

BACKGROUND MEMORANDUM I
CYBERPROFILE - A REVIEW OF HUDSON COUNTY
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1.0 INTRODUCTION TO THE CYBER STRATEGY PARADIGM

1.1 CYBER STRATEGY CONCEPTS

Cyber Strategy is a New *Paradigm*

As discussed in the Briefing Book, a Cyber District Development Strategy has been most often practiced as a form of the *industrial attraction model* of economic development. Either enrich a site with digital network resources in the hopes of attracting heavy network-using service businesses; or provide incentives that might include a digital infrastructure in order to attract technology manufacturers.

The more powerful interpretation, just beginning to appear in practice, is of a paradigm shift in metropolitan form. According to noted urban economist Anthony Downs, “a paradigm is a basic metaphor used to explain the operation of a complex system. When most of society abandons one basic metaphor for another, a paradigm shift occurs.” Hudson County has the option of capturing the *first-mover* benefits of becoming a leading jurisdiction in the emerging practice of applied Cyber Strategy.

Cyber Strategy Creates a New Synthesis

Applying Cyber Strategy while still in the old paradigm involves simply grafting technology onto existing structures – add a computer acquisition initiative to the County budget, try telecommuting at the margin of the system of automobility, use network infrastructure to attract new business. In a Cyber County, Cyber Strategy fundamentally changes some aspect of land use, transportation and other economic development policies as it is incorporated into the mix. A new synthesis results.

Cyber Strategy Requires Leadership

While grass roots support is important, success requires sustained political leadership from a core of elected officials and from institutional leaders representing key sectors.

Cyber Strategy Involves Soft Changes

Cyber Strategy is about organizational innovation as much as technology adoption. The idea is to restructure organizations to make effective use of new technology, not simply add new machines to the old structure.

Because the changes do not necessarily require extensive bricks and mortar construction nor large capital investments in infrastructure such as for the light rail system or a freeway interchange, we refer to it as a *soft* strategy. The critical changes are based in corporate culture and human behavior. The capital investment required is spent to acquire high-quality but off-the-shelf technology that it is characterized by ever increasing performance and ever decreasing price per unit of performance.

This means the changes are more dependent upon leadership than capital. With strong leadership, they can be accomplished in a shorter time span than a comparable bricks and mortar/concrete and asphalt strategy.

1.2 CYBER STRATEGY LINK TO ECONOMIC BENEFITS: INCREASING THE USE OF DIGITAL TECHNOLOGY

Technology provides basically two opportunities for a community to benefit economically – by manufacturing/distributing it or by using it. Manufacturing digital technology was once thought of as a guaranteed recession-proof strategy for high value-added jobs. The experience of the last few years destroyed what remained of that theory. Today it is clear that the most effective long term technology strategy for capturing economic benefits is through *using* digital technology.

As discussed in the Briefing Book, western economies are leading and experiencing a technological revolution. The good news is that the use of technology can open new opportunities or give the user a competitive advantage in existing markets. If many of the businesses in a community achieve an advantage over competitors elsewhere, the community will prosper. Effective utilization may even ultimately attract the manufacturers of the technologies being used.

The bad news is that the failure to use technology can result in missed opportunities and competitive disadvantages. When a community's core businesses fail to modernize their operations by adopting digital technologies, collective failure may result. That could reduce a community to an economic backwater.

Hudson County, of course, will never become an economic backwater since it contains valuable assets and is part of the metropolitan New York regional economy. The challenge here is to add opportunities created by digital technologies to the existing regional opportunities in order to develop as robust an economy as possible.

The transition from a manufacturing base to a services base has been ongoing in Hudson County for over a decade. Redevelopment of former rail yards along the Hudson River into first class office space and upscale housing is the physical manifestation of that transition. However, those same development opportunities are not available to the other districts in the County. Cyber Strategy will be most effective in those districts now being left behind.

The larger private organizations in any community tend to be the most sophisticated users of cyber technology because they have the expertise, capital, and incentives to strategically deploy digital networks. (The Gold Coast is a concentration of such firms.) Their limited purpose is to accumulate wealth for the corporation's owners and compensate its employees at competitive levels. While those are good things to do, it is, unfortunately, possible for those organizations to interact with their horizontal and vertical markets over those networks with little economic leakage to the local community.

The role of Cyber Strategy is to foster utilization by smaller businesses, key non-profit service delivery systems, government, and local consumers, and to guide the large organizations into uses which benefit the community as well as the enterprise.

Four conditions must be met for county-wide utilization to occur:

1. Network infrastructure must be able to provide the bandwidth and services needed
2. The infrastructure must be affordable so that all members of the community can use the network.
3. Key organizations must own or otherwise have affordable access to network access infrastructure.
4. Business practices and corporate culture must support system-wide utilization.

1.3 CYBER COUNTY CHARACTERISTICS

Cyber technologies provide a basis for a paradigm shift because of their inherent capabilities, and to a certain extent their steadily decreasing price/performance ratios. It is clearly more economically compelling to conduct as many banking functions as possible through a kiosk network (ATMs) rather than a system of branch banks.

The capabilities of digital technologies:

- allow the built environment to be more rationally organized for a relatively low cost in a relatively short time frame by substituting and adding some services digitally to existing places in the County
- make available greatly expanded temporal windows for transactions and service delivery (in the maximum, referred to as 24x7),
- reward speed in business, government, and public facilities, and
- facilitate fundamental changes to the provider-client relationship.

Metaphors such as adaptable, sustainable and innovative become available as the basis for a marketing campaign.

By using those capabilities, a Cyber County can:

- Spatially reorganize whichever functions can be transported over a digital network. This means that some functions can be made to *virtually* appear at locations convenient to consumers, or at places that satisfy social goals such as community-building or economic revitalization. Neighborhood centers can be defined and declining malls can be revitalized. This includes improving the range of functions offered at amenities like libraries, community centers and shopping centers by creating digital access to services such as retailing and governmental and educational services. At times this could include dedicated space for network access and at others simply using ATMs or kiosks in public spaces to provide services. The mix of uses in mixed-use developments, neighborhoods and even buildings can be increased through virtual presence.
- Provide services at times more convenient to the consumer, in some cases all day every day.
- Increase the processing speed of private and public enterprises and facilities. This means faster decisions, shorter product life cycles, faster speed of products to market, free flowing streets and highways, fast processing through bridge toll gates, and so forth.
- Lower costs and improve customer service by providing the tools for customers to help themselves to what was previously bureaucratically produced and delivered. This results in producing and consuming becoming intertwined in a new role that Alvin Toffler labeled the *prosumer* (a contraction of producer and consumer).

In order to obtain the benefits from using those capabilities, a Cyber County corporation would include a Cyber Strategy unit within it. That unit would:

- Monitor market conditions, community needs and technology opportunities.
- Develop initiatives and joint venture agreements with vendors or manufacturers.
- Coordinate initiatives with cities and state government.
- Amend existing policy documents to incorporate Cyber Strategy.

For example, the technological revolution referred to above is about to produce a wave of wireless innovation. Part of this wave has already hit Japan (a traditional global leader in wireless technologies due in part to the high cost of access to wired networks) in the form of 3G services (for third generation wireless, essentially broadband services). In Tokyo middle class teenagers have absorbed 3G services into their culture, which is sometimes referred to as the land of the oyayubi-zoku (the “thumb tribe”). The 3G wireless phones can take digital pictures and link them together with sound to create short videos, buy soda from a vending machine (as with a smart card), and is a two-way video phone.

Along with *Bluetooth* and *Wi-Fi* (Wireless Fidelity) capabilities, 3G will provide entirely new families of network services. A Cyber County would be monitoring the introduction of these technologies into regional markets, assessing applications that would benefit the greater community, and arranging joint venture agreements to bring those technologies and services to the County for specific purposes at affordable prices.

1.4 CYBER PROFILE ELEMENTS

The Cyber Profile characterizes the current status of certain key Hudson County systems in relation to an ideal *model* of a Cyber County. The *model* suggests the elements that the Profile should characterize. The gap between the ideal and the actual defines the options that the Advisory Committee will prioritize. A particular vision of the Hudson Cyber County and its associated action plan (products of Phase III of this study) will follow from those priorities.

The Cyber Profile first examines the network infrastructure and pricing in order to identify obvious deficiencies that could handicap subsequent economic development initiatives.

The second section of the Profile characterizes the access infrastructure and network utilization within five elements of the County which are essential to economic development initiatives. These six elements provide insights into the state of utilization of cyber technology in the County.

1. Service delivery system for workforce development
2. Local government
3. Businesses
4. Health Care
5. Transportation systems
 - Highways, streets and cars
 - Public transit
6. The built environment

2.0 PROFILE: NETWORK INFRASTRUCTURE DISTRIBUTION AND PRICING

Cyber County Ideal

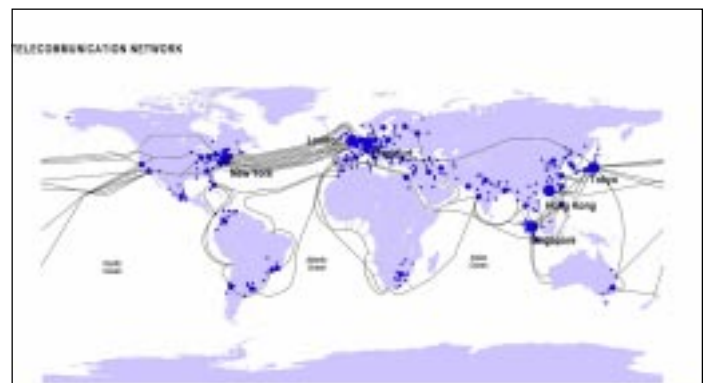
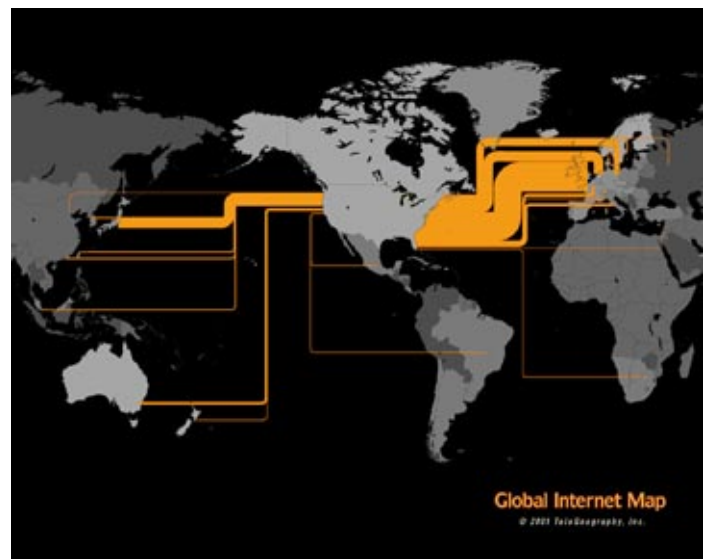
A Cyber County has an excellent infrastructure of network transmission (bandwidth) and access. Consumers can order and have installed on-demand digital telephone features and various amounts of bandwidth at reasonable rates.

The incumbent local exchange carrier (ILEC) has modernized its distribution plant and switching hubs so that the full range of services are available on-demand to potential consumers. Larger markets like Hudson County can also expect a level of competition in local access, transport, and exchange carrier markets. Cellular service and cable television, especially digital cable should also be available throughout the County. Pricing should be competitive across all markets.

Current Actual

The New York Metropolitan region has a long and progressive history in the development of digital communications infrastructure. In the 1980's, the Port Authority of New York and New Jersey developed one of the nation's first broad-band fiber networks, linking Manhattan to a satellite communications facility (The Teleport) on Staten Island. The Port Authority utilized its own transportation rights-of-way to route the fiber optic cable and connected the World Trade Center and the Teleport through a telecommunications hub in Journal Square located in Jersey City.

Subsequently, the network infrastructure has been expanded and redundancy has been added making the region attractive to communications dependent businesses of all types from Princeton to Manhattan. A University of Florida study (Malecki 2000) ranks the greater New York City region as the best served urban center in the United States in terms of available bandwidth. The quality of the fiber optic infrastructure, proximity to other office centers and supporting services, has made Hudson County a competitive location for information based business activity.



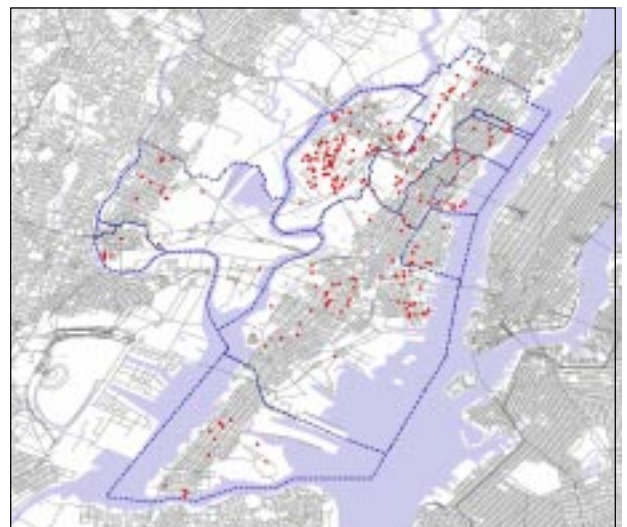
Figures 2.1 & 2.2 - Global Telecommunication Fibre Backbones

Under federal law, Verizon is responsible for providing service on-demand to consumers throughout the County. The exact nature of Verizon's network modernization program has not been disclosed, but a Verizon spokesperson provided assurances that it had enough bandwidth available to satisfy foreseeable demands.

Figure 2.3 (source: WRT) shows the approximate location of Verizon central switches, each designated by a mile radius circle representing the area within which DSL service would theoretically be available. There are few districts in the County that lack access to Verizon's DSL service. The service is priced by Verizon at \$45 per month which is typical of prices in other markets and competitive with digital cable service in Hudson County.

Figure 2.4 (source: Geotel & WRT) shows the fiber-based networks of the six carriers that compete with Verizon in certain sub-markets. These broadband networks are concentrated at the waterfront, between Jersey City's downtown and Journal Square and in Secaucus. These locations appear to respond to the demand from large employers that have located portions of their businesses such as back office, regional headquarters, and distribution within the County. Kearny, East Newark, southern Jersey City, Bayonne and the northern portion of North Bergen display the weakest access to existing competitive broadband infrastructure. It is not known whether this also results in price discrepancies.

Each of the cities of Hudson County has a cable franchise. Five different cable operators provide the service. It is possible but unlikely that there are houses in the County not passed by cable. A telephone survey of these operators found that all but one currently offer high speed data service over digital cable. The exception is planning to offer the service by the end of 2002. Prices were in the \$40 to \$50 per month range with discounts offered in relation to the level of other cable services consumed. Each company claimed to offer high speed data service in the commercial areas of the respective franchise areas. No switched digital voice service in competition with Verizon was offered, although one operator claimed to be planning the service.



Figures 2.3-2.5 - DSL Service areas, fibre network and cell towers

Figure 2.5 (source: Geotel & WRT) shows the distribution of cell towers throughout the County. With the exception of the Bayonne-Jersey border and a northeastern portion of North Bergen, cell coverage appears adequate.

Possible Initiatives to Address the Gap

There do not appear to be infrastructure or service deficiencies or obvious price affordability issues anywhere in the County at this time. A survey of consumer satisfaction could probe more deeply into this condition.

Policy makers need to stay alert to changes in this condition as the pace of technological innovation requires bursts of investment to keep the plant up to date. For example, wireless vendors active in Hudson County should be queried about their intentions for upgrading to offer 3G services.

Also, the prospect for Internet telephony could at some point erode the market for long distance telephone service. If this occurs, it will be a problem nationally with state or federal governments bearing the responsibility for a solution. Nevertheless, the County will want to follow the proceedings.



Figure 2.6 - overlapping broadband infrastructure in Hudson County

3.0 ACCESS INFRASTRUCTURE AND UTILIZATION

Since the network distribution infrastructure appears to have no obvious deficiencies, Hudson County's organizations have the opportunity (or face the challenge) to more fully utilize those resources. One of the competitive advantages of Hudson County is its access to an extraordinary broadband network infrastructure.

The network access infrastructure and the culture of network utilization determine the extent to which that competitive advantage can be realized. In order to do so, every resident and business person would have affordable access to a wide range of cyber technologies at a convenient location supported by technical assistance for engaging in e-commerce, e-business, e-government, distance education, and telemedicine.

3.1 SERVICE DELIVERY SYSTEM FOR WORKFORCE DEVELOPMENT

There are dozens of distinct service delivery systems in Hudson County, including primary and secondary education, post-secondary education, senior health care including the frail elderly, psychological counseling for at-risk youth, housing counseling, and so forth. The Cyber Profile looks at the Workforce Development System because of its direct linkage to economic development.

Ideal Cyber County

Consumers obtain needed information on-demand through a variety of channels. Information is comprehensive and clearly presented about the services available including counseling, training, placement and so forth. The services are delivered primarily face-to-face but with a mix of channels, some rich in media.

Ideally, the various organizations engaged in the service delivery system strategically use digital technology to ensure effective learning for an affordable cost. Today, this would involve some combination of the following options:

- universal Internet access among the organizations in the system enabling e-mail exchange and Instant Messaging among the individuals;
- record sharing or even a shared data base of clients;
- inter-organizational online scheduling software;
- training classes delivered as a mix of face to face instruction, interactive video conferencing and Web based rich media modules;
- teachers skilled in all three channels of service delivery (face to face interaction, interactive video conferencing, Web based media modules), particularly customizing e-training modules produced by third parties;
- Web based teacher training;
- shared-use, neighborhood-based training centers;
- one-stop concept extended digitally into every target neighborhood;
- employers given access to the system Intranet, allowing real time communication of workforce needs among other things;
- interactive video conferencing used by employers to quickly interview job candidates with a minimal effort.

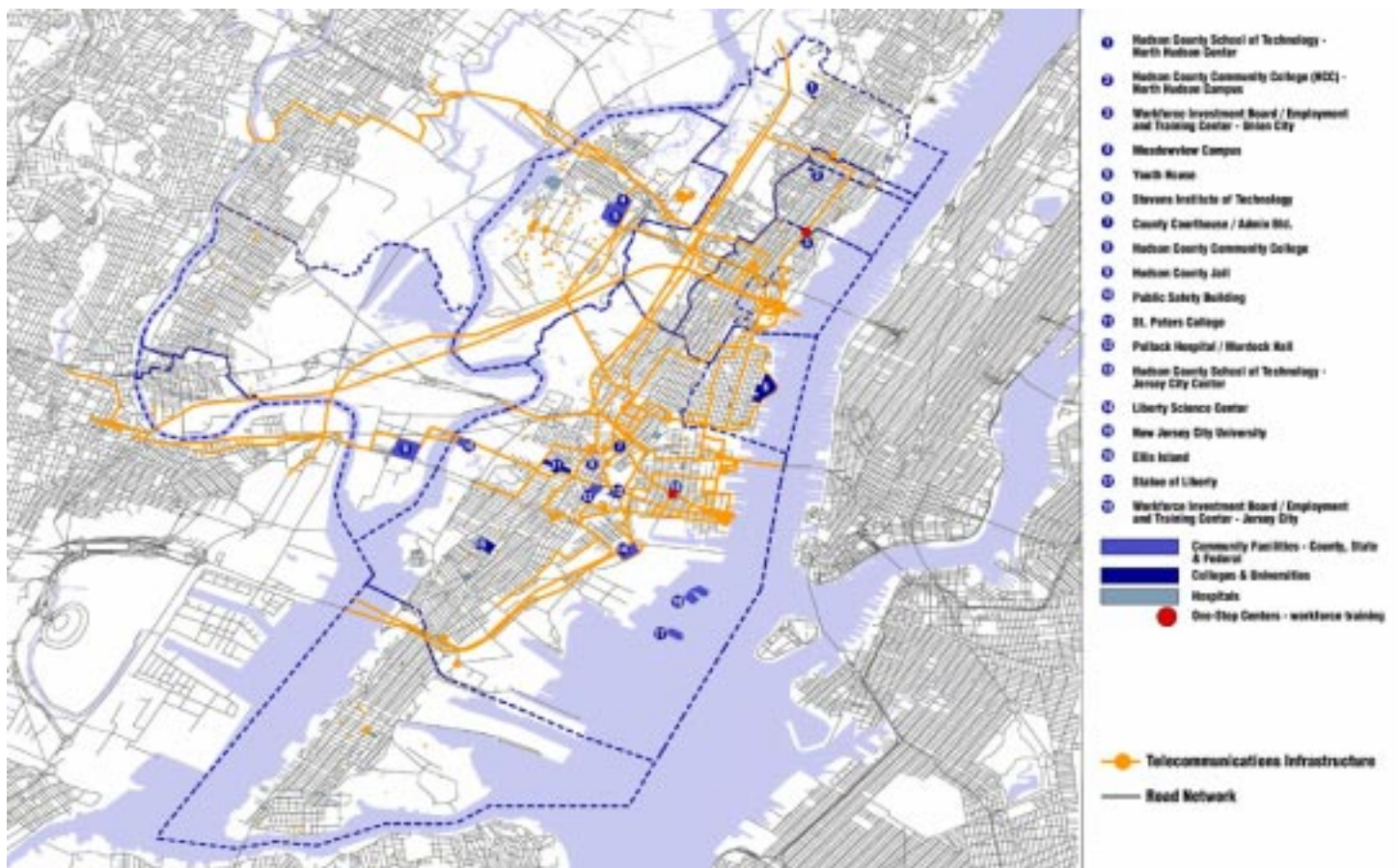
In order for these conditions and others like them keyed to evolving technological capabilities to occur, the organizations must cooperate in an environment of mutual trust. This involves establishing a division of labor among the participating organizations, eliminating or at least identifying the program overlaps, cooperatively applying for funds to overcome deficiencies in the infrastructure required for network access, agreeing that any “report card” apply to the performance of the entire system rather than the individual members, and so forth. While this may appear utopian, the process of planning the digital enterprise access infrastructure for each of the participating organizations and developing the network applications should help produce those conditions.

Current Actual

There is useful but unused Cyber infrastructure in various places around the County. Hudson County Community College has, at its Journal Square location, a distance education class room equipped to originate or receive live interactive courses over ISDN. This room has been unused in the past and is available for immediate use.

The facility is unused because innovation is a challenge to the faculty, and because of the perception that the market for HCCC education products strongly prefers face-to-face delivery. However, the individuals in this market also strongly prefer that services be delivered to them in their local neighborhoods and cities.

Figure 3.1.1 - Community facilities



The initiative for live, interactive distance education was never really implemented at HCCC. HCCC sponsors eleven community computer centers, located primarily in public housing projects and public libraries.

There is also the Hudson County Distance Learning Technology Council and Plan. The Hudson County Schools of Technology (HST) became the hub of an interactive telecommunications center for distance learning and staff development that was put in place in the early 90s. It was established by Verizon and bonded by the County. We learned that many of the original sites of this effort are being dismantled as the system was never adequately used. One of the problems with usage was the lack of local technical assistance to trouble shoot and solve problems. The other included scheduling conflicts between the different school districts in the County and HST. The former network is being replaced by a broadband ATM network, but its programs have not yet been determined. In September, HST will offer 10 fully on-line courses through this network and in September of 2003, the superintendent is pushing for the opening of a separate virtual high school to serve the entire County.

The Hudson Schools of Technology operate a data center that is evolving into an ISP for three other school districts in the County. Other school districts are upgrading the systems but the money for equipment, technical support and staff development is not enough to fulfill the school's needs.

The Stevens Institute of Technology offers an array of distance education courses and e-seminars over the Internet. New Jersey City University also offers an online set of products.

Saint Peter's College campus is a wireless *hot zone* which provides access to the Internet and campus computing resources such as high speed printers from anywhere on campus. This initiative may have lessons for similar service in public places throughout the County, via Wi-Fi technology for example, but it does not provide a resource to the Workforce Development System

From an organized delivery system perspective, the eight or so organizations that contribute to workforce development seldom communicate and act independently of one another. Private industry does not communicate regularly with key members of the system and so its needs are not well integrated into the activities of the system or its individual members. The system is, in other words, fragmented.

Possible Initiatives to Address the Gap

A logical first step would be to reduce the fragmentation of the system. Conduct a series of meetings between the various organizations that participate in the system. The objective of the meetings would be to draft a plan for an initiative to create one or more pilot projects to implement one or more parts of the cyber vision, such as record sharing or coordinated marketing. The experience of some of the members with distance education is a positive that could be built upon. The unused distance education classroom is a resource that could be put to immediate use.



Figure 3.1.2 - Supplementary Community Services in Little India

Cyber County Ideal

In a Cyber County, the county government and its constituent municipal governments discuss, plan, pilot and eventually adopt a new model of government that becomes manifest, in part, through digital technologies. No one model has dominated this evolution of local government because most of the progress to date has occurred idiosyncratically without a strong sense of an underlying strategic model.

The one new alternative to traditional bureaucracy that emerged in the early 1990s is privatization. But that movement is unrelated to digital technology. It is likely over time that a model inspired by digital technology will take hold and the leading candidate to do so could be called the client-server model.

In a client-server inspired government, the corporation moves away from direct service provision in many areas and instead provides the resources for citizens, neighborhoods, and community-based organizations to produce the services that each needs. A private sector analogy is in electronic banking, where the customer uses digital technologies to enter data and move funds without a human intermediary. This idea in local government would mean that individuals would go online to choose and reserve a recreation facility such as a softball diamond, rather than call a bureaucrat to do it for them. This idea can be extended into many of the services currently offered by county and municipal governments.

Beyond adopting the same basic model, there are many other characteristics in a Cyber County. For example, there is one face to government – the County and city Web pages are functionally linked to each other. Each Web page is expressed in service categories that reflect the customer's perspective rather than the government perspective. In addition to providing current information, Web pages enable transactions such as fee paying, requesting special services, arranging an inter-library book loan, and so forth.

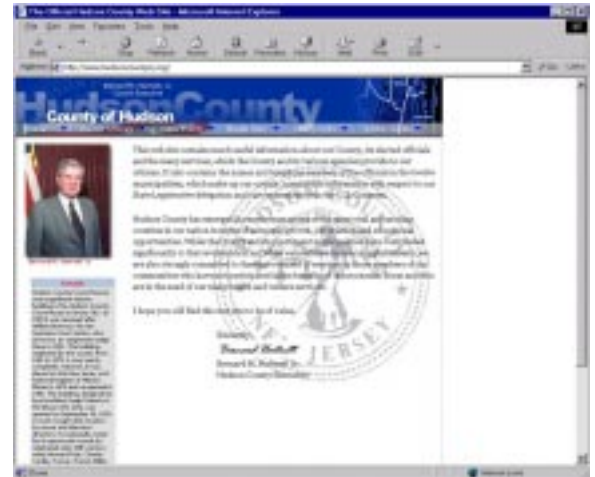


Figure 3.2.1-3.2.3 - County and Municipality Web-Sites

Intranets have been established to facilitate e-business transactions with private vendors. The system is also used for demand aggregation providing access to lower per unit prices for standard commodities purchased by local governments.

Every neighborhood has a Network Station to ensure high speed access to e-government for all citizens. This also helps reduce street congestion reduction and increases the sense of place at the shared point of delivery.

Decisions are made more quickly based on real-time information, services are delivered more on-demand.

Current Actual

The County of Hudson and its municipalities appear to be behind the curve in applying network technology to public service delivery. In a survey of 12 local government agency Websites, we found 6 were not working, under construction, or otherwise unreachable. Three contained out-of-date or limited information. Three were judged adequate to good in terms of amount and timeliness of information. None offered transactions. We speculate that a review of internal digital technology assets and practices among the cities would not encounter a substantially more advanced condition.

Possible Initiatives to Address the Gap

There are two main initiatives that could be followed in Hudson County. The least complex would consist of improving the use of the World Wide Web and telephone call centers as service delivery channels.

In this initiative, the Office of Strategic Revitalization (OSR) would create a committee of County and city representatives to establish guidelines and identify funding for development of Websites for all local governments and government agencies. Eventually these Website should render services directly over the Internet, such as licensing, permitting, payment of fees and fines, etc.

The OSR could also conduct a formal evaluation of the network technology needs of the County of Hudson and the 11 cities and of the institutional arrangements for managing the networks. For example, the University of Texas has developed a Government Performance Project in which it evaluates the county government's use of information technology according to seven criteria – architecture, management support, planning, citizen involvement and engagement, cost-benefit analysis, procurement, and training. In April 2001, 40 of the largest counties (by revenue) in the nation were surveyed. The County of Hudson could request that the Government Performance Project administer the survey in order to get an accurate assessment of where the County ranks in relation to the current state-of-the-art in network development.

The second initiative would foster adoption of a new model of government and more cost-effective use of digital networks by identifying and promoting those individual departments in the county and the cities that could best be considered as leaders in the evolution to e-government. In this way, existing good practices can be shared and the individuals that have taken their departments to the cutting edge can assert county-wide leadership. Some study and evaluation of the best practices among the various government agencies among the county's local governments will be required as a first step.

This could begin through any of the following relatively modest tasks:

- Publish a “best government I.T. practices” document and circulate among local officials throughout the state.
- Initiate an “I.T. in public administration” training program for local and county officials at a local higher education institution (Stevens?)
- Coordinate online municipal activities throughout the county to eliminate costly redundancy and disseminate best practices.

Encourage the use of bilingual documents and websites throughout the county in public documents, especially electronic versions.

3.3 BUSINESS

There are at least two business development tracks in a Cyber County. The first involves formation, nurture and growth of virtual and home-based business. To date, we have not identified support systems or webs of virtual businesses. The main elements in place for nurturing new technology-oriented businesses are the incubators at both the Stevens Institute of Technology and New Jersey City University. These are strongly tied to these institutions and, in the case of Stevens (NJCU's is just starting), has proven to be successful.

For the overwhelming majority of businesses, however, only a small percentage had a web presence as indicated from the various Chamber of Commerce Webpages that also identify a Web address for their member businesses. In one case, over 60% of the businesses identified a Web address, but even that is relatively small percentage compared to the ideal.

The second business development track in a Cyber County is the way in which digital technologies are being used to transform existing firms and industries, to make them more competitive in the national and global economy.

Three representative industries of local significance are included in the Cyber Profile based on the Targeted Industry Analysis in the appendix.

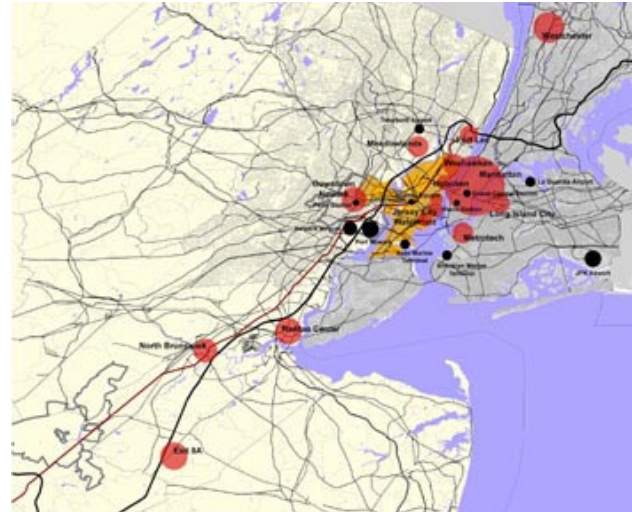


Figure 3.3.1 - Regional Business Hubs



Figure 3.3.2 - IT Infrastructure and the location of major employers

3.3.1 DISTRIBUTION AND FREIGHT TRANSPORTATION

Distribution and freight transportation refer to a broad set of activities related to the transportation of freight by air, sea, and land (as well as inter-modal), as well as intermediate storage, warehousing, processing and breakdown/aggregation.

County Ideal

Information technology improvements in shipping and transportation focus on two main areas – freight tracking and logistical coordination. In tracking, positioning equipment such as GPS receivers – currently in place on most long-haul planes, ships, and trucks – are increasingly supplanting barcodes and scanning checkpoints to provide real-time tracking information for freight shipments. This tracking information provides valuable information on the status and performance of industrial supply chains.

“Smart” shipping and distribution facilities such as the Port of Singapore, a containerized facility hemmed in by dense urban development, are utilizing extremely sophisticated logistics software. This software, which plans stacking schemes for containers to minimize freight movements, as well as directly controlling cranes, minimizes human operator error and improves efficiency and throughput.

Hudson County

Hudson County is currently an important freight transport corridor, and is projected to become even more important in the future. Yet the region’s facilities are relatively low-tech, and rely upon union labor that has resisted past efforts to streamline operations. The North Jersey Transportation Planning Authority, Inc. and the New Jersey Institute of Technology are currently undertaking a study to utilize fallow brownfield sites in western Hudson County to expand the region’s freight handling capacity.

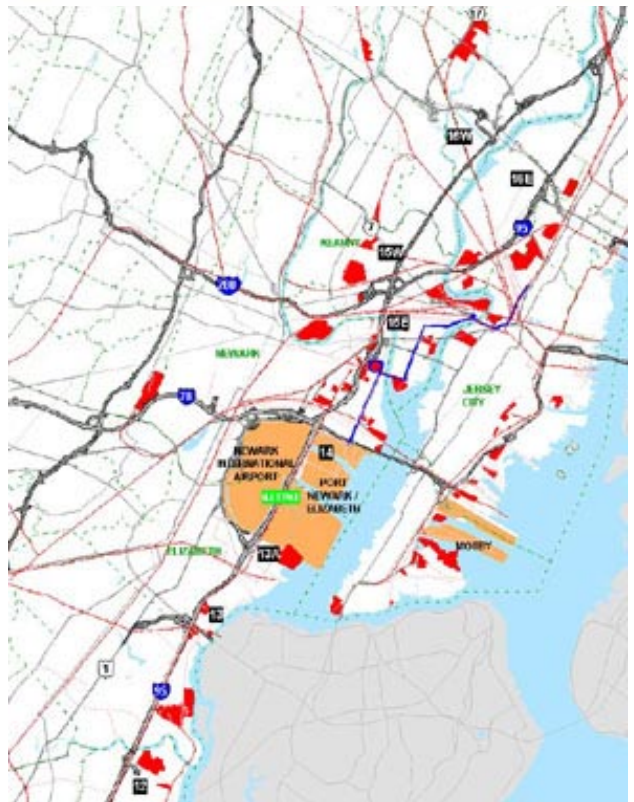
Substantial shipping and distribution operations are sited in the Seacaucus Meadowlands, where the east coast’s main North-South transport corridor comes closest to midtown Manhattan. Major facilities are operated by several distribution outsourcing companies including: Distribution Solutions, Inc., Interstate Intermodal, Kerr Norton Marine, Mega Shipping and Forwarding, Nippon Express USA, NYK Line, and Orient Consolidation Services.¹

The NJTPA/NJIT strategy is highly dependent upon expanding the physical capacity and land area dedicated to freight use and improving transportation linkages in the region. However, digital technology-based management strategies, such as the kind that have greatly improved the ability of Singapore to handle increased traffic loads, are not being actively pursued. In fact, the Phase I Executive Summary does not contain the term “information technology”.

Possible Initiatives to Address the Gap

- Immediately push for information technology strategies to be incorporated into future freight infrastructure planning efforts, especially the NJTPA/NJIT studies.
- Encourage investment in smart management systems for freight and distribution facilities, perhaps through tax breaks or pilot programs.

¹ <http://www.secaucus.org/web.html>



Figures 3.3.1-3.3.3 - The airport and port are fueling potential growth in value added distribution and other supporting uses. The Portway corridor is one initiative to support these trends.

3.3.2 PRINTING AND PUBLISHING

The printing and publishing industry produces goods ranging from newspapers and magazines to books, labels, checks and even T-shirts. There are two dominant sectors; commercial printing (advertisements, catalogs, etc) which accounts for about one-third of all employment, and newspapers which employ a similar fraction.

County Ideal

Print-on-demand is an emerging technology for flexible, customized manufacture of printed materials such as books and magazines. While several experiments for its deployment in large retail book chains have failed, it remains a viable option for very limited print runs by small commercial publishers. Combined with a large back catalog, print-on-demand means back titles will never go out of print. Print-on-demand also has the advantage of moving the point-of-manufacture closer to point of consumption, potentially reducing distribution costs associated with book publishing. Print-on-demand, because it relies on digital data storage, naturally lends itself to remote operation via network such as the Internet.

Online publishing is a growing phenomenon which securely distributes and sells reports, newsletters, journals, trade information and other premium content over the Web, via e-mail to wireless handhelds or desktop workstations. Featurewell.com is an example of an online marketplace for writers and editors.

Online publishing is increasingly becoming a multi-media production process. For example, in 2001 the International Press Telecommunications Council ratified a standard developed by Reuters to describe, package, store and deliver multimedia news. This will enable journalists and publishers to combine video, text, graphics, pictures, and audio to deliver stories to a range of devices including financial service desks, Web sites, and mobile phones.

E-textbook design and production is an established niche within the publishing industry. A student reading an e-textbook on a computer screen can do more than just click on a word and get a dictionary definition. Audio and video plug-ins allow for pronunciation guides and clips of lectures. Other functions enable students to highlight, type notes in the margin of the text, take quizzes, and interact with their professors.

Cyberprofs can customize the text by adding, removing and rearranging textbooks, primary sources, and articles. They can create a Web syllabus that links directly to assignments and adds materials as needed throughout the semester. Class progress can be monitored with reports on student usage and self-grading quizzes.

Hudson County

The state of the printing and publishing industry in the county is starkly divided between the physical print production operations, which are rapidly shedding jobs, and the white-collar publishing functions which were one of the fastest growing sectors in the 1990s.

Hudson County is increasingly being drawn into the orbit of the Manhattan-centric book and magazine publishing industry. For example, John Wiley & Sons, a leading publisher of scientific, medical and technical books recently moved its headquarters from Manhattan to Hoboken's redeveloped waterfront, a net gain of over 800 jobs. The company received a business employment incentive grant from the New Jersey Economic Development Authority that will provide \$7 million over the next 10 years.² Presumably, Wiley has a sophisticated understanding of on demand printing, online publishing, e-text book publishing and other similar innovations.

Possible Initiatives to Address the Gap

The printing and publishing industry in Hudson County was traditionally driven by the exodus of printing firms from Lower Manhattan in search of lower land and labor costs. Thus, job functions tended to be lower-skilled, manual labor jobs. However, while the higher value-added functions of the publishing industry are increasingly drawn to Hudson County, this process is shaky. Much will depend upon the success of the John Wiley and Sons experiment.

Hudson County's main newspaper, the Jersey Journal, has an extremely limited circulation area. As a result the county is often overlooked in the statewide media. Some observers find this missing voice a major factor in the county's lingering image problems.³

- Explore further development of the technical/scientific publishing industry in Hoboken, through linkages between John Wiley & Sons and Stevens Institute of Technology.
- Introduce print-on-demand technology for local government records and documents as a demonstration of the technology.
- Encourage the use of environmentally-friendly printing techniques.
- In general, assemble the technical resources to assist business in the county assess and further their Cyber Strategy. Encourage the local universities to present technology lectures and demonstrations.
- One option is for post-secondary schools to form a coalition committed to developing and teaching with multi media e-textbooks. This commitment can be leveraged in an agreement with a prominent e-book publisher to locate its facilities in one of the designated city centers. See the Built Environment Section below.

3.3.3 SECURITIES AND FINANCIAL SERVICES

The securities and financial services industries are the engine of the global economy, responsible for allocating capital resources among competing opportunities for investment and development. They are also the engine of the New York metropolitan areas economy, employing hundreds of thousands directly and more indirectly in industries that depend upon their huge wealth-generating capacity. They are also the chief financier of local government in the urban core, contributing as much as 20 percent of local tax revenues in New York City during boom periods.

² "John Wiley Leases Office in Hoboken" *New York Times*, 8/10/2000.

³ "Why Can't Hudson County Get Any Respect?" *New York Times*, 1/14/2001.

County Ideal

The financial services industry relies heavily upon telecommunications to move information and conduct transactions at a global scale. A number of technologies and technology practices support this function:

- *Synchronous optical networks (SONET)*. A technology pioneered by Bell Atlantic in the United States, SONET is a network architecture that uses meshed rings to ensure rapid recovery in the event of a network disruption. They are used extensively by the financial services industry because of their redundancy.
- *Offsite disaster recovery facilities*. The September 11 terrorist attacks highlighted the extensive precautions taken by the financial services industry to maintain active trading operations even while Manhattan was under attack. These facilities used to be backups, but are now evolving into full-fledged twins of the Manhattan trading floors.
- *Distributed computing*. The complexities of financial markets and the huge amount of data they produce lend themselves to analysis through distributed computing techniques, which are just beginning to be developed. This technique also leverages idle resources in other parts of the world while markets are closed at night.
- *Voice over IP Telephony*. The largest VoIP networks in the world are used by financial companies. These networks leverage these firm's existing investments in high capacity inter-urban IP bandwidth to cut down on international telephone service requirements from traditional carriers. Technology even exists for intercepting intra-corporate mobile phone calls and routing them between employees over the corporate IP network.

Hudson County

Until the 1980s waterfront boom in Jersey City, Hudson County had a negligible presence in the financial sector. However, as an offshoot of the 50-year postwar trend for financial firms to move from lower Manhattan to Midtown, Hudson County began seeing a sizable migration of financial firms (often only single divisions) from lower Manhattan to the easily accessible Jersey City waterfront.

While initially it was back office functions, in recent years higher-level activities also have located in Jersey City. Firms that have moved operations to Jersey City include Chase Bank, Goldman Sacks, and Lehman Brothers.

Many of the Jersey City operations were backup trading sites. These backup locations became primary sites for workers displaced from Lower Manhattan after September 11. Hudson County's telecommunications and power infrastructure are world-class and sufficient for significant further expansion of this sector. The trend in the securities industry is now to upgrade these backup sites to full-fledged "hot sites", signaling a sea change in the confidence of the sector in Hudson County as a location for these uses.



Possible Initiatives to Address the Gap

Hudson County's securtities and financial firms are huddled along the Hudson Waterfront. Only the Jersey City waterfront, Weehawken's waterfront and, to a lesser extent, the Hoboken waterfront are acceptable locations for financial services firms. Poorer building stock, inaccessibility, and image problems have prevented this activity from expanding beyond this small zone. *Expanding the range of locations* for finance companies as valuable space along the waterfront fills is important to consider. PSE&G is currently conducting a study to determine what parts of the County have excess power capacity as one incentive to lure businesses to other areas.

Following the September 11th attacks, many firms relocated higher-level operations to Jersey City. However, experts from NYU's Real Estate Institute have found that most of these firms have not committed to Jersey City on long-term leases. *Retaining these September 11 "Refugees"* would also help reinforce the this sector of the County's economy.

- Explore ways to develop alternative financial services hubs such as Journal Square. Assess the needs of financial firms and ways to meet them.
- Actively recruit firms that located displaced workers in Jersey City to keep high-level operations in Hudson County. Key points might be the diversity of transportation, telecommunications and electric power infrastructures versus Manhattan.
- Continue to improve the county's technical infrastructure with special emphasis on redundancy, reliability, and flexibility. Power and telecommunications should come first.

3.4 HEALTH CARE AND HEALTH SERVICES

Health care and health services are a large, rapidly growing sector that encompasses everything from diagnostic and preventive medicine to cancer research and long-term care.

County Ideal

Medicine and health care have been a whirlwind of innovation as advances in information technology are increasingly applied to the complexities of human biology and service delivery. However, five areas of technological innovation deserve special attention as part of a Cyber County:

- *Diagnostic imaging.* The array of technologies using radiation, ultrasound, and magnetic resonance for non-invasive scanning of human patients. These techniques rely heavily on sophisticated computers to process sensor data into useful imagery.
- *Gene therapy.* Gene therapy is a novel approach to treating diseases based on modifying the expression of a person's genes toward a therapeutic goal. The use of IT requires extensive knowledge in the workforce of both human genetic mechanisms and the patient's own particular genetic makeup.
- *Health care management.* The streamlining of the health care industry in the last two decades owes much to the use of IT systems for managing health care resources effectively.
- *Bioterrorism and biological warfare preparedness.* Relatively unimportant before the anthrax attacks of Fall 2001, this area is now a hotbed of research and development. This includes upgrading, training, and mobilization of local bioterrorism response teams and medical assets.
- *Telemedicine.* Using broadband data networks to remotely diagnose, treat, counsel, and even perform surgery using robotic instruments.

Hudson County

Hudson County has eight main hospitals (listed below) and dozens of outpatient clinics. While the Jersey City Medical Center is a regional trauma center and is a teaching affiliate of Mount Sinai School of Medicine, the county lacks a major research institution, most of which are concentrated in the North Jersey suburbs and Manhattan. It should be noted, however, that the Jersey City Medical Center is in the midst of preparing to move to their new facility on Grand Street which is currently under construction. As a state of the art facility, it will contain space for research purposes.

Of the five broad technology areas identified above, Hudson County health care institutions have not effectively leveraged all of these technology assets.

Hudson County has 8 hospitals:

Independent Hospitals

- Bayonne Medical Center (Bayonne)
- Christ Hospital (Jersey City)
- St. Mary Hospital (Hoboken)
- West Hudson Hospital (Kearny)

Liberty HealthCare System

- Greenville Hospital (Jersey City)
- Jersey City Medical Center (Jersey City)
- Meadowlands Hospital Medical Ctr. (Secaucus)

New York Presbyterian Healthcare System

- Palisades Medical Center (North Bergen, NJ)

Possible Initiatives to Address the Gap

Health care has been one of the biggest sources of employment growth for New York City in the last decade. Hudson County can leverage its greater accessibility to the Jersey suburbs for highly specialized medical services that are largely captured by suburban hospitals and Manhattan research institutions. Applications of new technologies in all five areas above need to be upgraded and expanded to improve quality and consistency of health care service delivery.

In fact, the state of Hudson County's health care system is questioned by the looming presence of the deserted Margaret Hague Maternity Hospital on the palisades of Jersey City.

- Utilize the present focus on bioterrorism as a means to engage the health care community in a countywide effort to assess and upgrade the health care infrastructure in a coordinated fashion.
- Explore ways to expand the teaching and research functions of county hospitals, and how to link these to local medical technology industry. This should be leveraged through the Liberty Health Care System's strong links with the New York-based Mount Sinai Medical System.
- Explore ways to develop Hudson County into a model for bioterrorism preparedness.



Figure 3.4.1 - Health Services have always played a strong role in Hudson County

3.5 TRANSPORTATION SYSTEMS

3.5.1 HIGHWAYS, STREETS AND PRIVATE MOBILITY OPTIONS

Cyber Ideal

The existing concrete and asphalt surface transportation infrastructure of highways, arterials, streets and parking lots cost a great deal to build, is expensive to maintain and nearly impossible to expand. Because it is such a valuable asset, that transportation infrastructure must be used efficiently. This is certainly the case in Hudson County.

The Cyber ideal involves ITS applications, telework and teleservice practices, and a significant penetration of alternative vehicles, such as neighborhood electric vehicles (NEV).

ITS applications include real time traffic information linked to remote signal controls (to create reverse lanes as needed, for example), and to public distribution channels, including access to smart cars. It also involves electronic toll collection at all toll payment points.

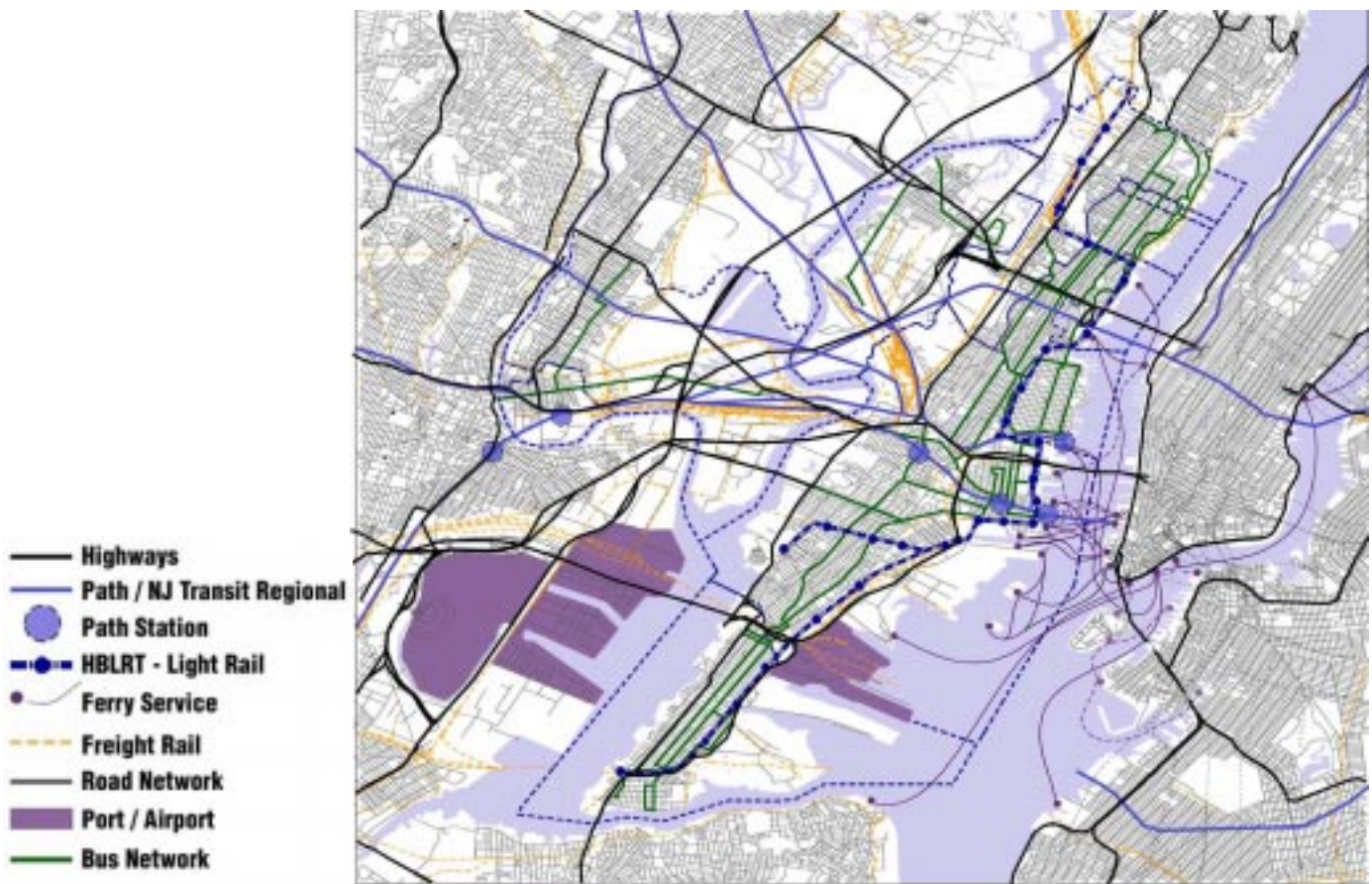


Figure 3.5.1 - Transportation Networks in Hudson County

Regional initiatives for telework and teleservices provide virtual access to work and services, the purposes for most driving trips, within a few miles of every resident's home.

With shorter distances to travel, alternatives to high performance vehicles are feasible. Four-wheeled cycles, neighborhood electric vehicles, golf carts and perhaps even the Segway are vehicles that run over *mixed-use streets*. Car-sharing is also practiced in Cyber County.

Current Actual

The Circulation Element of the County Master Plan refers to ITS, electronic tolls and real time traffic information as ways to maximize the efficiency of existing roads. The Plan does not identify specific initiatives.

The New Jersey Turnpike is planning electronic tolls and congestion pricing to help alleviate traffic conditions at the toll booths.

As part of the Portway initiative undertaken by NJDOT, the new roadway construction solely for truck use will integrate new ITS architecture for real-time control.

A local firm, Transcom, collects and distributes real time traffic data. Lockheed Corporation recently purchased Transcom and now charges for traffic data which were previously provided free.

A car sharing study is currently underway.

Jersey City has automated signal control of at least one route.

New Jersey DOT has a new Executive Director who is currently evaluating a number of options, some of which may involve digital networks.

Telecommuting has been tried over the years, most recently after 9/11. Those initiatives have achieved limited success, possibly because of old line familiarity with management by observation. Some industries, such as securities, require their employees to work in a central office every day.



Figure 3.5.2 - Current entrance to the Lincoln Tunnel



Figure 3.5.3 - The existing street system is congested

Gap and Optional Initiatives

Hudson County roads are so congested that the economy is being damaged. Congestion relief must be a high priority for the application of Cyber Strategy. As expressed in the Master Plan:

“The impact of congestion on business and industry results in increased cost of delivered goods and services, delayed and missed deliveries and the loss of ready access to customers. These impacts translate into reduced productivity, profits, and markets. The net result is higher costs for businesses in the metropolitan region, which diminishes the region’s ability to compete in national and international markets.”

P19

Possible options to overcome the gap between the ideal and the actual include:

- a region-wide initiative for distributed work places and telework practices,
- a County-wide initiative for delivering a broad range of public and private services electronically into mixed use centers developed in most neighborhoods,
- a County-wide demonstration of new personal transportation alternatives from the Segway to neighborhood electric vehicles that will capitalize on the shorter trip lengths caused by the first two cyber strategies. Daimler-Chrysler recently announced it had agreed to provide neighborhood electric vehicles to the Playa Vista, a technologically sophisticated master planned development in Los Angeles County. Hudson County would be an excellent site for a similar pilot since the work trip for 140,000 residents who live and work in the County is no longer than 10 miles to begin with.
- expand ITS initiatives described in the County Ideal

3.5.2 PUBLIC TRANSIT

Cyber Ideal

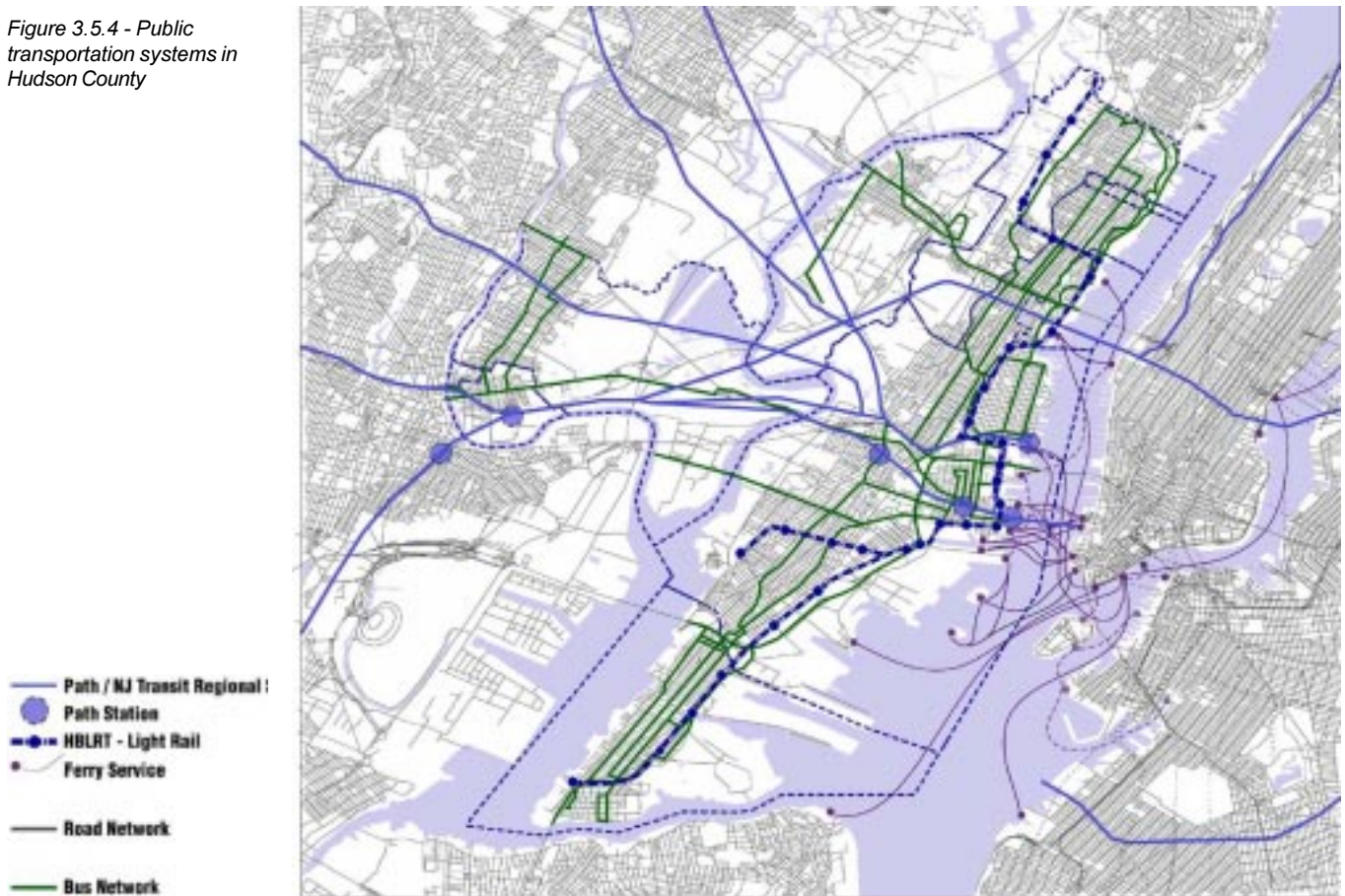
Ideally, the built environment provides good “access” (the ability to reach one place from another usually measured by the amount of time it takes to move from one location to another) between home, work and services. In this way, the cost of publicly providing mobility services (the potential for movement) can be minimized and the mobility services provided can be highly effective (connecting origins to desired destinations for a high percentage of the population).

The Cyber Ideal in public transit involves at least the following:

Smart cards for consumer ease of use across each service in Hudson County’s sophisticated multi-modal system. Smart cards also benefit the transit operator by generating a data stream that can be analyzed for origin-destination relationships, route planning, revenue projections and other purposes.

Rapid bus service utilizing driver control of traffic signals in order to avoid red lights requiring the bus to stop.

Figure 3.5.4 - Public transportation systems in Hudson County



Intelligent Transportation System technologies that can provide real time information at transit stops regarding time before next bus or train. This service will also appeal to wireless users who might want to check the timing and loading on various route options when choosing which transit line to ride.

ITS can also provide MapQuest type software calibrated specifically for the regional transit system. The e-Station being designed at New Jersey Institute of Technology and funded by New Jersey Department of Transportation and the National Center of Transportation and Industrial Productivity is a more sophisticated version of this.

As envisioned, each e-station will consist of: (1) an enhanced transportation system to inform people of exactly when buses are to arrive; (2) a portal to the Internet giving users e-mail service and access to myriad resources including the state's One Stop program for employment information; (3) a fulltime concierge or facilitator; and (4) card access to the building. As e-stations evolve, they can also offer access to e-commerce with purchases delivered to the station.

At approximately 2,000 square feet in size, each station would have a storefront facade, adequate seating, storage or other flexible space, banks of computers, a concierge desk, pay telephones, and an ATM

machine. E-stations will be sponsored and maintained by local community organizations in partnership with private entrepreneurs. The most sophisticated version of ITS at transit stops is the Network Station. The prototype was tested between 1995 and 1997 in Compton, California under the name the Blue Line TeleVillage Demonstration Project. This project was described in the Cyber Briefing Book.

Finally, there are radio dispatched para-transit services. Ideally, such a system would replicate the performance characteristics of the private automobile – on-demand, door-to-door service for a large market. Typically, because of its expense, para-transit is limited to seniors and the disabled.

Current Actual

The Circulation Element of the County Master Plan includes specific actions for enhancing walking and cycling, and for land use policies that improve access through building proximity. It does not contain recommendations for smart cards, rapid bus, or public transit ITS applications.

Hudson County has been a leader in revitalizing waterfronts through ferry service. In the New York region, the revitalization of ferry service was the outgrowth of real estate developer Arthur Imperatore's efforts to improve access to his waterfront development Port Imperial in Weehawken in 1986. It was the first private ferry service across the Hudson River since the late 1960s. Today, Hudson County is connected to Manhattan by no fewer than 4 major ferry routes. These ferries carry over 6 million passengers a year and an EPA study estimated they kept as many as 2,500 cars per day off Manhattan streets.

Gap and Optional Initiatives

- Begin planning smart card initiatives for bus/rail transferable to automated toll payments.
- Explore with Transcom possible joint ventures involving low cost use of real time traffic data.
- Plan a demonstration project of a system of 3 Network Stations at strategic locations in the County including possible ferry terminals.



Figures 3.5.5 - 3.5.6 - Upcoming HBLRT stations present a great opportunity for integrating Cyber applications

3.6 BUILT ENVIRONMENT

The discussion of the built environment is unique in this document as many of the issues described below effect, and are affected by, all of the previously mentioned elements. The spatial pattern created by buildings, roads, and open spaces, as well as their physical images is fundamental to the experience of a place. It is through the spaces, streets, and objects of a city that people come to understand it; and it is also through these ingredients that cities are ultimately able to transform themselves. Many precedents point to the fact that quality of life is a primary consideration for the attraction of technology-oriented workers. For this reason, the physical character of Hudson County is crucial to the success of Cyber County implementation.



Figure 3.6.1 - Views of New York City has had an enormous impact on the Gold Coast

Cyber County Ideal

While some predicted the wholesale replacement of cities by virtual environments, it has become apparent that the relationships between the virtual and physical worlds are intertwined and mutually supportive. Due to the rise of broadband digital telecommunications, some physical places have been replaced (e.g. the bank teller), others enhanced (e.g. the library), and yet others potentially reinforced (e.g. urban commercial cores). New technology is capable of helping to make the complexity of global culture and the complexity of Hudson County itself readable and understandable to residents and visitors. Depending upon where and how this technology is distributed and accessed can have profound visual and social benefits for the County's physical form.

The ideal physical form of a Cyber County is not a singular ideal. Unlike the homogenous character often associated with classic, focused 'cyberdistricts' like Silicon Valley, which behave as insular enclaves, an integrated Cyber County must offer a diversity of physical environments. The strengths of dense urban fabrics are a good scaffold upon which to build new layers of uses and social interactions through digital technologies while supporting smart growth initiatives encouraged by the State. A Cyber Strategy for Hudson County should simultaneously recognize and reinforce the diverse assets that have been the foundation of its growth. It should actively support high-rise office development as well as neighborhood revitalization. A Cyber County should seek to deploy different strategies for different sectors of the economy, recognizing that diversity and choice is what makes Hudson County unique. It is not about making a new County, but making a smarter one.

A Cyber County's physical environment is transparent and legible, encouraging greater participation of businesses and individuals in emergent economic, educational, and social service opportunities. Books are no longer sequestered behind walls, medical information relegated to the best teaching hospitals, and business consultation at the end of long queues. Information and expertise from around the world, as well as from City Hall, can now be delivered at a lower cost and with a higher value to citizens twenty-four

hours a day. Much like the physical transportation network has signs, lights, and structures to orient users and declare its presence, the layers of digital infrastructure are used to orient and guide people to the amenities, services and assets of the County. Social portals – libraries, training centers, schools - become a strong, visual part of the urban realm. Investments, particularly those in rail and public transportation, are leveraged with new technology initiatives that make them more attractive and usable.

A Cyber County is comprised of mixed-use neighborhoods, centers and buildings. A mixture of new uses and functions are added to the existing activity centers dispersed across the County making them more viable and central to the day to day activities of the area's residents. Integrated new technologies provide a range of services (particularly to the single use districts such as warehousing, office and retail centers) with limited up-front costs that are usually associated with bricks and mortar construction. Over time, these initiatives can reduce the demands on transportation systems and change the way these centers are currently used.

The ultimate goal of a Cyber County is to foster a culture of innovation. This culture will permeate every aspect of City-building whereby future housing, commercial and open space projects will be encouraged to seek new ways of integrating digital technology to make them more attractive and viable. The culture of innovation will ensure that the County constantly changes, adapting to new initiatives and market forces that may be present in the future. Flexibility in adapting to new opportunities is fundamental and constant.

Current Actual

Due to its strategic position, Hudson County is subject to numerous development forces that reflect the County's global, regional, and local exposure. These forces are varied and flexible, creating an environment of constant social and economic transformation. The waterfront is the most visible sign of growth with high-rise buildings that form a strong edge to the County. However, the enormous growth and change along the water has not carried fully to the County's historic neighborhoods and industrial cores. The resulting physical pattern is extremely varied and reflects the local advantages that various sites have with respect to infrastructure, location and adjacent uses.

Activity centers are scattered throughout Hudson County reflecting the multiple market forces acting on the County. Although the centers are extremely varied, it is possible to fit them into general categories. Global office centers have settled on the Hudson River waterfront, capitalizing on visual and physical proximity to Manhattan. Regional office and warehousing has grown up around the regional highway and railway network helping to mediate between the global



Figure 3.6.2 - The diversity of images in Hudson County



Figure 3.6.3 -Activity Centers - the left shows office development along the Hudson - the right depicts the neighborhood commercial corridors in the context of the County's other activity centers

and local scales (e.g. distributing global freight from the ports to the larger region). Regional automobile oriented commercial activity occupies areas around major arterials and at the intersections of highway infrastructure in the form of strip commercial centers and enclosed malls. Regional commercial centers are often marked by historic urban cores which have been transformed from focused city centers into competing regional magnets. The County is home to several important tourist destinations which serve as global and regional attractions and, finally, neighborhood centers are scattered throughout the County serving adjacent communities with local shopping and entertainment opportunities.

However, in many cases, the centers described above function as single use enclaves separated from other uses but well located with respect to transportation. Outside of the office developments along the waterfront, few of these centers use information technology extensively, and none provide services for the larger community. Given the different services each center offers from employment to retail, local residents are often required to use many centers to fulfill their needs. This places demands on the transportation system and inhibits a full range of services in each area that often make neighborhoods attractive.

The County suffers from a lack of legibility as its physical form does not follow an organized or regularized development and street pattern. This lack of order creates problems in visualizing and rationally understanding the area and the location of its primary assets and services. As opposed to traditional cities where the locations of these primary assets are often readily apparent by landmark buildings or distinct district characteristics, street signs in Hudson County become a primary method for visualizing the environment. To the outsider, Hudson County is primarily a system of highways that provide no indication of the physical form of the County's neighborhoods and amenities.

Disconnections of all types abound throughout Hudson County. The County's separations are typically created by three elements: topography, transportation corridors, and land use conflicts. Significant topographical features, like the Palisades, exist throughout Hudson County, often coinciding with real and perceived boundaries between neighborhoods. Various transportation features, such as highway overpasses, railroad grade-crossings, retaining walls, and high-traffic arteries contribute to the divided nature of the

region. Largely due to its industrial heritage, land use conflicts abound as healthy neighborhoods and important open space and commercial amenities are divided by abandoned and derelict industrial properties. The combination of these barriers frustrate any clear reading of the County's form and isolates specific neighborhoods from supporting services.

Possible Initiatives to Address the Gap

The extensive system of infrastructure both facilitates and impedes movement within the County. Combined with the other land use patterns and distribution of services, the County's fragmented physical form is contrary to the County ideal which provides a linked and networked system of services and civic amenities to reinforce neighborhoods and provide a greater range of functions for local residents. As the County's physical form is representative of its success and history, attempting to tame the existing patterns of movements and uses in the short term will be difficult. Technology initiatives should be tailored to providing services throughout the County in strategic locations that will benefit from additional use. HBLRT stations, bus stops, and neighborhood commercial corridors should be evaluated as to the specific opportunities and programs that can be applied in a cost effective manner through broadband technologies.

As mentioned in the ideal, the built environment comprises in some way all of the initiatives described in this Cyber Profile through their access and application 'on the ground.' As such, every technology initiative should be leveraged with innovative and sensitive physical designs that express their function and importance within the larger context.



Figure 3.6.4 - Diagram illustrating the physical fragmentation in Hudson County



Figure 3.6.5 - Neighborhood areas represent one opportunity for application of a Cyber Strategy

- Develop a system of digitally linked services accessible through designated facilities and the civic realm such as public plazas and public transportation stations. Events, attractive retail commercial corridors, business hubs and transportation systems can be linked in real time and imprinted on the public life of the County, collapsing the very real boundaries that isolate many of the County's existing assets from additional markets.
- Capitalize on public transportation by concentrating new uses at existing and future HBLRT stations but also at multi-modal points in the County where two or more systems overlap (ferry and light rail, Path and bus, etc.). PATH, NJ Transit, and other authorities are critical partners to engage in the short term.
- Initiate an effort to link neighborhood parks into a County-wide system of parks that provide information on public events, sports and performances in real-time through ATM broadband technologies.

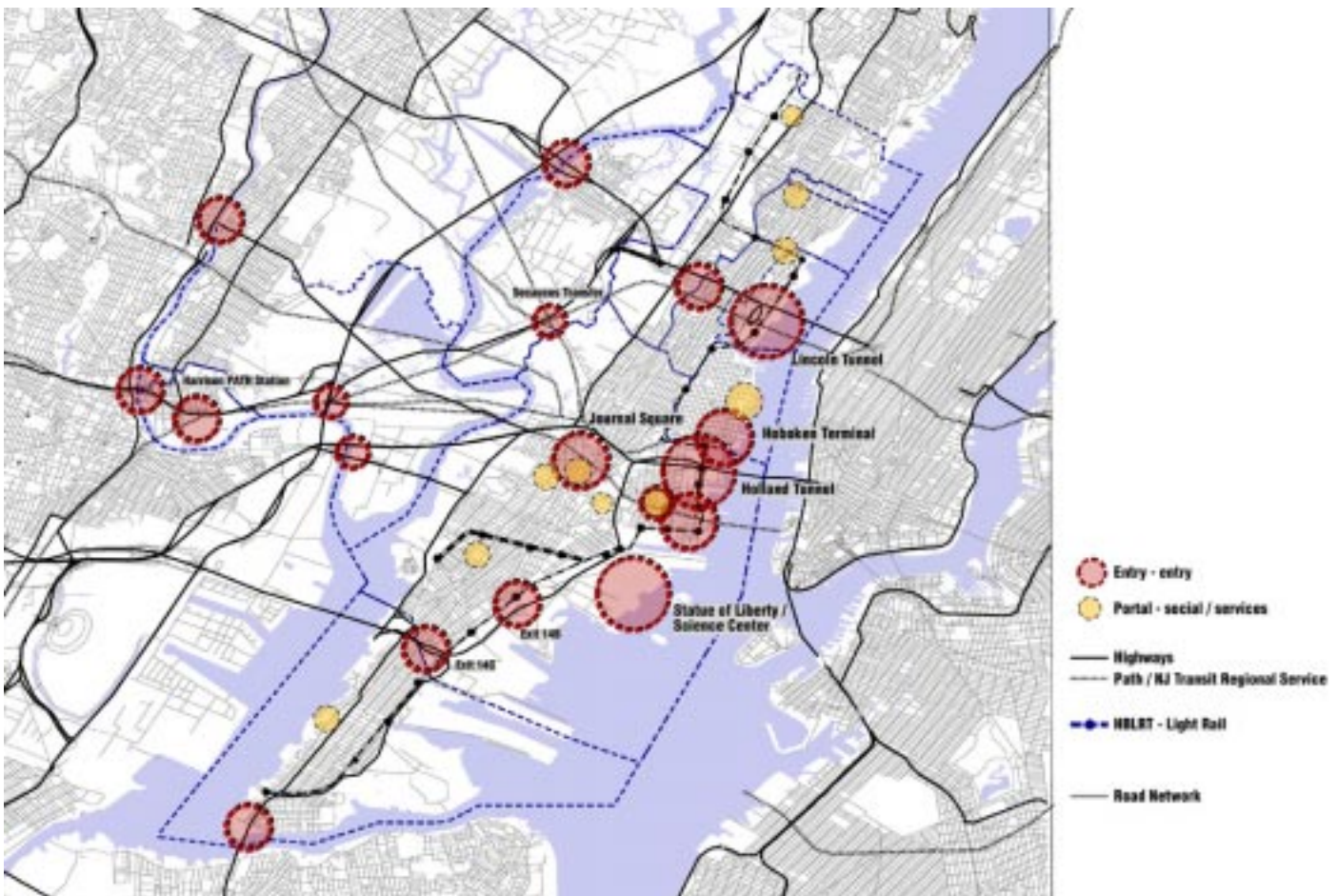


Figure 3.6.6 - Physical and social portals in Hudson County - physical entrances and locations of public services should be enhanced in the public realm

- Evaluate the existing activity centers for the potential to include a greater mix of uses that will make them more attractive and viable over the long term. Even the most successful of enclaves should be encouraged to become more diverse in their land use mix and better connected. Techniques for linking the waterfront to its neighbors should be explored by considering strong mixed-use, pedestrian-scaled corridors which extend westward into Jersey City neighborhoods as well as reinforced connections to Hoboken. Inventive approaches to infrastructure should be explored such as a potential re-use of the old, elevated rail right-of-way in the Hamilton Park area.
- Target neighborhood commercial corridors to provide an expanded range of services through telecommunication-based shared-use facilities that enable residents to use and learn new skills. These facilities can become true neighborhood centers that provide the opportunity for creative production through uses such as a digital film production or a music studio. Services that are offered in one neighborhood should be linked to others to provide a uniform level of service and strengthen the physical importance and location of key neighborhood sites. Sharing resources and information can positively effect all of the County's neighborhoods.
- Develop a system of visual orientation where the main assets, services and functions are clearly indicated and advertised from highways and gateways. Similarly, existing service and training facilities should be physically pronounced and an active part of the urban environment. Hudson County's gateways are poorly defined and lack any effort to identify the unique assets in the County.
- Coordinate marketing and create a full community bulletin board on-line that reflects the distinct characteristics of each neighborhood. Civic space should include both digital networks and physical environments.
- Target opportunities for improved public space when they exist with the above Cyber Strategy initiatives.