

**TELECOMMUNICATIONS:  
OREGON'S NEXT TRAIL**  
*Some Problems Today, Many Prospects Tomorrow*

Report to Governor Roberts

prepared by  
Task Force on Telecommunications  
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## FOREWORD

Electronic highways in the 21st century will move information at an unprecedented pace and Oregon has some road building to do. Oregon's changing economy is becoming more information-intensive and our success in the Information Age depends on providing services that allow efficient access to and distribution of information. We need to be doing the right things now inside government and across Oregon to take advantage of the promise of telecommunications and other information technologies.

In January, you asked us to join a task force to look at statewide communication systems to make sure they are being used most effectively. Specifically, we were given two tasks: (1) To review existing telecommunications activities within state government; and, (2) To determine what role state government should play in establishing an advanced telecommunications infrastructure that serves all Oregonians.

In attempting to answer the first question we were impressed by the breadth of telecommunication activities across state government and by the emerging spirit of cooperation among key agencies to work on communication problems and opportunities. However, we also observed that telecommunications lacks the stature and recognition it deserves for the important role it can play in providing services to citizens. Goals and objectives are notably absent for telecommunications within state government, and there is undue splintering of some roles.

Only limited time was available, so we were unable to address the second task in-depth. The question of state government's role in assuring an advanced telecommunications infrastructure is a very important one. It merits much more consideration than we were able to give it. State government can and does have an impact on the telecommunications structure that serves all Oregonians. State government performs a regulatory role through the Public Utility Commission over some aspects of telecommunications. Also, state government happens to be the largest consumer of telecommunications products and services in Oregon.

State government has not demonstrated needed leadership on telecommunications. The role of telecommunications in economic and work force development, education, and health policy has yet to be defined. Strategies need to be crafted for leveraging public dollars that are already being spent to ensure that an advanced telecommunications capability is available to all regions and citizens in Oregon in the future.

Here, then, is a true public policy opportunity: To define the role telecommunications will play in our lives in the coming years. We hope this is an opportunity your administration will find irresistible.

Because of time constraints, our report is more general than definitive. Still, we as a group are *supremely confident* that properly directed and deployed, information technology and telecommunications can bring effectiveness, efficiency, and equity to government services. We hope our findings and recommendations are useful in guiding future efforts and future thinking.

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## THE CASE FOR CLEARER FOCUS

Telecommunications is much more than telephone service. Taken literally, it means communicating over a distance. In the new age of information, it is the merging of telephones with an array of other technologies--television, computers, satellites, microwaves, radiowaves--into a powerful interactive system that enables citizens to access and process information. As such, telecommunications is critical to *all* of the state's objectives.

Like a heart beat, telecommunications is often taken for granted. While it is a vital component to our economic, educational, and social health, telecommunications often gets overlooked as long as it is functioning. We continue to feed it routine dosages of nourishment--in this case investment of state money--every budget cycle without guidelines.

The status of telecommunications in Oregon is evident by its absence in *Oregon Shines*. Telecommunications is not listed as a strength. Nor is it considered a weakness. It seems it just is ... Adequate. Merely functional on an as-needed basis. Surviving on its own momentum. This is surprising since telecommunications is the primary delivery vehicle we will need to meet the challenges of the emerging information economy and many of the aspirations expressed so well in *Oregon Shines*. More to the point: telecommunications must be an integral part of any statewide strategy.

- Rural economic development and educational opportunities will ultimately depend upon the quality of telecommunications systems.
- Health care training, diagnosis, and analysis can be delivered and maximized statewide through telecommunications.
- Educating our children and (re)training our work force will be enhanced by it.
- Full participation in an international economic community requires a high quality telecommunications system.
- Maintaining a quality environment and avoiding congestion depends in part on our ability to substitute information movement for people movement.
- And in the new era of Ballot Measure Five, telecommunications and other information technologies have the potential for allowing state government to continue to provide quality services to Oregonians. Boldly used, these technologies offer a way state government can become smaller and smarter and even boundaryless--able to share people, machine, material, and money resources.

Deployment of developing telecommunications technology should be as much a cornerstone of Oregon's future as its education system or transportation system. Yet, the state's investments are driven by a two-year, politically-based budget process. And, almost as an afterthought, by its data processing needs. The possibilities for integrating services and leveraging investments by sharing capacity are too often unexplored. Instead there is a tendency for individual agencies to make organizationally-bound and event-based telecommunication investments.

As we pursued the questions asked by the Governor, a few basic problems became evident. Investments have been made with little long-range, strategic planning. There are no threshold criteria, public values, or goals against which to judge a proposed investment. At the same time, coordination of telecommunication services is difficult, as there is no single point of coordination or decision-making for approval of the investments. Still, recent steps by state government are encouraging. We heartily affirm the Governor's assignment of responsibility for telecommunications to one of her Senior Policy Advisors. Creation of the interagency Telecommunication Advisory Committee is another positive step. And the Governor's appointment of this Task Force signals that more attention is being given to the state's telecommunications decisions.

## FINDINGS

1. *Public policies and goals for telecommunications throughout Oregon need to be established, widely distributed, and closely monitored.*

We believe every Oregonian should live and work where they want, including working from the home, without paying a penalty in terms of education, health services, infrastructure, or access to services provided by governments. Oregon's telecommunications system should offer access to all citizens regardless of location, income, or background.

We have already noted the lack of a telecommunications strategy for Oregon; that state investments are driven by a two-year budget process primarily generated from the bureaucracy's data and voice network needs. We have implied that telecommunications can have a transformational impact on the lives of Oregonians, the conduct of their business, and the effectiveness of their education system. As such, state telecommunications investment and deployment decisions must be shaped and leveraged in a larger context.

2. *Telecommunications lacks stature and recognition of the important role it can play in making government and education more creative and effective.*

The promise of telecommunications depends upon strategic planning, strategic thinking, and leadership. Do we want our government to become "boundaryless" in the future so as to be able to move resources, information, and ideas quickly and adeptly across agencies and across governments in Oregon? In an era of resource scarcity do we want to use technology to support key alliances with other governments, private sector enterprises, and not-for-profits? If so, what are those most important links? Somebody or some group needs to make these kinds of strategic decisions to make telecommunications more than just the transmission of electronic signals.

The National Governors Association's (NGA) recently issued report on telecommunications specifically acknowledges the important role of this technology in the delivery of educational services. NGA supports, "*a(n) ... education and public purpose ... telecommunications network--a system that allows distribution of, and student interaction with, multiple education programs simultaneously in every part of a state or nation-regardless of social and/or economic status.*" Oregon, should do no less if it does, in fact, believe that education is the key to economic growth and an informed citizenry.

3. *Citizen access to government services and public information via telecommunications needs to be affirmed and strengthened .*

Today most businesses and perhaps one-quarter of the homes in Oregon have computers. Ninety-three percent of Oregon households have a telephone, which is just a special form of information terminal. Demand is mounting from companies and individuals for easy access to government's public records and deliberations. Individuals are gaining this access to commercial services and will expect nothing less of government. The cost to government of not keeping within shouting distance of these advances is not merely the greater cost of using inefficient tools, but of continued erosion of public confidence.

4. *Oregon should have a full set of performance measures for tracking the health and capability of its telecommunications infrastructure.*

A basic tenet of administration is: if you can't measure it, you can't manage it. While the Public Utility Commission collects some data relevant to its hearings and regulatory role, no other groups appear to be monitoring Oregon's telecommunication vital signs, such things as the breadth and form of telecommunication penetration, who is served, types and extent of citizen access and service levels, the currency of the technology, mix between government owned and leased lines, counties and cities served, and so forth.

## **RECOMMENDATIONS**

We offer three categories of recommendation to further the exploration of telecommunications as a vital state resource. In the short term, we address the immediate organizational and implementation difficulties for developing and assessing telecommunication investment proposals. In the long-term, we address further examination of those issues which we were unable to study in-depth, including the role state government plays in development of the public switched network. Our general recommendations speak to the lack of a vision and policy framework that would enable state government to view telecommunications as a critical strategic resource.

### General Recommendations

1. Because telecommunications is an essential element of economic performance and delivery of service, executive direction is needed to elevate telecommunications to a stature equal to education or transportation.
2. The state needs to establish a strategic plan for telecommunications and articulate policy and goals which give needed direction, cohesion, and context to how we think about telecommunications and how we invest in this infrastructure.
3. The overriding mission of any strategic plan ought to be to increase, to the maximum extent possible, citizens' access to public information and services without regard to geographic location or income.
4. In addition, any policy should include, but not be limited to:
  - a. The state should encourage the establishment of a wide array of gateways for interconnection so that existing institutional and technical boundaries will become transparent enough to make it easy to access and share networks and information.
  - b. The state should develop standard platforms for voice and data networking.
  - c. State government networks should be designed to provide cost-effective, efficient communication services, using shared, rather than dedicated, lines and facilities where economically and technically feasible.
  - d. Whenever possible, the procurement of Oregon state government network features and capacity should help ensure the availability on the public switched network of the features and capacities needed for the development of a modernized telecommunications system throughout the state.
  - e. Oregon should support both directly and indirectly the cultivation of telecommunication professionals to carry out the planning and maintenance required to bring the telecommunications function up to the strategic level.
5. The state should establish a full set of performance measures for tracking the health and capability of its telecommunications infrastructure. (Outlines of three sets of potential measures for the state and state government are attached as appendices.)

### Recommendations for the Short-Term

1. Eliminate any statutory distinction between "telephones" and "information technology" and establish a central authority for coordinating, evaluating, and setting priorities for the state's telecommunications efforts.

2. Issue an administrative rule or executive order to formalize the cooperative/peer review role performed by the inter-agency Telecommunications Advisory Committee. This group is making good progress; the expectation for continued interagency cooperation on telecommunication projects should be formalized. It should be involved in program deployment ideas before agency plans become fixed.
3. Establish criteria for judging the merit of state agency telecommunication projects. These criteria should assess the project's impact on the community of state and local agencies, the citizens they serve, and the public switched network. These criteria should include, but not be limited to:
  - a. The degree to which the project increases the level of citizen access to information and governmental services.
  - b. The proposed investment's capacity for interagency cooperation and the sharing of network services.
  - c. The degree to which investments may provide information services that enhance the state's provision of other services.
  - d. The extent to which the proposed investment can use existing state network capability, including the lottery system.
  - e. The potential impact of the investment upon the utilization and deployment of the public switched network.
  - f. The degree to which the investment results in a standard platform that easily links to other networks and services.

#### Recommendations for the Long-Term

1. Establish a Task Force under the direction of the Governor's office to develop telecommunications policies and goals for the state as a whole, including the setting of targets for deployment of telecommunications technology in the next decade.
2. Conduct a study to determine the potential for telecommuting in the state's work force and to determine the changes in personnel practices necessary to enable new work arrangements that take advantage of telecommunications technology.
3. Implement a comprehensive statewide electronic mail capability to link state agencies, cities, counties, and Educational Service Districts, and to interconnect with public switched electronic mail services by 1995.
4. Extend state government's emerging standards in data processing, data base management, and network management to cities, counties, and Educational Service Districts to allow easy sharing of information resources and the creation of information alliances.

## *Appendix One*

### List of Possible Performance Measures for Determining the State of State Government's Network

The Telecommunications Advisory Committee should provide a status report every two years. That report shall include, but need not be limited to the following:

1. A map and description of the telecommunications networks operated by the state government on government owned or leased facilities, such description to include the type of facilities and transmission capacities.
2. A description of the current use of those networks for public access to public information and a statement of plans and ideas for possible changes in those networks that could improve public access to public information.
3. A summary of what the state government is doing and plans to do, in connection with the procurement and operation of state networks, that may change the general availability of public telecommunications infrastructure for information access for all Oregonians. In particular, the report should describe how government network procurement could stimulate the general availability on the public switched network of the services and features being purchased for state government networks.
4. For each of the three objectives listed below, the report should provide quantitative measurements of the current status, proposals for specific quantitative goals for future time periods, and discussion of what needs to be done to achieve the goals. Measurements and goals should be specified for the state as a whole and for each county.
  - a. Public access to state government information and public services by voice telephone
    - (i) The report should specify the percent of Oregon households with toll free voice telephone access to state government information and services.
    - (ii) If user fees or telephone toll charges are required for any Oregon resident to have access to state government voice information networks, the report should specify for such networks the percent of Oregon households that would be required to pay in combined user fees and telephone toll charges 25% more than the lowest combination of telephone charges and user fees required for similar access.

(iii) If voice telephone access to a central state government telephone information directory and referral service is provided, the report should specify the percent of Oregon households with toll free access to such service.

b. Public access to public information available on state government computer networks

(i) The report should specify the number of state government databases containing public (not private, proprietary or confidential) information accessible through state government data networks. The report should specify the percent of those databases to which all Oregon residents are permitted at least read-only access to the public information in those databases.

(ii) The Executive Department should establish a common standard protocol for access to and interface with government databases and data networks. Of the publicly accessible databases reported under 5(b)(i) above, the report should specify the percent that are accessible via that common standard.

c. Public access to government video networks

(i) The report should specify the percent of Oregon communities with a video information access node on a government network (for example, via Ed-Net).

(ii) The report should specify the percent of communities with such a video information access node, for which the video network node can be used for video access to state government, either for legislative hearings, for video teleconferencing with a state government office, or other state government video information access.

## *Appendix Two*

### List of Possible Performance Measures for Gauging the Health and Capability of Oregon's Public Telecommunications Infrastructure

The Public Utility Commission has regulatory oversight of the public switched telecommunications network in Oregon. The Public Utility Commission should provide a report each biennium. That report should, (1) describe the current state of Oregon's publicly accessible telecommunications infrastructure, (2) provide a summary of what the commission is doing and plans to do to further improve the availability of telecommunications infrastructure for information access for Oregonians, and (3) provide recommendations for changes needed, if any, to achieve the goal.

The commission report should include, but need not be limited to, (1) results of measurement of the current status of each of the 13 specific objectives listed below, (2) proposals for specific quantitative goals for each objective to be achieved in later time period, and (3) discussion of what needs to be done to achieve those goals. Measurements and goals should be specified for the state as a whole, for each county and for each local exchange telecommunications utility's franchised territory, if applicable.

#### 1. Universal telephone service:

percent of households with a telephone

#### 2. Single party service:

- a) percent of residential telephone lines with single party service
- b) percent of business telephone lines with single party service

#### 3. Touchtone service

- a) percent of residential telephone lines on which a touchtone phone would operate without any changes by the local exchange carrier (not optional availability for an additional fee, but "works now" status)
- b) percent of business telephone lines on which a touchtone phone would operate without any changes by the local exchange carrier ("works now")

#### 4. Service quality standards

The commission should specify technical service quality standards suitable both for reliable voice communication and for facsimile and data transmission at speeds up to 9600 bits per second without special line conditioning.

- a) percent of residential lines meeting this quality standard
- b) percent of business lines meeting this quality standard

5. Extended area service

- a) percent of telephone exchanges in which 80 percent or more of intra-LATA calls are local or extended area service calls
- b) percent of telephone exchanges from which a call to the seat of county government is a local call

6. Enhanced emergency service (E911)

- a) percent of telephone exchanges with all lines served by 911 service
- b) percent of telephone exchanges with all lines served by E911 (enhanced 911, with automatic number identification)

7. Equal access

percent of telephone exchanges with equal access to competitive long distance carriers on all exchange access lines

8. Intrastate toll

annual percent changes since 1984 in typical intrastate toll charges compared to typical interstate toll charges for both switched and dedicated access

9. Optional vertical services

percent of telephone exchange for which optional custom calling services such as call waiting, call forwarding and three-way calling are optionally available to all exchange subscribers

10. Mobile (cellular) telephone service

percent of geographic territory (in square miles) in which mobile (cellular) telephone service is available

11. Voice messaging and other audio information services

- a) percent of exchanges with voice messaging optionally available with no long distance toll charges required to reach the information provider
- b) percent of exchanges with other audio information services available with no long distance toll charges required to reach the information provider

12. Information gateway and other data information services

- a) percent of exchanges with access to a data information gateway, such as CompuServe, Prodigy, Tymnet or SprintData (formerly Telenet), with no long distance toll charges required to reach the gateway or information provider (excluding 800 number access)
- b) percent of exchanges with switched broadband data services with a data rate of at least 56 kilobits per second available

13. distance learning and other video information services

- a) percent of schools with access to video distance learning service
- b) percent of telephone exchanges with video telemedicine or business teleconferencing services available using either analog or compressed digital video technology

In addition to the above, the commission should include in its report a map showing the major fiber optic, microwave, cable and other telecommunications facilities for public switches interexchange telecommunications service in Oregon, and indicating the placement of the points of presence of the major interexchange carriers.

The report should also include a listing, by local exchange carrier within each county, of the percent of their local exchange served by (a) digital switches, (b) electronic analog switches with stored program control, and (c) electro-mechanical switches.

The report should also include a statement by the commission concerning the procedures used, if any, to coordinate with the Oregon Economic Development Department to assure that telecommunications infrastructure is in place to meet the needs of specific economic development goals and projects.

*Appendix Three*  
Performance Indicators for Measuring *K-14* Education's Active  
Partnership in the State's Telecommunications Network

The Department of Education should provide a status report every two years that includes, but need not be limited to, the following:

1. Statewide in-service to provide school district superintendents and community college presidents a perspective on how educators should use technology in the classroom today.
2. Statewide in-service illustrating the achievable benefits available to Oregon's learners through technology.
3. Policy statement that encourages a strategic partnership between the state government, business community, and *K-14* education, with emphasis on teaching and learning with computers, as well as the use of multi-media in the classroom and work place.
4. Combine teaching and technology to bring excitement and learning to Oregon's schools:
  - a. Telecast enrichment courses to urban schools.
  - b. Help urban schools expand curriculum possibilities through cable and/or satellite television signals.
  - c. Challenge advanced students with vast storehouses of information on CD-ROM and other on-line databases--access to State and Higher Education libraries, etc.
  - d. Help functionally illiterate adults master written language through videodiscs and networked computer systems at local and/or school district libraries.
5. Establish criteria that assures interagency collaboration between all state agencies whenever practical, i.e. State Library and Higher Education networks should not have advanced without a comprehensive analysis of how *K-12* education connects to the systems.
  - a. All Oregon school districts should be able to electronically access Oregon's State Library System. Not only would this allow for considerable cost savings in eliminating costly duplication of the purchase and storage of expensive hardware/software materials, it would greatly enhance the quantity and quality of educational materials for Oregon's 500,000 grades *K-12* students.
  - b. All Oregon school districts should be able to electronically access Oregon's Higher Education and Community College Education Systems' registration offices, libraries, career counselling centers, and certain teacher training and/or instructional classroom presentations specific to subject matter pertinent to the public school classrooms.
  - c. Single purpose networks such as the Oregon Lottery Network exemplify the necessity of long-range planning that demands interagency collaboration before proceeding to installation. For a few more dollars, could a number of state agencies and public education institutions tap an invaluable resource? In this case, the State made an economic development decision in disregard of its position that education is the driving force behind economic development.
6. *K-14* education representation mandatory on all major telecommunication committees at state level.

*Footnote:*

This impromptu listing identifies just a few of the activities that might be appropriate to bringing public education into a statewide network. Oregon's education system is the most immediate, effective, and cost efficient way to access present and future users of state-driven telecommunication systems. When 500,000 grades *K-12* students and all of their administrators, parents, board and budget committee members begin to use various component parts of the state's telecommunication system, it won't take long to realize dividends from the investment.