The Digital Network Infrastructure and Metropolitan Chicago

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http://www.nwu.edu/it/metrochicago/

A Report for the Metropolitan Planning Council

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Regional Progress and Activities Since the Report

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Metropolitan Planning Council

- Promote and implement sensible planning and development policies
- Policy analysis, outreach, and advocacy with public officials and community leaders
- Improve equity of opportunity and quality of life throughout metropolitan Chicago.

Scott Goldstein, Vice President, Policy & Planning

MPC Telecommunications Working Group

http://www.metrochicago.org/

Traditional Urban Planning Issues

- Transportation
- Land Use
- Utilities

Promote regional planning across the six county Metropolitan Chicago region

The Digital Network Infrastructure

- Services provided over fiberoptic cables, copper wires, coaxial cable, radio/wireless
- Voice, Data, Audio, Video
- Commerce, Education, Government

The NEW Infrastructure

Northwestern University

Advanced Network Community

- Campus OC-12 Backbone
- 20,000+ E-mail Accounts

Regional/National Initiatives

- MREN, vBNS, STARTAP,....

Unbiased Perspective

- Faculty Expertise

http://www.nwu.edu/

Chicago Assets

- 373,000 in technology-based companies
- 11.6% Illinois Gross State Product is from technology-based firms
- 75% Illinois Tech firms in Metro Chicago
  - 56% of these are in Cook County (Chicago)
- Service and manufacturing are users and consumers of high technology
- Diverse economy
- Existing public and private networks

The U.S. Internet Economy

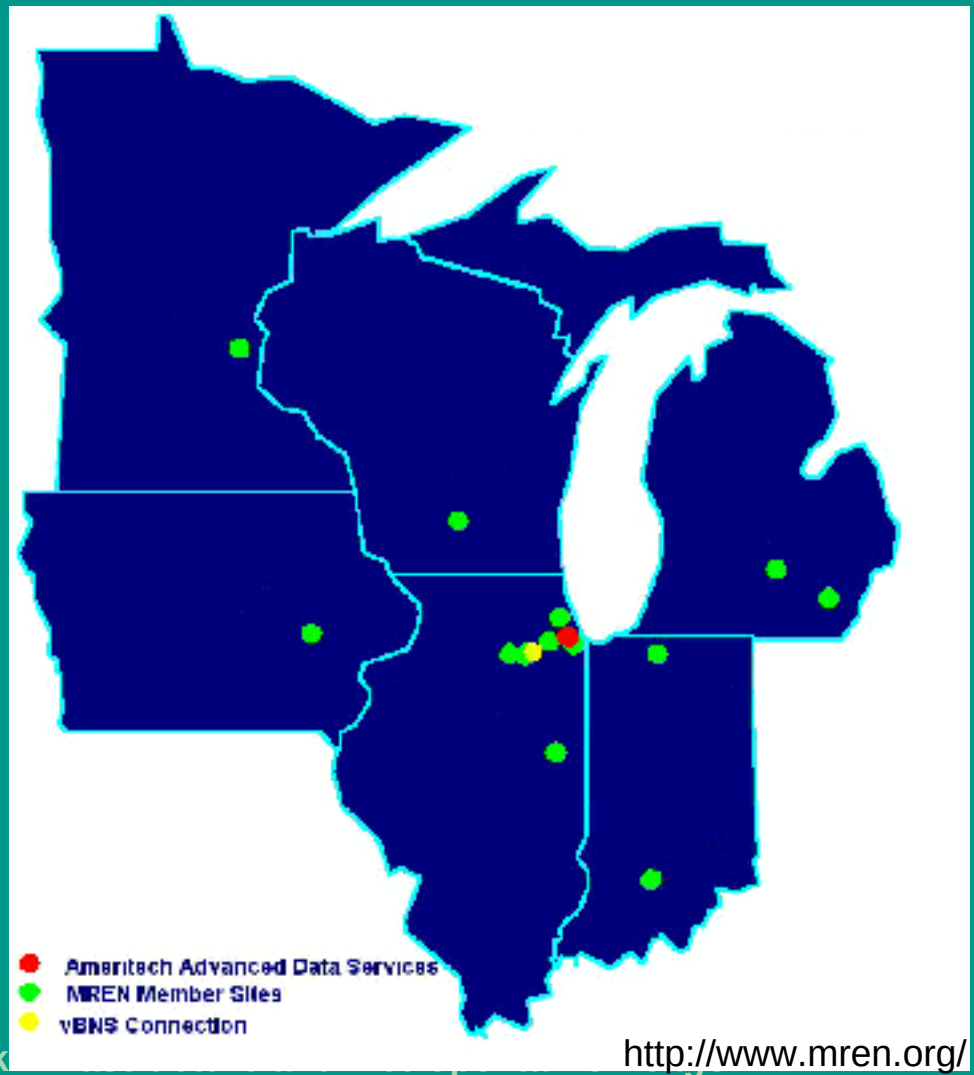
$301.4 BILLION

1.2 MILLION JOBS

- Automobile: $350 billion
- Telecommunications: $270 billion
- Energy: $223 billion

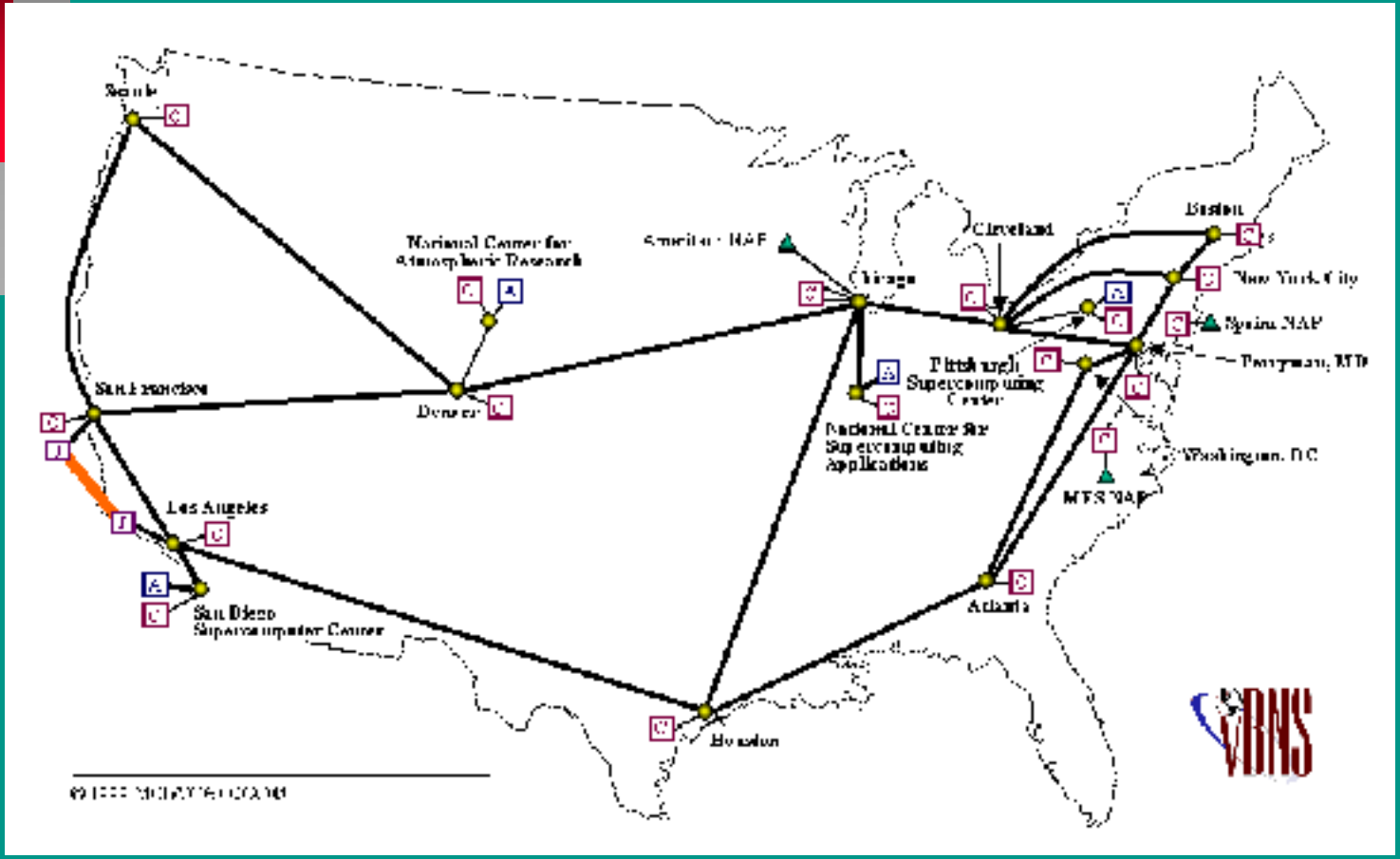
HIGH PERFORMANCE DIGITAL NETWORK INFRASTRUCTURE

Metropolitan Research and Education Network (MREN)



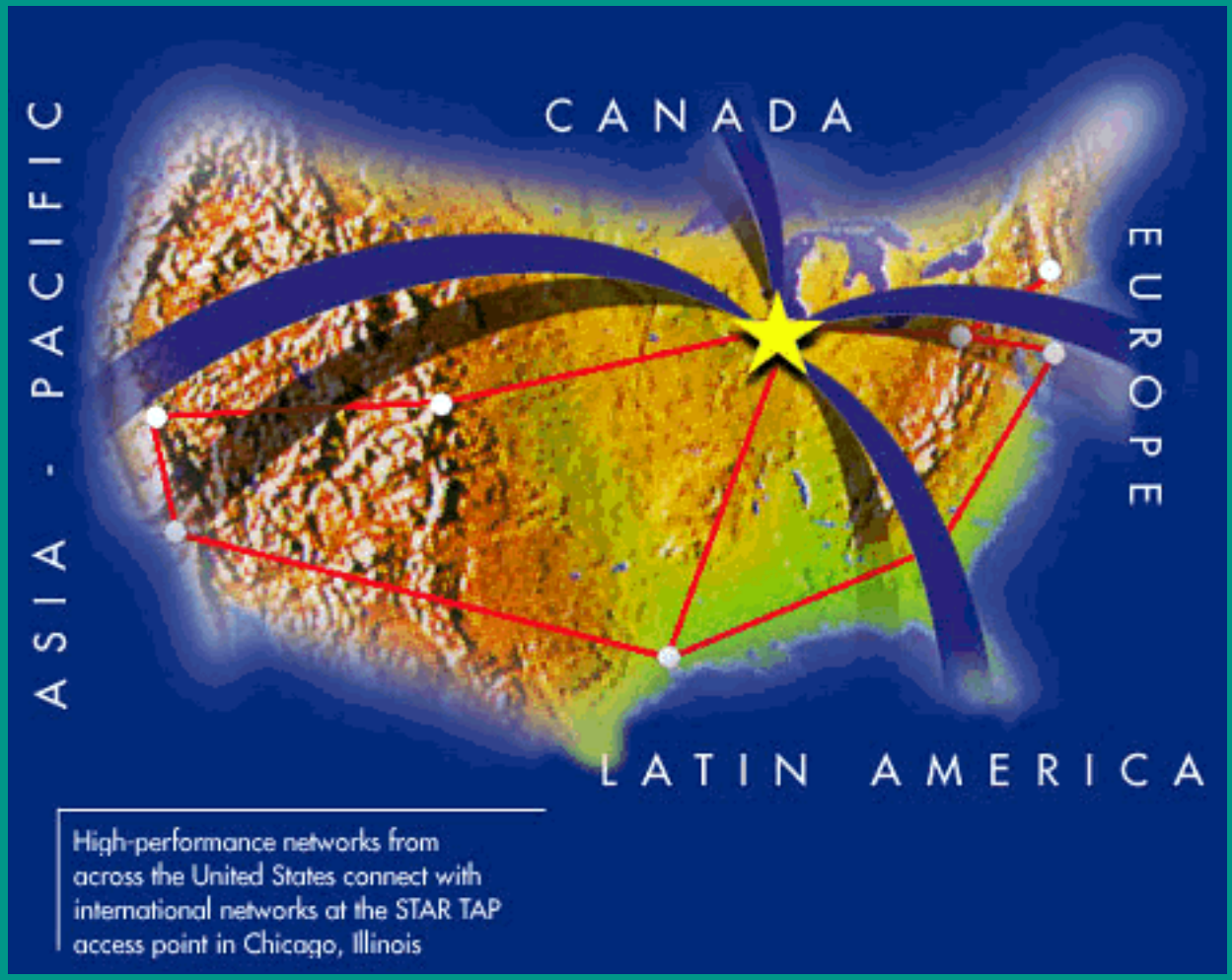
http://www.mren.org/

very High Performance Backbone Network Service (vBNS)



http://www.vbns.net/

Science, Technology, and Research Transit Access Point (STAR TAP)



http://www.startap.net/

The Chicago HUB

- National Railroad System
- National Highway System
- National Air Transportation System

National Information Superhighway

The Report: Goals & Objectives

- Develop a Common Understanding of Issues and Concerns
- Provoke Discussions among Decision-makers
- Suggest Benefits of Cooperation and Collaboration

CHALLENGES AND OPPORTUNITIES

1. Business, Industry, and Electronic Commerce

- Business in Transition
  - More options for consumers
  - Lower business costs
  - Internal management
- The Internet Land Rush
  - Products and services
  - Marketing and information
  - Distribution channels
- Government's Role

2. Technology-based Economic Development

Information Economy “Ecosytems”

- Educated Workforce
- Research Universities
- Infrastructure
- Technology-based Firms
- Venture Capital
- Quality of Life
- Perceived Image

How Does the Region Stand Up?

3. Transportation, Land Use, and Resource Management

- Impact on Transportation
  - Technology as transportation stimulant?
  - Intelligent transportation systems
- Encourage/Discourage Growth
  - Access to Digital Network Infrastructure
- Managing & Monitoring Resources
- Regulations and Zoning

4. Building the Digital Network Infrastructure

- Leveraging Current Investments
- Impact of Regulation/Deregulation
- Encouraging New Investments
- Public/Private Partnerships

5. Workplace and Training

- Implications for Employers and Employees
  - Changing job requirements
  - Changing workplace
  - Workplace training & retraining
- Reaching Those Who Lack Basic Technology Skills

6. Higher Education

- Demand for Higher Education is Expanding
  - Learning any time, any place
  - Individualization
- Economic Engine
  - Research and discoveries become products
  - New talent and skills
- Challenges for Higher Education
  - Network connections & equipment
  - Faculty training
  - New programs

7. Elementary and Secondary Education

- Improving K-12 Education
  - Teacher training
  - Access to technology
- Key to Quality of Life
  - Talented/Skilled workforce wants good schools for their children
  - Prepare next generation for participation
  - Fuel higher education
- An Equalizing Force in the Face of Economic Inequities

8. Health Care and Life Sciences

- Health Care Delivery
  - Telemedicine
  - Electronic records and information
- Research and Economic Development

9. Government and Community Networks

- Facilitate and Encourage Participation
  - Access to information & services
- How Are We Doing?
  - State comparison
- A Metropolitan Research Planning Network
  - Share information and materials
  - Coordinate activities and projects
  - Catalyst for regional cooperation

10. Quality of Life

- Individual Choices
- Community and Neighborhoods
- Safety, Security, Privacy
- Balancing work and personal Life

PUTTING OUR MINDS TOGETHER:
An Action Plan

FIVE PRINCIPAL POLICY RECOMMENDATIONS

I. Build the Metropolitan Chicago Digital Network Infrastructure

- Leverage Current Investments
- Encourage New Investments
- Public/Private Partnerships

The potential opportunities
and benefits will not be realized without
ubiquitous access.

II. Expand the Region's Information Economy

Establish Targets for Technology-based Economic Development

- Next-generation network technologies
- Application and content development for the region's diverse business and industry

Advance the Region's Information Economy "Ecosystem"

III. Strengthen Education and Workforce Training

- Lifelong Learning must be integral to the workplace and home
- Higher Education must advance new ideas and procedures
- Elementary and Secondary Education must provide a strong foundation

Necessary for achieving full economic and social participation

IV. Implement Aggressive Plans to Mitigate the "Digital Divide"

- Provide access through schools, libraries, and community facilities
- Reach those who lack basic technology skills

The price for leaving some behind is too high!

V. Harness Technology to Shape "Sensible Growth"

- Use Technology to Redirect Growth
- Reclaim Underutilized/Abandoned Spaces
- Build Smarter

Providing access to technology can be a tool for managing land use and transportation.

The report is available

on the Web at

http://www.nwu.edu/it/metrochicago/

Regional Progress and Activities since the Report

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Technopolis Evanston: The Purpose

- Bring high-speed network connection to every residence, business, institution and government office
- Model for other communities/regions

www.technopolisevanston.org

Why Evanston, Illinois, USA?

- Metropolitan area -- 75,000 people adjacent to Chicago on Lake Michigan
- Educated workforce -
- Major research university -- Northwestern University

Evanston, Illinois, USA

- Existing digital network infrastructure -- considerable fiber, including city cable network
- Technology-based firms -- more than 100 in and outside NU/Evanston Research Park
- Venture capital -- available

Evanston, Illinois, USA

- Quality of life -- next to Chicago and all amenities
- Perceived image -- desirable place to live and work

Technopolis Evanston: The Partners

- Evanston Inventure (organization of largest employers)
- Northwestern University
- Evanston Chamber of Commerce
- EVMARK (Central Business District)

The Partners

- Evanston Township High School and elementary schools
- Evanston Public Library
- City of Evanston/City Council

The Partners

- Northwestern/Evanston Research Park and Incubator Center
- Community technology experts

Patricia Widmayer, Co-chair

Technopolis Evanston Enterprise

Technopolis Evanston: The Need

- Expanding technology sector
- Growing home businesses/e-commerce
- Students/faculty off campus
- Schools/hospitals/government

Technopolis Evanston: The Goals

1. Build community through government services, community-building, and digital democracy

2. Attract and retain-information-based companies

The Goals

3. Strengthen education

4. Open doors to the world for residents

5. Create a unique, competitive edge for Evanston's existing businesses

Technopolis Evanston: The Components

1. Physical digital network infrastructure with bundled high-speed voice, video, and data services

2. Technopolis Evanston Electronic Village (web site/portal)

The Components

3. Education, training, and technical services across community

4. Electronic commerce initiatives and support

5. Technology-based economic development

Technopolis Evanston: The Timetable

1997

May	**Task Force convened**

1998

May	**Request for Proposal**
August	**Six proposals received**
September	**Vendor review begun**

The Timetable

1999

February	**Vendor review completed**
March-May	**Development Team formed**
May-August	**Business plan development**

The Timetable

1999 (cont)

September-December

>Public/private corps formed

>Initial capital secured

>Contracts negotiated

>Business structured

>Network construction begins

The Timetable

2000

January	**Marketing begins**
March	**Initial services delivered**

Technopolis Evanston: The Development Team

The Performance Group (Loebl Schlossman Hackl/Hague Richards)

with

>Cisco Systems, Inc.

>NEC Business Network Solutions

>Siemens/Landis Division

>Carrier(s) to be determined

Technopolis Evanston: The Not-for-profit Corporation

>Sets all policies

>Retains executive staff

>Develops community network

>Structures business services

>Develops education & training

>Subcontracts to for-profit enterprise

>Receives percentage and royalties

>Advances concept in many forums

Technopolis Evanston: The For-profit Enterprise

- >Holds seat on board
- >Runs business/delivers services
- >Engineers/maintains network
- >Maintains Electronic Village
- >Develops new products/services
- >Collects revenue
- >Receives profit
- >Carries to other cities

The North Suburban Higher Education Consortium (NSHEC)

Collaboration of colleges and universities -- two-year and four-year, public and private -- museums, and high schools schools in Metropolitan Chicago sharing technology

www.nshec.org

Patricia Widmayer

Consortium Executive Director

NSHEC ATM Network

- Constructing NSHEC ATM Network (OC3) with hub at Northwestern
- Enables high-speed access to Internet and advanced research/education networks

NSHEC ATM Network

Provides:

>High bandwidth to meet student, faculty and staff demand (e.g. streaming audio/video)

>Shared ATM engineering expertise

>Scalable and upgradable architecture

>Joint maintenance agreement/quality of service

>Collaborative applications development

>Model for regional digital networks

Chicago's Technology Development Plan

- **3 million people in city/ 8 million in region**
- **City of neighborhoods**
- **Hub for nation's transportation infrastructure**
  - **>O'Hare International Airport**
  - **>Railroad system**
  - **>Interstate highway system**
- **Nexus for High Performance Digital Network Infrastructure**

The Chicago Plan: The Leadership

- **Mayor Richard Daley driving initiative**
- **Believed to be first major metropolitan regional technology plan**
- **Intended to link all sectors and neighborhoods**
- **Engaging most powerful and expert in city to develop**

The Chicago Plan: Mayor's Council of Technology Advisors

- **35 technology and entrepreneurialeaders, including Northwestern University**
- **Developing five part plan by August, 1999**
  - **>City Network Infrastructure**
  - **>Industry Development & Access to Capital**
  - **>Marketing**
  - **>Bridging the Digital Divide**
  - **>Workforce Development**
- **CIO & City Planner directly involved**

The Chicago Plan: The Civic Network Project

Design and connect a network providing high-speed telecommunications to every residence, business and institution in the city

The Chicago Plan: Technology Growth Fund

- $3 million fund, and leverage another $3 million from co-investors
- Early stage and seed capital

The Chicago Plan: TechnologyIncubator Center

- **Lytton Building:**

  >260,000 square feet, 17 stories in heart of downtown Chicago

  >Tax subsidies for tenants

  >Advanced network throughout building

  >Modeled after 55 Broad Street (???), New York

The Illinois Century Network

- Statewide digital network backbone to link schools, museums, libraries, research institutions, state agencies, local government, and other public service entities.
- $28 million to engineer and begin construction
- NSHEC ATM Network is demonstration

Northwestern's International Center for Advanced Internet Research (iCAIR)

- Focal point for leading edge Internet research, innovation, and pre-production deployment.
- Founding partners IBM, Ameritech, and Cisco Systems.
- 17 research partners

www.icair.org

iCAIR: Mission and Projects

- Advanced applications
- Advanced middleware & metasystems
- Advanced infrastructure
- Policy studies

And more to come……..

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