

electronic components, mainly slated for future high-tech factories, and 'smart cards' show potential. Major consumers of electronic and electrical components are GE Lighting, Flextronics Intl. and IBM Hungary. Competition, which is intensive, includes established trading relationships between the multinationals and their home country industry.

**Telecommunications services** present opportunities despite the recent downturn in the global market and the weaker-than-expected results from Hungary's providers in 2000. Growth is expected from the liberalization of Hungary's telecommunications services and the new market-entry potential that could result from the recent *Unified Communications Act*. Also, **mobile, data and Internet telephony** could offer significant opportunities. This market is expected to reach US\$2.3 billion in 2001, an 11% increase over 2000. Fixed-line telephony represented 52% and mobile communications 40% of total market share in 2000. Currently 15 to 20 providers dominate the market. However, even with new companies entering the market in 2002 after the liberalization, only three major groups of companies are expected to be present in the market in four to five years.

#### INVESTMENT STUDY (HUNGARY AND SLOVENIA)

The Canadian Embassy in Budapest is conducting an investment study to discover how much Canadians have invested in Hungary. We would like to hear from any Canadian companies with local investment.

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**Mobile telephony** is the fast-growing subsector. The number of subscribers totalled 3.8 million in June 2001 and was expected to reach 4.5 million by the end of 2001. With a penetration rate of 38%, mobile telephone subscriptions equal fixed-line users. There are three mobile service providers: Westel Telecommunications (Westel Mobile Communications and Westel Radiotelefon), Pannon and Vodafone. There is one active paging firm, Eurohivo, but this is a limited market segment. Although dominant Hungarian telephone operator MATAV, local telephone operators and mobile phone companies are the primary providers, public-switched data-transmission services are not regulated by concessions. Therefore, several alternative providers are providing those services. The largest of these are Pantel, Novacom, GTS and Antenna Hungaria. The Communications Authority held one auction for five blocks of the 3.5 Gigahertz (GHz) frequency in June 2001, and another

for parts of the 26 GHz frequency will start within a year. MATAV, Pantel, AnTetra (a subsidiary of Antenna Hungaria) and GTS each won a block of nationwide frequency. An auction of third-generation mobile UMTS concessions will also be held. According to law, satellite services fall under free competition. However, all companies providing satellite telecommunications services must obtain a licence. VSAT providers are MATAV Sat-Net (500 terminals), Hungaro DigiTel (950), BankNet (780) and GTS Hungary (1000+terminals in Hungary and surrounding countries). In 1999, the *Telecommunications Law* was modified to allow the use of the Internet for telephony. Currently MATAV, Pantel, Novacom and two GSM service providers offer Voice-over Internet provider service.

The **Internet** market lags behind the general economic development. The number of paying Internet dial-up subscribers amounted to only 235,000 in 2000, and this number reached only about 258,000 in June 2001. These numbers are low for a 10-million population. The lack of access to personal computers, the minimal access to personal capital and credit, and the lack of understanding of the benefits of the Internet restrict growth. Therefore, Internet service providers will continue to focus on service in and around Budapest and specifically on business-to-business (B2B) customers. ISP service to household consumers will continue to lag behind B2B connections for some time. However, the future presents potential to investors, just like the emergence of e-commerce, which will grow rapidly, once credit and capital are readily available to the nation through existing financial institutions. Given EU accession, the expected influx of multinational corporations will generate a need for increased accessibility to the Internet and better infrastructure for e-commerce.

Major Shows: <http://www.hungexpo.hu>

**INFO 2002:** Budapest international trade fair for ICT – April 23-27, 2002

**COMPFAIR 2002:** international computer, IT and telecommunications exhibition – October/November, 2002

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## CZECH REPUBLIC

The Czech Republic has an exemplary high-quality **information and communication technology (ICT)** market in Central Europe with a high share of software and IT services. The country retains the highest ratio of ICT spending to GDP in the region at 2.9%, as well as the highest penetration of mobile phones. ICT spending levels, as a percentage of GDP, are already comparable to those of most Western European countries. ICT spending per capita reached US\$151 in 1999. Expenditures in ICT are among the highest in the region, and the value of the market reached US\$1.56 billion in 1999 (US\$1.47 billion in 1998), marking a year-to-year growth of just under 7%. A still more respectable 12% growth rate is expected in 2000, as ICT spending is projected to reach US\$1.75 billion. While much of this growth is derived from greater spending on software and services, a moderate recovery can be expected on the hardware market. ICT hardware continues to represent the chief ICT investment, despite the growing focus on solution development among users. In 1999, basic hardware accounted for 47% of overall ICT expenditures, followed by ICT services (37.9%) and software (15%). The share of software and services as a percentage of overall spending continues to expand. The Czech Republic is leading the Eastern European **telecommunications market**. The GPRS technology has entered the Czech market, and the tender for UMTS licences went out in the autumn of 2001. The mobile phone penetration reached 40% in 2000, along with 25% penetration in Hungary and Slovakia, and 16% in Poland. The country's youngest third mobile operator, Cesky mobil, owned by the Canadian company TIW, has noted an excellent beginning. Future expansions of the ICT market depend on the rise in the number of companies implementing packaged application solutions; the Internet

## CELESTICA

Celestica is one of the world's largest companies providing electronic manufacturing services (EMS) to original equipment manufacturers (OEMs). Toronto-based Celestica acquired a small German-owned plant in the Czech Republic in April 1999, then immediately constructed a new building, a green-field investment project in Rajecko near Brno, which opened in September 2000. In July 2001, Celestica acquired from Sagem a mobile phone factory located in Kladno, near Prague. Now, Celestica makes a variety of electronic parts and finished products to supply leading OEMs from the telecommunications and IT industry on a worldwide basis. Celestica has so far invested close to US\$100 million in new production facilities and equipment. Most went to technology and equipment for the plants. Celestica now employs over 2,500 people in the Czech Republic. This strategic position is an ideal location to produce and distribute parts in other European countries, and local technical expertise and investment incentives have also been enticing. Celestica is now concentrating production from other countries in the Czech Republic. For more information, contact: <http://www.celestica.com>

boom; the expansion of e-business and its infrastructure; the trend to share resources through networking; the growing demand for ICT services; and the investment in upgrading the telecommunications and data communication infrastructure.

Further growth of the Czech telecommunications market is expected, and the predicted value of the market in 2004 is US\$3.27 billion. By 2001, the fixed-line market expanded to US\$1.52 billion, and mobile services expanded to US\$1.75 billion. There should be a liberalization of the fixed-line market during the 2001-2003 period; privatization of Cesky Telecom and Ceske radiokomunikace; a growing number of alternative operators; and a tender for UMTS licences.

## THE EUROPEAN BANK FOR RECONSTRUCTION AND DEVELOPMENT IN POLAND

The EBRD plans to invest some 600-million Euros a year in Poland, over the next few years, in partnership with central and local authorities, as well as private companies and state-owned enterprises. One of its priorities will be infrastructure investments, where there is an obvious need for improvement. For example, the road system will have to be upgraded to EU-level standards, and work will continue well after Poland's accession to the EU. Similar opportunities exist in the environment, energy and water-distribution sectors.

## Major Competition

Major competitors are from Germany, the Netherlands, France, the United Kingdom, Scandinavia and the United States: in **telecommunications** - KPN Royal Dutch Telecom, RWE Telliance, TeleDanmark, GTS (Global TeleSystem), Atlantic West, TIW, C-Mobil, Nokia, Ericksson and Siemens; in **Internet** - Telecom Austria, Nextra, Star One, Tiscali and TeleDanmark; and in **ICT hardware and software** - Libra, Vikomt, AT Computers, Microsoft, Novell, Linux, SAP, Minerva, Oracle, Intentia, Navision Software, GEAC and Celestica.

## Other Information Sources

Czech and Moravia Electrical and Electronic Association:  
<http://www.electroindustry.cz>

INVEX, largest ICT fair in Central Europe: <http://www.invox.cz>

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