

# Transportation Redefined

## Moving People, Goods, and Information

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*"Our thinking has created problems which cannot be solved by the same level of thinking."*

—Albert Einstein

Societal indicators suggest that the transportation industry may want to revisit some of the key assumptions about growth forecasts in the traditional transportation infrastructure. Examples of these indicators include the following. A builder-sponsored survey in the San Francisco Bay Area revealed that more people worry about traffic and public education than affordable health care and preserving the environment. Land developers are beginning to take a serious look at how to build "electronic roads" into their developments. The Institute of Transportation Studies at the University of California-Davis has established a research program in com-

munications as a mode of transportation. A recent California policy conference was oriented toward using a "new level of thinking" which considers how the communications infrastructure might be used as a transportation facility.

Given California's long-recognized status as a bellwether state, the time may be right to look more closely at trends prompting this interest in another mode of transportation. Some of those trends are explored here.

### Public Policy

The advisory committee to the California Secretary of Business, Housing and Transportation released a model transportation policy document this year. The possibilities of the use of communications technologies are recognized in this publication, *Califor-*

*nia Transportation Directions: Mobility 2010* (1). Another document, *Vision: California 2010*, published by the California Economic Development Corporation, cites telecommuting as a way to improve the state's traffic congestion and air quality (2). Even *Moving America: New Directions, New Opportunities*, the national transportation policy statement (3), states, "[D]ramatic developments in telecommunications . . . are transforming and improving the efficiency of transportation and creating new opportunities such as 'telecommuting'." The Southern California Regional Mobility Plan, which makes use of telecommuting and flexible work hours, is perhaps one of the most ambitious public policy plans in

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the world. By 2010, the forecast is for 10.3 million home-based trips, with 3 million of those trips to be addressed by telecommuting and flexible schedules (4).

## Life-Styles

In a shrinking labor pool, the employer who offers to deliver work to the employee will be the preferred one. Commutes of one to four hours a day are no longer consistent with the life-style of members of two-income-households who are struggling to meet family needs. According to Tom Miller of Link Resources, 34 million people are working full- or part-time from their homes. This is a reflection of both the economy and of a significant change in life-style.

According to Jack Nilles, the telecommuting consultant who coined the term "telecommuting," 60 percent of jobs involve some sort of information processing (5). In most cases, information processing can be done anywhere, thus work can be delivered to the employee via the communications transit system.

## Technology

Propelling the use of the communications transit system is the use and availability of communications technologies. Cellular telephones, pagers, voice mail, facsimile machines, and personal and lap-top computers are commonplace. Fiber optics into the home and network automatic call distributors, which make it possible for people around the world to be a part of the same system, are on the one-to-two-year horizon. All these technologies are changing how the traditional transportation system is used. According to Patricia Mokhtarian, author of *A Typology of Relationships Between Telecommunications and Transportation* (6), "Finally, the most important impact of telecommunications may not be that it increases or decreases the amount of travel that takes place, but that it permits a great deal more flexibility in whether, when, and how to travel."

## Environmental Regulation

The least polluting method of moving information is telecommunication. The South Coast Air Quality Management District, which is implementing Southern California's California Clean Air Act, has designated telecommuting as a transportation control measure. Similarly, the Bay Area Air Quality Management District has recommended telecommuting demonstration projects for collecting data to determine the impact of the use of communications technologies in meeting air quality guidelines.

## Health

Long commutes have an adverse effect on the body, according to Raymond Novaco of the University of California-Irvine, who has published his research findings in the *American Journal of Commuting Psychology*. Spending hours of delay in heavy, smog-producing traffic can lead to high blood pressure, irregular heartbeats, and chest pain (7). Annual health care costs exceed \$600 billion, and the amount would be 12.5 percent more if it reflected the 31 million uninsured, according to the Compensation and Benefits Review (8). The incentives to encourage exploration of alternative modes of travel that may not have so great an impact on health are clear.

## Conclusions

It is generally recognized that we have moved from the Industrial Age to the Information Age, which requires emphasis on a different type of infrastructure. Although we will continue to need the current modes of transportation, we will also need to expand our awareness of the communications infrastructure as an important Information Age transportation facility. Thus far, private industry has been the primary source of investment in this transportation facility. Perhaps we should ask, "Is it time to start creating public/private investments in communications facilities? Are transportation industry professionals adequately trained in the possibilities and the impacts

of communications as a transportation facility?"

Finally, taking a systems view of transportation, one can conclude that one of the most fundamental reasons for the increasing levels of single-occupant vehicles has to do with organizational principles. Organizations still revolve around Industrial Age principles, which presume that workers have to go to a centralized site because that is where the workers' tools are. However, Information Age employees have such tools as facsimile machines, personal computers, voice mail systems, pagers, and electronic communications networks capable of sending and receiving work. Therefore, one can conclude that much can be done to solve transportation capacity problems by adopting Information Age organization principles, which allow employees to travel on the virtual network to the virtual workplace.

## References

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