

Technology as Part of Transit Oriented Developments

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Part I

An Introduction to the *Digital Centers Strategy* for TODs

The Problem

The population of California is expected to grow 37% by 2020. This will be equivalent to adding the population of Los Angeles every seven years.

However, there are insufficient funds for building the automobile infrastructure required to address projected levels of automobile traffic. In fact, acute traffic congestion is currently a problem in every urbanized region in the State. Even if adequate infrastructure was affordable, auto generated air pollution remains a threat to global ecosystems. The price of gasoline has increased enough to remind policy makers that the auto-dependent California life style hangs by the thread of imported oil, with price and availability determined in the Middle East and South America.

It appears that the era of expansion of automobile infrastructure is nearing its end. The question is, of course, what are the alternatives?

In the search for alternatives all paths lead to the *urban form*, the locational pattern of urban functions in geographical space. For example, traditional fixed-route public transit is not economically viable in low density areas with widely dispersed functions.

Where cities were once built with all functions integrated in walkable centers, or along transit corridors, availability of the automobile allowed developers to build functions on land between and beyond the main channels of public transit. Housing in tracts, shopping in malls, work in office or industrial parks, government in civic centers and education on large campuses, each separated from the other by significant distances, have resulted in near total dependence of urban life on automobility.

Vision of Transit Villages as Bricks and Mortar

The structural solution to automobile dependence is to change the urban form that generates the demand for transportation. The idea of functionally integrated town or village centers located at transit stops with higher density mixed commercial and residential in the middle surrounded by lower density residential on the village periphery is a vision of a new urban form that has achieved some degree of consensus. This vision

is more or less included in the definitions of livable communities (US Department of Transportation, Federal Transit Administration), transit villages (Cervero), transit oriented communities (Calthorpe), Smart Growth (Angelides), and traditional neighborhood developments (Congress for the New Urbanism).

Although an attractive vision, it is a bricks and mortar strategy that requires substantial amounts of capital, agreeable market conditions, and relatively long time periods to implement. For example, it has taken over 7 years to design and develop the Fruitvale Transit Village.

In the aggregate, it is unrealistic to assume that more than 20% to 40% of the projected growth will be built according to the livable community model. And construction of new communities on the regional periphery do nothing to retrofit the older suburbs.

Even worse, the lack of transit oriented development is calling into question the political viability of additional investments in fixed rail transit. A report entitled the "Joint Development Entrepreneurial Study," prepared for Bay Area Rapid Transit by the Sedway Kotin Mouchly Group (with subcontractors) was published in May, 1996. The report states that there has been a "frequent failure of major transit investments in the United States to generate the amounts of transit-related development anticipated and needed to generate the long-term ridership essential to justify the capital investment in transit."

These limitations imply that something else is needed, particularly at rail stations.

The Globally Integrated, Digital Broadband Network

The opportunity for something else exists because of truly revolutionary advances in the price-performance characteristics of network technologies. It is becoming clear that the globally integrated, digital, broadband network (DBN) will transform key elements of all societies, regardless of economy, language, or customs.

Even the relatively weak narrowband version based on the analog public switched network that has become popular today as "the Internet" is having tremendous impact. "In a recent survey conducted by Sprint and Southern Methodist University's Cox School of Business, 94% of executives said that technology solutions are driving their business strategies today. In fact, 66% of them said technology was completely driving business strategy." (Newspage.com, Inc., 9/21/99)

Local governments are beginning to see e-government as a model for reducing costs and improving customer service. Universities are capitalizing on their brand names in the national and global distance education markets. Medical centers are deploying telemedicine programs as ways of cost-effectively bringing the expertise of specialists to under-served populations.

The robust Internet II of the future will be based on digital private networks and will offer multi-media, three dimension, full motion, high resolution, interactive features. In order to remain viable in this future, the business strategies of virtually all businesses, institutions, non-profits and private businesses will need to incorporate DBN.

Despite its growing influence, this phenomenon has yet to be incorporated into a new vision of urban form that could be advocated by city builders, rail transit authorities, environmentalists, economic development planners, property owners, and especially advocates of TOD.

Vision of Transit Villages as Digital Centers

As private commerce, public transactions, and collaborative work migrate from bricks and mortar facilities onto digital broadband networks, the physical location of these activities will become relatively flexible. These activities can be thought of as materializing where there is network access.

Banks provide a good example of this phenomenon. Typical retail banking functions such as cash withdrawals, account activity/balance inquiries, and balance transfers can be accessed through an automated teller machine available at a convenient neighborhood location. This application of network technology has added functions to the convenience store and reduced the need for some consumers to visit a formal bank as frequently. Automatic loan machines as well as banking based on personal computers and smart cards will, in the future, add more banking functions to neighborhood locations or to homes while further diminishing the need for trips to banks and, ultimately, for buildings dedicated to banking activities. (See a discussion of the potential dematerialization of banks in “The Future of Retail Banking,” Deloitte & Touche Consulting Group, 1995)

This means that by clustering the technologies required to access the network, many urban functions can be spatially re-organized into new patterns that are conducive to public transit usage and walking. In this way, the automobile bias of the urban form can be reduced. Markets and a variety of economic opportunities can be introduced at places where few currently exist.

Kiosks, speaker phones connected to audio bridges, computers with modems, and a variety of video conferencing devices along with the appropriate network services can multiply the functions available at any particular location. Re-locating to a network a function normally found in a specific bricks and mortar location is exactly what happens in the following cases, all of which occur today.

- consumers satisfy some of their banking needs at an ATM, or over the phone,
- students take a distance education class at an off-campus location,
- citizens pay their traffic tickets at a government kiosk,
- employees work at a telework station near home,
- business people hold meetings over an audio bridge,
- work teams complete their collaborative assignments using e-mail, and

- consumers buy clothes over the Internet.

These examples illustrate the possibility of rationally re-organizing urban form quickly and affordably by developing a system of *network stations* -- centers for network access at strategic locations. I refer to such a policy as a *digital centers strategy for livable communities*. The phrase “bricks and bits” implies that the strategy will retrofit the built environment into a complex combination of physical and electronic functionalities.

To contribute to TODs, add *network stations* to available space near transit stations. A *network station* will have between 10,000 and 20,000 square feet space and be equipped and staffed so that the public can get shared use of network access technologies. This is analogous to shared use of public transit vehicles. The *network station* acts as a gateway to the DBN like the train station is a gateway to the rail network.

The *digital centers strategy* has been demonstrated with funding from the Los Angeles County Metropolitan Transportation Authority in Compton, California where the prototype televillage (network station) was developed

The Digital Centers Strategy Elsewhere

Although the practice of using network services to reinforce transit villages is new, it is gaining support elsewhere in California and the nation.

- The Blue Line TeleVillage at the Compton station of the Metro Blue Line in Los Angeles County is the prototype facility. That demonstration project won awards from the International Telework Association and also from the National Information Infrastructure Competition in the “Telecollaboration” category.
- Based on the success of the prototype, the strategy was publicly endorsed by then U.S. Secretary of Transportation Federico Pena
- The “bricks and bits” strategy won an Honorable Mention Award in the Central Valley’s International Design Competition entitled “Housing the Next 10 Million.” The American Institute of Architects and the U.S. Environmental Protection Agency sponsored the Competition.
- The strategy was referred to as a good example of visionary thinking by Planning Magazine editor, Ruth Knack in the special issue on the 21st Century published in December, 1999.
- VIA Metropolitan Transit in San Antonio has included a system of TeleVillage Centers in its light rail plan going before the voters in May, 2000.
- Based on the digital centers strategy, the City of Long Beach incorporated electronic neighborhood centers into its recently adopted Strategic Plan as a way of reinforcing neighborhood walking communities.

Part II

Bricks and Bits Strategy Applied to the Ed Roberts Campus 12 Ideas to Provoke Discussion

In this section, I apply the *bricks and bits strategy* to suggest 12 ideas to provoke discussion at the ERC design charrette.

1. Open the ERC “Info Box” on October 12, 2000. In other words, create an ERC presence in available space near the Ashby BART station within 6 months. Use the facility as a visitor center for exhibiting the ERC plans/collecting comments, and as a communications center for delivering some services from various partners located elsewhere to clients for whom the Ashby station is convenient. Equip the facility with low cost video conferencing and ISDN service.
2. Import a few of the government services located at the Eastmont Town Center to the ERC “Info Box” for both ERC clients and residents of the South Berkeley Community. Funding from the MTC for recent TLC application would support planning for both this idea and #3.
3. Create an ERC presence electronically at the Eastmont Town Center. Direct clients to the Eastmont Town Center who live in Oakland and further south, who do not live near BART, and who can conduct their face to face meetings over video.
4. Establish an independent call-center-agent incubator in order to create employment for 10 to 30 independent call agents every six months. InfoCast in Naperville, Illinois has a call-center-agent development program that could be adapted by the ERC to its client’s needs.
5. Become a regional, national and international leader in the practice of telework. By promoting the telework movement, and by putting workers with disabilities at the forefront, there could be many more telework opportunities for people with disabilities.
6. Work with large chain stores such as Nordstrom’s to develop 5,000 square foot pocket stores. Pocket stores will have small staffs, carry high volume goods, and offer high speed access to the retailers web page – with staff there to assist.
7. Solicit the latest generation of ATMs (talking ATMs for the blind, ITMs using iris recognition, check cashing ATMs for the “un-banked,” and full transactional ATMS) and solicit every kiosk available (HUD Next Door).

8. Work with AOL to implement its “AOL everywhere strategy” at the ERC. Provide public access to AOL brands Moviefone, Digital City, Instant Messenger, and Mapquest. Order convenience goods at the BART station of origin for pickup at the ERC retail
9. Strike a deal with BART to get access to one of its unused fiber strands for the ERC and other non-profit organizations, and use it to connect employees with each other and with clients.
10. Look into using the auditorium for exhibiting some feature films (high definition, big screen public entertainment) as a service to the South Berkeley community, or possibly as a revenue source. The economics of film exhibition will change dramatically due to “digital cinema” with direct satellite distribution of product and automated exhibition. The firm named AndAction provides turnkey operations with Texas Instruments’ DLP Cinema digital projection system. This same infrastructure can be used to show pay per view events.
11. Aggressively extend technology-assisted-living to network technologies by, for example, equipping people with certain disabilities (e.g., speech) with 3Com’s Palm Computers or Handspring’s Visor so that they can “beam” communications via infrared. Send memo’s, business cards, other contact information, or software. Work teams can share meeting notes. At Banana Republic in NYC, shoppers can get a store map and directory beamed to them at the front door. Another example is a small plug-in-card with integrated laser scanner (matchbook size) to add bar code scanning capability to Palm Computers, handheld PCs, and pen tablets powered by Windows CE means that a user can scan bar codes with one hand.
12. Work towards a 7x12 and even a 7x24 operation in order to maximize the value of the development, and to deliver more services to the community. For example, consider the potential for international video conferences since 7PM to midnight in Oakland is 11AM to 4PM in Hong Kong and other regions in Asia, and midnight to 6AM in Oakland is 9AM to 3PM in Paris and other regions in Europe.

Walter Siembab
The Siembab Corporation
Summary, April 2000

The corporate mission is to provide planning and implementation services to collaborative regional efforts that deploy digital, broadband networks for livable communities and sustainable economic development.

Mr. Siembab developed the *bricks and bits strategy* as a framework that can be used for retrofitting existing cities or building new communities. The *strategy* received an Honorable Mention Award in the Central Valley's International Design Competition entitled "Housing the Next 10 Million," sponsored by the American Institute of Architects and the U.S. Environmental Protection Agency. The Siembab Corporation has:

- Designed and operated the Telework Facilities Exchange Demonstration Project, the largest multi-jurisdictional telework program in the nation with 56 participating government agencies. This project won the 1995 Innovation Award from the International Telework Association.
- Designed and developed the Blue Line TeleVillage Demonstration Project, the prototype Urban TeleVillage which had over 12,000 visits by community members in 9 months of operation, 32 participating organizations and 112 additional organizations preparing to participate. This project was a Semi-Finalist in the 1996 National Information Infrastructure Award Competition, and won the 1997 Innovation Award from the International Telework Association.
- Advised the Ahmanson Ranch in Ventura County and Village One in Modesto about how to strategically integrate telematics networks into their "new urbanist" community designs.
- Advised the City of San Diego and the Los Angeles County Metropolitan Transportation Authority on joint development opportunities with private sector fiber network developers.
- Developed for the Regional Action Partnership in Sacramento County a conceptual plan for two "City of the Future" centers to retrofit distressed retail districts in order to demonstrate shared access to services and work, small business access to e-markets, and new channels for introducing innovative technologies to the business community.

Mr. Siembab has been a university lecturer and professional seminar leader teaching how to use telematics to create a more livable, sustainable city of the future. He frequently makes presentations on this topic at conferences and has published a number of reports and articles. He has served in a leadership capacity for several professional associations, most recently on the Board of Directors of the International Telework Association.