# Executive Overview

# Departmental Systems and Software Directions

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To Our Clients:

This summary is an excerpt from a full research report, Departmental Systems and Software Directions, issued as part of INPUT's Information Systems Program (ISP). A complete description of the program is provided at the end of this Executive Overview.

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## REPORT ABSTRACT

Departmental systems are now emerging as one of the major computer industry issues of the 1980s. Evolving as the crucial middle tier of a three-tier computing hierarchy consisting of corporate, departmental, and personal level automation, these systems are fast becoming the critical link that brings groups of workers in direct contact with the corporate information they need to function more productively.

This report analyzes the characteristics, potential, and directions of departmental systems during the next five years, with special emphasis on software. In addition to discussions of broad market trends, a number of individual user and vendor activities are highlighted. Implications for information systems strategies are provided, as well as recommendations for action.

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## A. DEPARTMENTAL SYSTEMS—WHAT THEY ARE AND ARE NOT

- Departmental systems have recently gained center stage in terms of volume of user/vendor discussions, plans, and concerns. After more than 20 years of conceptualizing, experimenting, advancing, and retreating, the idea of departmental systems as a viable middle tier of computing between the mainframe and the workstation is now solidifying.

- INPUT defines a department as an organizational entity which is headed by a full-time manager and is comprised of one or more work groups which perform interrelated tasks. (A work group is three or more people performing a common task.) INPUT makes a distinction between departmental computing and departmental systems; departmental computing encompasses any type of automation that is used by departmental personnel. All of the options contained in the department "B" box in Exhibit II-1 are considered "departmental computing."

  - Departmental systems, however, are defined specifically as computer processors that have multiuser facilities and which are primarily dedicated to the needs of a specific department. Departmental systems are often department controlled, but do not have to be for inclusion in the definition. Departmental systems include mini-computers, multiuser supermicros, PC-based local area networks (LANs), and micro-mainframe connections where significant local processing is done at the micro level.

  - Excluded from the definition of departmental systems are standalone micros and dumb terminals connected to remote mainframes. Exhibit II-1 illustrates the relationship between departmental systems and departmental computing.

- The software for departmental systems is composed of generic, department-specific, and industry-specific software.



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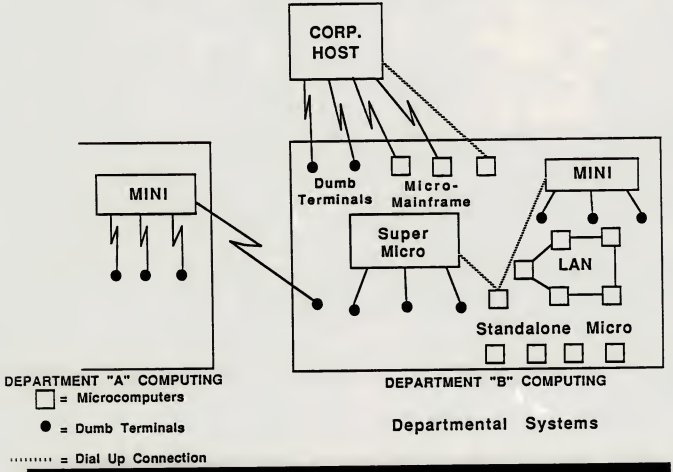
# DEPARTMENTAL SYSTEMS
# WHAT THEY ARE AND ARE NOT





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## B. DEPARTMENTAL SYSTEMS' CAPACITY TO EXPAND SIXFOLD

- INPUT estimates that departmental systems (as illustrated in the shaded area of Exhibit II-2) currently account for about 25% of all computing capacity, as approximated by total MIPS (millions of instructions per second). By 1991, this share will double to 50% of a base which is three times larger than today. As a result, the computing capacity of departmental systems will increase sixfold during this five-year period--a 43% average annual growth rate.

- This impressive growth is in contrast to a 12% annual increase predicted for standalone micro capacity growth and a 19% annual increase for dumb terminals connected to remote (i.e., outside of the using department) mainframes.

- Factors contributing to the rapid expansion of departmental systems capacity include:

  - Grass-roots demand from PC-skilled end users for increased power and easier access to organizational information and computing resources.

  - Top-down demand due to corporate management's push for systems with major strategic payoffs. These systems typically require increased information flow among formerly isolated work groups.

  - Major price/performance improvements that result in mainframe power being brought down to minis and mainframe/mini power down to micros.

  - Advances in communications technology which, when combined with enhanced vendor cooperation regarding standards, provide a major opportunity for cost-effective transporting and sharing of remote information.



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# DEPARTMENTAL SYSTEMS' CAPACITY TO EXPAND SIXFOLD

| TYPE | COMPUTING CAPACITY INDEX 1986 | 1991 | AAGR |
|---|---|---|---|
| Remote Mainframes<br>Dumb Terminals | .25 | .60 | 19% |
| Micro Mainframe<br>Dept. Mini or Supermicro<br>PC-Based LAN | .25 | 1.50 | 43% |
| Standalone Micro | .50 | .90 | 12% |
| Total MIPS Index | 1.00 | 3.00 | 25% |

= Dept. Systems



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## C. FORTUNE 1000 DEPARTMENTAL SOFTWARE PRODUCTS TO EXCEED $7 BILLION

- Fortune 1000-sized firms will increase their usage of departmental software products by 32% annually for the next five years, as illustrated in Exhibit II-3. By 1991, more than $7 billion will be spent--up from almost $2 billion in 1986. Approximately two-thirds of this expenditure will be for applications software, a majority of which will be industry-specific.

- This impressive growth in software usage is more than one-half again as great as the 19% rate of growth to be enjoyed by the software products marketplace overall during this same time period.

- Reasons why Fortune 1000 departmental software will exceed the overall market growth include:

  - Competitive pressures on large businesses to improve management and control of their diverse, decentralized operations in order to better respond to domestic and foreign competition. In many cases this means increased automation at lower levels within an organization.

  - Willingness of PC-confident end users to expand their individual computer usage to the next logical level of automation--the department.

  - Attractive price/performance computing resource alternatives that combine low cost/high power/low environmental demands with ease of use.



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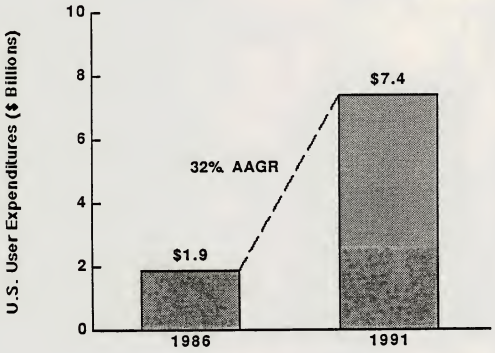
# FORTUNE 1000 DEPARTMENTAL SOFTWARE PRODUCTS TO EXCEED $7 BILLION





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## D. DEPARTMENTAL SYSTEMS ARE NATURAL GATEWAYS

- The computing environment of the future is a three-tiered (corporate, departmental, personal) series of hardware and software resources which will become extensively interconnected, as illustrated in Exhibit II-4. To be fully productive, users must be able to easily migrate across the boundaries of these tiers as the information needs arise.

- In contrast to distributed processing attempts of the 1970s that withered, departmental systems of today are uniquely positioned to serve as excellent gateways to other departmental or corporate systems. Reasons for this recently obtained capability include:

  - Increased operating systems sophistication that facilitates inquiry and file uploading and downloading while still serving local processing requirements.

  - Enhanced speed that meets the users' requirements for subsecond response time in spite of the departmental systems role within a larger, highly complex system.

- Departmental systems derive their strength from being able to handle the complexities involved in intertier exchanges while remaining close enough, and responsive enough, to the individual user to be an excellent central source of computing power.



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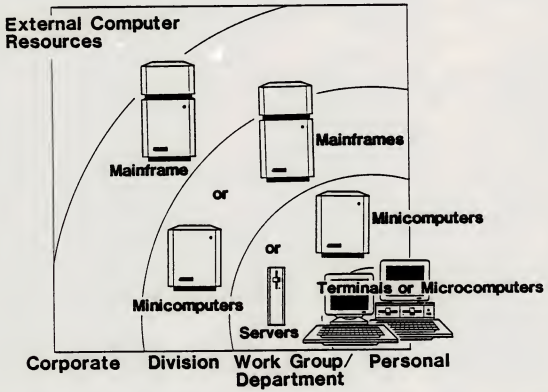
## DEPARTMENTAL SYSTEMS ARE NATURAL GATEWAYS





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## E. THE NETWORK WILL BECOME THE SYSTEM

- Within the next decade, most organizations will discover that the concept of a "hierarchy" of computing is no longer useful. The balance of power between corporate and departmental nodes will shift. As interconnected departmental nodes increase in power and scope, the corporate "host" will shrink in significance to become primarily another node on the network, as illustrated in Exhibit II-5. It will no longer be necessary to go through the host in order to access and interact with other nodes. The corporate computer will become for the most part a data base server and network overseer.

- The concept of the real system being a networked group of equally accessible processors has numerous ramifications for both users and vendors.

  - With the network as the system, the user potentially becomes more productive because of ease of access to whichever network resource is most appropriate to the needs of the moment.

  - More communications-trained data processing management will be required at the corporate level in order to handle the complexities inherent in a networked system with powerful nodes.

  - Applications development becomes more difficult because both functions and data can reside at numerous locations. New vendor offerings will help users address this problem, but will not entirely remove the pain and challenge.

  - Effective methods for tracking the location and accessibility of data and processing resources within the complex network environment will become essential, along with security techniques for protecting its integrity.



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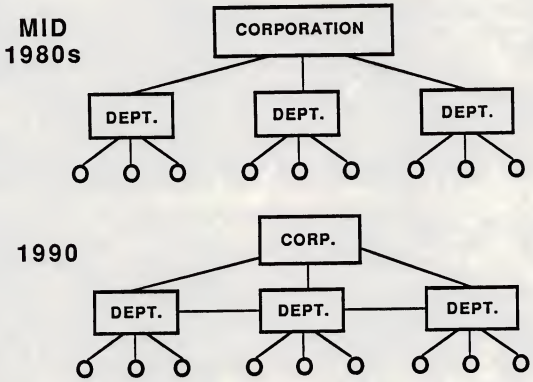
# THE NETWORK WILL BECOME THE SYSTEM



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## F. USER RECOMMENDATIONS

- Departmental systems are a major opportunity. The reality of user needs, combined with impressive vendor offerings result in INPUT's recommendation to information systems decision makers to aggressively commit themselves to a departmental systems strategy within the context of a larger, organization-wide automation strategy. To be successful in the departmental systems arena INPUT recommends the following (as summarized in Exhibit II-6):

  - Insist that corporate level strategic business planning be thoughtfully integrated with information systems planning so that the organization translates automation investment into profitable marketplace differentiation.

  - Assure that the information systems organization is actively involved in all major departmental systems evaluations and decisions, while maintaining close interaction with the end users.

  - Seek solutions that interface well with a multivendor world. Proprietary architectures should be downplayed. Open-ended designs should be encouraged to facilitate user flexibility.

  - Seek well-defined application areas. The interconnectiveness of departmental systems adds a major layer of complexity in terms of system design, installation, and support. The success of the user's entire system could be threatened if a single component fails to work.

  - Emphasize customer education, training, and ongoing support. The end user faces major challenges with departmental systems. These challenges are not only technical, but economic, organizational, and political.



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# USER RECOMMENDATIONS

- Departmental Systems Are a Major Opportunity
- Keys to Success:
  - Aggressively Commit to a Deparmental Systems Strategy
  - Insist Corporate Planning Integrates Information Systems Planning
  - Ensure I.S. Involvement in Departmental Decisions
  - Interface Well with the Multivendor World
  - Seek Well-Defined Application Areas
  - Emphasize Support





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