Installation fee	Equipment cost	Monthly fee	Free monthly traffic, Mb	Additional traffic, $/Mb
MTU-Intel (Tochka.ru, Moscow)					
Basic	399	leased	150	800	0.10
Active	399	leased	270	2,000	0.06
Economy	399	leased	99	300	0.12
Individual	399	leased	60	0	0.16
Web Plus (St. Petersburg)					
Household	199	leased	29	500	0.08
Business	199	leased	99	1,000	0.06
Golden Telecom (Russia-on-Line, St. Petersburg)					
Optima	199	leased	59	unlimited (up to 7 users)	-
Profi	199	leased	299	unlimited (up to 15 users)	-
Golden Telecom (KIS, Nizhny Novgorod)					
Beginner	90	not included*	50	200	0.13
Minimal	90	not included*	100	800	0.13
Basic	90	not included*	150	1,500	0.11
Business	90	not included*	250	3,000	0.10
Lux	90	not included*	500	6,500	0.09

* equipment cost varies between $260 and $710
Source: Company data

Only with mass-market pricing can there be mass-market broadband

The average monthly bill of $20–30 for dial-up access, compared to $60–100 on top of three-digit installation costs for ADSL, makes the latter a niche market. In Europe the relationship is nearer €25 for narrowband and €40 for ADSL, and our European technology team estimates mass-market adoption price levels at €20–25 per month.

Which ISP model works?

Incumbent telecoms are best positioned to be the leading ISPs

Summarizing the above, we believe that the incumbent telecom (or mobile) operator as majority shareholder is the best ownership model for an ISP. The incumbent ISP is able to offer access at lower prices than its competitors, as it can leverage off the network it already owns (including the last mile). Internet access services can thus be bundled with voice telephony as part of a monthly flat fee to the operator.

Incumbent ISPs also confer consumer credibility and have existing distribution networks for their ISP product—a distinct advantage in the consumer world. In addition, incumbents provide an ISP with financial backing and tend to be more tolerant of start-up losses generated during the first few years of operations, seeing the potential for bundling services in the future and generating increased telecom traffic.

We believe access will remain a low-margin business at maturity

However, this affiliation also means that ISPs are essentially *resellers* of access—ultimately a commodity product. We therefore expect single-digit reseller EBIT margins at maturity, despite the fact that currently access services stand out in the Internet economy as being profitable.

Value-added services such as online business contain more growth and profitability potential . . .

To address this long-term profitability shortfall in the bread-and-butter access business, ISPs are seeking to move upstream into higher value-added services such as data center services (co-location and hosting), IP telephony and content. Likewise, in Russia Golden Telecom is pursuing the ISP portal model, while the recent announcements by MTU-Intel suggest that it may follow suite, either through acquisitions or through allying with other content providers.

. . . but are also more speculative, which makes us cautious about the ISP revenue model

Meanwhile, the feasibility of the above ISP revenue growth patterns remains uncertain. Until mid-2001, the common view was that access could be used merely as a subscriber acquisition tool to stimulate higher growth and higher-margin portal revenues. This view was challenged by structural questions surrounding the prospects of online advertising as a format, particularly in the current narrowband environment (see p. 39 for details). As a result, we are cautious about the future of the ISP model, as the growth and profitability drivers of the ISP business remain potentially more valuable but also more speculative than online business.

Online business

Internet advertising

Total Russian advertising is approaching the 1997 peak of $1.75 bn this year, ahead of our forecasts . . .

Total Russian advertising increased 47% year-on-year in 2000 to $1.1 bn, somewhat ahead of our forecast of $1.0 bn. This year we expect the historical peak level of $1.75 bn in 1997 to be approached, and by 2003 we forecast Russian advertising will represent 0.66% of GDP ($2.7 bn), up from 0.45% in 2000 but still below the European levels of 0.8%–1.4%.

Advertising market in Russia

	1998	1999	2000	2001E	2002E	2003E
Total advertising, $ m	**1,750**	**750**	**1,100**	**1,700**	**2,125**	**2,656**
% chg, y-o-y	-3%	-57%	47%	55%	25%	25%
Total advertising, % of GDP	0.54%	0.41%	0.45%	0.56%	0.59%	0.66%
Internet advertising, $ m	**0.8**	**2.0**	**3.5**	**7.0**	**14.9**	**29.2**
% chg, y-o-y	n/m	150%	75%	100%	113%	96%
% of total advertising	0.05%	0.27%	0.32%	0.41%	0.70%	1.10%

Source: RARA, Brunswick Warburg estimates

. . . but online advertising is less exciting due to lower than expected Internet penetration growth

Meanwhile, 2000 online advertising revenues of $3.5 m came in 36% short of our estimate. Slower online migration primarily resulted from the lower-than-expected growth of Internet penetration, and the consequent failure by the leading online players to start using their profiling and data mining potential. While the composition of online advertisers is no longer skewed towards barter exchange between Websites, non-IT offline companies (such as Nestlé or Stimorol) still only use online advertising for ad hoc campaigns.

Breakdown of Yandex' advertising client base

	April 2000	January 2001
Total paying advertisers, of which	25	174
online businesses	22	47
offline businesses (including IT)	3	127

Source: Company data

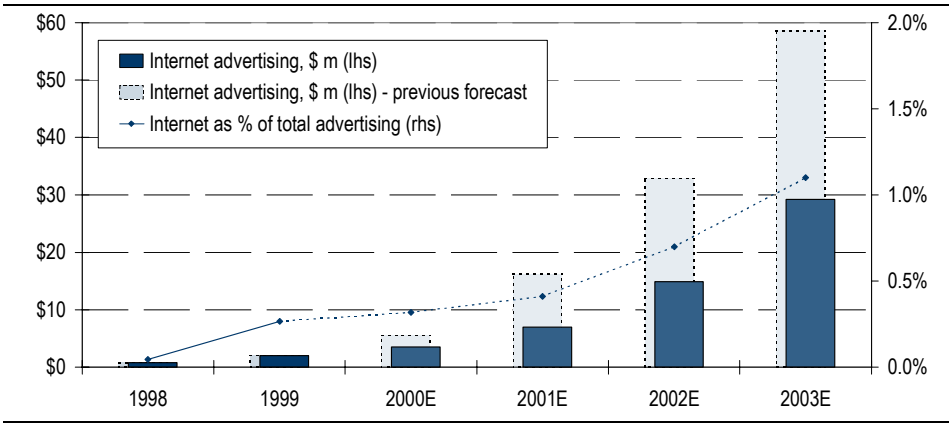
We believe the Internet is likely to remain a complimentary media until wider broadband adoption . . .

As a result, it appears that the Internet is likely to continue to be regarded as an important but complimentary advertising medium for longer than we had previously thought—most likely until penetration starts approaching the 10% level, starting with major centers. In any case, banner advertising on a narrowband access platform appears not to be the way forward. In our view innovation in online advertising formats relies on broadband adoption.

. . . and forecast revenues of just $29.2 m in 2003

We have consequently cut our 2001–03E forecasts for online advertising revenues. In our view, despite impressive growth rates from a low base (2000–03E CAGR of 103%), in absolute terms the sector is likely to remain relatively small, with overall revenues of $29.2 m in 2003E. This corresponds to 1.1% of total advertising, compared to today's 0.8% and 2.0% respectively in Europe and the US.

Online advertising in Russia



Source: Brunswick UBS Warburg estimates

Consolidation is likely to remain the main trend in the Internet media . . .

The Internet media market remains overcrowded, with dozens of emerging portals and vertical content providers sharing the current all-but-negligible revenues. In line with our expectations, the start of consolidation has been the most important development on the market in 2000–01. Golden Telecom emerged as one of the leading players through $33 m worth of acquisitions of content projects (arguably still at hyped valuations); netBridge merged with Port.ru under the auspices of the latter, subsequently rebranding as Mail.ru; and Rambler entered into an alliance with Independent Media.

. . . primarily as it is the least profitable segment of the IT industry at this stage

We believe consolidation is likely to remain the main trend in the Internet media in the years to come—indeed, we find it no surprise that Internet content companies became the first in the IT industry to start merging. The Internet advertising model is unlikely to become profitable over the next two years (Yandex, one of the leading portals, expects to start breaking even in 2003) and access to equity financing has been cut by the burst of the tech bubble.

In the medium term, content providers are likely to be subsidized by cashflow-positive companies

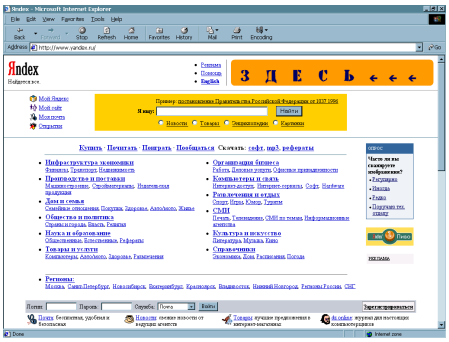
As a result, until Internet penetration increases, we expect content providers to remain or become affiliated with cashflow-positive companies such as telecoms (including ISPs), media groups or IT houses. Similarly, in the emerging portal segment, two of the leading players are owned by Golden Telecom, a CLEC, and Independent Media, a publishing house. Recently, MTU-Intel stated its intentions to eventually move into the content business.

Leading emerging Russian portals

Yandex

Ownership: ru-Net Holdings

Affiliation: independent



Rambler

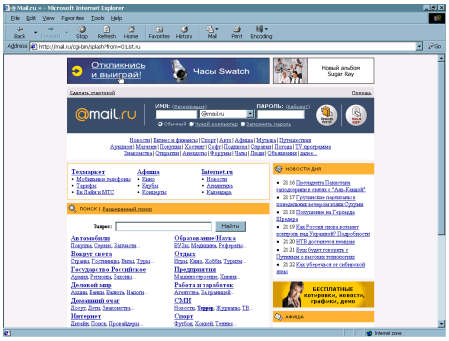
Ownership: Rambler Group

Affiliation: independent

Mail.ru

Ownership: Mail.ru

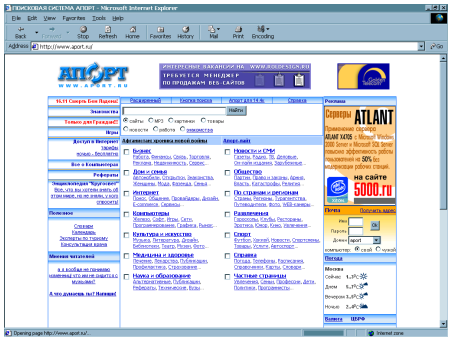
Affiliation: independent



Aport

Ownership: Golden Telecom

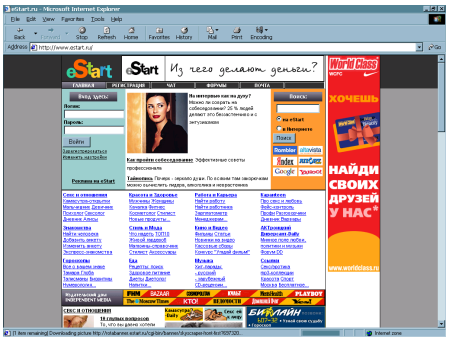
Affiliation: telecommunications



eStart

Ownership: Independent Media

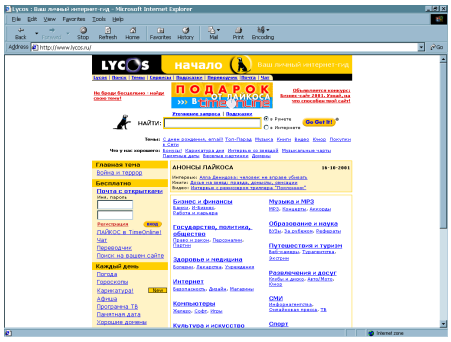
Affiliation: traditional media



Lycos

Ownership: Lycos

Affiliation: multinational

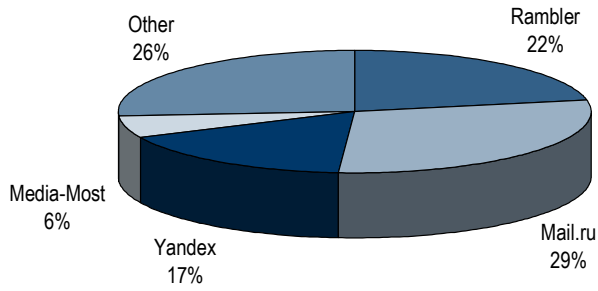


Source: Company data, Brunswick UBS Warburg

Among emerging portals, Yandex, Rambler and Mail.ru remain in the lead . . .

Although different sources use different methodologies and suggest varying conclusions, the above six emerging portals and the Web properties of the troubled Media-Most group are generally among the leaders of Russian Internet content. Based on the latest data provided by Gallup Media, Yandex is currently the leading Russian portal, with a 56% reach of total Internet audience, followed by Rambler with 48%. SpyLOG suggests that the Web properties of Mail.ru are in the lead, closely followed by the Yandex and Rambler (see chart below). Yandex this year expects to generate revenues of $1.1 m, suggesting a 16% market share, up from $420,000 or 12% in 2000.

Leading portal groups' shares of the Russian Internet audience, June 2001



Source: SpyLOG

. . . but the key is the future mass market, not the limited current audience

Regardless of the exact breakdown, we believe having a high share of the expected 4.7 m Internet audience (as of end-2001) and $7 m online advertising market in 2001 may have little meaning aside from brand formation. In our view, real competition is only likely to emerge when the Internet starts becoming a mass product. However, paradoxically, the Internet becoming a mass product is largely a consequence of competition between today's players and the resulting improvements in the quality of content.

Defining an online transaction

To avoid confusion over definitions, we repeat below our definition of an online purchase as a paid transaction initiated through the Web, i.e. the Internet user buys goods found on the Web. However, the transaction need not to be completed over the Web—that is to say a transaction counts as an online purchase even if the product is ordered off-line (by phone, fax or mail).

Internet commerce

Promotional Method	Ordering Method	Definition
Detailed product and price information on the Web leading to specific purchasing decision	HTML Forms	Direct Internet purchase (included)
	Other online methods	
	E-mail, fax or letter	Indirect Internet purchase (included)
	Phone	
	Face-to-face purchase in a store	Internet marketing (not included)
General company and brand promotion via the Web		

Source: UBS Warburg

B2C e-commerce—still far from the mass market

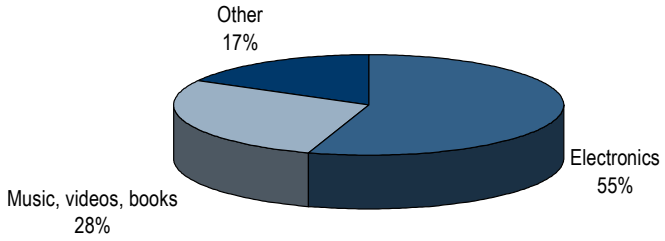
While we have seen the birth of a B2C industry with turnover of $40 m in 2000, it is still in a nascent stage

Surprisingly, B2C e-commerce turnover came in well ahead of our forecast of $17 m in 2000, with an estimated $40 m, up from $3 m in 1999. In fact, reporting by some e-shops suggests total B2C volumes in Russia were closer to $60 m. The proportion of online buyers increased from 3% of Internet users in 1999 to 10%. Nevertheless, in our view, this exploding growth effectively represents the birth of the industry and should not be extrapolated.

High online migration in electronics retail was the main growth driver

The increase was primarily driven by high online migration in electronics (PCs and peripherals, mobile phones, and household appliances). We estimate that as much as 4% of computer retail moved online in 2000, only slightly lower than the European level. Electronics is generally one of the sectors best positioned for e-commerce and the sophistication level of Russian PC users is high. According to our estimates, electronics accounted for 55% of Russia's B2C turnover in 2000, or about $22 m.

Breakdown of Russian B2C turnover by product group, 2000E



Source: Expert RA, Brunswick UBS Warburg estimates

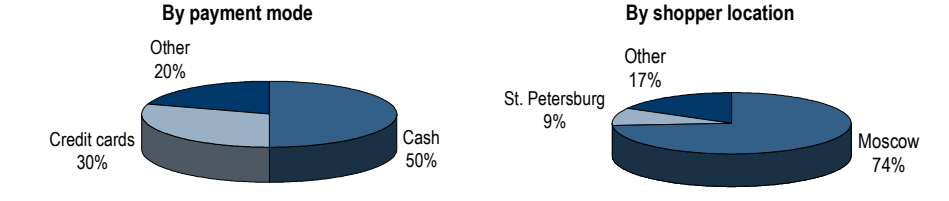
The appearance of new projects was another force for a time

The appearance of new projects against the backdrop of Internet hype was another significant reason for the high B2C turnover, as most start-ups initially tried to attract customers by undercutting prices. Some 100 new e-shops were launched during 2000, on top of the existing 400. Almost no new projects were started in 2H00-1H01, with the notable exception of some offline retailers' pilot projects. In fact, the reverse trend was noticeable in 2001, with several flagship players such as XXL.ru (supermarket) and Arcadia.ru (books, music, videos) going out of business.

74% of B2C e-commerce is still in Moscow, and 50% is for cash

Russian B2C e-commerce remains highly concentrated geographically, with 74% of online buyers residing in Moscow, according to SpyLOG, followed by St. Petersburg with 9%. Due to low credit card penetration, 50% of B2C online transactions were paid for by cash on delivery.

Breakdown of the Russian B2C market, 2000E

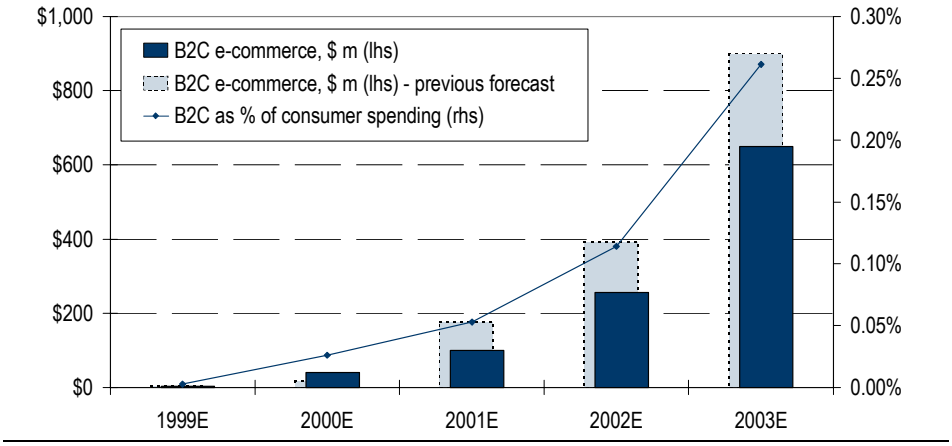


Source: NISPI, SpyLOG

We have cut our 2003 estimate for B2C turnover from $900 m to $650 m, to account for lower than expected Internet penetration growth

Despite higher than expected numbers in 2000, we do not anticipate last year's growth will accelerate in 2001, as although online migration is likely to continue and broaden to other product groups (such as travel services, ticketing, and healthcare products), certain players are also likely to leave the market. We also have cut our medium-term projections for B2C e-commerce turnover in 2003 from $900 m to $650 m to account for lower than expected Internet penetration growth. This translates into average online spending of $147 per buyer in 2000, rising to $342 in 2003E, or one-third of the current European level.

B2C e-commerce turnover

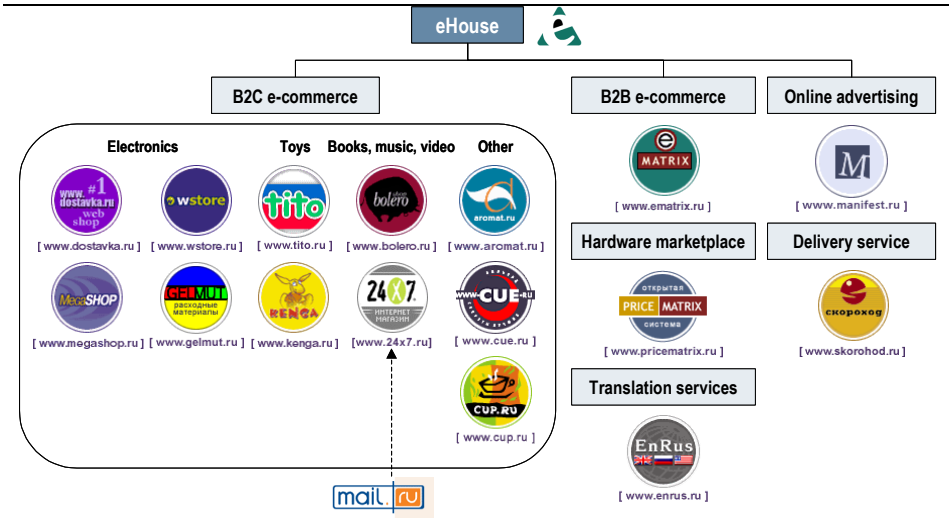


Source: Brunswick UBS Warburg estimates

eHouse is the leading player, operating 11 shops, a delivery service and related projects

Consolidation in B2C e-commerce in 2000–1H01 was lead by the eHouse holding, which launched its first e-shop—Dostavka.ru (PCs, peripherals and mobile phones)—back in December 1998. Following a series of acquisitions and forming an alliance with Mail.ru's 24x7 e-shop, the holding now operates 11 online stores, its own delivery service and other related projects. eHouse, with 2000 turnover of $16.3 m—still mostly made up of online sales of computer parts—claimed 30% of the B2C e-commerce market. Although our estimates are somewhat lower, we nevertheless consider eHouse the leading player in the sector.

Structure of eHouse

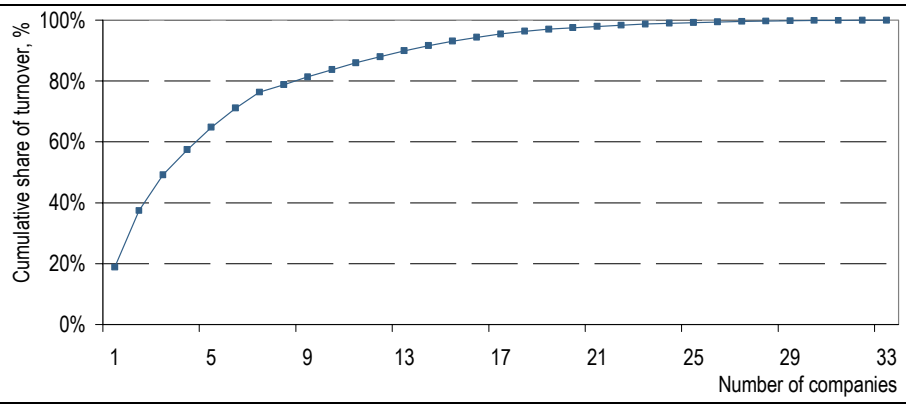


Source: Company data, Brunswick UBS Warburg

The overall market is fragmented, but concentration is relatively high among the top players

However, we believe that the overall Russian B2C e-commerce market remains fragmented. On the one hand, the rating agency Expert RA—which looks at individual e-shops (rather than holdings)—suggests a fairly high level of concentration among the top players, and its 2H00 survey revealed that of the 60 e-shops included, the top six accounted for about 60% of aggregated turnover. On the other hand, we estimate that these 60 e-shops—albeit market leaders—accounted for only 35%–50% of total Russian B2C turnover, which means that the rating cannot be fully taken as a proxy for the market. Concentration among the other participants is significantly lower.

Cumulative turnover of RA Expert's top 33 e-shops



Source: Expert RA

Leaders have emerged, but the sophistication of their business processes has yet to be tested by the mass market

In the survey, Expert RA notes that the lower part of the rating has changed significantly over the past year, while the top tier remained nearly unchanged, suggesting clear leaders are emerging in Russian B2C e-commerce. In our view, as important the current leadership is, sophistication of business processes has yet to be tested and we believe few existing e-shops can handle the mass-market stage.

16 top-rated Russian e-shops*

	e-Shop	Product range	Daily visitors	Daily buyers	Average purchase, $
1	Bolero (eHouse)	books, music, videos	n/a	n/a	n/a
2	ComputerShop	PCs, office equipment	n/a	n/a	n/a
3	Ozon	books, music, videos	9,000	500	14
4	Porta	portable electronics	n/a	n/a	n/a
5	XXL**	supermarket	1,000	50	62.5
6	Homeshop	electronics	1,400	20	300
7	24x7 (eHouse)	books, music, videos	4,500	100	12
8	Biblio-Globus	books	n/a	n/a	n/a
9	Biblion	books	n/a	n/a	n/a
10	Boomerang	books	n/a	n/a	n/a
11	Co@Libri	books	2,000	110	3.6
12	Depo.ru	PCs, office equipment	n/a	n/a	n/a
13	e@shop	DVD, games	1,000	20	63
14	Flowers.mogo.ru	flowers	n/a	n/a	n/a
15	InterShop	PCs, office equipment	n/a	n/a	n/a
16	Rifle.ru	weaponry	n/a	n/a	n/a

* e-shops rated A+, A and B+ by RA Expert 2H00 rating
** discontinued operations in June 2001
Source: Expert RA

Profitability is the big unknown

In our view, the main unknown at this stage is how profitable the operating e-shops are—a hard judgment to make given the low level of transparency in the sector. eHouse reported December 2000 gross and net margins of 11% and 6% respectively, on revenues of $2.1 m. Notably, the holding said that while computer parts accounted for most of the turnover, toys generated ten times as much profit, despite representing a low share of sales. In general, this is in line with profitability patterns in offline distribution.

The gross profit of B2C e-commerce is forecast at $48.7 m in 2003E

We assume the gross margin of Russian B2C e-commerce is currently at 10%, projected to fall to 7.5% in 2003. Thus the actual money generated by e-shops (as opposed to their turnover, which represents the total value of all goods exchanged via online transactions) is forecast to grow from $4.0 m in 2000 to $48.7 m in 2003.

B2C e-commerce revenues in Russia

	1999E	2000E	2001E	2002E	2003E
GDP, $ bn	181	246	304	362	401
Consumer spending as % of GDP	63%	62%	62%	62%	62%
Consumer spending, $ bn	114	153	188	224	249
Online consumer spending as % of total	0.003%	0.03%	0.05%	0.11%	0.26%
Online consumer spending, $ m	**3.0**	**45**	**100**	**256**	**650**
Gross margin of e-shops	n/m	10.0%	9.2%	8.3%	7.5%
Gross profit of e-shops, $ m	**n/m**	**4.0**	**9.2**	**21.4**	**48.7**

Sources: Brunswick UBS Warburg estimates

B2B e-commerce—in search of a business model

B2B is one of the hot topics in the Russian IT sector

As expected, B2B e-commerce was the focus of a lot of hype within the Russian IT sector over the last eighteen months, primarily following disenchantment with the medium-term prospects of consumer Internet. While we agree that there is generally more money in B2B—both today and going forward—we believe the structure of the sector has only started taking shape in Russia and that it is still a couple of years before this translates into quality growth.

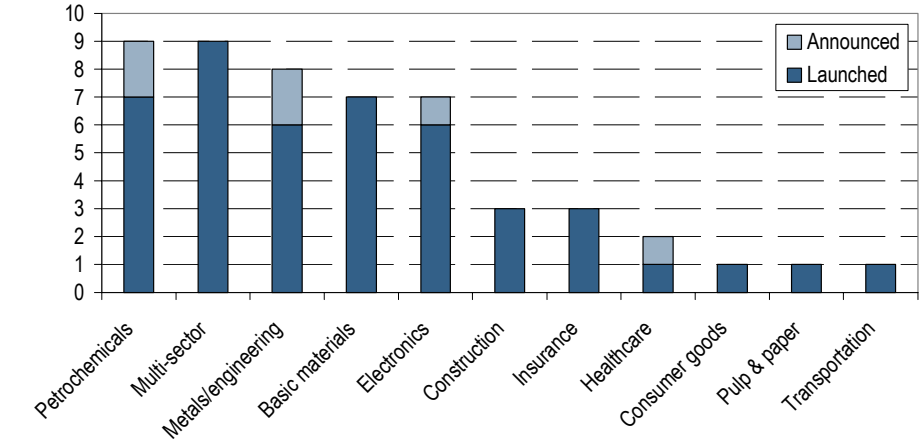
B2B e-commerce turnover totaled $160 m in 2000, up from $30 m in 1999 . . .

B2B e-commerce turnover is estimated at about $160 m in 2000, up from $30 m in 1999. This number is represented by what essentially can be classified as distributors' outlets (Dealine, Gloryon), transactions through emerging SME market places (eMatrix, Faktura), and the first trades at pilot vertical projects of a potentially larger scale (metals-Russia.com, e-Metex, MetalTorg.Ru). Most of the volumes in the first two were in PCs and peripherals. Likewise, Dealine—one of the leading distributors of PCs and peripherals—generated 80% of its $31 m turnover in 2000 online.

. . . with over 50 projects claiming B2B e-commerce attributes launched in various industries

There are over 50 operating or announced projects with the attributes of B2B e-commerce, in addition to industry information sites and online yellow pages that remain beyond our definition of e-commerce. So far, most of the announcements come from the oil and gas sector and metallurgy, but there are also multi-sector initiatives. We distinguish six factors of a sector's suitability for B2B e-commerce—market size, degree of fragmentation, channel inefficiency, process complexity, and product differentiation—and expect these to start revealing themselves as the concept of B2B is more widely adopted in Russia.

Number of B2B projects in Russia by industry



Source: Boston Consulting Group

Bilateral trade predominates over many-to-many models, and e-sales over e-procurement

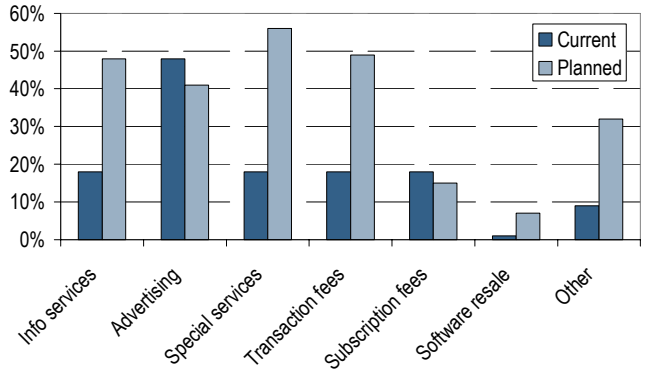
At this stage, one-on-one trades dominate the Russian B2B e-commerce, and marketplaces are only emerging. We find many-to-many models more attractive in the long run—in Europe we forecast the share of B2B through market places will increase from 1% in 2000E to 25% in 2003E, due to connection costs and the network benefits of net marketplaces and their advanced functionality. The Russian B2B market is also skewed towards e-sales, whereas e-procurement mostly boils down to PCs, peripherals and office equipment.

The functionality of B2B offerings remains limited, with the media component still too important in revenues

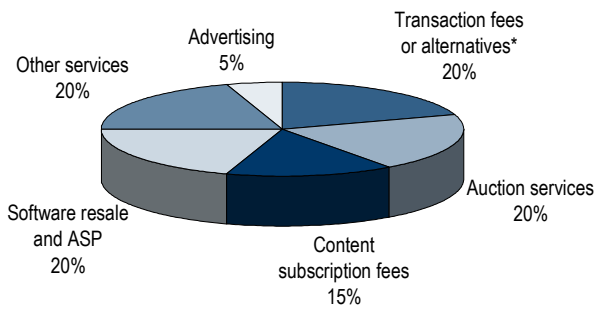
As a consequence, the functionality offered by the existing B2B projects remains relatively limited, with less than half estimated to be able to actually structure a transaction or part of one as opposed to just initiating the deal for execution offline. Limited functionality is coupled with the fact that a lot of B2B projects still operate in promotional mode, not charging for the services. As a result, B2B e-commerce still remains essentially a media business in terms of revenue sources, with advertising by far the main income stream, compared to only 5% in a developed marketplace model.

B2B marketplace revenue model

Revenue sources of Russian B2B projects, % of poll respondents



Typical B2B marketplace revenue model



* % or flat fee per transaction, mark up, subscription
Source: Business Online, UBS Warburg

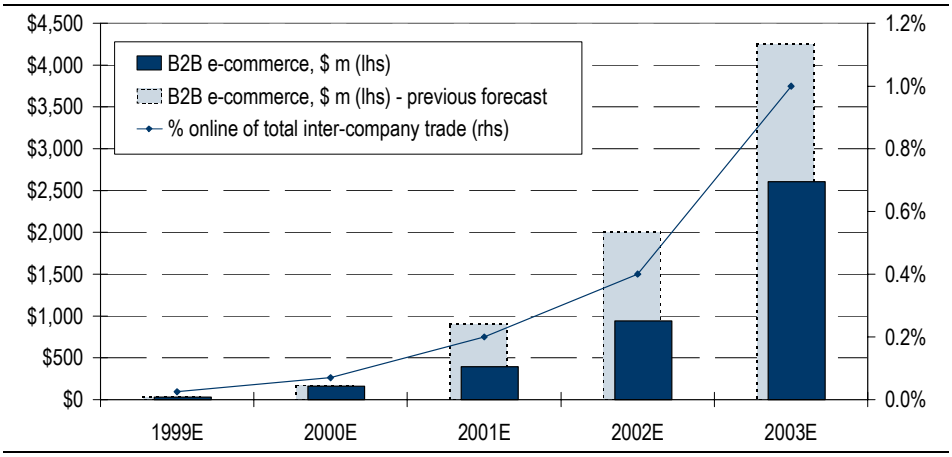
We expect B2B to rise with the growing sophistication of back-end systems and higher transparency of Russian business

In our view, two main developments are likely to determine the growth of B2B e-commerce in Russia—the automation of internal business processes and a shift towards higher transparency and increased cooperation. Most Russian companies are still going through the process of building internal networks connecting different offices, branches and departments, as well as installing and fine-tuning ERP systems, thus establishing inter-company integration—and hence B2B e-commerce tools—remains a next step. Further, the generally low level of transparency, an unwillingness to cooperate and the high level of vertical integration in Russian economy all hamper the rollout of successful B2B initiatives, but are expected to change in the medium term.

B2B e-commerce growth is expected to gain momentum in 2003, reaching turnover of $2.6 bn

As a result, similarly to B2C e-commerce, we believe the exploding growth of online B2B turnover in 2000 effectively represents the birth of the industry and should not be extrapolated. We conservatively assume that it is still 1–2 years before the sector's structure will mature, and expect B2B e-commerce growth to gain momentum in 2003, reaching $2.6 bn (compared to our previous forecast of $4.3 bn). This suggests online migration of inter-company trade of just 1% in 2003, compared to the current European level of over 2%.

B2B e-commerce turnover



Source: Brunswick UBS Warburg estimates

Gross profit of B2B intermediaries is forecast at $78.2 m in 2003E

Given that business models are only just being determined in the immature Russian B2B market and that most of the projects are only at the pilot stage, it is difficult to say what net revenues—as opposed to the total value of all goods exchanged—B2B intermediaries will generate going forward. In general, we calculate the value created by B2B e-commerce players as a combination of the 1%–3% gross margin of market places and the 10% in cost savings on the part of offline companies from lower transaction costs, the reduced costs of the goods bought and improvement in net working capital. For Russia at this stage, we simply assume B2B intermediaries' margins grow from 1% in 2000 to 3% of total turnover in 2003, as new revenue streams and value-added services are introduced, and forecast net revenues of $78.2 m.

B2B e-commerce revenues in Russia

	1999E	2000E	2001E	2002E	2003E
GDP, $ bn	181	246	304	362	401
Total inter-company trade, % of GDP	66%	65%	65%	65%	65%
Total inter-company trade, $ bn	119	160	198	235	261
Online share of total inter-company trade, %	0.03%	0.07%	0.20%	0.40%	1.00%
B2B e-commerce turnover, $ m	**30**	**158**	**395**	**941**	**2,607**
Gross margin of B2B intermediaries	0.3%	1.0%	1.5%	2.5%	3.0%
Gross profit of B2B intermediaries, $ m	**0.1**	**1.6**	**5.9**	**23.5**	**78.2**

Sources: Brunswick UBS Warburg estimates

Projects backed by established companies are likely to dominate

It is notable that there are very few B2B e-commerce start-ups in Russia, with most of the announced projects operated or backed by established companies (in offline industry, media or IT). These are currently testing grounds with small-scale pilot undertakings evaluating the economic effects at every stage, and in our view are in a position to ramp up investment once business models have been refined. We also expect Russian exporting companies to start joining international B2B projects. Likewise, Severstal is reportedly participating in the Global Steel Exchange (GSX.com). Similarly, among companies doing B2B applications, only the ones that have built strong relationships with one or two very large clients are expected to be able to survive in the long run.

Russian B2B projects

	Sector	Main owners / participants
Faktura	multi-sector	Financial Technologies Center
TenderOnline	multi-sector	AYAXI
Business.ru	multi-sector	Independent Media
Tpp.ru	multi-sector	Chamber of Trade and Industry of the Moscow oblast
WorldbidRussia.com	multi-sector	Worldbid.com
eTrade-Community	multi-sector	Parus, Clever Management
MetalTorg.Ru	metallurgy	RVS (Megasoft)
metals-Russia.com	metallurgy	Internet & Technology Group, Ltd. (Israel)
e-Metex	metallurgy	Pipe Industry Development Fund
europe-steel.com	metallurgy	Gazprominvestholding, Middlesex Holding, Interfax, Hatch Beddows
Metalcom.Ru	metallurgy	Russian Association of Metal Traders (RAMT)
NefteBid.com	oil & gas	Sibneft
InMarSys	oil & gas	Intertech
Platts.ru	oil & gas	Platts.ru
GIATS	pulp & paper	Roslesprom
Lesprom.ru	pulp & paper	Lesprom.ru
eMatrix	electronics	eHouse
Dealine	electronics	IBS
Gloryon	electronics	Gloryon InterNetwork holding
MTS Zerno	grain	Russian Funds, Roskhleb
Zerno On-Line	grain	RVS (Megasoft)
StroyTeh	construction	n/a
RusTrans	transportation	Rustranscom, Transalliance (Lithuania)
OfficeMart	stationery	Techart Computer

Source: Business Online, Company data, Brunswick UBS Warburg

notes

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