

Southwest Ohio Regional Report on Ohio's Readiness for Global Electronic Commerce May 2000





## IAMS

www.iams.org Cincinnati Region Project Management Institute of Advanced Manufacturing Sciences (IAMS) 1111 Edison Drive Cincinnati, Ohio 45216 Telephone 513-948-4032 E-mail: leitner@iams.org



This is a summary report. For more detailed information please visit www.ecom-ohio.org.

# **Statewide Steering Committee**



#### Ready, Set, Go!

**Action!** must be our watchword as the information revolution powerfully transforms our economy and society. But is Ohio ready to compete in the new information economy? This report answers that question and more. It documents ECom-Ohio's landmark public-private leadership effort to measure Ohio's readiness for global electronic commerce. The project has collected data in 22 key indicators that measure our state's performance against a comprehensive set of national benchmarks (www.cspp.org).

The Internet and growth of e-commerce as a way of doing business has thrust Ohio's industrial base into a time of turbulent change. Network traffic doubles every six months and forecasts show that business-to-business e-commerce will be a major driver of our state's economy in the next decade, generating new entrepreneurial ventures, sources of wealth and jobs. As industry experts recently observed:

"Business-to-business trade isn't growing up in high-tech centers like Silicon Valley; it's developing in industrial hubs like Cleveland and Detroit. As B2B trade expands, there will be a flight of talent and venture capital money to support these efforts, leaving the coasts feeling a bit of a frost — while middle America experiences the Internet boom in 2001."

- - Forrester Research, February, 2000

We firmly believe that Ohio—a leader in the first industrial revolution—has the potential to be a leader in the ECom revolution in which we are participating today. Thriving in this time of change will challenge all of Ohio's firms and institutions. The report you hold identifies a course of action and the direction we must take to remain competitive. Turn the page to see how you can get involved within your home, firm, educational institution, or government unit to move our state forward in the new economy.

Roduide and Clu

Roderick G. W. Chu Chancellor, Ohio Board of Regents



Lars Nyberg Chairman and CEO, NCR Corporation

#### Southwest Ohio's Electronic Commerce Readiness

Southwest Ohio's overall ratings are based on six sumary aspects of the Computer Systens Policy Project (CSPP) grid. The CSPP grid provides national benchmarks showing four stages of e-commerce readiness for communities and regions at www.cspp.org. ECom-Ohio collected and analyzed data to evaluate the State of Ohio's performance based on the CSPP benchmarks.

# **Infrastructure Capabilities**

# **Components of E-Commerce**

From the creation of Over-the-Rhine dot.com companies catalyzed by Main Street Ventures to the transformation of the business-to-business supply chain, Greater Cincinnati's economic engine is fueled by the expansion of broadband information technology.

#### **Components of E-Commerce Defined**

Infrastructure: The communication networks that connect users to the Internet.

Access: The choices available by which users can connect to the public data network at the level they demand or need.

Usage: The extent to which business, government, and household users utilize the access available to them.

### **Available Local Backbone**

Connectivity in Southwest Ohio has significantly improved during the past year with the dominant presence of Cincinnati Bell and its aggressive efforts to deploy Digital Subscriber Line (DSL) technology. As a result, there are a variety of technology choices. Connections at 1.5 Mbps (T-1) speeds are most available in urban and suburban areas, serving 15% of Southwest Ohio businesses. Seven percent of these businesses use DSL technology and 7% use Integrated

Optimal Infrastructure, Access and Usage
Estimated Household Usage
Estimated Government Usage
Estimated Business Usage



Services Digital Network (ISDN) technology to access the Internet. Access capacity from seven service providers totals 6800 Mbps to points outside the region, providing moderate network redundancy and connectivity. Wireless access to the Internet is not widely available. Additionally, an aggressive cable provider supports 45 Mbps uploading to the Internet from residential desktops in zones where cable modem technology is deployed, serving 2.3% of business users.

## **Ability to Meet Demand**

Connection attempts from the Southwest region typically do not experience tremendous disruptions; 90% of all connection attempts are successful. However, dialup connections are not robust enough to support high bandwidth applications. Network slowdowns occur during peak hours but rarely deny access. Sixty percent of Southwest Ohioans report interruptions in service at least once a month. Infrastructure is sufficient to support



above average levels of data traffic today but may not have the capacity to support steady growth in Internet traffic in the future.

# **Key Findings**

Southwest Ohio's extensive connectivity supports the region's highly interactive consumer and business use of the network. However, its infrastructure may not be sufficient to support future emerging high bandwidth applications, which may place stresses on the current primary and secondary infrastructure.

- Increase market pressure for bandwidth through increased Information Technology (IT) literacy at every level of the workforce, K-12, secondary education, and public access centers.
- Leverage existing economic development tools for keeping network capacity ahead of demand.
- Develop a robust network infrastructure map to support the region's business attraction and retention.

# **Access to Critical Services**

## **Range of Services**

Dialup access at 56K is available throughout the region to residents and small businesses. ISDN, DSL and cable modem service is available in the urban and suburban core. T-1s are available throughout the region and are used by 15% of Southwest Ohio businesses; high bandwidth access is available in Hamilton County where 7% of the business users are on DSL and 7% of the business users connect using ISDN lines. A wide range of payment and service options are available to businesses.

## Affordability

For residents and small businesses, flat dialup service options are available universally. Fiftyseven percent of all Southwest Ohio citizens and 76.8% of Southwest businesses know of a variety of Internet Service Provider (ISP) options and service packages. Service options based on usage are available from selected ISPs and service areas. Higher bandwidth services are available through both ISDN and cable at flat rates based upon connection speeds, not actual usage. Large businesses have access to competitive pricing options for high bandwidth service.

# **Quality of Service**

Dialup and higher bandwidth service setup times are nominal and most accounts are active within 7-10 days. Ninety percent of the Southwest users in business and 74% of the Southwest users at home consider transmission speeds adequate for current levels of usage. Even though more than 50% of the residents and businesses report disruptions in service at least once a month, 85% of the households and 92% of the businesses rate service response as satisfactory.



# Competition

For data services, a wide range of technologies and providers are available in urban and suburban areas; there is less choice in rural areas. With 7% of the business users in Southwest Ohio, DSL penetration is above the national average in this region. The Southwest region has a highly competitive ISP market, although providers generally have only one level of service. Discriminating buyers can find alternative service packages from a large number of ISP providers.



# **Key Findings**

The urban and suburban Cincinnati market is highly diverse and boasts a variety of service options for broadband service technologies (cable, DSL, ISDN), speeds and price points. Its status as a "showcase" community for Cincinnati Bell's DSL technology provides real benefits for Cincinnati business and home users. Rural areas within the Southwest region have more limited choices.

- Support statewide efforts to increase access in rural communities, paying particular attention to this strategy as a potent workforce development tool.
- Explore a variety of possible incentives for deployment of e-commerce technologies and workforce development, particularly in the small business segment.



# **Business Online**

# Domains

Ohio's domain growth rate significantly increased during the last six months of 1999, making it the twelfth highest state in terms of newly registered domains. The Southwest region's domain growth rate is 130%, well above the national average domain growth rate.



## **Websites**

About 30% of all Southwest Ohio businesses are online and 16% of the Southwest Ohio area businesses have websites, which is below national averages. Among Ohio businesses with more than 100 employees, website usage is substantially higher at 66%. Transportation, retail and financial service industries are more aggressive at using highly interactive content to attract new customers. Very few Ohio businesses are using tracking or push technology to retain customers. While there are companies with websites that demonstrate latest best practices in web usage, these are not widely used.

#### Business use of technology ...



# **Market Development & Business-to-Business Transactions**

Sixteen percent of all Southwest Ohio businesses have a website but 82% of those cite competitive pressure and attracting new customers as primary reasons for creating a web presence. There are few significant business-to-business electronic transactions except in those Southwest Ohio industrial sectors with strongly linked supply chain management systems, such as automotive original equipment manufacturers (OEMs) and logistics and distribution. Twenty-seven percent of all Southwest Ohio businesses use the Internet and 7.5% practice Electronic Data Interchange (EDI) with suppliers or customers.

#### Southwest Ohio Business Best Practice Sites

#### Cincinnati Bell: www.cincinnatibell.com Proctor & Gamble: www.pg.com Federated Department Stores: www.federated-fds.com Gold Star Chili: www.goldstarchili.com Busken Bakery: www.busken.com

# Networking

Local Area Networks (LANs) are used in 33% of Southwest Ohio businesses. Most businesses with a Wide Area Network (WAN) also have a LAN. Even though many businesses are networked, only 12% rely on e-mail as their primary form of business communication. Only 32.5% of Southwest Ohio businesses have more than half their employees using computers.



# **Key Findings**

Businesses in the Southwest Ohio region, while among the most advanced in Ohio, are not aggressive users of websites for marketing or selling. However, a positive trend shows that Southwest area businesses are adapting new technologies more quickly than national rates.

- Explore incentives for deployment of e-commerce technologies and workforce development, particularly in the small business segment.
- Support of the dissemination of best practice and cost-benefit information.
- Evaluate and implement strategies for the attraction and retention of skilled IT workers.

# **Citizens Online**

# **Internet Access at Home and at Work**

The Southwest Ohio region matches the national average in terms of computer ownership and Internet usage. Fifty-six percent of Cincinnati area citizens own a computer and 44% are online and log on weekly. Nineteen percent of Cincinnati area citizens cite lack of access as a barrier to getting on the Internet.



# Schools

While over 90% of all Southwest schools are wired, some areas within the city's core and rural areas lack adequate updated hardware or facilities for effective educational use. Seven out of 10 Ohio schools have every classroom connected to the Internet. Eighty-six percent of Southwest Ohio schools offer staff and teachers Internet training either on or off site but there is a perceived lack of computer skills mastery and full integration into curriculum offerings.



# Libraries

Libraries in Ohio boast an outstanding array of network services and public access to information, databases, and resources. Libraries in the Southwest region provide 57 buildings with access and 315 workstations with public access to the Internet, access to web-based e-mail for independent professionals, and computer hardware, software, and training. The Public Library of Cincinnati and Hamilton County has 41 branches and four special service centers. THE PUBLIC LIBRARY of Cincinnati and Hamilton County

# **Ohio Citizens Online**



# **Key Findings**

Southwest Ohio has broad citizen participation relative to other regions in Ohio and national averages. Public access through schools, community centers and libraries is above average and planning is in place to expand public access.

- To boost computer literacy, train teachers extensively in computer skills and use curriculum to actively share that knowledge with students.
- Use private sector computing facilities for public training and seminars.
- Explore incentives to deploy e-commerce technologies and workforce development.



# **Community Planning**

# **New Communities Created**

Among the most visible signs of Cincinnati's rich e-conomy:

- Main Street Ventures, a catalyst in the creation of at least 20 businesses in the city's Over-the-Rhine neighborhood.
- Cutting-edge companies from both coasts are coming to Cincinnati to use ZoomTown's high-tech testing lab.
- Profound changes in business-to-business supply chains, where e-commerce applications have transformed aerospace, automotive, major retailers, and other businesses.

#### Southwest Ohio Websites of Interest

Partnership for Greater Cincinnati: <u>www.trinet-online.com</u> Cincinnati.com: <u>www.cincinnati.com</u> University of Cincinnati: <u>www.uc.edu</u> CinciNow.com: <u>www.cincinow.com</u>

## **Employment Opportunities and Skills**

Several local colleges and proprietary schools in the Southwest region provide an IT curriculum and numerous degree programs. Local chambers and businesses are actively changing curriculum content to improve graduates' technology literacy. Four local one-stop centers provide job search and resume posting services. The region participates in the OhioWORKS statewide job search and resume posting service.



## Planning

During the past 18 months, many technology-related organizations and companies have been working together to focus on the development of a Regional Technology Leadership Organization. A well-developed organization of this type is essential to the economic progress of the region.

### **Government Websites**

Few government units outside of the metropolitan Cincinnati area are online. The City of Cincinnati operates the most interactive website of all metropolitan areas statewide with the capability of accepting payments for parking tickets online. Of other cities online, there are few government resources, downloadable forms or other self-service options for citizens. No local government unit provides procurement online.

#### Southwest Ohio Government Websites of Interest

City of Cincinnati: <u>www.rcc.org</u> Hamilton County: <u>www.hamilton-co.org</u> Clermont County: <u>www.co.clermont.oh.us</u> Kenton County, Kentucky: <u>www.kentoncounty.org</u>

# **Key Findings**

The Southwest region has strong individual community technology planning efforts that need better coordination to maximize their impact. There must be an aggressive effort to put local government units online.

- Demonstrate competitive advantages in business formation, attraction and retention through the deployment of web-enabled government systems.
- Support strong leadership in the coordination of local technology planning efforts.

# **Glossary of Terms**

**Access**—The technology choices available by which users can connect to the public data network at the level they demand or need (dialup, cable, DSL, ISDN, wireless, etc.)

**Bandwidth**—The capacity of a transmission channel to move data among locations.

**Cable modem**—A device that enables a personal computer to be connected to a local cable TV line and receive and send data.

**Dialup access**—Refers to connecting to the Internet via a modem and standard telephone line.

**Domain name**—The unique name that identifies an Internet site and its address.

**DS3 (Digital Signal 3)**—A standard digital transmission rate of approximately 45 Mbps.

**DSL (Digital Subscriber Line)**—A technology which enables the ordinary copper component of telephone lines to carry data at rates much higher than ISDN.

**E-commerce (Electronic commerce)**— Commercial and non-commercial transactions facilitated through the use of networked technologies.

**Gbps (Gigabits per second)**—A measurement of the rate of speed at which data is transferred (e.g., 1 Gbps equals 1 billion bits per second).

**Infrastructure**—The communication networks that connect users to the Internet.

**Internet**—The collection of interconnected networks that use the IP protocols.

**ISDN (Integrated Services Digital Network)**—A service that allows for higher data transmission speeds and is capable of handling at least two services over one line simultaneously (i.e., voice and fax or voice and data).

**ISP (Internet Service Provider)**—A company or organization that provides users with connectivity to the Internet.

**Kbps (Kilobits per second)**—The rate of speed at which data is transferred (e.g., 1 Kbps equals 1,000 bits per second).

LAN (Local Area Network)—A network of interconnected workstations that share the resources of a single processor or server within a relatively small geographic area, such as an office.

**Mbps (Megabits per second)**—A measurement of the rate of speed at which data is transferred (e.g. 1 Mbps equals 1 million bits per second).

**OC3 (Optical Carrier level-3)**—An optical fiber line that supports digital signal transmissions at 3 times the base rate of 51.84 Mbps or approximately 155 Mbps.

**OC12 (Optical Carrier level-12)**—An optical fiber line that supports digital signal transmissions at 12 times the base rate of 51.84 Mbps or approximately 560 Mbps.

**OC48 (Optical Carrier level-48)**—An optical fiber line that supports digital signal transmissions at 48 times the base rate of 51.84 Mbps or approximately 2.5 Gbps.

**OC192 (Optical Carrier level-192)**—An optical fiber line that supports digital signal transmissions at 192 times the base rate of 51.84 Mbps or approximately 9.7 Gbps.

**T1**—A commonly used line for Internet connectivity that supports digital transmissions at 1.5 Mbps.

**Usage**—The extent to which business, government and household users utilize the Internet access and infrastructure available to them.

WAN (Wide Area Network)—A geographically dispersed telecommunications network.

**Wireless access**—A communications system in which radio-frequency or infrared waves carry a signal through the air, rather than along a wire.

**xDSL (Digital Subscriber Lines)**—One of many variations of DSL, the most common of which is ADSL, asymmetric digital subscriber line service.

# **Southwest Regional Workteam Members**

**3X Corporation** Acordia Air Force Research Lab Ascend **Behavioral Health Generations** Belcan Benesch Friedlander Coplan & Aronoff LLP **BioStart** Blue Chip Venture Co. Buettner & Associates, CPA **Cardinal Solutions Group Career Resource Center** Center for Employment Resources Children's Hospital Medical Center Cincinnati Bell Cincinnati Business Courier Cincinnati Enquirer Cincinnati Post Cincinnati Police Division Cincinnati State Cincinnati Tech Prep Consortium Cinergy Corp. Cintech City of Cincinnati Clarcor **Client Server Associates** Compag Computer Corp. **CSH** Technology Services CSI -- Component Software International Digital Bang, LLC DocuVision Drvsdale Edison BioTechnology Center Ellenbogen Entek IRD Environmental Technology Commercialization Center Ethos Interactive Federal Lab Consortium **Fidelity Investments** Frost and Jacobs LLP G.A. Sullivan **GE** Aircraft Engines Giage. Inc. Global Cloud, LTD Grant Thornton Great Oaks Institute of Technology Greater Cincinnati Chamber of Commerce Hamilton County. Business Center, Inc. Hamilton County. Office of Economic Dev. HomesThatClick.com **IMI Systems** Intrieve Incorporated ITEC (Info Tech Expositions and Conferences) ITT Tech JLDK Keane, Inc.

**KPMG Peat Marwick LLP** LanVision Systems, Inc. Main St. Ventures MAX Technical Training Media Bridges Cincinnati Mercer Supply Merk Management Group Metropolitan Energy Systems, Inc. Miami University Micro DataBase Systems Milacron NCR NIOSH Northern Kentucky Technical College Northern Kentucky University ORSANCO Oxford Community Improvement Corp. Parker Hannifin Portman Equipment Positive Business Solutions Inc. PricewaterhouseCoopers Process Automation, Inc. **Process Development** Procter & Gamble Company Project Bark **Quest Technical Resources Regional Computer Center** Robert S. Vogt & Partners Rotex RSI Rumpke Schneider Electric School to Work SCS Engineers SDRC SIM Technology Corp. Smith, Guttag & Bolin Spinco STAR BASE Consulting Sustainable Land Use Synchrony Communications, Inc. Taft Stettinius Hollister TechSoft Systems The Staubach Co. The Union Institute The Urban League of Greater Cincinnati The Witt Company Toyota Triple-I Systems, Inc. University of Cincinnati University of Findlay Vorys, Sater, Seymour and Pease LLP William G. Wergowske, CPA, Inc. Wm. Maltbie & Associates, Inc. Wright Technology Network Xavier University