International Conference
Session Summaries

BUTLER COX
FOUNDATION

Transformation and Renewal
Budapest, 11-13 November 1990

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This document contains a summary of each speaker's presentation, together with a copy of his visual aids, where these have been provided to us. We have produced it to give delegates both a workbook, in which they can make their own notes during the presentations, and as an *aide memoire* for use after the conference.

We have prepared these summaries from notes provided by the speakers before the conference, and from prior discussions with them. Speakers may, of course, decide to make some changes to their presentations, so these summaries may not be an exact representation of their material.

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Transformation and Renewal

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The long-term impact of technology

Thierry Gaudin, French Ministry of Industry and Research

Thierry Gaudin is director of the Centre de Prospective et d'Evaluation (CPE), where he is responsible for evaluating worldwide technological development.

Trying to imagine the future of the world over the next 100 years is a formidable task, and many modern forecasters believe it to be impossible beyond 20 years ahead. However, the great visionaries of history have always taken a long-term view and proposed ideas to help shape the future.

Data available today can help. Demographic studies suggest an ageing population in northern countries, but a younger and more active population in southern countries. India and China will stabilise their birth rates, but in Africa and the Middle East, population growth will still outstrip available resources. The greenhouse effect, aggravated by the destruction of the great rain forests, will cause a population shift away from the southern deserts to the new, warmer, northern regions. Japan will become the leading world financial power, and new ways of creating business with an international impact could appear in India, Brazil, and China.

Although conflicts between superpowers will have been eliminated, they could be replaced by more local conflicts between sectarian interests. In the 'fourth world', lack of education, poor living conditions, and unemployment, exacerbated by the effect of different drugs, could be devastating.

This is the shape that many of today's forecasters see the world taking, but reactions against this process of degradation will occur, and events in Europe in the last century may provide a useful precedent. With the urban population multiplying rapidly and the old ruling classes attempting to control them, public disturbances were inevitable. What happened was that new, more open cities were built and mass education was introduced, creating new sets of values.

In the 21st century, solutions are likely to be found through the ever-widening spread of technology, particularly communications and information technology. By 2020, East

European countries will have reached the same level with telecommunications as their Western counterparts, and the growth of wideband capability will mean that by 2050, the whole world will have access to advanced communications, with Europe being the best equipped region. Broadcasting has been centralised since its inception early this century, and this fitted the centralisation of power, but as communications facilities become ubiquitous, broadcasting will decentralise, and by 2040 will be indistinguishable from other forms of telecommunication.

The ever-increasing capability of technologies like optical fibre will accelerate this phenomenon, and the continuing rapid development of information technologies will bring about major changes. By 2020, rule-based learning, coupled with image and visual technologies, will change the nature of education, bringing major benefits but carrying the risk that counter-cultural ideas could be exploited through the technology.

The ease of communication and widespread availability of technology will diminish the influence and strength of central powers of whatever sort. The ability to build personal networks will give rise to a world economy and business structure based on local innovation and smaller companies, such as we see emerging now in the Western world. Freedom of speech will be available through the network, and initiatives will come from all corners of the world.

From a global point of view, this may be seen as a gigantic neural network or 'planetary brain', and will represent another step forward in the evolutionary process by which man has used his intelligence to replace nature with a 'techno-nature', shaping the world to his design. Techno-nature now prevails across the planet, and towards the end of the 21st century, we shall see the last primeval forests replaced by controlled agricultural reserves and even the sea becoming 'domesticated'.

Today's cities are man's means of escape. Tomorrow, they may be the ocean dwellings envisaged by the Japanese architect, Kikutake, and beyond that, the artificial planets of the American, O'Neill. The challenge of the New Age is to transform the planet into a garden.

European trends in information management

Roger Camrass, Butler Cox Benelux

Roger Camrass is a director of the Butler Cox Group. Previously responsible for international consultancy, he has recently relocated to the Netherlands to develop the Group's business in the Benelux countries in preparation for the single European market.

A combination of increasing global competition, deregulation of national markets, and new technologies has stimulated an intense period of industrial and commercial change across Europe. The consequences of these changes can be seen in unprecedented merger and acquisition activity, new cross-border alliances, and moves by many large multinationals towards trans-national working. These changes will make new demands on pan-European information systems and support infrastructures, which will present a serious challenge to existing systems in many organisations.

Fundamental change at an infrastructural level will be required within Europe to enable companies to function efficiently at a regional rather than a national level. Many companies will be forced to regroup office staff, concentrating some within a few strategically placed centres of commerce across Europe, such as Paris, Brussels, and Frankfurt, and devolving some to high-tech business parks located well outside city centres. In addition to rapid transportation, managers and business professionals will require advanced electronic links, ranging from videoconferencing to electronic mail and EDI. International telecommunications services will benefit greatly from this escalation of trans-national demand.

The rate at which industrial change is likely to occur could well exceed the ability of the systems function to respond to emerging pan-European requirements. Much of the existing hardware and software will need to be substantially modified or replaced. To achieve this, new systems organisations and policies will need to be adopted across Europe, and new business applications, standards for hardware and software, and core systems skills will need to be defined. A new organisational approach will be required to bring together fragmented systems activities.

At a time of intensive change within large systems organisations, the IT supply sector is likely to undergo rapid transformation. Intensive competition amongst hardware suppliers,

combined with the much awaited adoption of open standards, will transform this sector into a commodity market. The recent flurry of mergers and alliances suggests that only a handful of European computer and telecommunications suppliers will survive the present decade. At the same time, the need for common applications across Europe will encourage a consolidation of the software sector, with a growing emphasis on a few large international players offering both packages and bespoke software solutions. The telecommunications services sector is likely to undergo rapid transformation as the emphasis changes away from national needs to pan-European network requirements.

Given the scope and intensity of industrial change beyond 1992, information systems management cannot afford to play a waiting game. To ensure that their organisations have the necessary information tools to tackle such far reaching change, systems managers will need to consider their own agendas for the early nineties. The cost of operating at a European level with inadequate systems support is clearly too high for many organisations to survive in the tough competitive markets of the nineties.

Europe – the fallen power

World's top banks		
Measured by total assets, end 1987, $bn		
1 Dai-ichi Kango Bank	271	Japan
2 Sumitomo Bank	251	Japan
3 Fuji Bank	244	Japan
4 Mitsubishi Bank	228	Japan
5 Sanwa Bank	218	Japan
6 Industrial Bank of Japan	216	Japan
7 Crédit Agricole	214	France
8 Citicorp	198	US
9 Norinchukin Bank	187	Japan
10 BNP	183	France

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Europe – the fallen power

World's top insurance companies		
Measured by total assets, end 1987, $bn		
1 Prudential	141	US
2 Nippon Life	123	Japan
3 Metropolitan Life	88	US
4 Dai-ichi Mutual	84	Japan
5 Aetna	73	US
6 Sumitomo Life	69	Japan
7 Equitable Life	56	US
8 Cigna	53	US
9 Travellers Life	50	US
10 Prudential	49	UK

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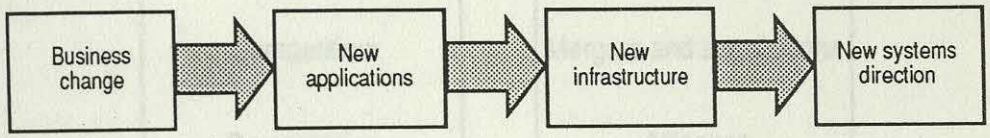
Sequential impact of change



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Why a single market makes sense

Prices of standard banking products (ratio of highest to lowest price)	
Mortgages	2.76
Consumer credit	
Credit cards	5.00
Commercial drafts	5.46
Travellers' cheques	1.44
Letters of credit	1.71
Commercial loans	1.57

Source: Price Waterhouse (the Cecchini Report)

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Restructuring of European business

Cause	Effect
Competition	Mergers and acquisitions
Deregulation	Alliances
Technology	Transnationalisation

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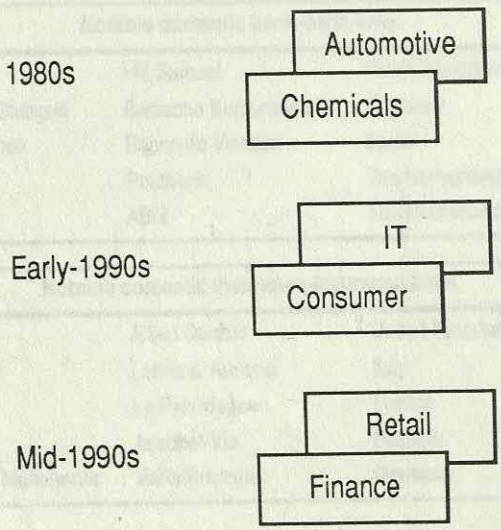
Timetable for sectorial change



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National privatisations and demutualisations

Privatisations	
Paribas	France
Société Générale	France
Postbank	The Netherlands
Girobank	United Kingdom
Banco Totta e Açores	Portugal

Demutualisations	
TSB Group	United Kingdom
Abbey National BS	United Kingdom
Crédit Agricole	France

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Domestic mergers in financial services sector

Notable domestic bank-bank links			
TSB Group	Hill Samuel	United Kingdom	1987
Landesbank Stuttgart	Badische Komunale LB	Germany	1988
Banco de Bilbao	Banco de Vizcaya	Spain	1988
NMB	Postbank	The Netherlands	1989
AMRO	ABN	The Netherlands	1990

Notable domestic insurance-insurance links			
Eagle Star	Allied Dunbar	United Kingdom	1985
Cofide	Latina & Ausorta	Italy	1986
AXA	La Providence	France	1986
Groupe AG	Assubel-Vie	Belgium	1988
Aachener & Münchener	Volksfürsorge	Germany	1988

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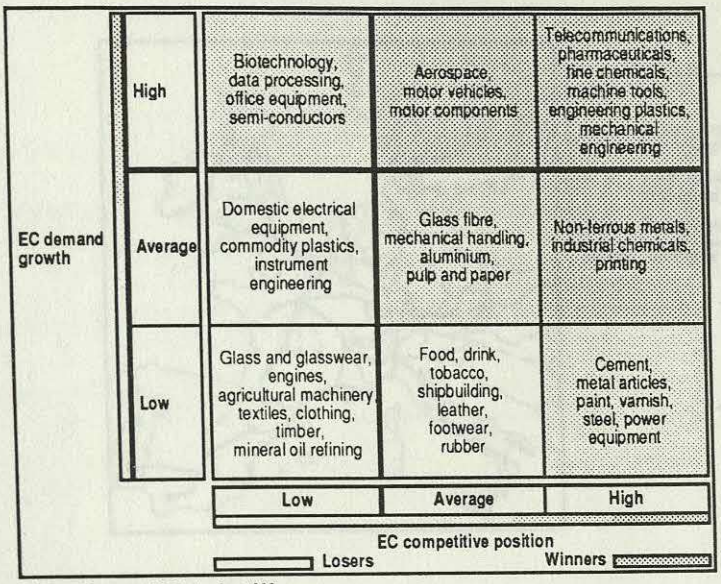
Winners and losers in the European Community



Source: European, 21 September 1990

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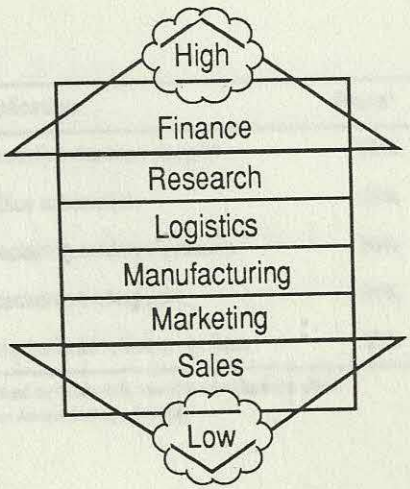
Functional integration across Europe



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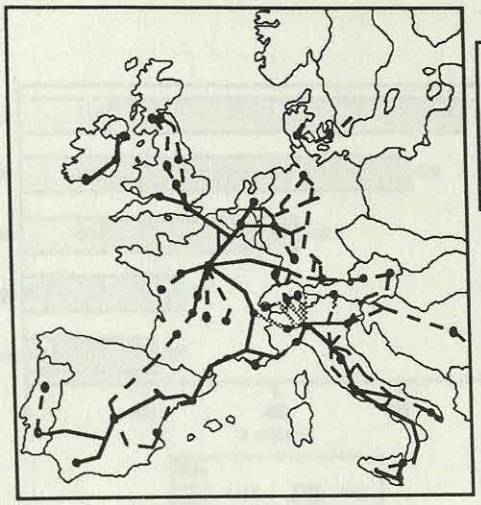
European high-speed rail system



Source: Community of European Railways

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European system requirements – 1992

Application	Plans*
Executive decision support	55%
Office automation	55%
Replacing outdated systems	50%
Electronic trading links	34%
International telecom services	33%

* Ranked by those with specific development plans.

Source: Amdahl Executive Institute

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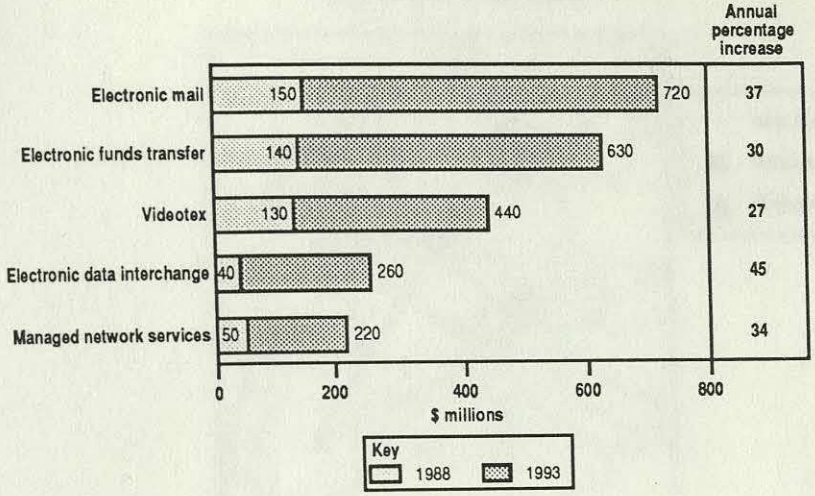
Rapid growth forecast in network services usage



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Infrastructure change

- New organisational approaches:
  - Strategic concentration
  - Decentralisation
- And new ways of working:
  - Location independence
  - Creative

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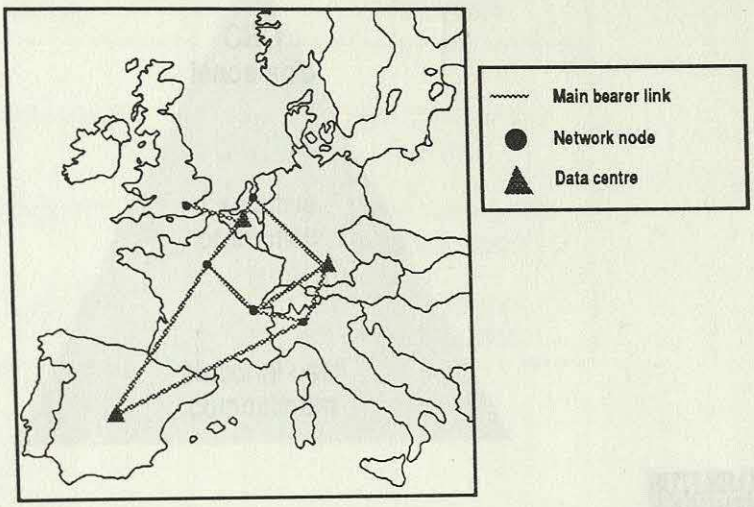
Promoting shared corporate services across Europe



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Challenges for European systems management

- Implementing systems policy:
  - Business planning
  - Common infrastructure
  - Core applications
  - New organisation

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Gaining commitment to a European approach

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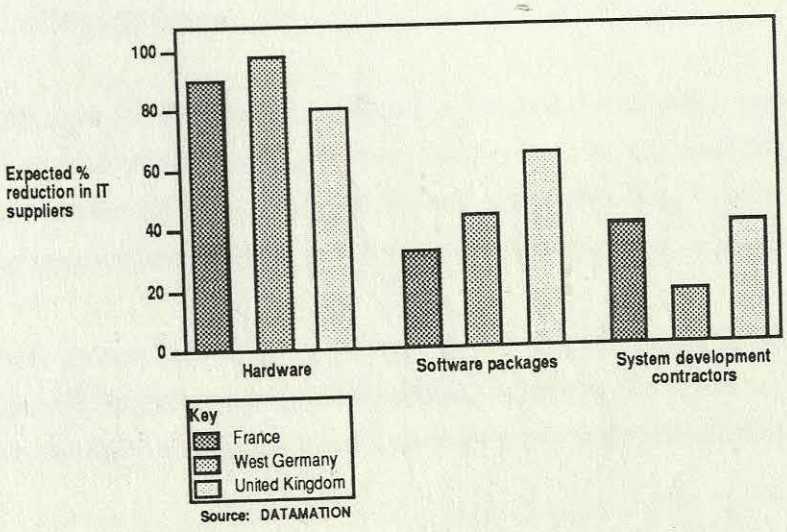
Information technology suppliers face shakeout



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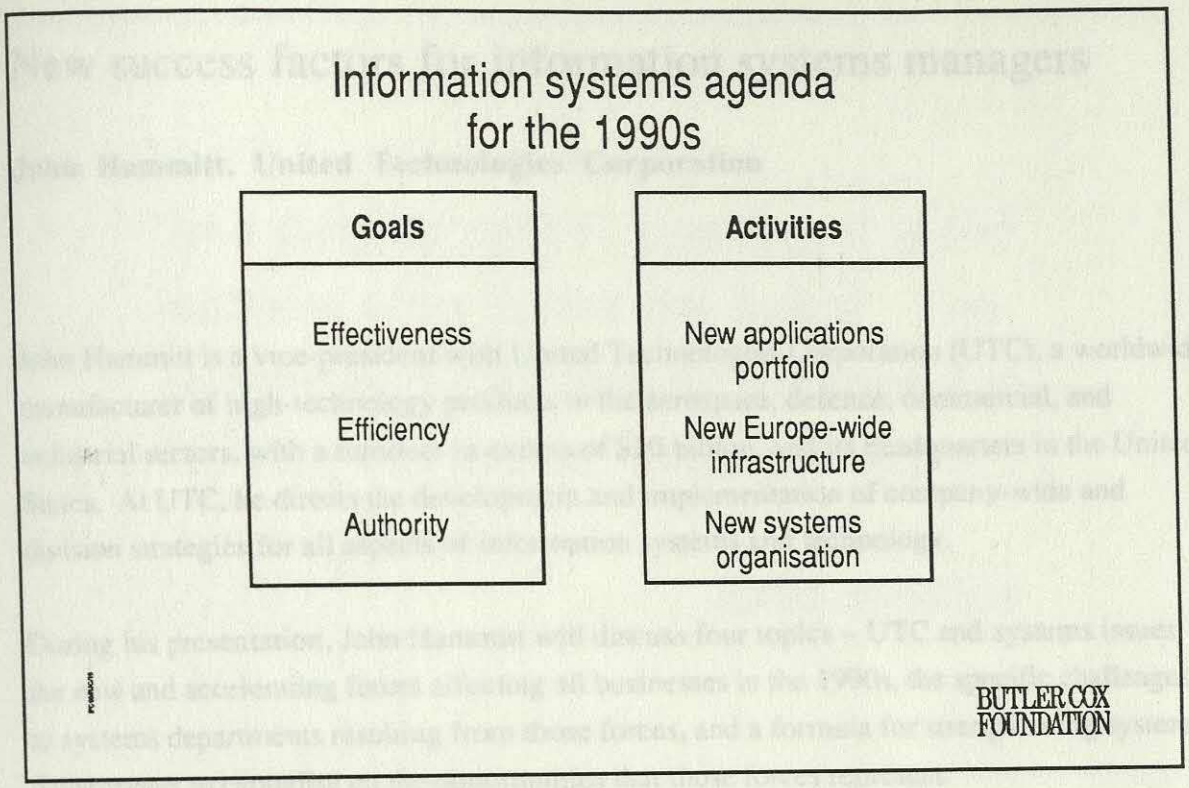
Information systems agenda
for the 1990s
Goals
Effectiveness
Efficiency
Authority
Activities
New applications portfolio
New Europe-wide infrastructure
New systems organisation
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New success factors for information systems managers

John Hammitt, United Technologies Corporation

John Hammitt is a vice-president with United Technologies Corporation (UTC), a worldwide manufacturer of high-technology products in the aerospace, defence, commercial, and industrial sectors, with a turnover in excess of $20 billion, and its headquarters in the United States. At UTC, he directs the development and implementation of company-wide and division strategies for all aspects of information systems and technology.

During his presentation, John Hammitt will discuss four topics – UTC and systems issues, the new and accelerating forces affecting all businesses in the 1990s, the specific challenges to systems departments resulting from those forces, and a formula for strengthening systems departments to capitalise on the opportunities that those forces represent.

Our future is no longer a simple extension of past events. In fact, the breadth and speed of economic, cultural, and technological change is creating future challenges which many systems organisations are ill equipped to address. With an eye towards this exciting yet threatening future, John Hammitt will examine the principles and values of successful systems strategies in the past. From that base of experience, he will develop three key principles for future systems success, which are people, their motivation, and systems leadership – in other words, his recipe for success is to build 'organisational muscle' to deal with the challenging future.

Strength through the development of people has two dimensions – talent (knowledge, skill, and interpersonal competence), and more clearly focused accountability. Motivation issues revolve around the need for urgent, sustained, and compelling business change. Better leadership is described in terms of why it is needed, and what it looks like.

All of these factors, the changing future, and our specific needs for strengthening systems capability, will be shown as especially critical in these times when we must plan global strategies, but deliver business results through more and more dispersed organisations.

"In a time of drastic change, it is the learners who inherit the future. The learned find themselves equipped to live in a world that no longer exists"

Eric Hoffer

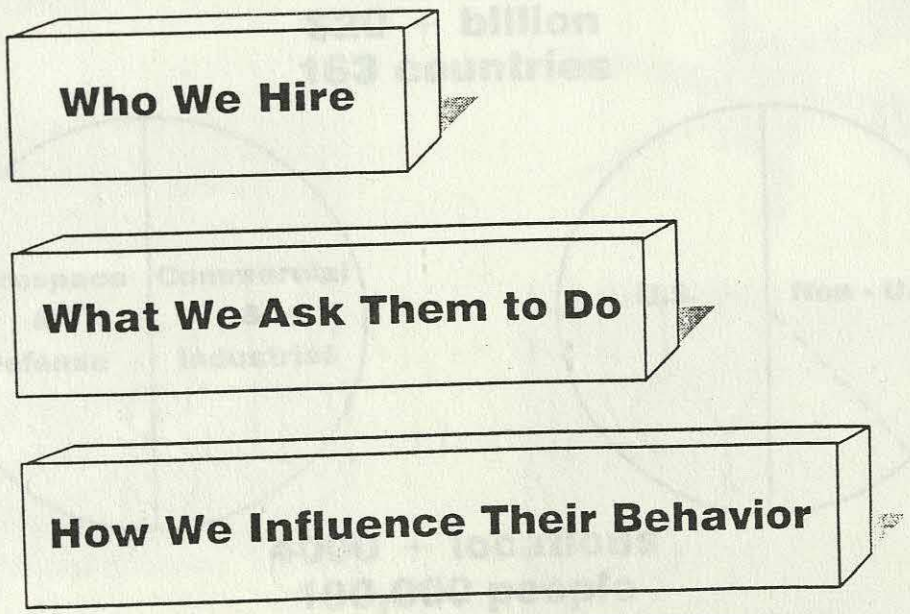
1990s' Issue . . .

THE FUTURE . . . ISN'T WHAT IT USED TO BE !!

1990s' Challenge . . .

INTERCEPT THE FUTURE

1990s' Success From . . .

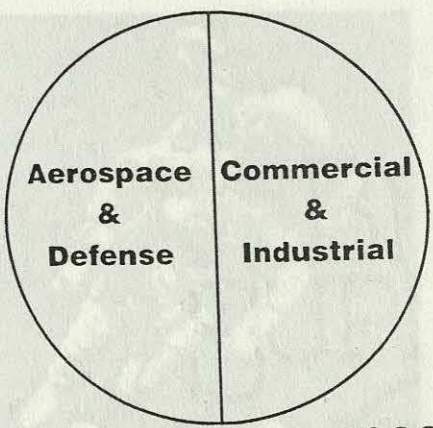


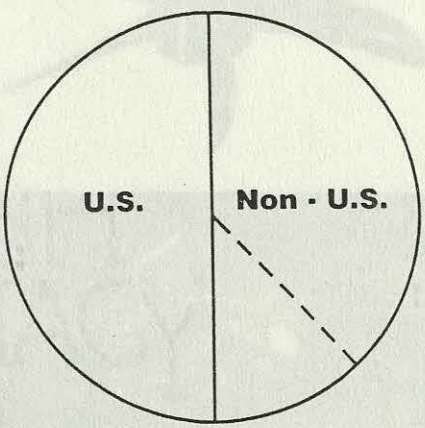
Agenda . . .

- **Introduce UTC**
- **Forces for change**
- **I/S issues**
- **Conclusions**

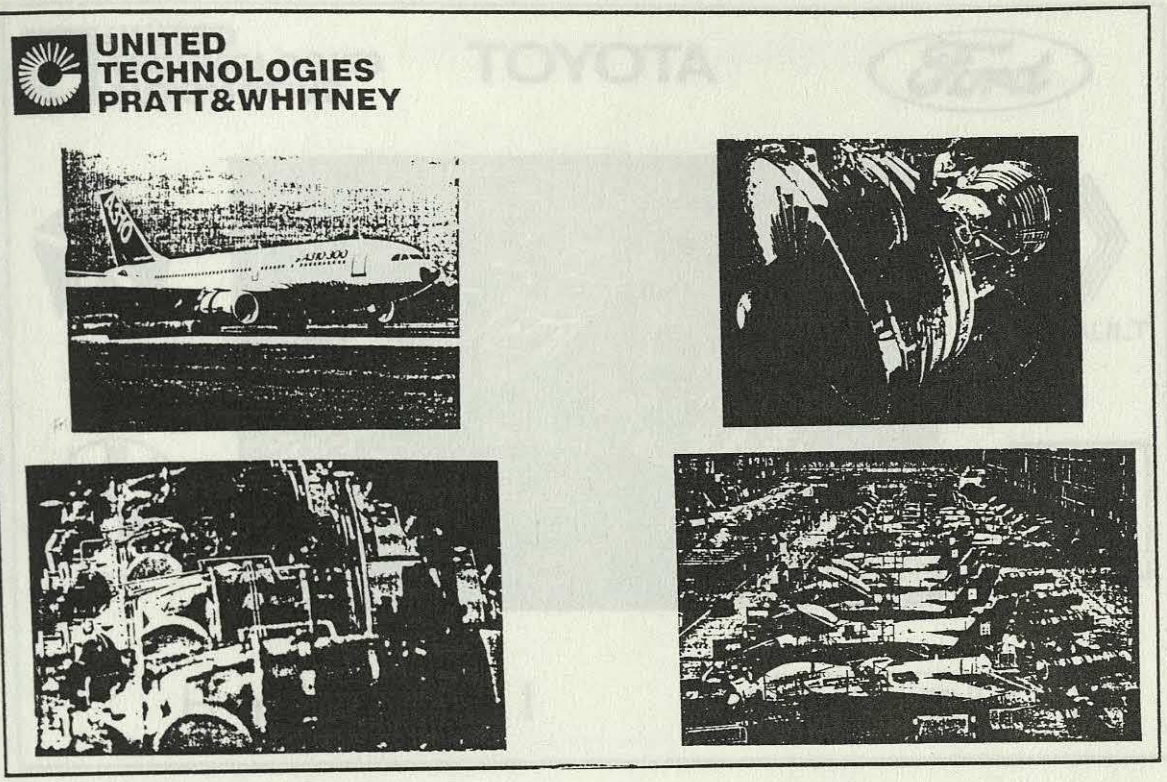
UNITED TECHNOLOGIES

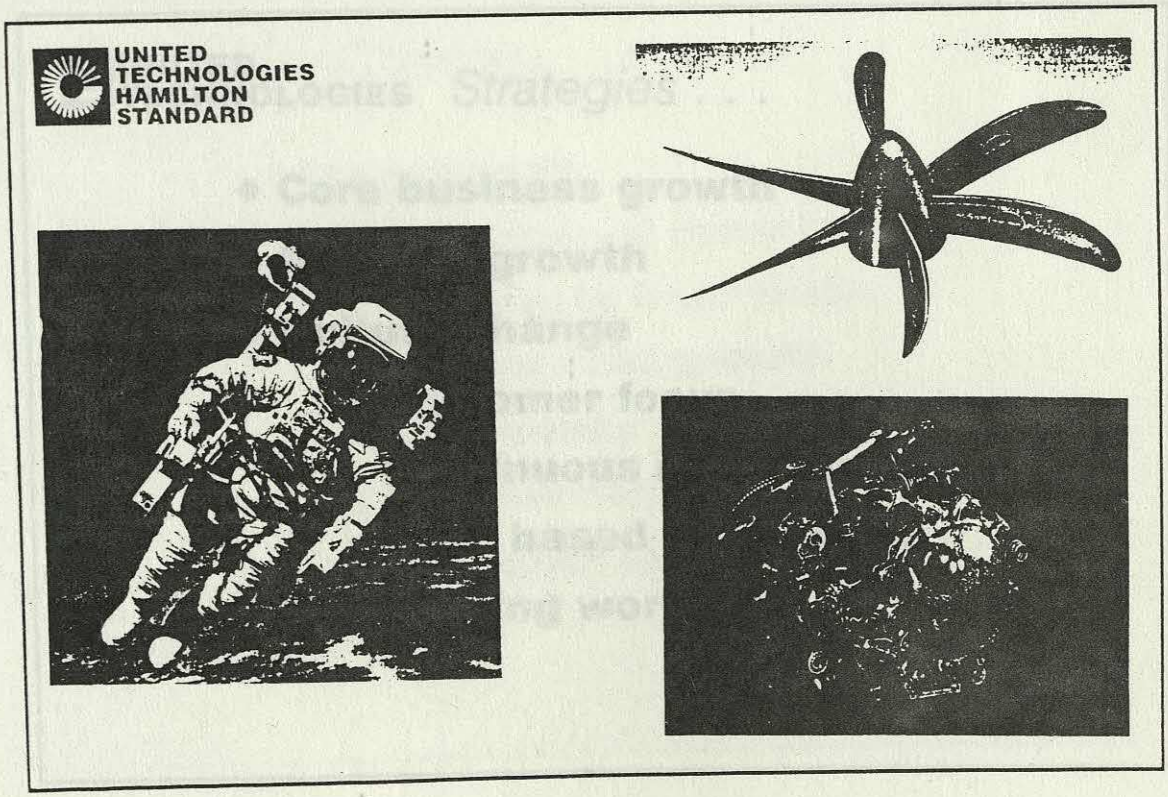
$20 + billion
163 countries





4000 + locations
190,000 people

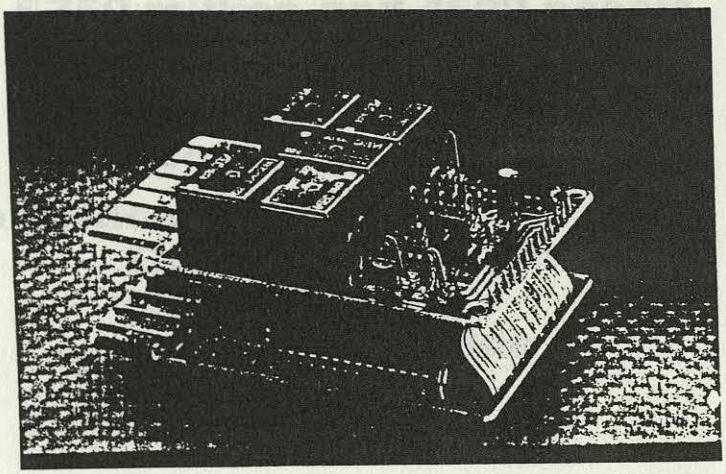

UNITED
TECHNOLOGIES
PRATT&WHITNEY


UNITED
TECHNOLOGIES
HAMILTON
STANDARD

UNITED TECHNOLOGIES AUTOMOTIVE

TOYOTA

Ford



RENAULT

GM

HYUNDAI

HONDA

UNITED TECHNOLOGIES *Strategies . . .*

- **Core business growth**
- **Non-U.S. growth**
- **Culture change**
  - **Customer focus**
  - **Continuous improvement**
  - **Time based competition**
  - **Shifting workforce**

UNITED TECHNOLOGIES *Information Systems . . .*

- **$750 million and 4500 people**
- **Decentralized by**
  - **Business**
  - **Geography**
- **Critical uses**
  - **Engineering/scientific**
  - **Manufacturing**
  - **Customer service**
  - **Distribution**

Forces For Change . . .

- **Megatrends**
  - **Sources of competition**
  - **Moves to freer trade**
  - **Labor cost growth**
  - **Economic volatility**
  - **Accelerating technology**
  - **Cultural diversity**
  - **Etc.**

Forces For Change . . .

- **Megatrends**
- **Specific trends**
  - **Consolidating and shifting markets**
  - **Demanding yet fickle customers**
  - **Time and technology competition**
  - **Product proliferation**
  - **Shrinking product life**

Forces For Change . . .

- **Megatrends**
- **Specific trends**
- **Critical issues**
  - **Demand for more from less**
  - **Obsession with "customer"**
  - **Speed and adaptability**

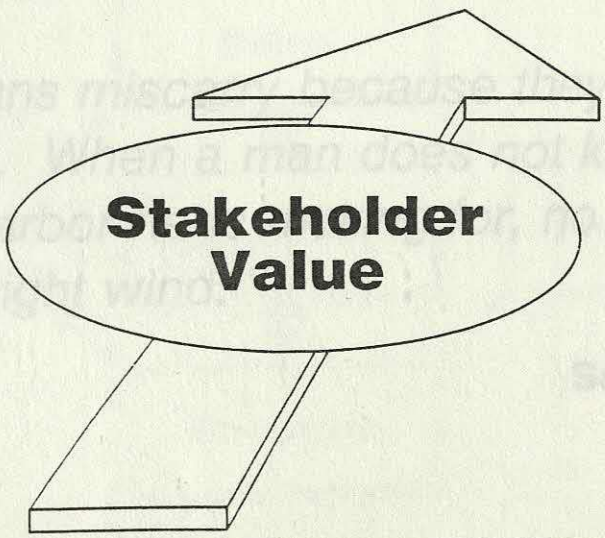
Forces For Change Require . . .

New Applications

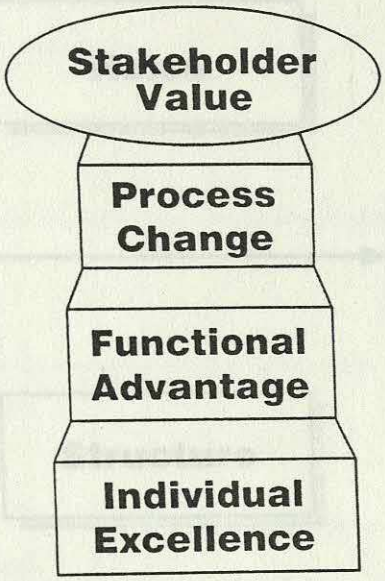
-vs-

New Technologies

I/S Success Measure . . .

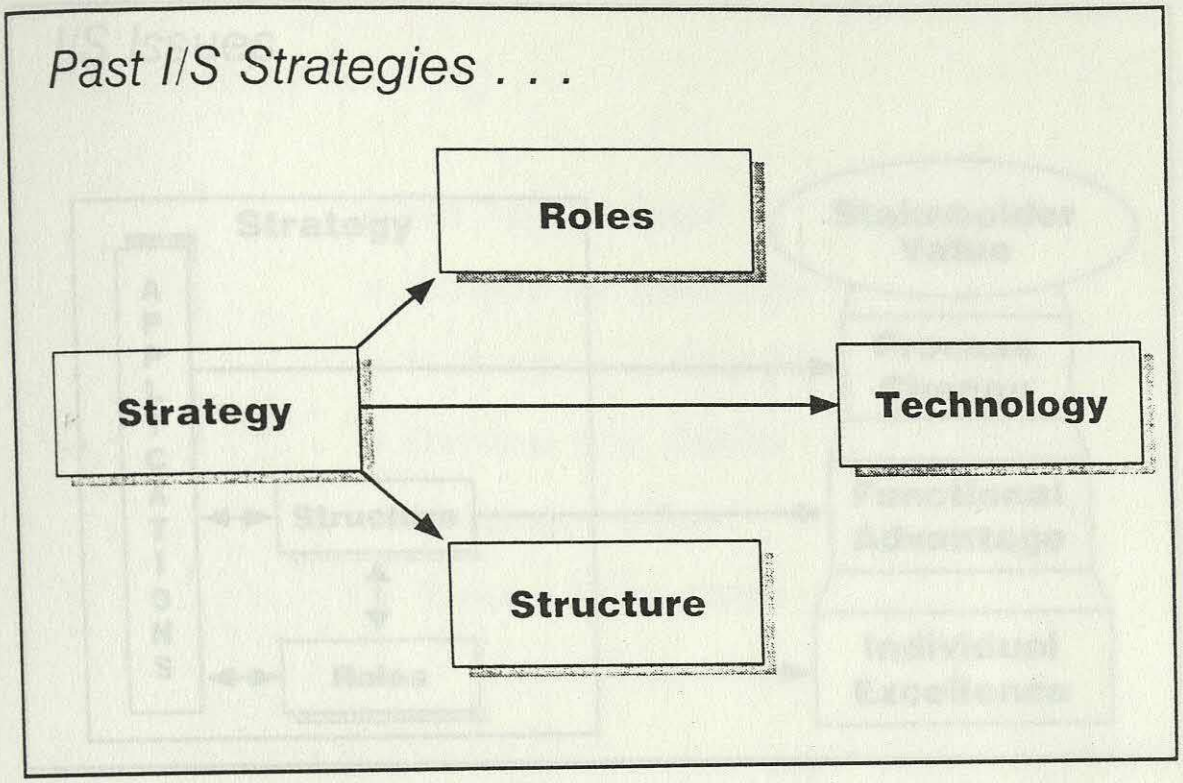


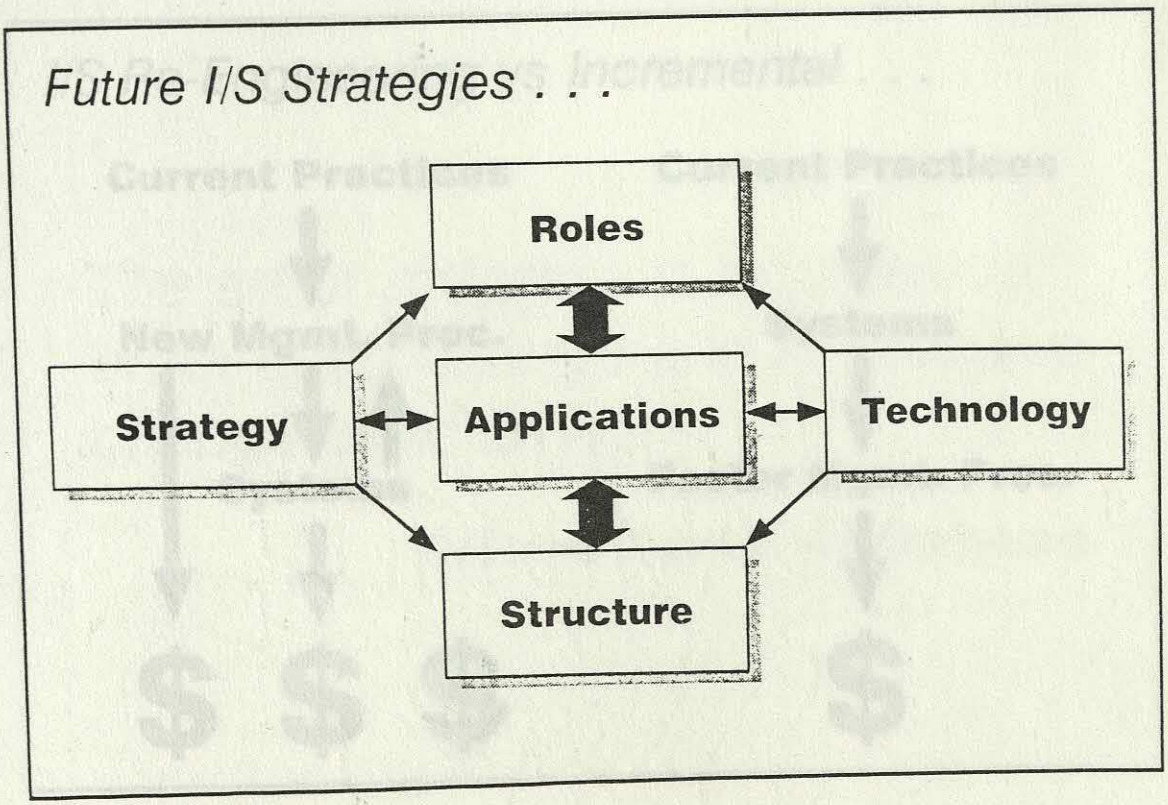
I/S Foundation Steps . . .



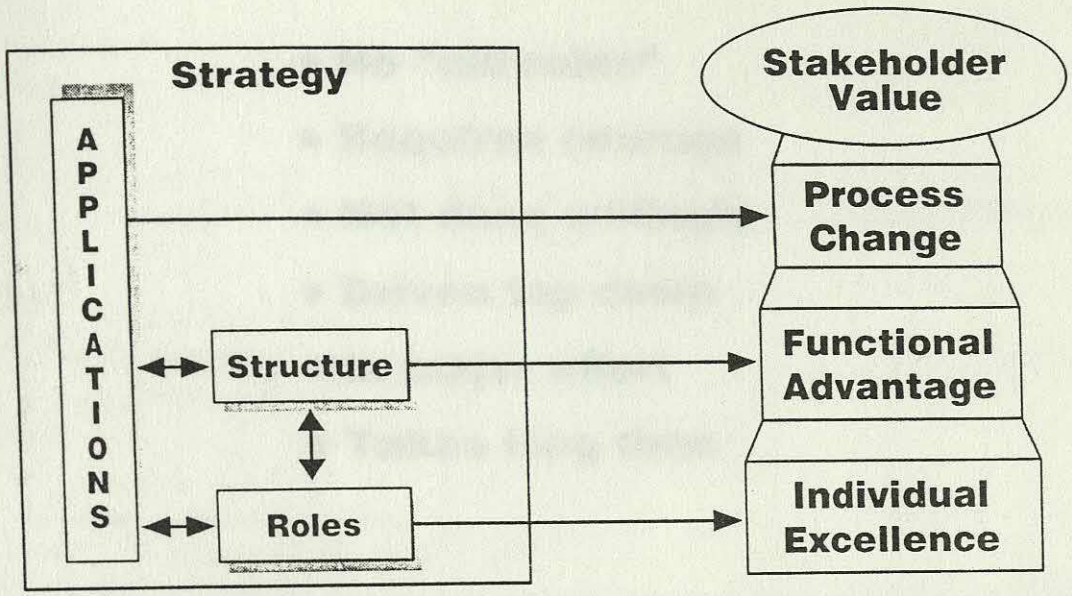
"Our plans miscarry because they have no aim. When a man does not know what harbor he is making for, no wind is the right wind."

Seneca

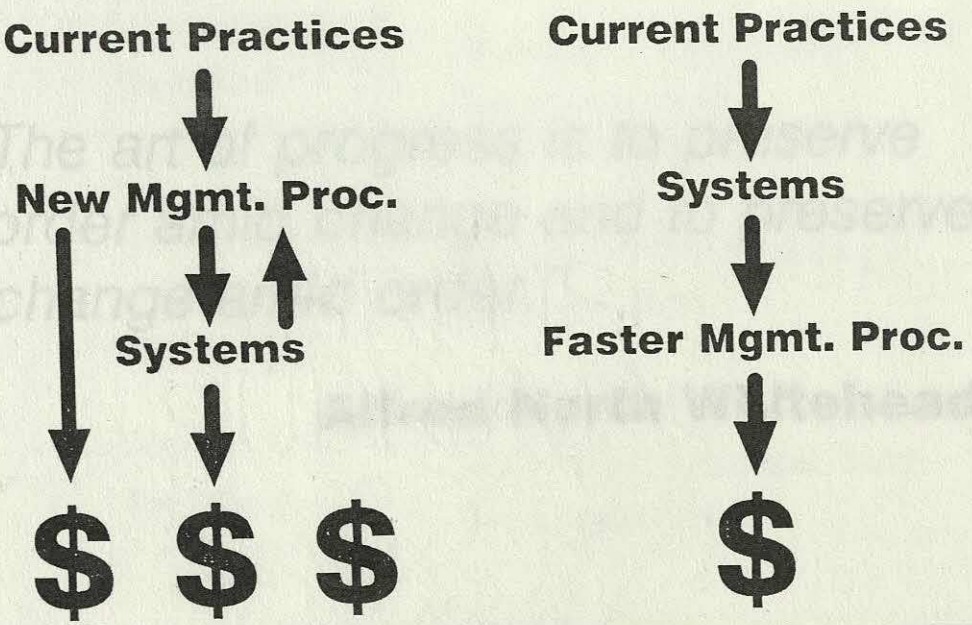

Past I/S Strategies . . .
Roles
Strategy
Technology
Structure


Future I/S Strategies . . .
Roles
Strategy
Applications
Technology
Structure

I/S Issues . . .



I/S Re-Engineering vs Incremental . . .



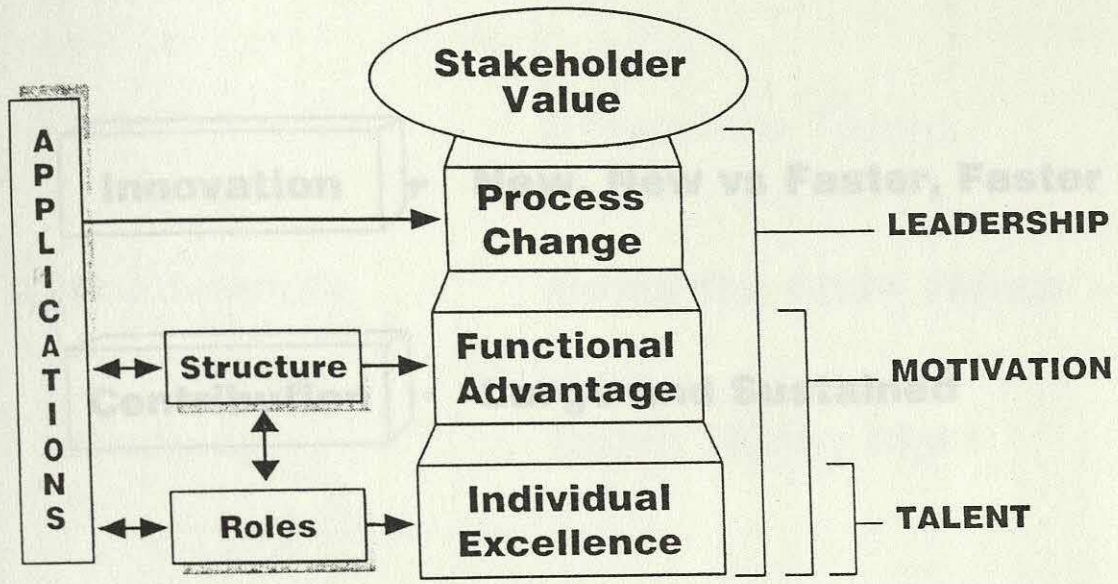
I/S Re-engineering . . .

- **No "old rules"**
- **Requires courage**
- **Not done willingly**
- **Driven top down**
- **Is major effort**
- **Takes long time**

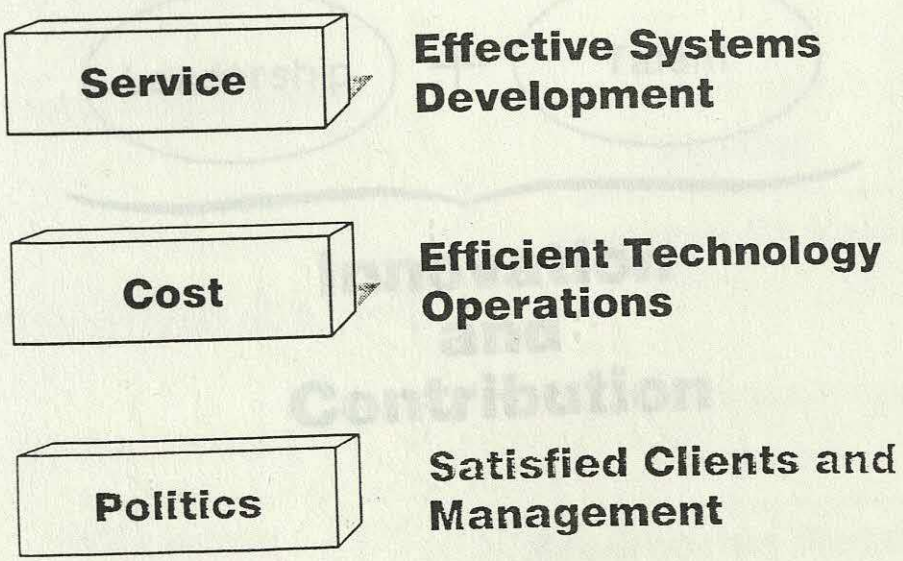
"The art of progress is to preserve order amid change and to preserve change amid order."

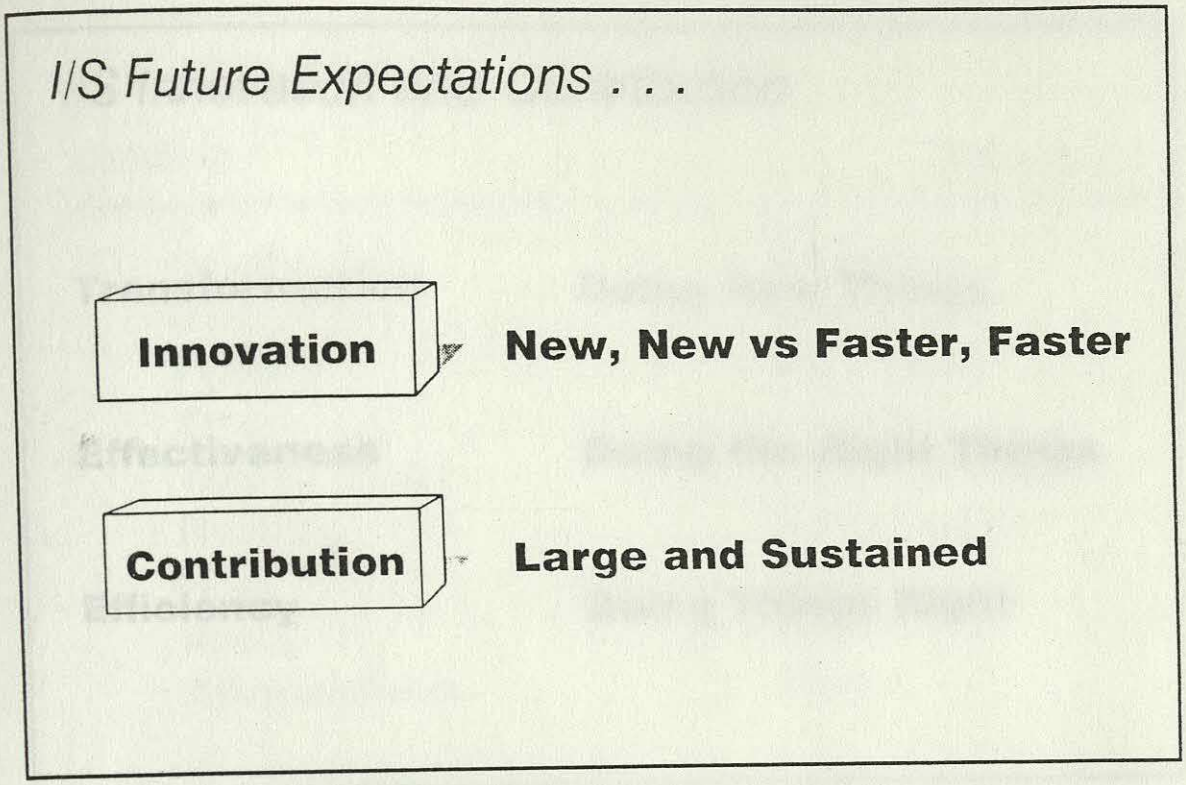
Alfred North Whitehead

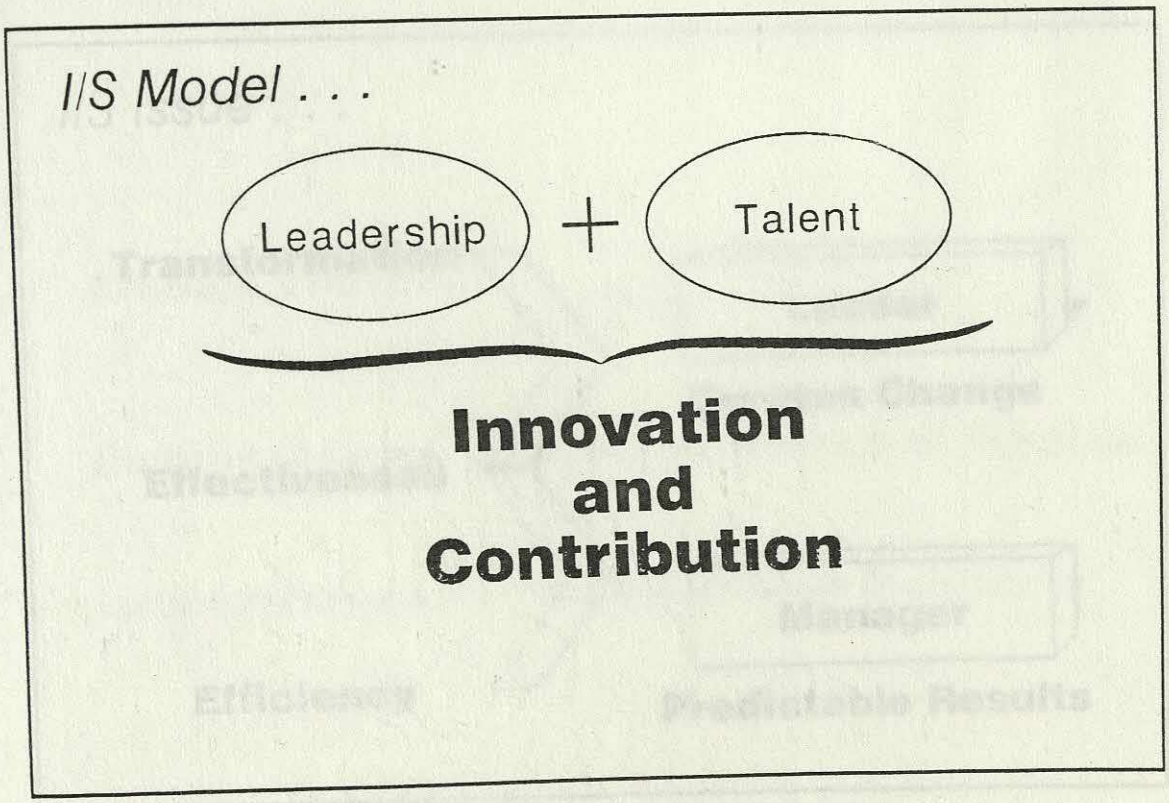
I/S Driving Forces . . .



I/S - Old Success Factors . . .



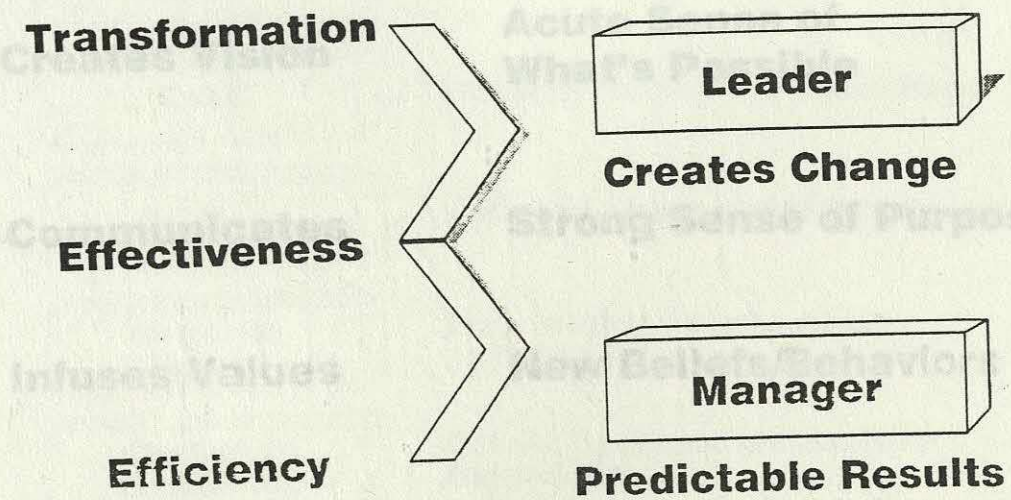

I/S Future Expectations . . .
Innovation
New, New vs Faster, Faster
Contribution
Large and Sustained


I/S Model . . .
Leadership
+
Talent
Innovation
and
Contribution

I/S Innovation and Contribution . . .

Transformation	**Doing New Things**
Effectiveness	**Doing the Right Things**
Efficiency	**Doing Things Right**

I/S Issue . . .



I/S Differences . . .

Leading	***Managing***
Originates	**Copies**
Develops	**Maintains**
People	**Structure**
Trust	**Control**
What? Why?	**How? When?**
Horizon	**Bottom Line**
Risk	**Rules**
Ideas	**Facts**
Alternatives	**Goals**

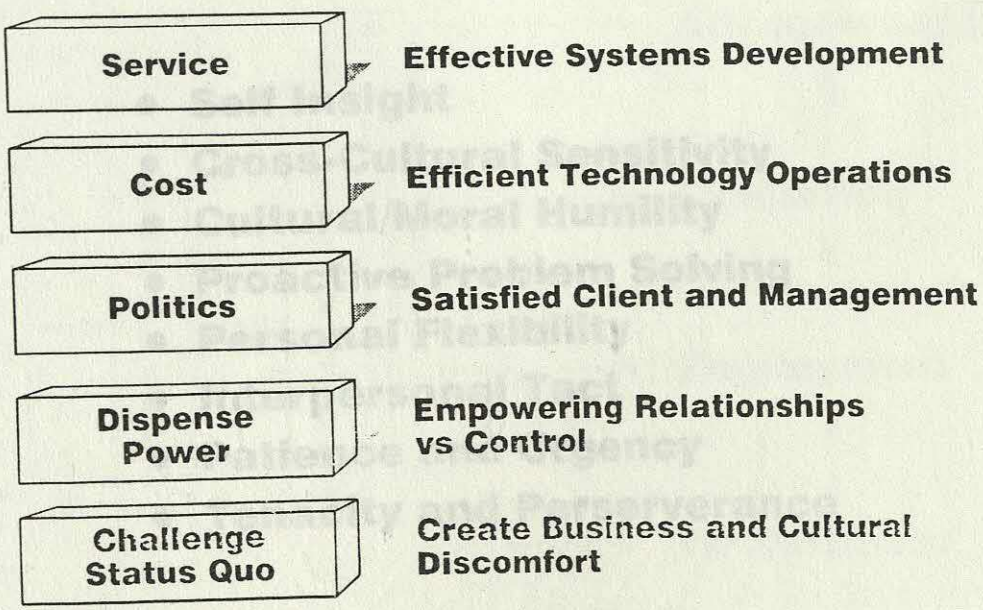
I/S Leader . . .

Creates Vision	**Acute Sense of What's Possible**
Communicates	**Strong Sense of Purpose**
Infuses Values	**New Beliefs/Behaviors**

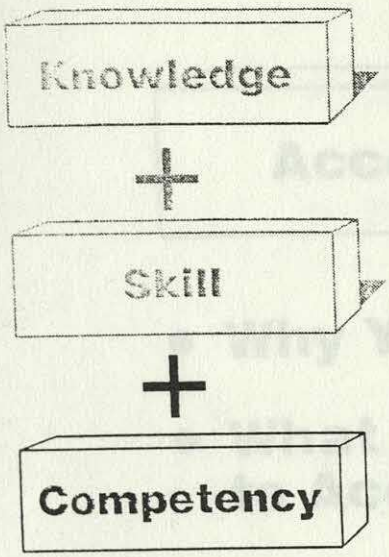
I/S Leader Characteristics . . .

- **Influences/Empowers Others**
- **Extraordinary People Skills**
- **Participative Listener**
- **Articulate Marketeer**
- **Tolerance for Ambiguity**

I/S - New Success Factors . . .



I/S Talent . . .



Body of Facts, Concepts and Principles

Ability to do Something With Knowledge

Behavior; How Something is Done

I/S Competencies . . .

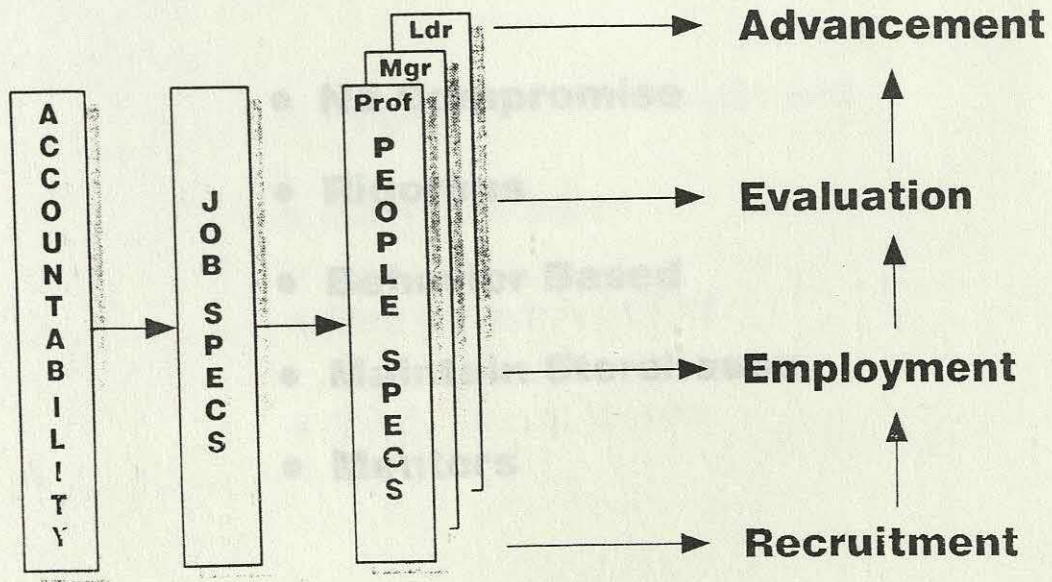
- **Self Insight**
- **Cross-Cultural Sensitivity**
- **Cultural/Moral Humility**
- **Proactive Problem Solving**
- **Personal Flexibility**
- **Interpersonal Tact**
- **Patience and Urgency**
- **Tenacity and Perserverance**

I/S Also Needs . . .

Accountability

- **Why Your Job Exists**
- **What You Are Paid to Accomplish**

I/S Muscle Building . . .



I/S Recruitment . . .

- **Continuous**
- **Personal**
- **Assisted**
- **Specifications**

I/S Employment . . .

- **No Compromise**
- **Rigorous**
- **Behavior Based**
- **Maintain Storehouse**
- **Mentors**

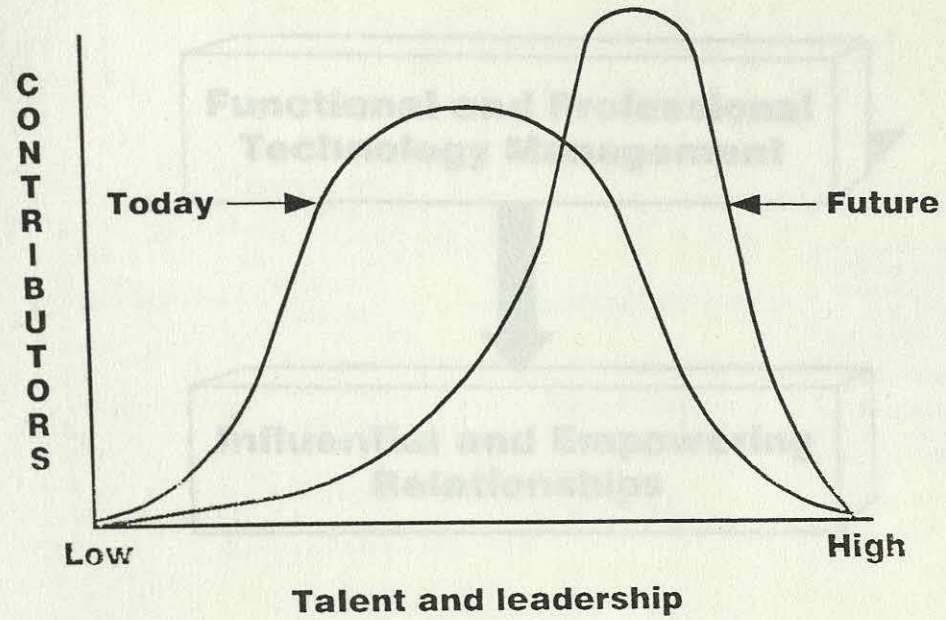
I/S Evaluation . . .

- **Results vs Activity**
- **Against Specifications**
- **Multiple Dimensions**
  - **Business and Technical**
  - **Competency and Skill**
- **Multiple Level Reviews**

I/S Advancement . . .

- **Aggresive Development**
- **Only the Best**
- **Deep Succession**
- **Early Hard Goals**

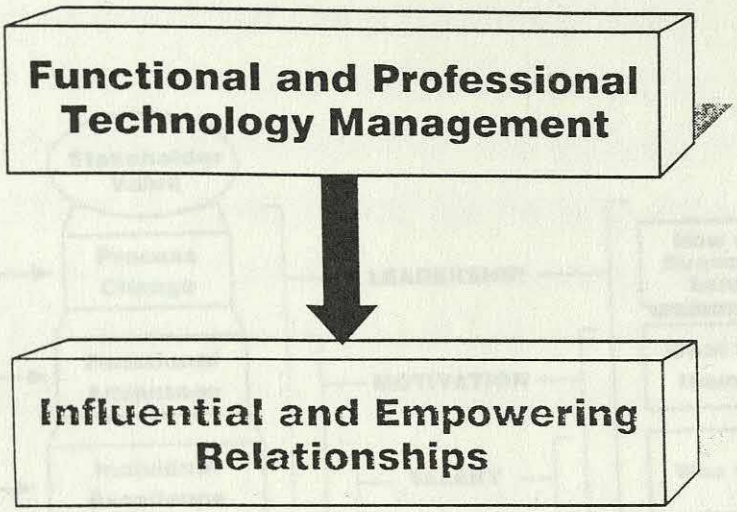
I/S Muscle Building . . .



"The significant problems we face cannot be solved by the same level of thinking that created them."

Einstein

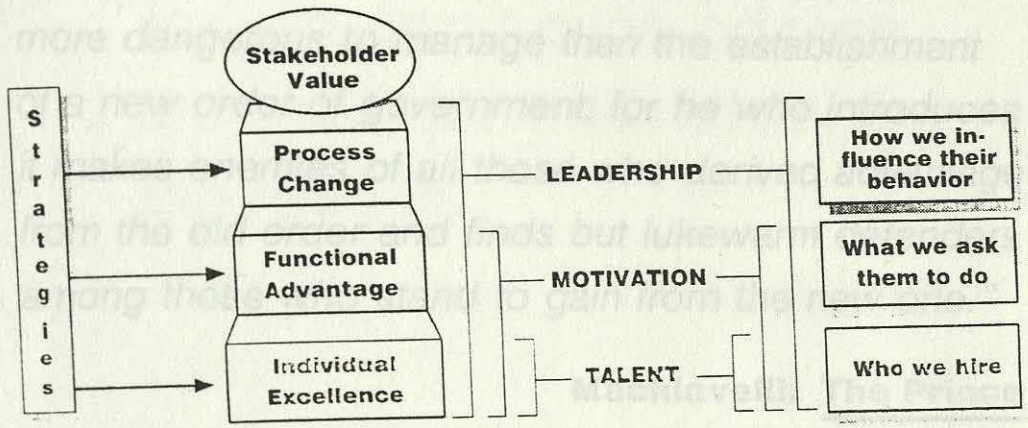
I/S Power Has Shifted . . .



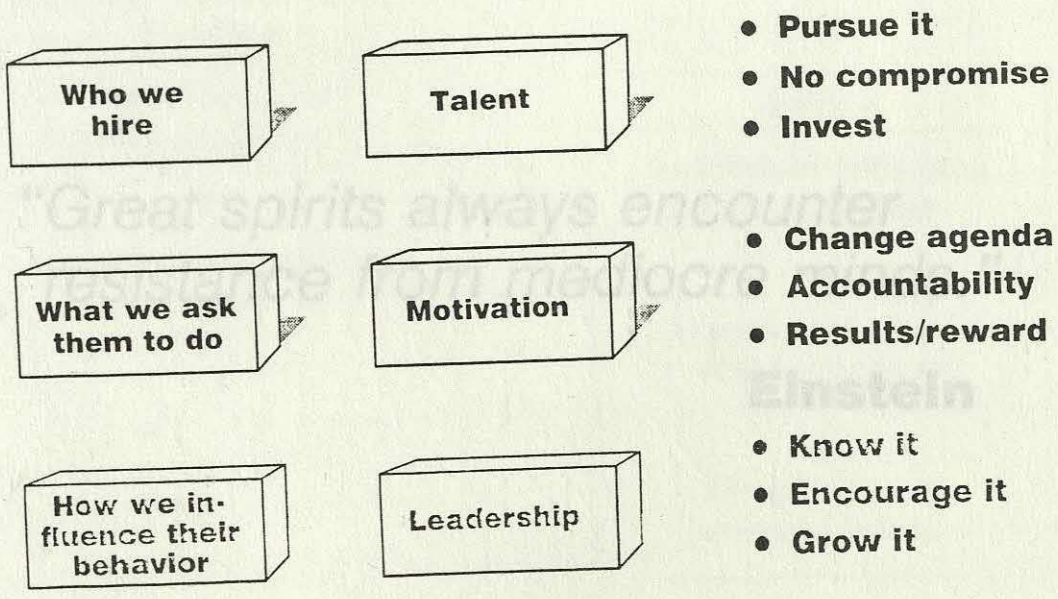
Success Attributes . . .

Personal	**Honest and Competent**
Interpersonal	**Trustworthy**
Managerial	**Empowerment**
Organizational	**Alignment**

Back to Basics . . .



Muscle Building Prescription . . .



"It must be realized that there is nothing more difficult to plan, more uncertain of success, or more dangerous to manage than the establishment of a new order of government; for he who introduces it makes enemies of all those who derived advantage from the old order and finds but lukewarm defenders among those who stand to gain from the new one."

Machiavelli: The Prince

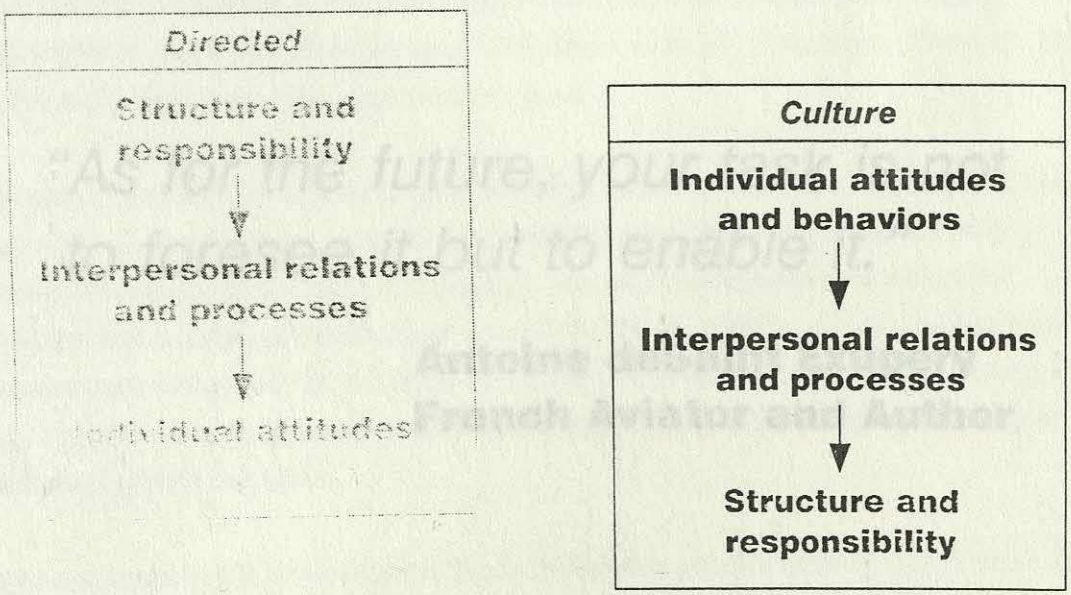
"Great spirits always encounter resistance from mediocre minds."

Einstein

"People don't mind change, they just don't like changing themselves."

Hammitt

Culture vs directed change . . .



Credits (No Particular Order) . . .

Michael Porter	**John Naisbitt**
Charles Garfield	**Richard Byrne**
Dave Robinson	**Dick Nolan**
Warren Bennis	**Michael Treacy**
Mike Jenkins	**Jim Kubeck**

"As for the future, your task is not to foresee it but to enable it."

Antoine deSaint Exupery
French Aviator and Author

Technology support for strategic management

Giorgio De Michelis, University of Milan

Giorgio De Michelis is associate professor of information science at the University of Milan. He is also one of the founding partners of RSO Futura, the company that represents the Butler Cox Foundation in Italy. He is responsible for research within the Esprit project and is cofounder of *Lito*, an Italian newsletter concerned with technology and organisational innovation.

During the 1980s, firms have become more complex with their behaviour affected by a growing number of factors which are less predictable. The information systems function is not immune from the consequences of more complex business environments – in fact, it has a crucial role to play in maintaining the ability of the business to respond to a rapidly changing environment. Not all market sectors are equally turbulent or complex, although whatever the degree of complexity, operations, marketing, and the business portfolio will all be affected. Successful organisations must retain an adequate level of flexibility in these three strategic dimensions.

An organisation's strategy may be based on different degrees of flexibility ranging from minimal flexibility sufficient to maintain organisational efficiency, through to a highly proactive change orientation affecting each of the three strategic dimensions. However, too much flexibility can destroy the organisation's identity.

Information technology, as well as other technologies, human resources, and organisational management, is a fundamental factor in the flexibility of a firm. It no longer has only cost-reduction objectives but must contribute to structural innovations both within the organisation and in terms of external business relationships. Neither is it adequate to view information technology only as a support for strategic actions – instead, systems managers must be proactive in anticipating the needs of the organisation and facilitating flexible, not constraining, systems solutions.

Systems managers find it increasingly difficult to maintain a single technical architecture as a result of the devolution of systems responsibility and the proliferation of competing options. It is important to note, however, that the impact of decisions on information technology can

have a major impact on the organisation's future flexibility. Systems strategy will need to be mapped into organisational strategy providing differing degrees of flexibility to different dimensions of the organisation.

Summary

- Companies are becoming more complex
- The strategic actions of a company have several dimensions
- The information system is a strategic agency
- Information technology may support a company's strategy

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Firms are becoming more and more complex

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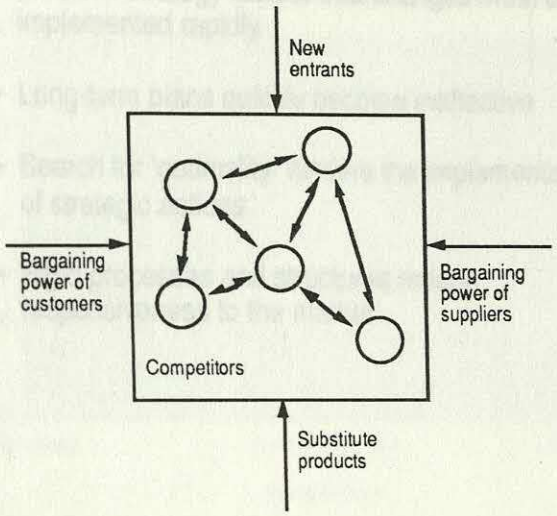
The competitive environment according to Michael Porter



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Firms are highly sensitive to the turbulence of the market

- Principal factors contributing to the turbulence of the market:
  - Planetarisation
  - Technological innovation
  - Differentiation
  - Instability of costs

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The innovation cycle is becoming shorter

- Imitative strategy means that changes must be implemented rapidly
- Long-term plans quickly become ineffective
- Search for 'optimality' hinders the implementation of strategic actions
- Rigid processes and structures reduce responsiveness to the market

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Complexity threatens firms

- With respect to operations
- With respect to marketing
- With respect to the business portfolio

Firms must reach an adequate level of flexibility in all three dimensions

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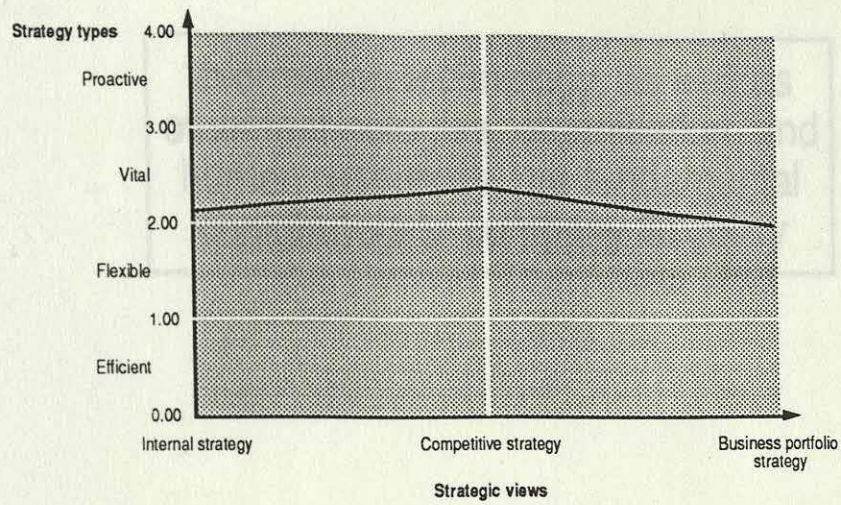
Three-point corporate strategy curve



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Too much flexibility can destroy the identity of a firm

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Information technology, as well as other technologies, organisation, and human resources, are fundamental contributors to company flexibility

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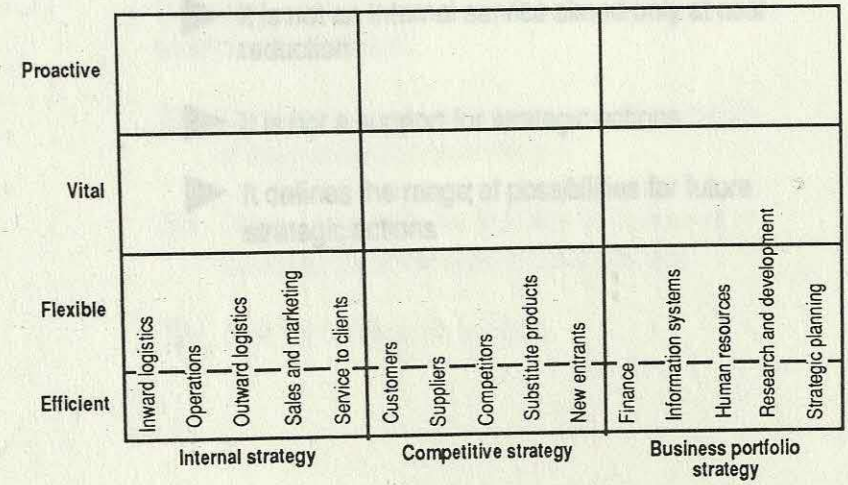
Corporate strategy matrix



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The information system is a strategic agency

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The information system is a strategic agency

- It is not an internal service aimed only at cost reduction
- It is not a support for strategic actions
- It defines the range of possibilities for future strategic actions

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Strategic decisions about operations, marketing, and the business portfolio depend much more on existing information technology than on any new information technology that might be introduced in these areas

The impact of information technology on the strategic choices of a firm is significantly delayed in time

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Recommendations (1)

Create a service culture in the information systems department

- Structure the organisation around clients/users of the information technology
- Offer not procedures and data, but answers to the information requests of clients/users
- Provide a helpdesk function

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Recommendations (2)

Maintain a dynamic coherence between information systems and the structure of the firm

- Characterise the information system in the language of the strategy and the firm
- Take into account the effects that each technological choice will have on the future possibilities of the firm

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PROFIIM: database

- Number of firms: 97
- Years: 1985 – 1989
- Number of variables: 100 per firm

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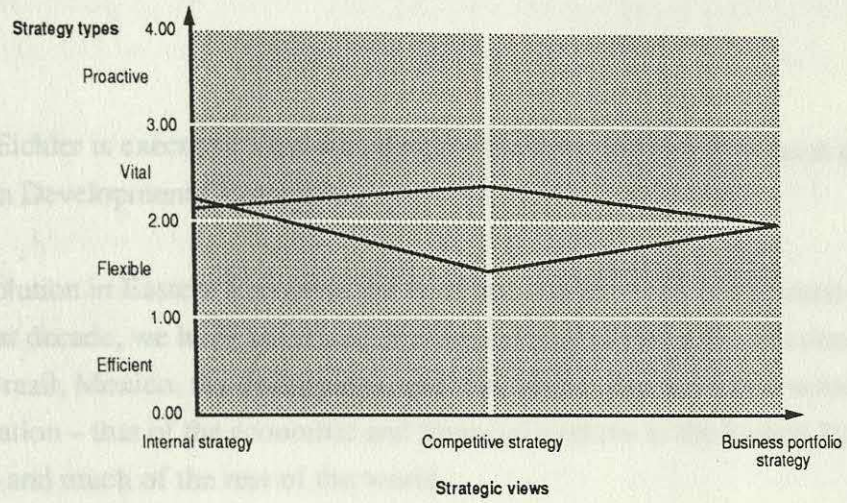
Comparison between three-point curves of information technology and corporate strategy



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Recommendations (3)

Develop the information system in new directions

- Networking, EDI, and cooperation technologies
- Multimedia and document processing
- Hypertext and flexible reporting

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Opportunities in Eastern Europe

Gabriel Eichler, Central European Development Corporation

Gabriel Eichler is executive vice-president for banking and investments at the Central European Development Corporation.

The revolution in Eastern Europe is the confirmation of a worldwide trend of liberalisation. In the last decade, we have witnessed democratisation of the political systems in Argentina, Chile, Brazil, Mexico, the Philippines, and elsewhere. We have also witnessed another liberalisation – that of the economic and financial systems in the United States, most of Europe, and much of the rest of the world.

The countries of Eastern Europe have been called centrally planned economies. In fact, while they have been characterised by central influence, they have not had central planning since the late 1950s. Moving from a state-controlled economy to a predominantly market economy is a difficult process and there are no good models to follow. The main issues are sequencing, timing, overall speed of reform, and the political dimension.

There are those who advocate shock treatment. Liberalise pricing structures, introduce convertibility of the currency, allow private enterprise, privatise, allow bankruptcies, liberalise imports and exports, and do it all at once. Many Western economists support and encourage this approach. Such an approach would cause immediate chaos in a reasonably smoothly running economy.

The other extreme is the gradual approach. Liberalise some prices but keep most controlled, allow some free enterprise, privatise only partially and very slowly, break up monopolies, introduce convertibility in five to ten years' time. We have learned that slow, haphazard reform does not work.

Because we are reforming the entire system, reforms must happen fast, and they must be introduced in batches, rather than as changes of individual laws, regulations, and practices. They must also have reasonable public support, and they must be introduced in a politically stable environment, although that environment may be democratic or more authoritarian.

East European countries are currently at a stage when the old rules of the game no longer apply. Many enterprise managers have been replaced, but new rules are not yet in place. The government therefore needs to take a two-pronged approach – on the one hand, running the country according to the old rules, and on the other, preparing a comprehensive program of changes that will be introduced in the proper sequence, at the proper time, and as soon as possible.

All of this needs to be in place before entrepreneurs can flourish. It need not take too long. This infrastructure exists in all West European countries. The European Community and most individual countries are offering their assistance free, including translators. Indeed, the East Europeans have an advantage; they can pick the best, and keep things simple by rejecting the unnecessary baggage of laws that have accumulated over centuries in the West.

Hungary may follow such a program, at least partially. Reforms have been taking place since 1968. Because they were slow and indecisive, they caused serious economic deterioration, but Hungary is much more advanced than any other country in the region in its legal and accounting systems, and in general, it is more sophisticated in its business culture and in its dealings with the West.

Information policy in Hungary – challenges and caveats

Tibor Vámos, Research Institute of the Hungarian Academy of Sciences

Tibor Vámos is Chairman of the Advisory Board for the Hungarian Academy of Sciences. The Academy was established in 1972 following the merger of two research groups, with the objective of carrying out research in automation and computer science.

An understanding of phenomena in another country requires an understanding of the nation's cultural and historical background. In Hungary, the events of the past 40 years and the abrupt changes in the recent period have had a dramatic effect on business and commercial organisations. As a centralised economy, Hungary has made efforts to benefit from the general progress of the Western world, first through COMECOM, and more recently, by moving towards private enterprise and a market-driven economy. Contrary to popular belief, the ideology of a centralised economy has not prevented Hungary from developing high intellectual standards and a progressive social and business atmosphere.

The information infrastructure has, however, developed very slowly, with a resulting negative effect on business. This is very largely the result of trade embargos, the most notable of which has been COCOM, which have prevented free trade in high-technology equipment.

Currently, Hungary, in common with other European countries, is experiencing a rapid transformation of its economic and technological infrastructures. This transformation offers enormous opportunities and is very stimulating, but could be disastrous if it is not managed within the framework of a long-range policy. Such a policy should emphasise the need for education that will enable society to benefit from information technology. It should also provide a blueprint for developing telecommunications and national policies for the hardware and software industries. Government has a role to play as a catalyst in enabling firms to exploit and benefit fully from information technology.

Looking to the future – understanding the present

- Understanding = cultural and historical background
- Social structure of the nation
- Balancing act between big empires:
  - Byzantine-German
  - Turkish-Hapsburg
  - Soviet-West

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Looking to the future – understanding the present

- Eastern periphery of Western culture/ Western frontiers of Eastern influence:
  - Roman church
  - Renaissance
  - Reformation
  - Enlightenment
  - Socialism
- Cultural pluralism, ability to adapt and compromise
- Limited tradition of trading

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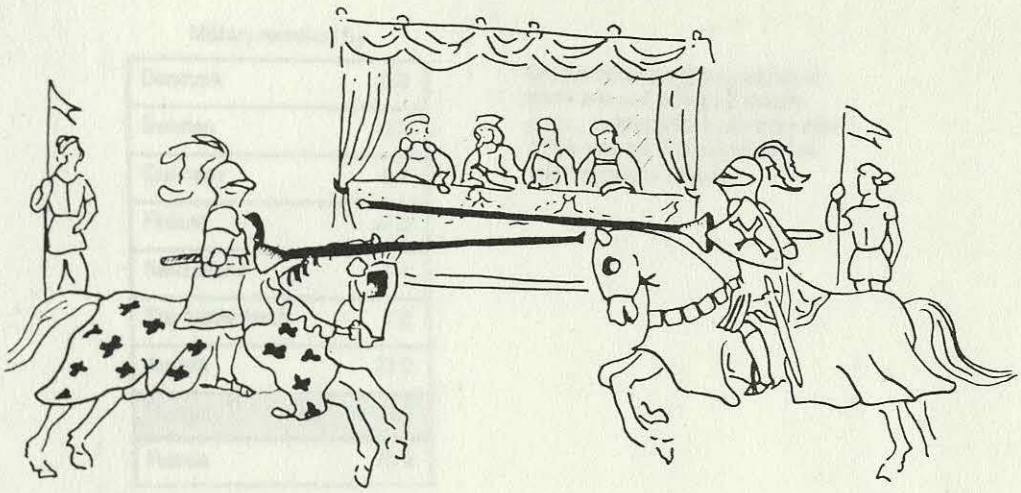

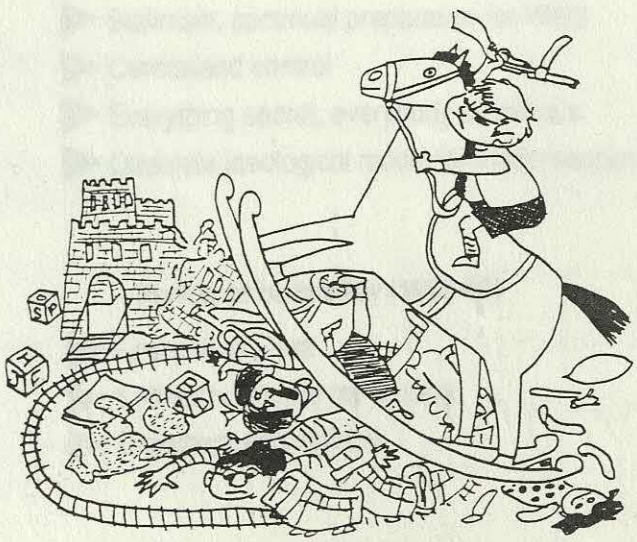

Illiteracy a century ago

Military recruits (%)

Denmark	0.3
Sweden	0.3
Germany	0.6
Finland	>1.0
Switzerland	1.1
The Netherlands	7.2
Austria	23.0
Hungary	34.0
Russia	70.0

On the other hand, excellence in some arts and sciences (poetry, music, mathematics) and education of the elite has flourished despite regular political purges.

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Dark age (1949-53)

- Stalinism, continual preparation for WW3
- Centralised control
- Everything secret, everybody suspicious
- Obsolete ideological model for modernisation

Period of instability (1953-62)

- Economic reform
- Self-sufficiency in technology
- Dreamers and dullards

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Reforms with intermissions (1962-1980s)

- Opening up to world economy and culture
- Slow move away from COMECOM
- Simulated market economy
- Timid private enterprise
- Computer and micro-electronic industry half-way between East and West
- Massive but fluctuating import of PCs
- Childhood with BASIC and COMMODORE
- Unified System created from IBM and Digital systems
- Sophisticated software piracy
- New generation of people
- COCOM's negative role

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The telephone focus

Bell	1876
First exchange in Budapest (Puskás)	1881
Radio telephone	1893-4

Telephones per hundred inhabitants:

Country	1933	1988	Country	1933	1988
Sweden	15.0	66	**Hungary**	**1.3**	**7.65**
United States	16.0	52	Greece	0.4	35.00
Switzerland	10.0	54	Israel		32.00
Finland	4.3	44	South Korea		21.00
Austria	4.0	36	Turkey		8.00
Japan	1.6	40			

Investment in telecommunications: (% of all investment, 1988)

South Korea	14.8
Turkey	10.9
General level	7-8
Hungary	**5.0**

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Rákosi's view of telecommunications

- A system of power, command, and privilege
- One-way communication only
- Dedicated networks
- Priority allocation to military personnel

Outcome:

- Lower GNP per capita
- Lack of growth in information services

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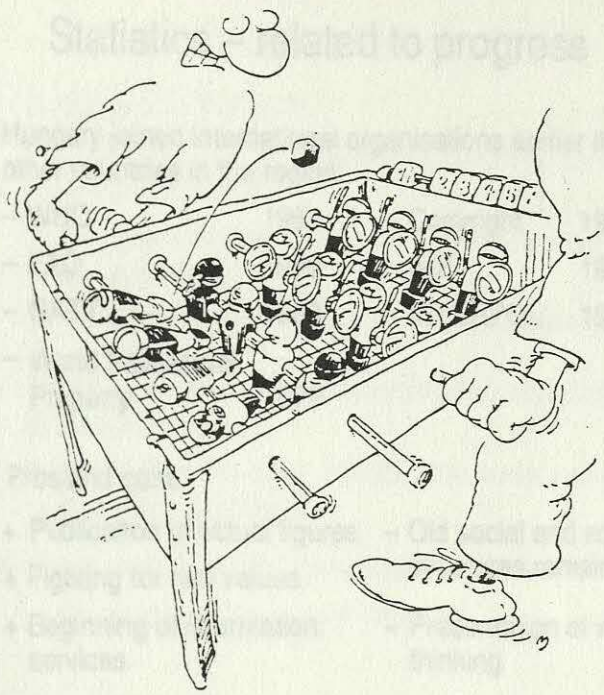

Statistics – related to progress

- 1848 – First Hungarian independent bureau of statistics
- 1869-73 – Restoration of Hungarian state
- 1953 – Reform proposals to introduce international information standards before any other country in the region

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Statistics – related to progress

- Hungary joined international organisations earlier than other countries in the region:

– WHO	1963	– Copyright	1971
– FAO	1968	– IMF	1982
– GATT	1969	– INTERPOL	1982
– World Intellectual Property	1970		

- Pros and cons:

+ Publication of actual figures	– Old social and economic structures remain
+ Fighting for real values	
+ Beginning of information services	– Presentation of wishful thinking

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Legislation pertaining to information

- Privacy of information
- Value of information
- Storage of information
- Debate about rights of society versus individual
- Legislation not so far enacted

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A cold shower

- Collapse of COMECOM:
  - Companies sold at low prices on Western market to get hard currency
  - Companies sold at high prices in domestic market to compensate

  eg VIDEOTON 4th in exports, 30th on home market
- Prisoners of an earlier investment policy and COCOM-COMECOM policy:
  - Higher than any other COMECOM, lower than any on the world market
- Home market prices after collapse of monopoly:
  - No competing power with imports

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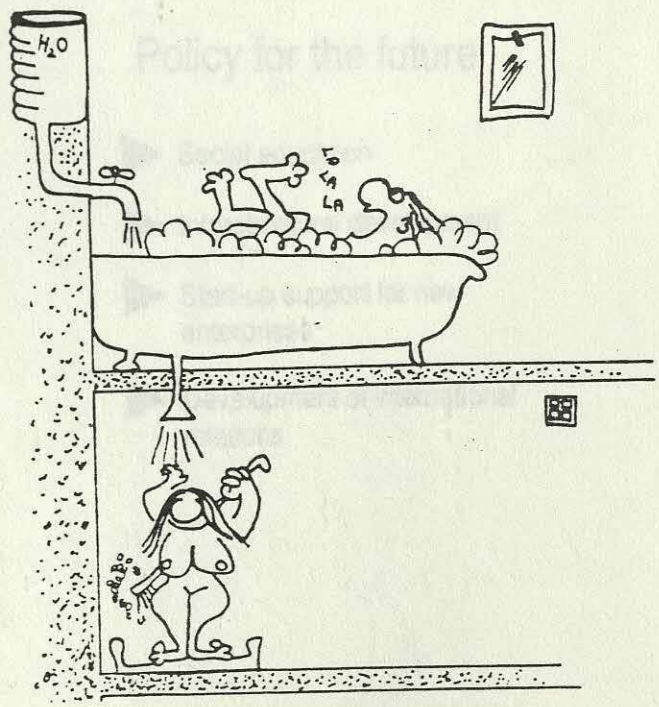

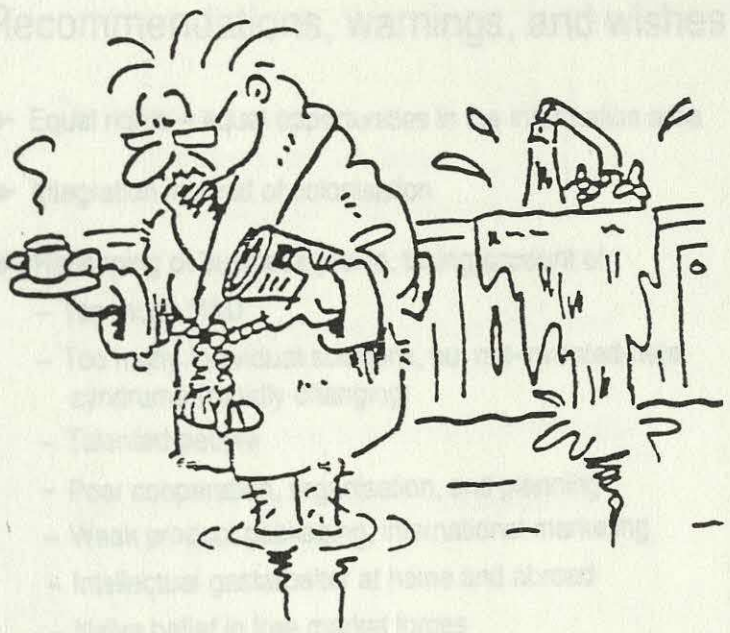

Policy for the future

- Social education
- Infrastructural development
- Start-up support for new enterprises
- Development of international relations

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Recommendations, warnings, and wishes

- Equal rights – equal opportunities in the information area
- Integration instead of colonisation
- Reshaping of business profile, taking account of:
  - Too much R&D
  - Too many individual solutions, but not-invented-here syndrome (rapidly changing)
  - Talented people
  - Poor cooperation, organisation, and planning
  - Weak product packaging, international marketing
  - Intellectual gastarbeiter at home and abroad
  - Naïve belief in free market forces

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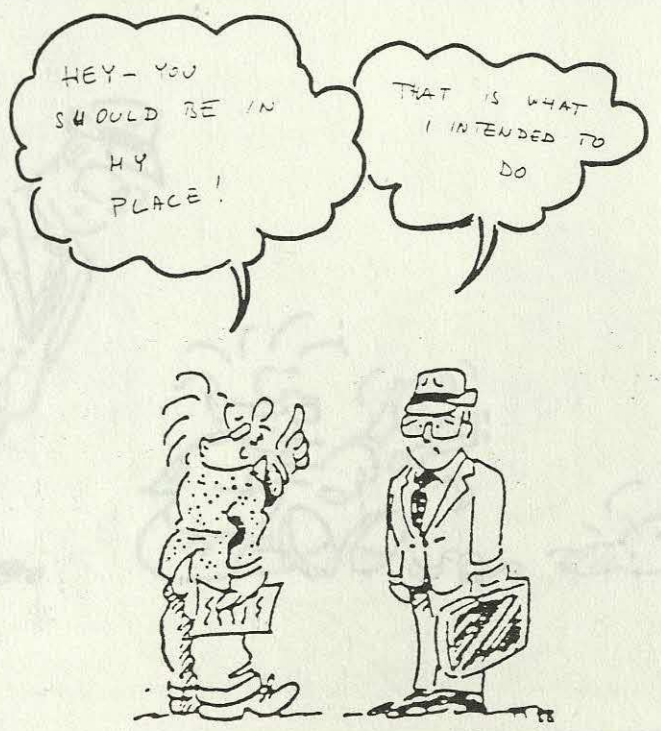

Recommendations, warnings, and wishes

- Infrastructure:
  - National and international
  - High standards of service and quality
  - Impact on motivation and self esteem
- Those who are prepared to be integrated will be rewarded
- The workforce is already computer-literate
- Business environment is not typical of Western Europe

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Long-range policy needed for:

- Building future markets
- Competing on a regional and worldwide basis
- Creating in Hungary an extension of Western civilisation

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Networking, and the shape of future corporations

Anthony Setchell, Digital Equipment Corporation

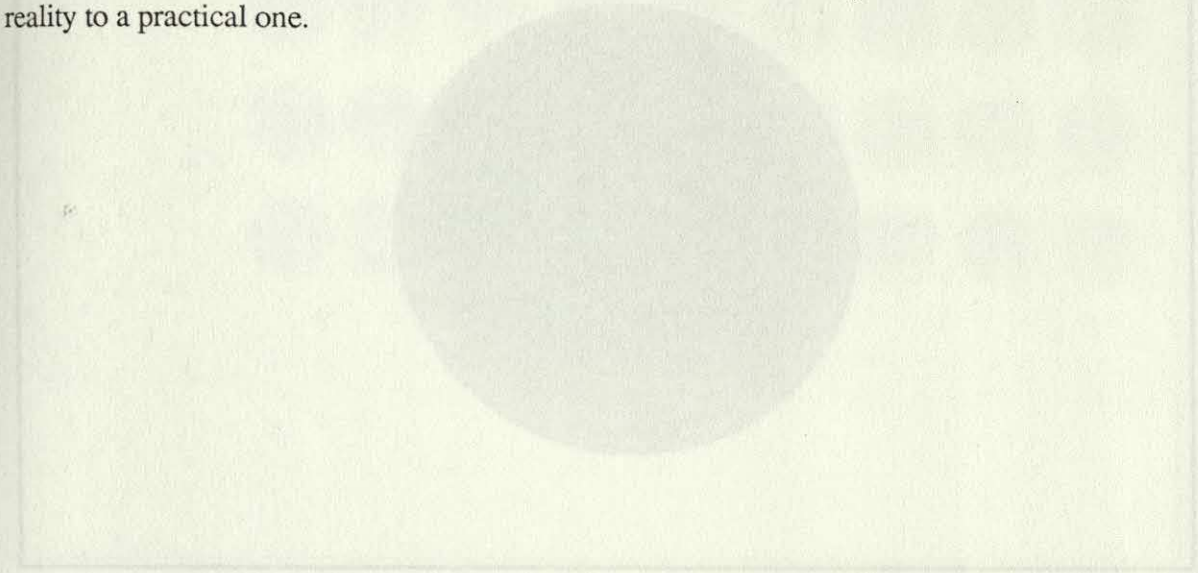
Anthony Setchell is global telecommunications strategist for Digital's Telecommunications Business Group. He is responsible for identifying, developing, and establishing the strategies, policies, and regulatory responses for Digital's activities in the telecommunications market.

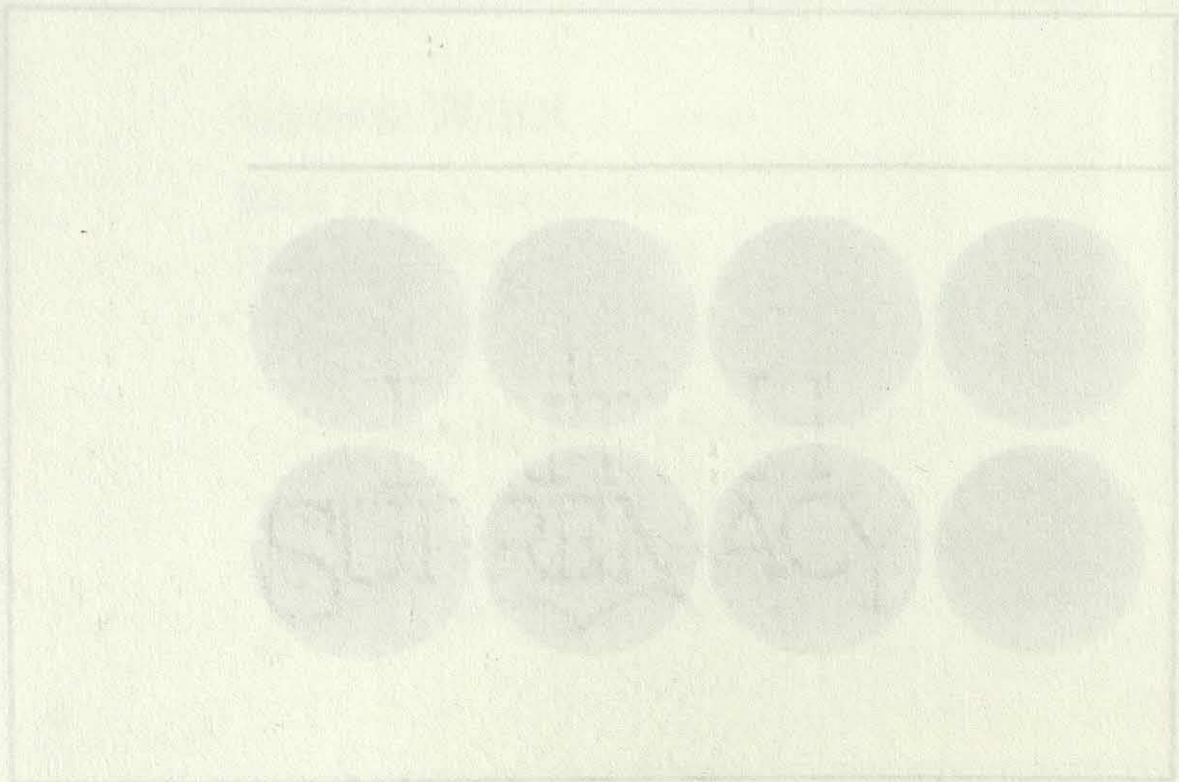
Distributed computing is a national phenomenon, which is encouraged by the need for enterprises to be more flexible and responsive to their environment. In this sense, distributed computing can be regarded as a utility, and in the manner of all utilities, needs to be present all the time.

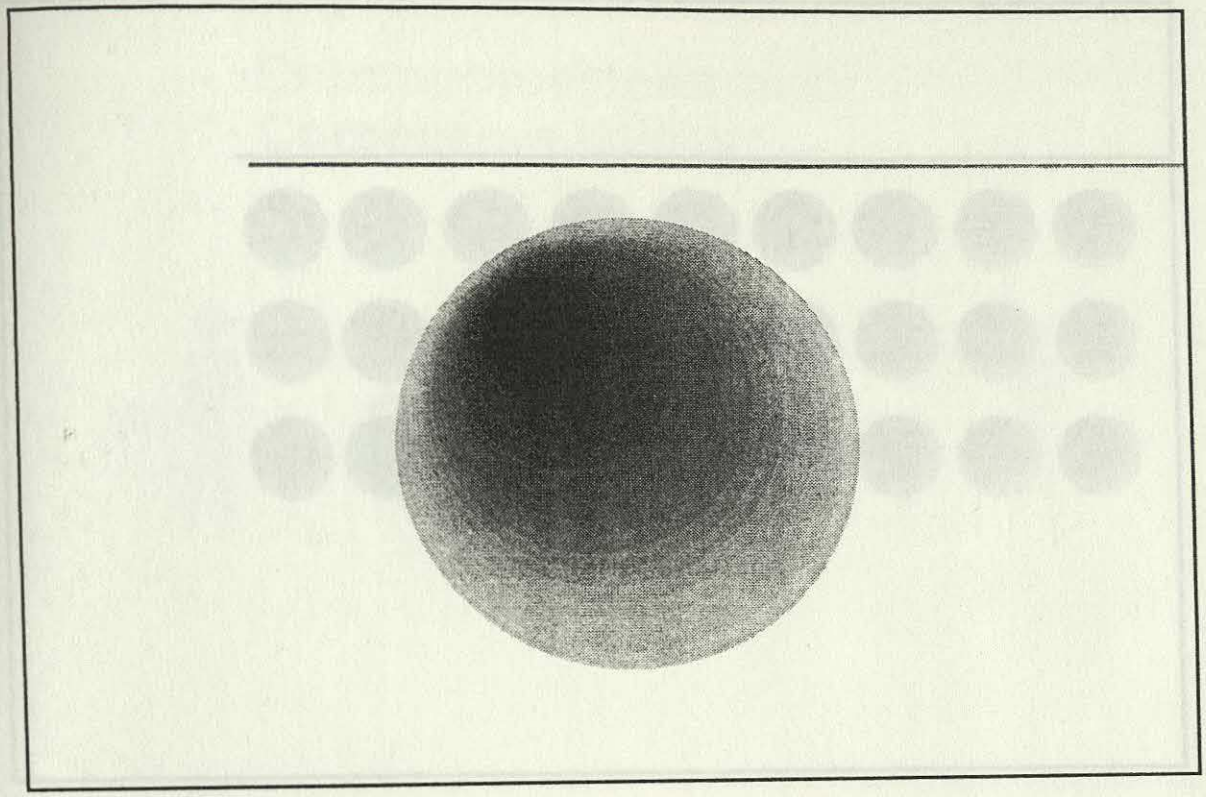
This utility is referred to as the communications and computing utility (C&C) and reflects the progressive merging of the original voice communications utility with the more recent computing utility. It is the potential of this utility that is reshaping many organisations, enabling them to manage their operations in a more efficient and flexible manner and making it possible to establish more efficient relationships between businesses. The C&C utility supports the spatial transfer of voice, data, and image information types, and in addition, has a memory capability to facilitate the transfer of information over time. With mobile communications, businesses, homes, cars, and individual people in the developed world are part of an interconnected society. Eventually, the infrastructure will be put in place to make this connectivity worldwide.

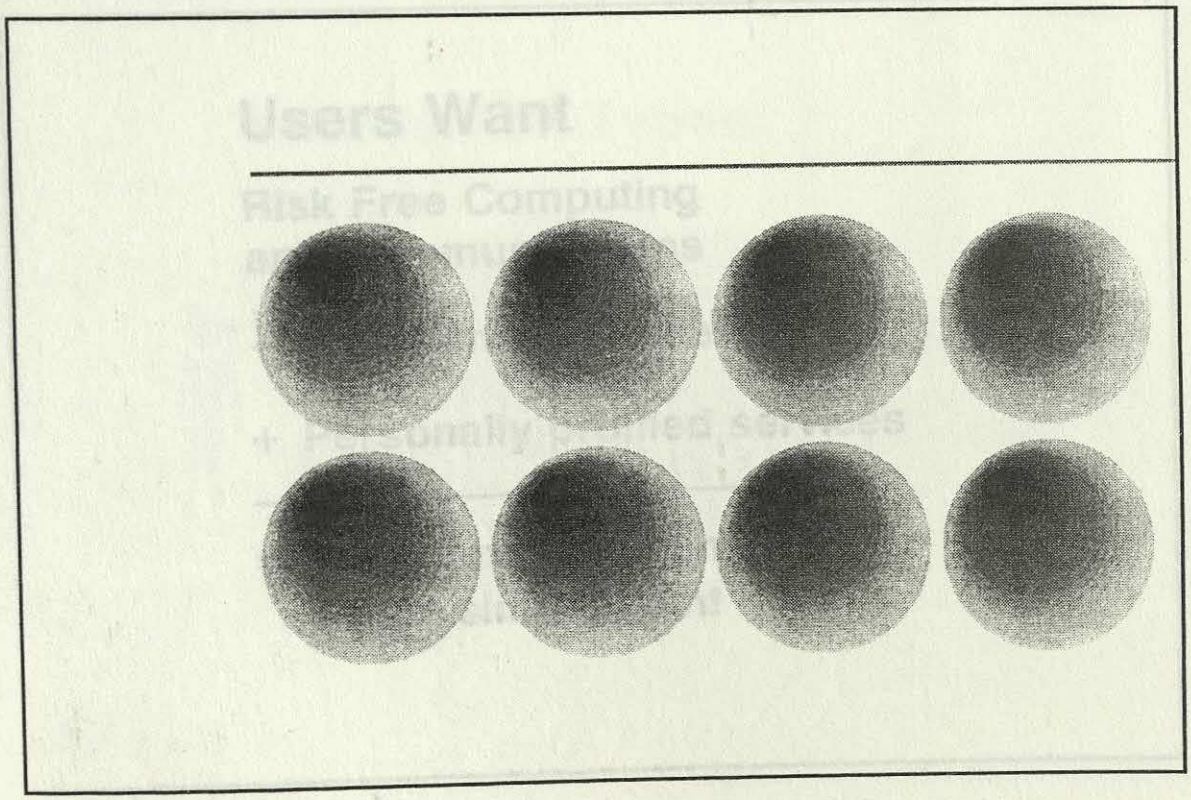
In the meantime, Digital has developed an internal utility, known as EASYNET, which effectively links the entire workforce of 120,000 people, who live and work all over the world. Although based on the older C&C services and not yet exploiting imaging, voice recognition, and more advanced services, it has nevertheless provided considerable benefits. Technical information flows freely through the company, as does marketing and sales information. Overall, information flow tends to be horizontal rather than vertical, and it is this which has an impact on the future shape of the corporation, both in terms of internal operations and in terms of relationships with other enterprises.

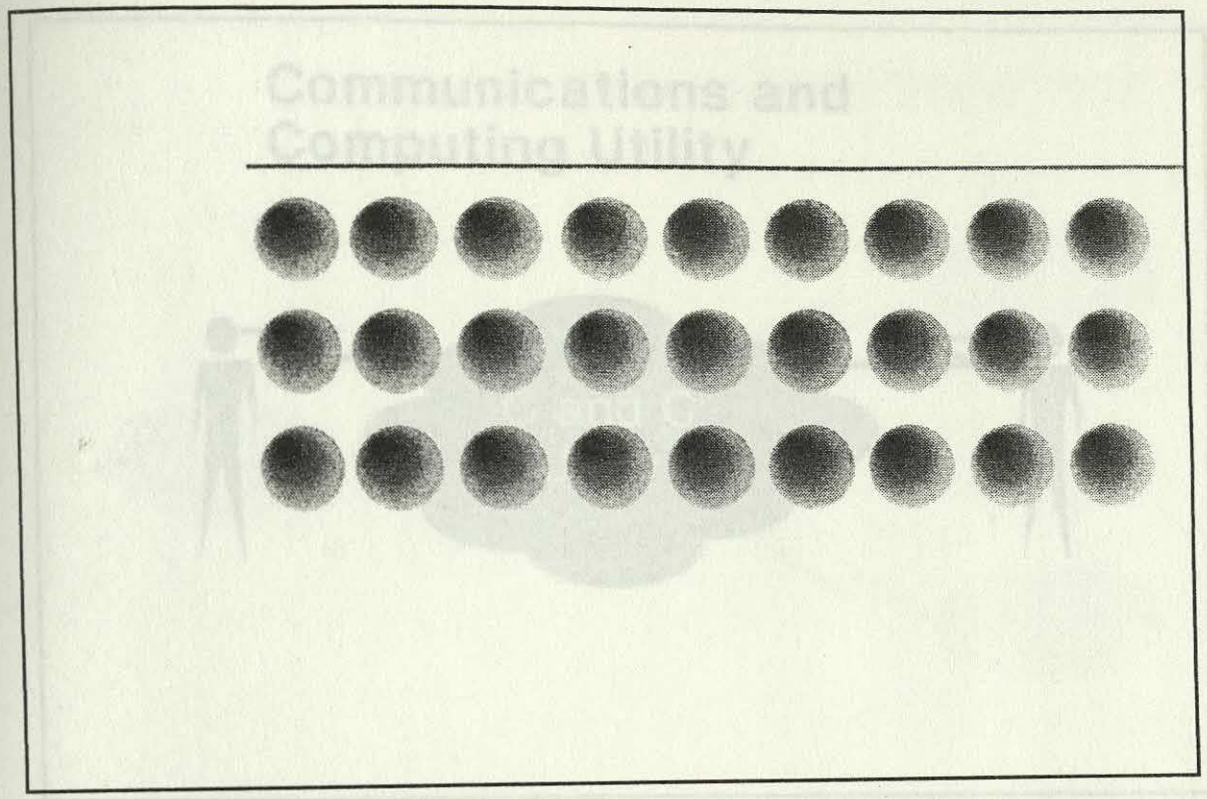
Anthony Setchell will describe the concept of a knowledge economy in which the C&C utility forces a reappraisal of the basic processes or knowhow of an enterprise. This knowhow, when captured in a knowledge base, is likely to be the main asset of an enterprise, and using a utility stretching across the whole globe, the knowledge economy moves from a virtual reality to a practical one.











Users Want

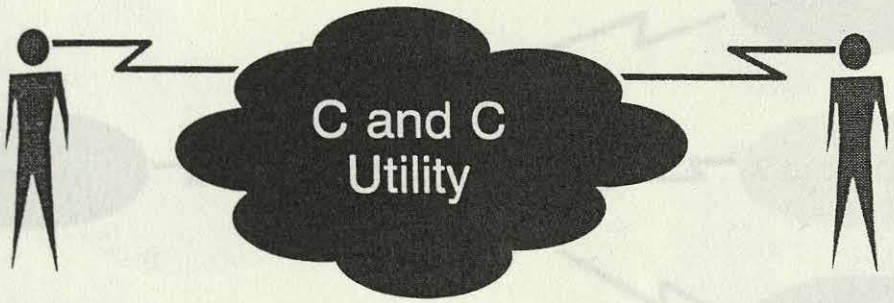
Risk Free Computing and Communications

+ Freedom of purchase

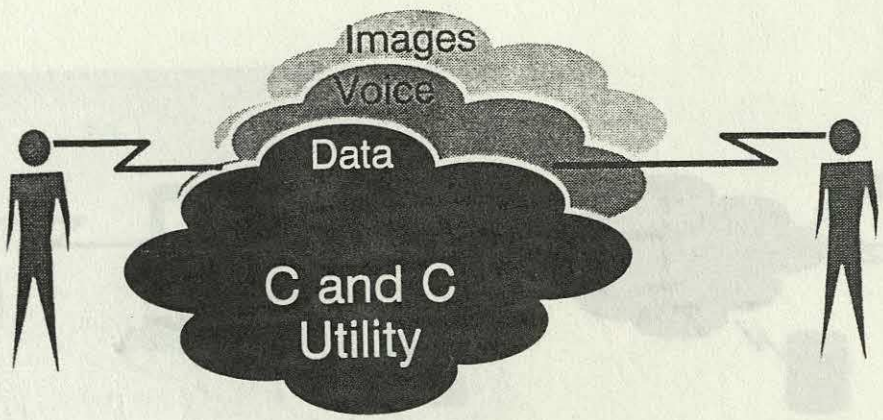
+ Personally profiled services

= Total flexibility from a single simple point

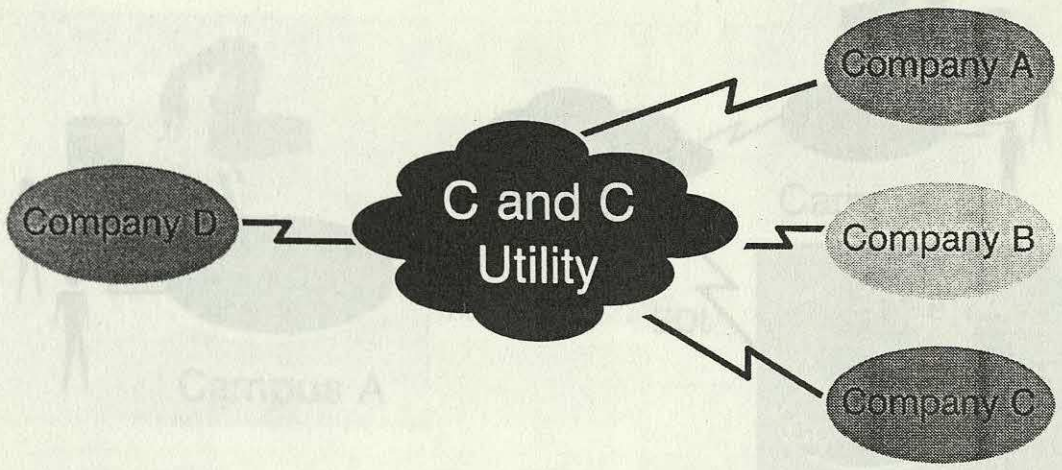
Communications and Computing Utility



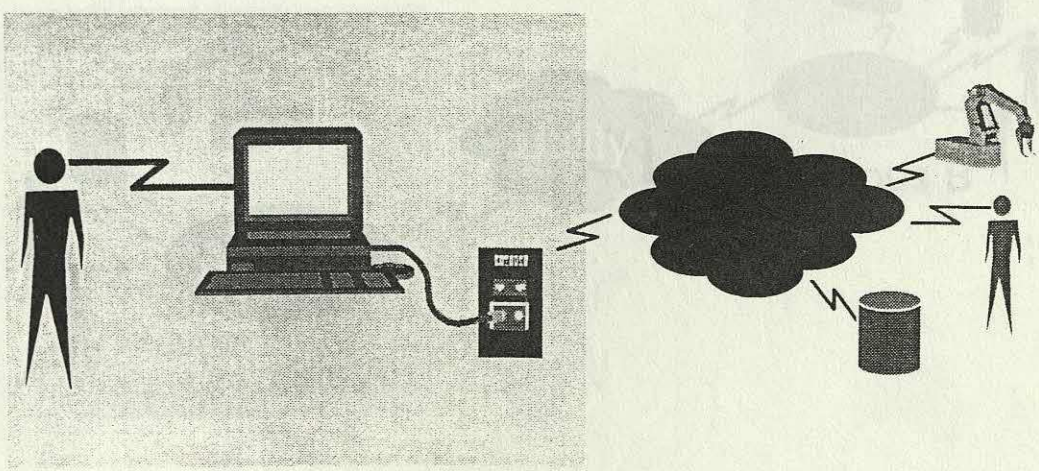
Information Types

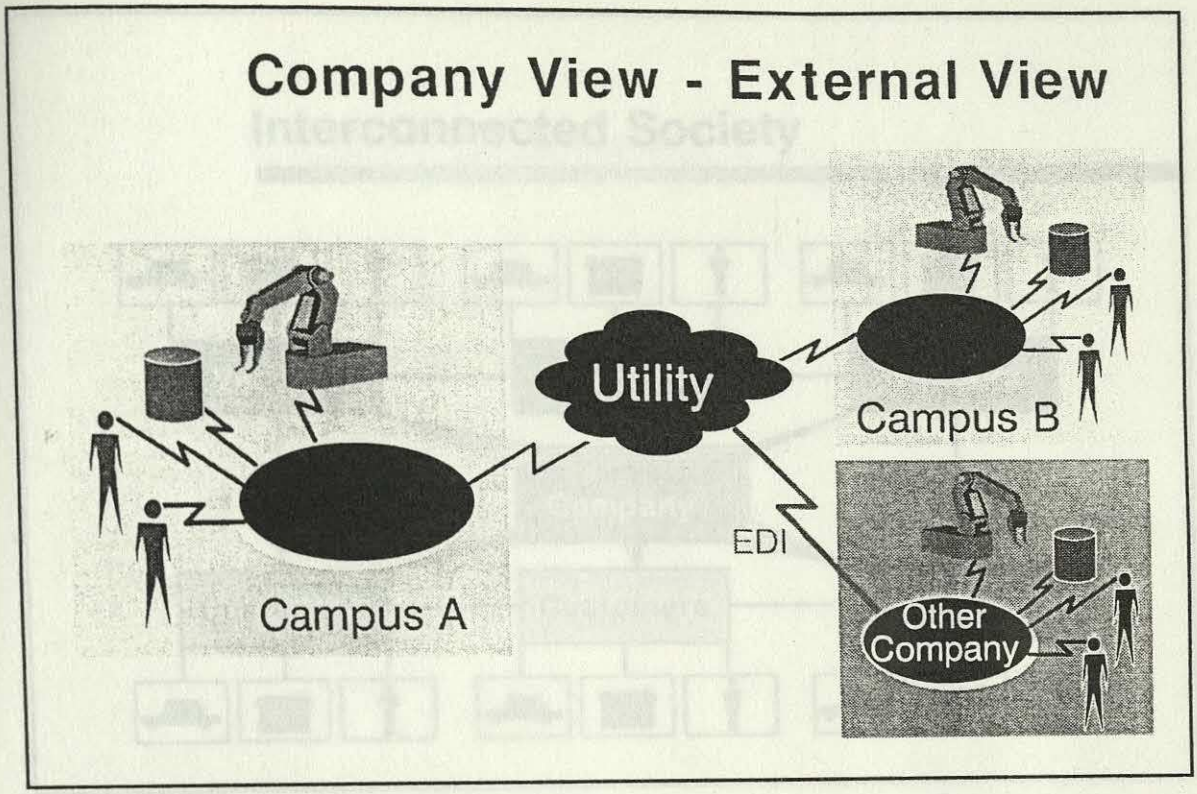


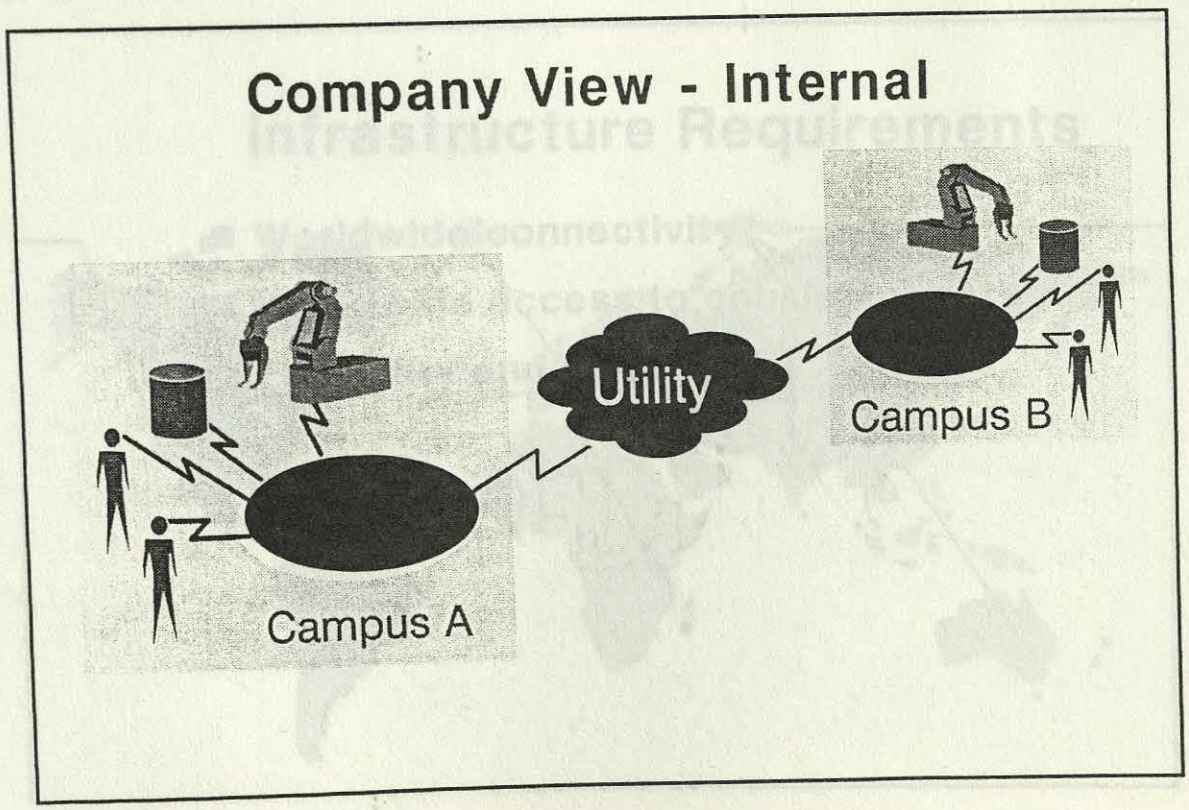
Groups of Companies View

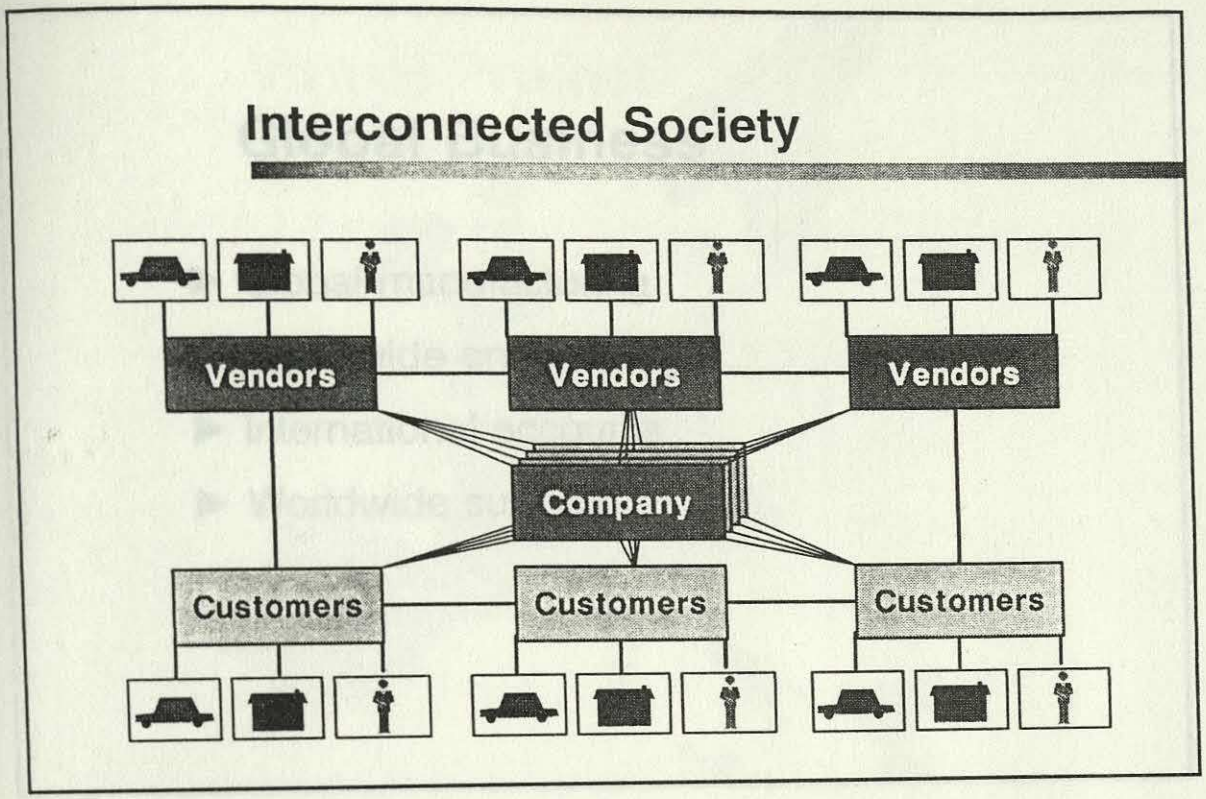


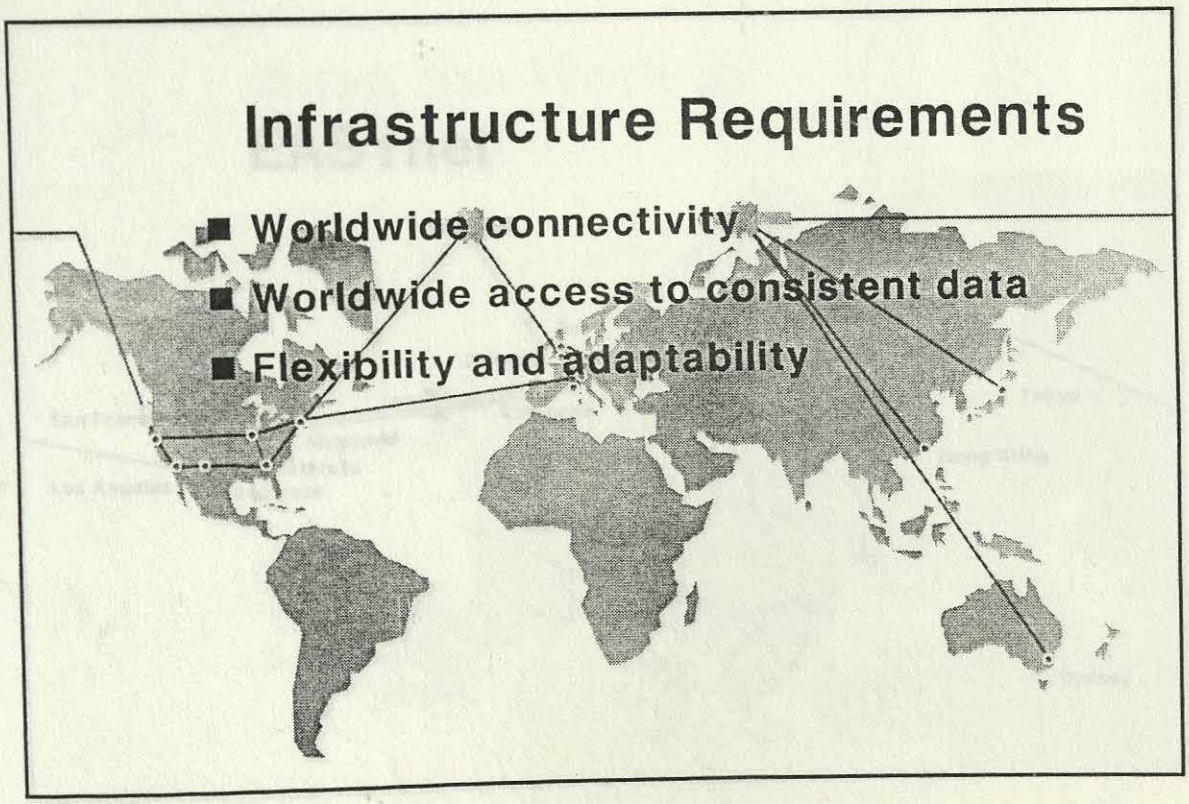
Individual View




Company View - External View
Utility
Campus B
EDI
Other Company
Campus A


Company View - Internal
Utility
Campus B
Campus A

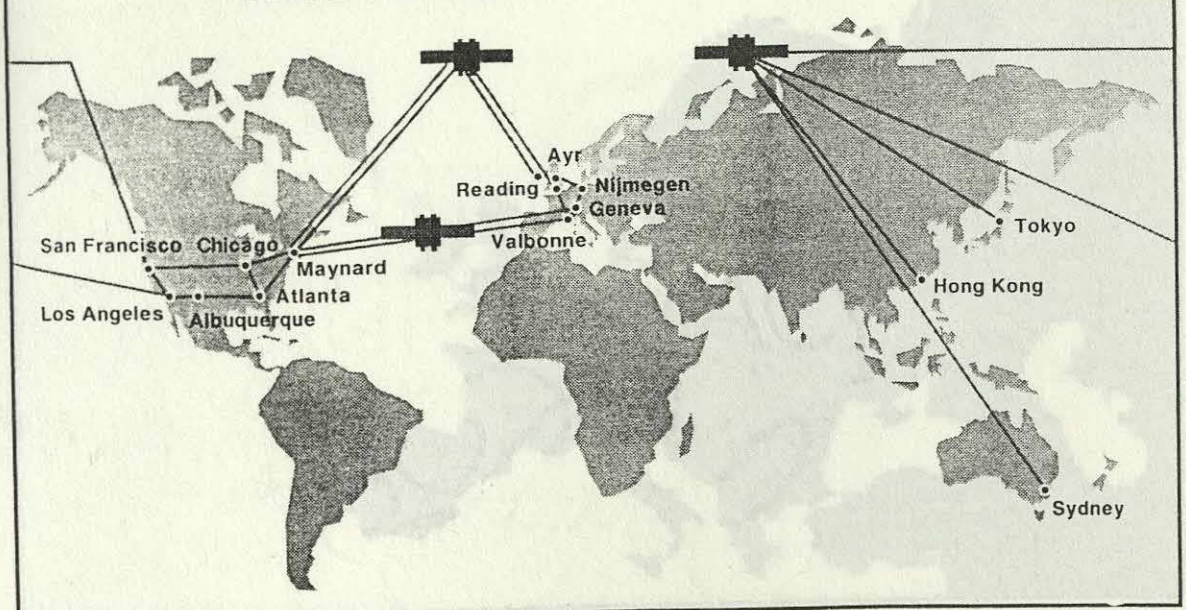

Interconnected Society
Vendors
Vendors
Vendors
Company
Customers
Customers
Customers

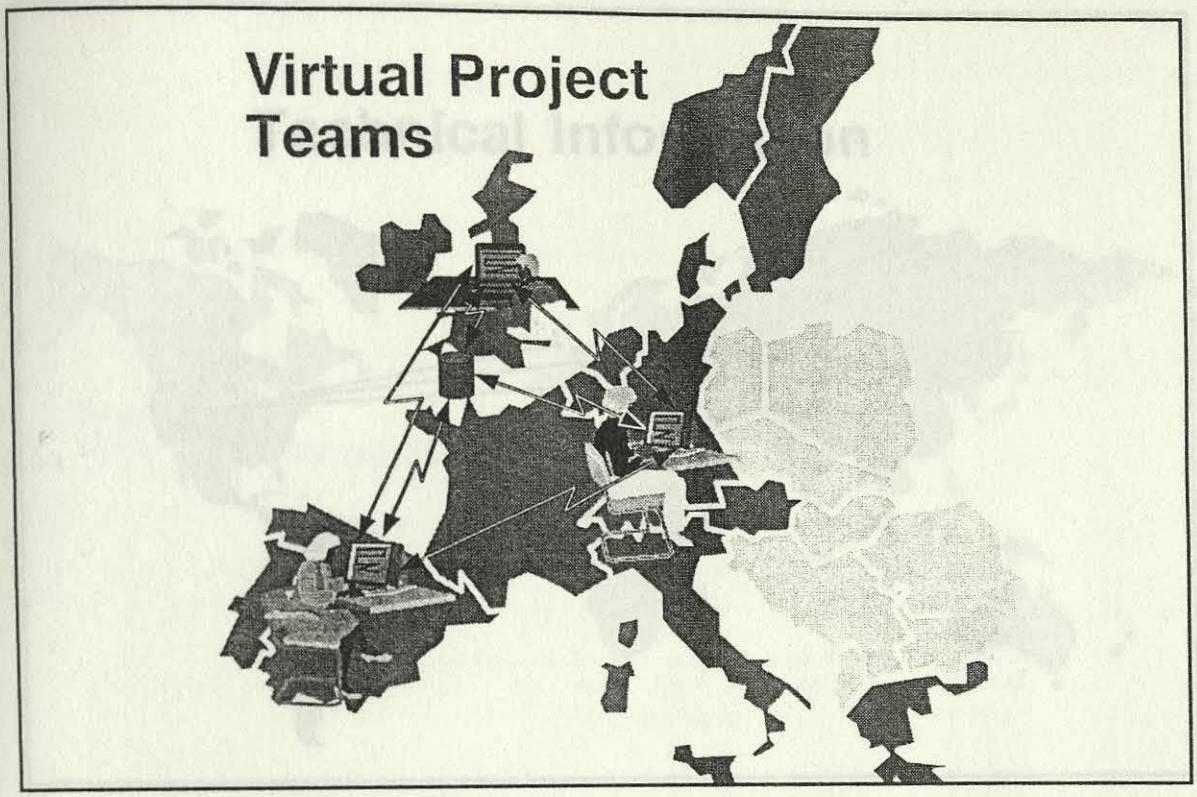

Infrastructure Requirements
Worldwide connectivity
Worldwide access to consistent data
Flexibility and adaptability

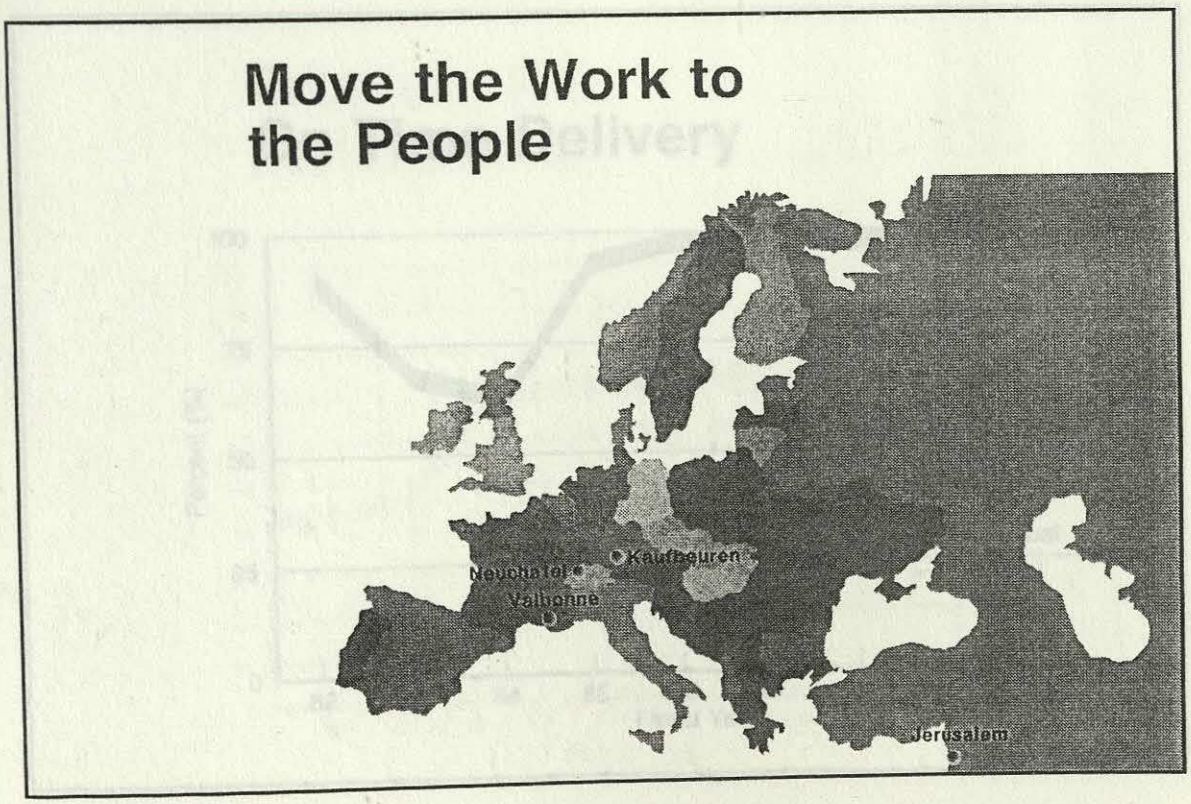
Global Business

- Global manufacturing
- Worldwide engineering
- International accounts
- Worldwide support

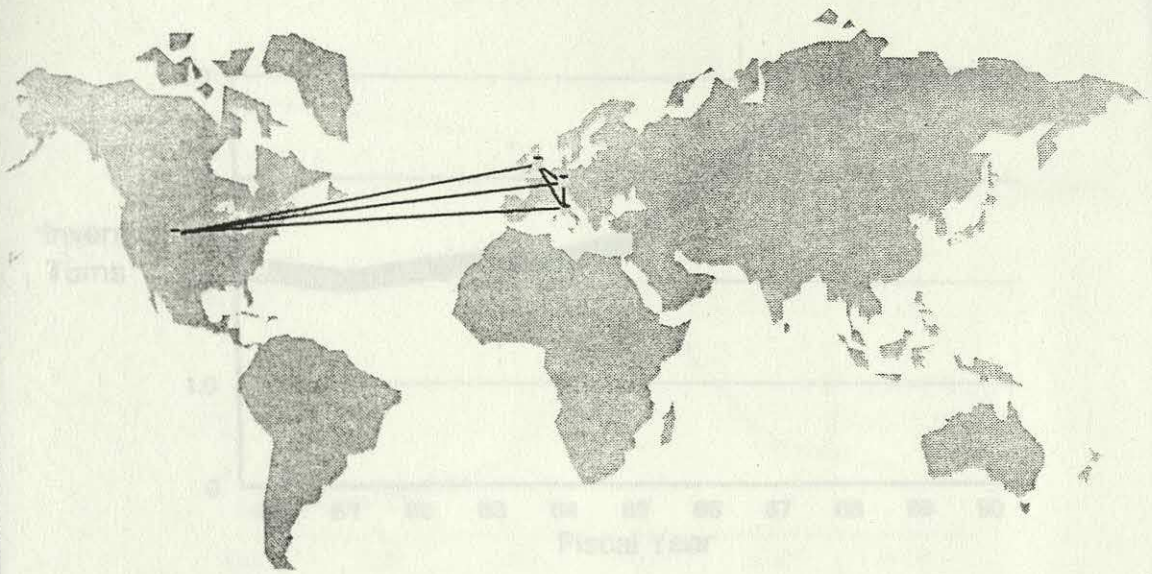
EASYnet



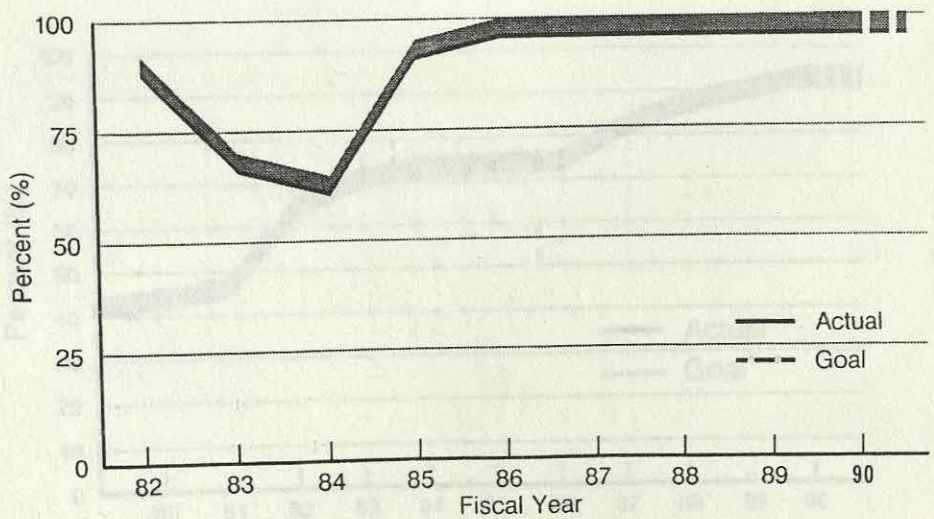

Virtual Project
Teams


Move the Work to
the People
Kaufbeuren
Neuchâtel
Vallorbe
Jerusalem

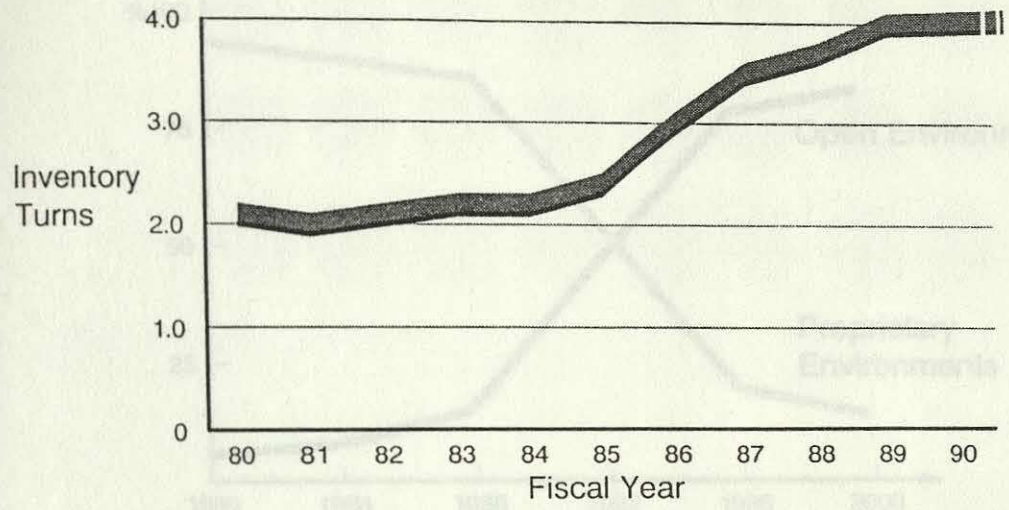
Technical Information



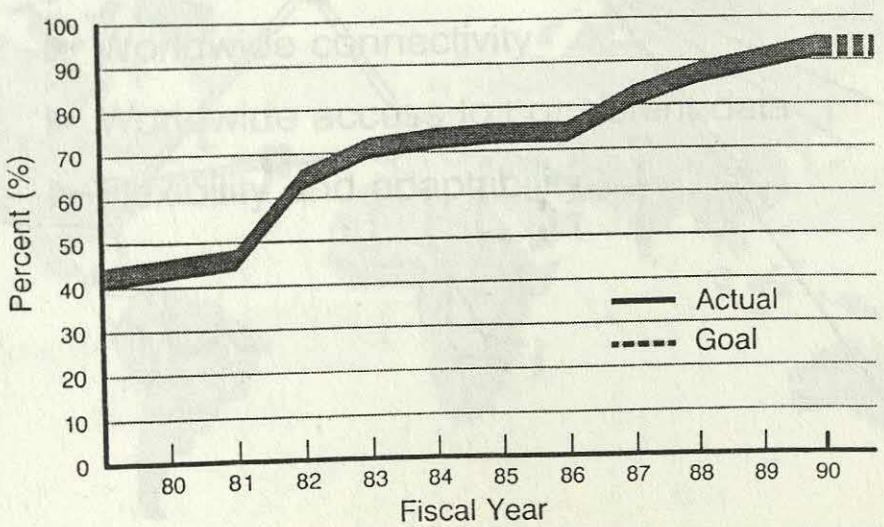
On Time Delivery

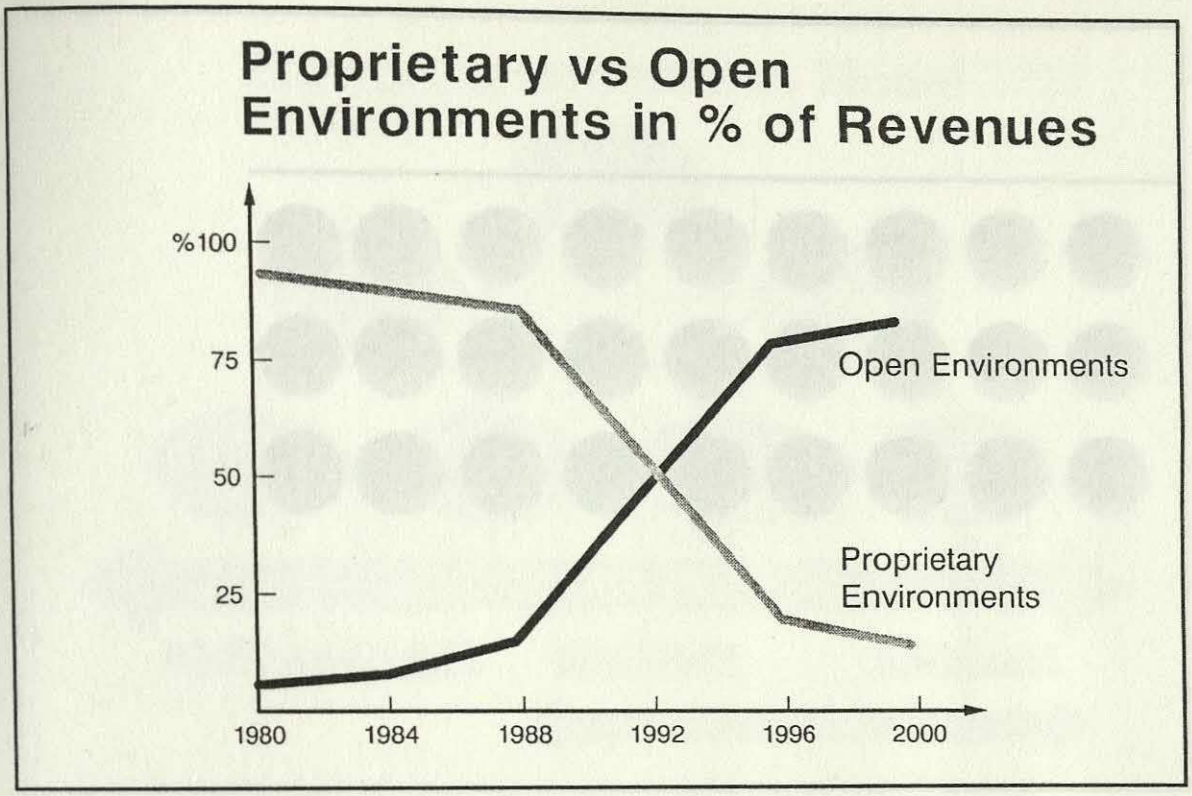


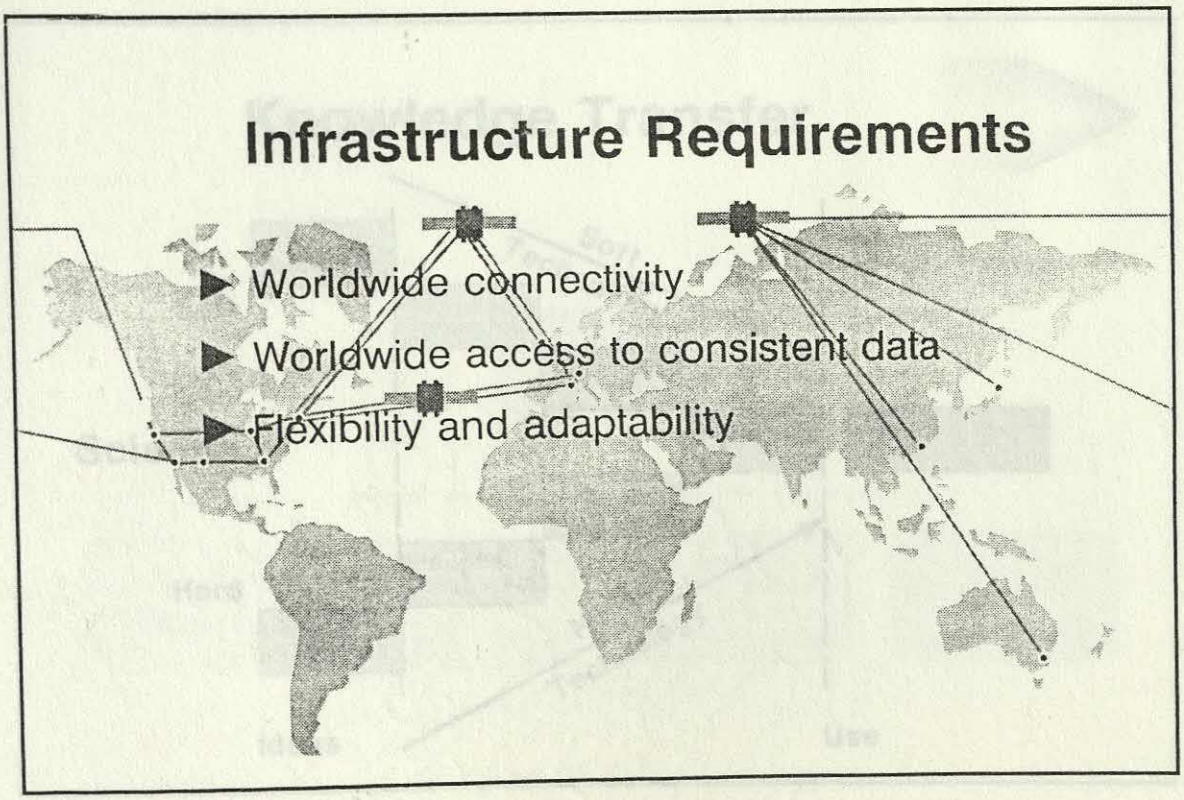
Management of Inventory

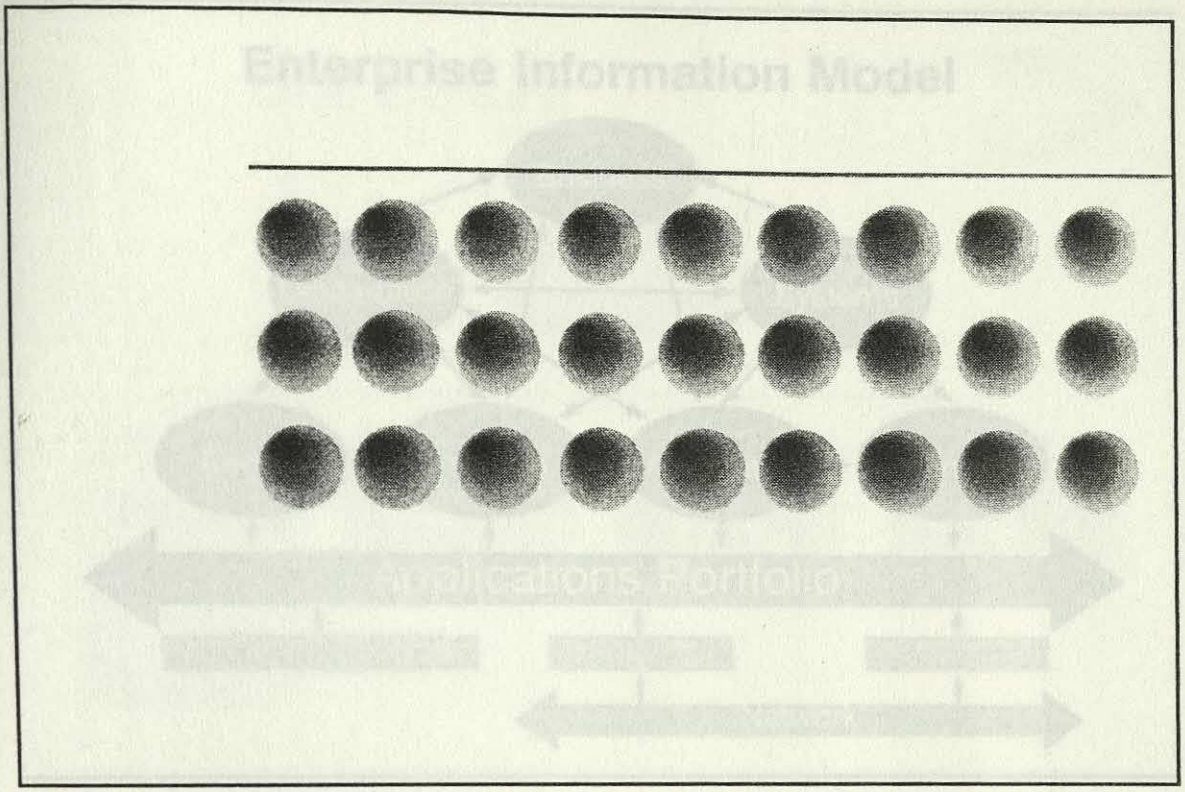


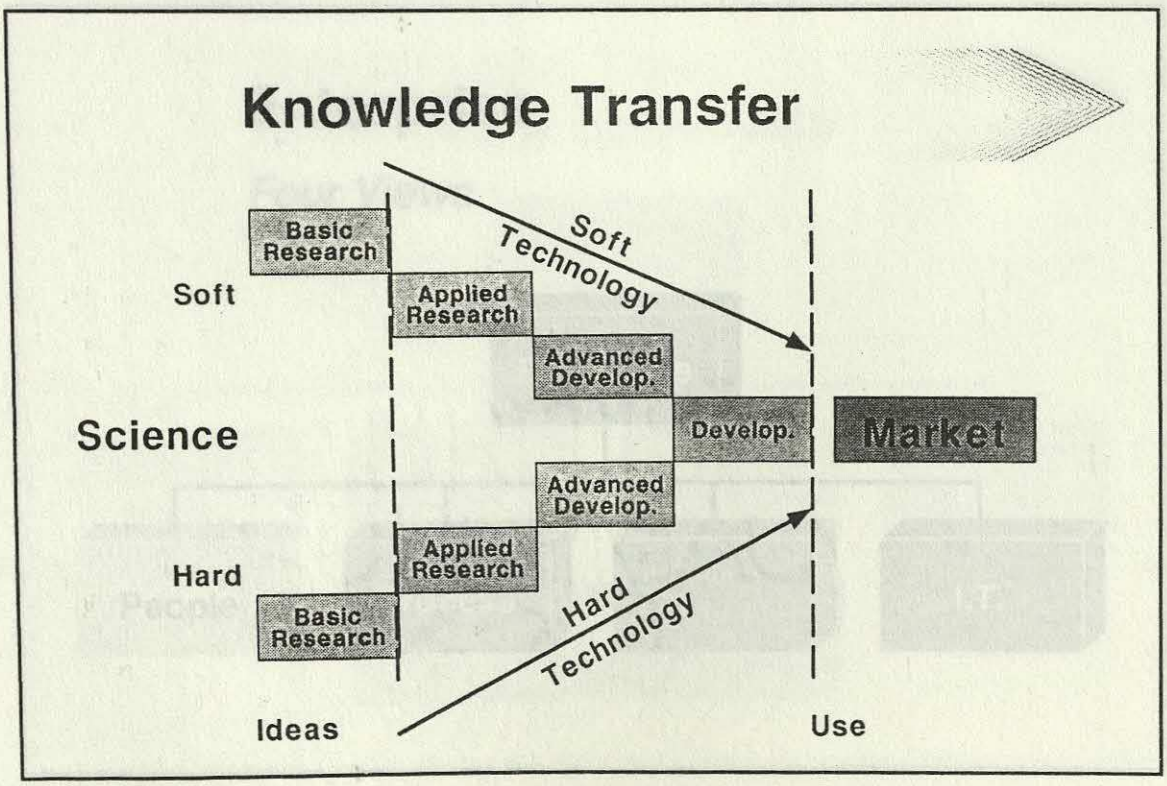
Problem Free Installations

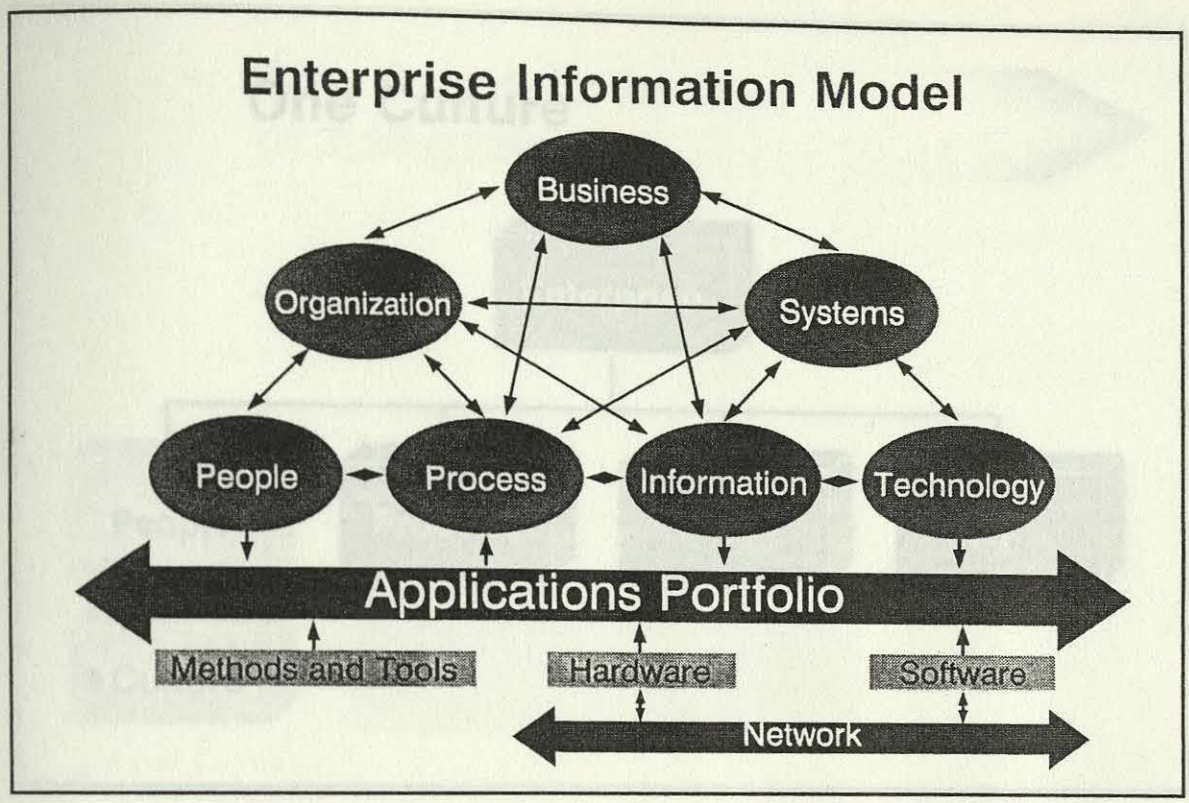


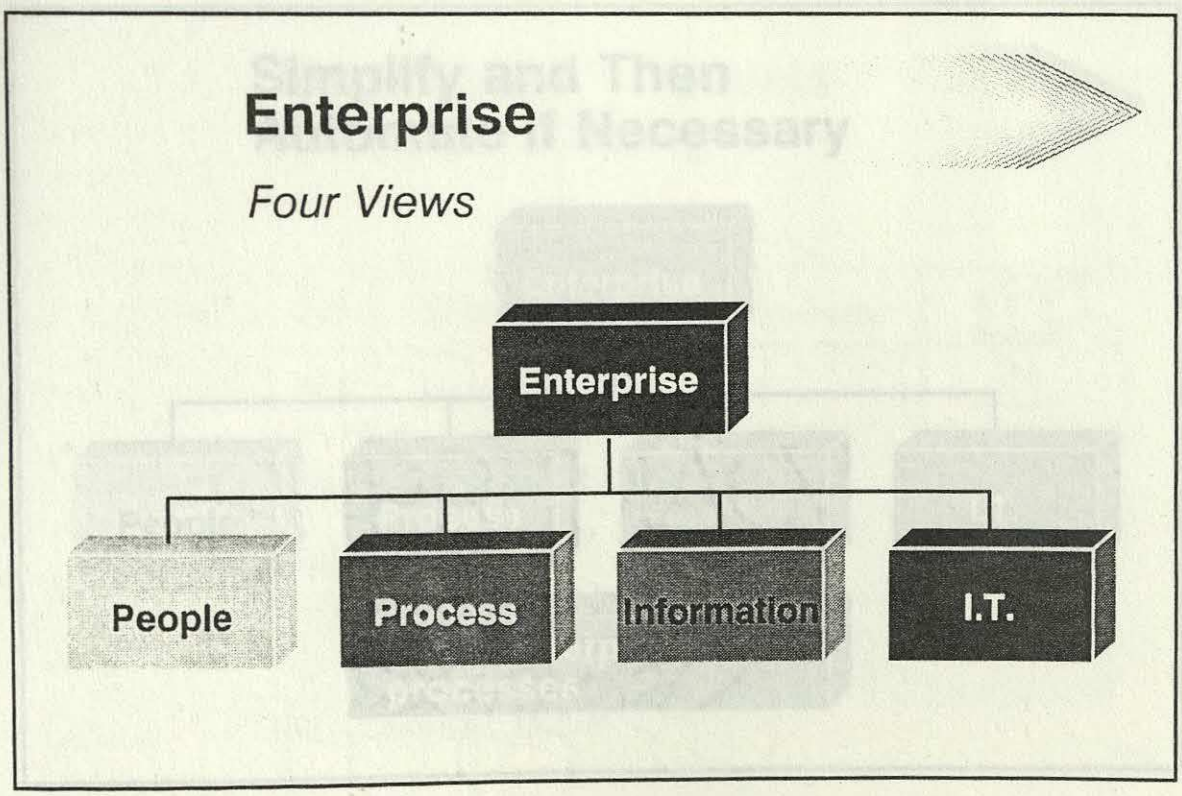

Proprietary vs Open Environments in % of Revenues
%100
75
50
25
1980
1984
1988
1992
1996
2000
Open Environments
Proprietary Environments

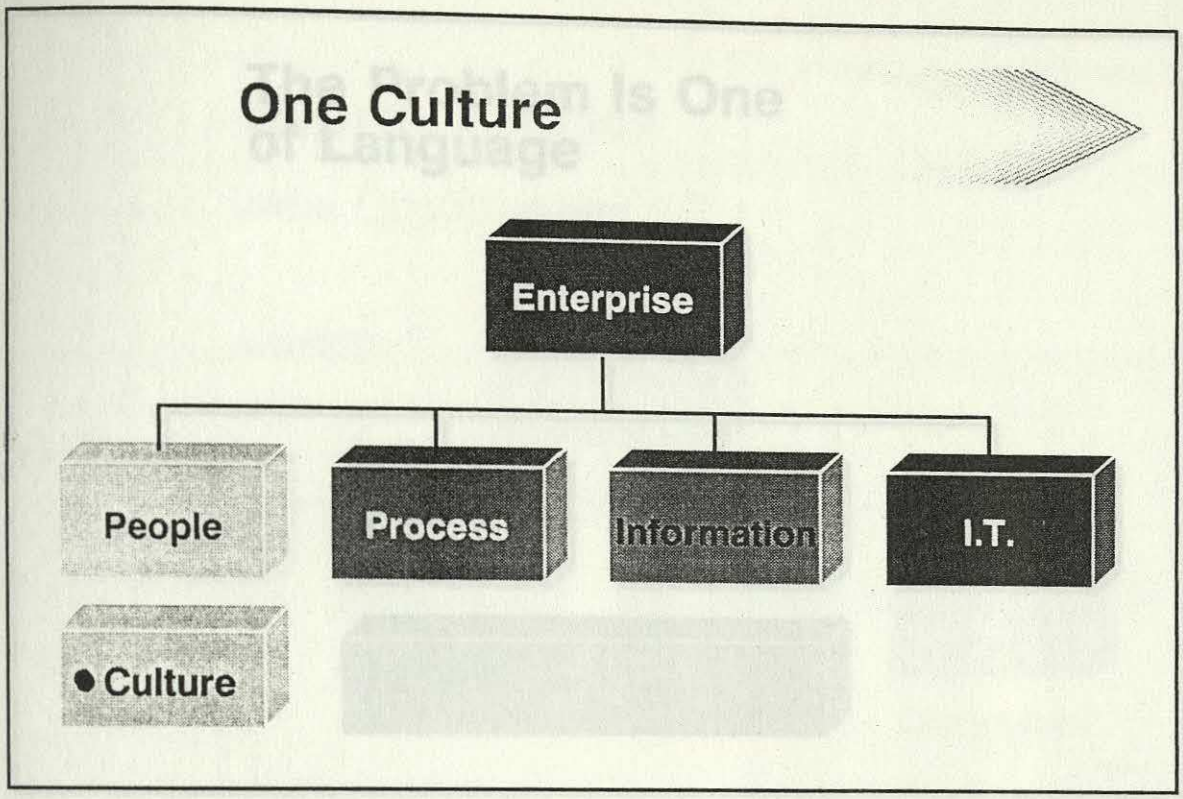

Infrastructure Requirements
Worldwide connectivity
Worldwide access to consistent data
Flexibility and adaptability

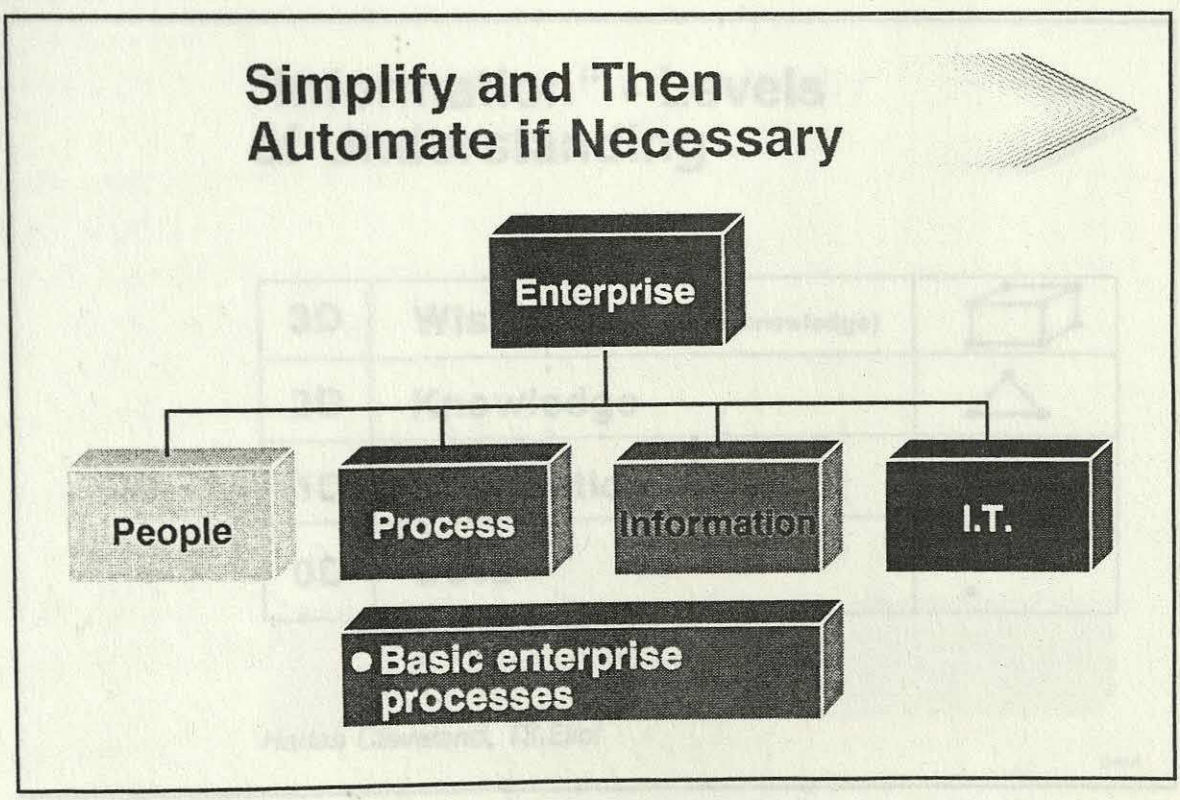



Knowledge Transfer
Basic Research
Soft
Applied Research
Advanced Develop.
Soft Technology
Science
Develop.
Market
Advanced Develop.
Applied Research
Hard
Basic Research
Hard Technology
Ideas
Use

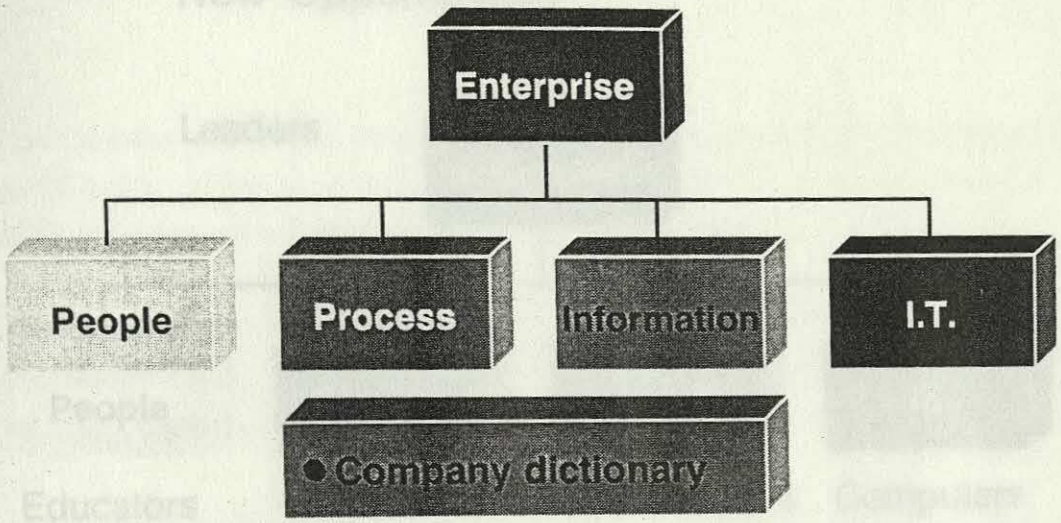

Enterprise Information Model
Business
Organization
Systems
People
Process
Information
Technology
Applications Portfolio
Methods and Tools
Hardware
Software
Network


Enterprise
Four Views
Enterprise
People
Process
Information
I.T.


One Culture
Enterprise
People
Process
Information
I.T.
• Culture


Simplify and Then
Automate if Necessary
Enterprise
People
Process
Information
I.T.
• Basic enterprise
processes

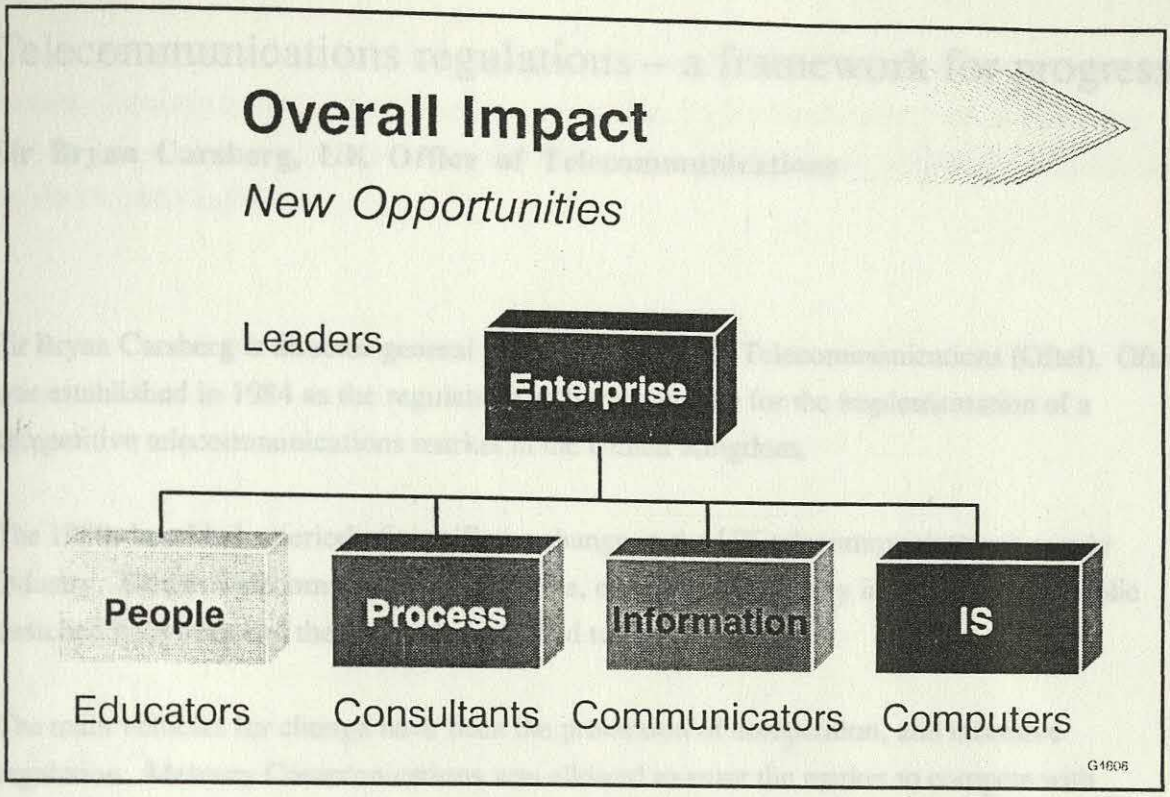
The Problem Is One of Language

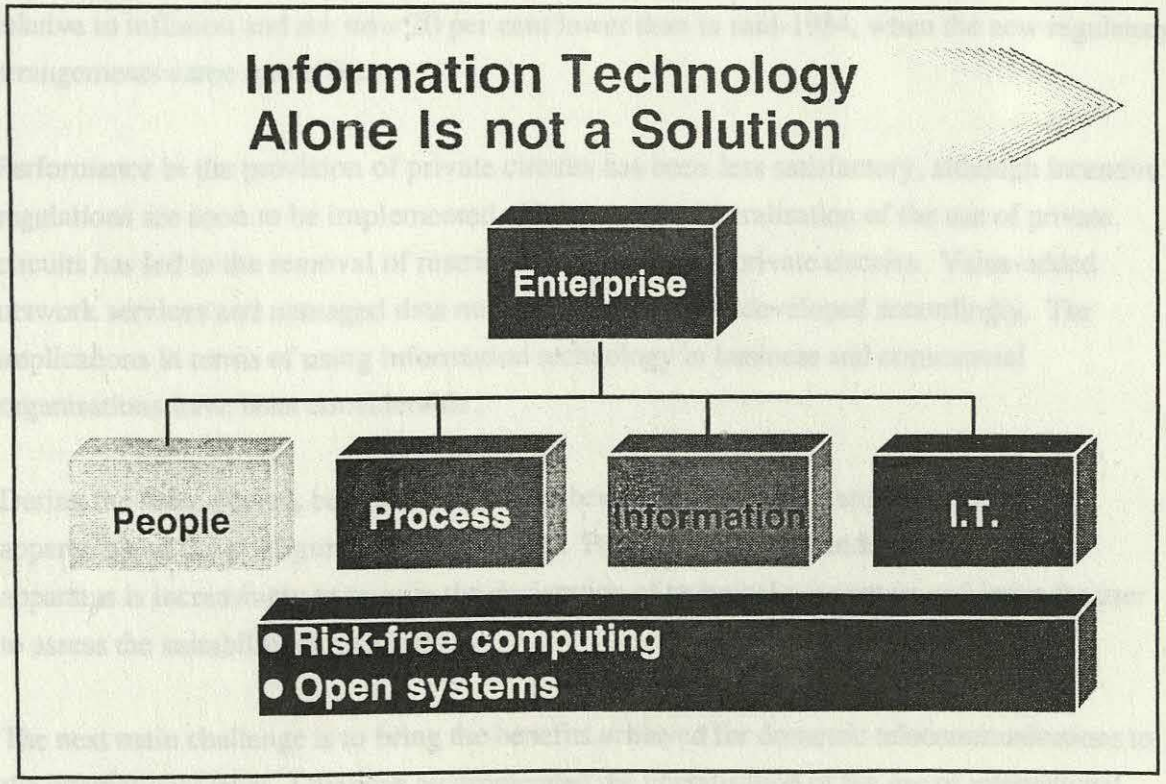


"Information" - Levels of Understanding

3D	Wisdom (Enterprise knowledge)	
2D	Knowledge	
1D	Information	
0D	Data	

Harlan Cleveland, TS.Eliot


Overall Impact
New Opportunities
Leaders
Enterprise
People
Process
Information
IS
Educators
Consultants
Communicators
Computers
G1606


Information Technology
Alone Is not a Solution
Enterprise
People
Process
Information
I.T.
• Risk-free computing
• Open systems

Telecommunications regulations – a framework for progress

Sir Bryan Carsberg, UK Office of Telecommunications

Sir Bryan Carsberg is director general of the UK Office of Telecommunications (Oftel). Oftel was established in 1984 as the regulatory body responsible for the implementation of a competitive telecommunications market in the United Kingdom.

The 1980s heralded a period of significant change in the UK telecommunications supply industry. British Telecom had, until that time, enjoyed a monopoly in the supply of public switched networks and the apparatus attached to those networks.

The main vehicles for change have been the promotion of competition, and incentive regulation. Mercury Communications was allowed to enter the market to compete with British Telecom in the operation of fixed networks, and two operators were licensed to provide cellular mobile networks. The effects of these changes have been a significant improvement in the overall quality of telecommunications services in the United Kingdom. At the same time, prices have been reduced, and for basic switched services, have fallen relative to inflation and are now 20 per cent lower than in mid-1984, when the new regulatory arrangements came into effect.

Performance in the provision of private circuits has been less satisfactory, although incentive regulations are soon to be implemented. However, the liberalisation of the use of private circuits has led to the removal of restrictions on the use of private circuits. Value-added network services and managed data network services have developed accordingly. The implications in terms of using information technology in business and commercial organisations have been considerable.

During the same period, business users have been allowed more freedom in the use of apparatus and the configuration of networks. Policy on setting standards for business apparatus is increasingly to require the declaration of technical parameters and leave the user to assess the suitability of alternatives.

The next main challenge is to bring the benefits achieved for domestic telecommunications to the international level. Oftel has recommended the liberalisation of the use of international

private circuits. However, this depends upon the policies towards telecommunications in individual countries, and in reviewing some of these, Sir Bryan Carsberg will suggest that, despite the benefits, few countries yet look ready to accept the degree of liberalisation enacted by the United Kingdom.

People, organisations, and the future of work

Charles Handy, London Business School

Charles Handy is visiting professor at the London Business School and a well known writer, teacher, and broadcaster. His most recent book, *The Age of Unreason*, provides an analysis of the future structure of organisations and the role that technology will play in supporting changing work patterns. These ideas will be developed during his presentation.

Economics and demographics are making necessary a restructuring of organisations. This restructuring will be essential as organisations move to achieve greater flexibility, and to a position from which they are able to compete on a global basis. Technology is on hand to support the restructuring.

Charles Handy uses the analogy of the Irish shamrock to describe an organisation with three distinct groups of workers involved (the three leaves) but bonded together to form one whole (the shamrock). The critical group is the core. This is a small group committed to the organisation, and performing those tasks that only that organisation can or will do. The second leaf is the contractual fringe. This group provides essential skills on an as-needed basis and is paid for results. The third group is the flexible labour force or the hired help, paid a wage for time spent working with the organisation to cope with peak times, holiday cover, or antisocial shifts. To some extent, there has always been contracting out and hired help, but economics is forcing companies to carry it further. They are doing so reluctantly because it is much easier to manage a captive labour force, always on tap, than to rely on outsiders, be they other companies or individuals.

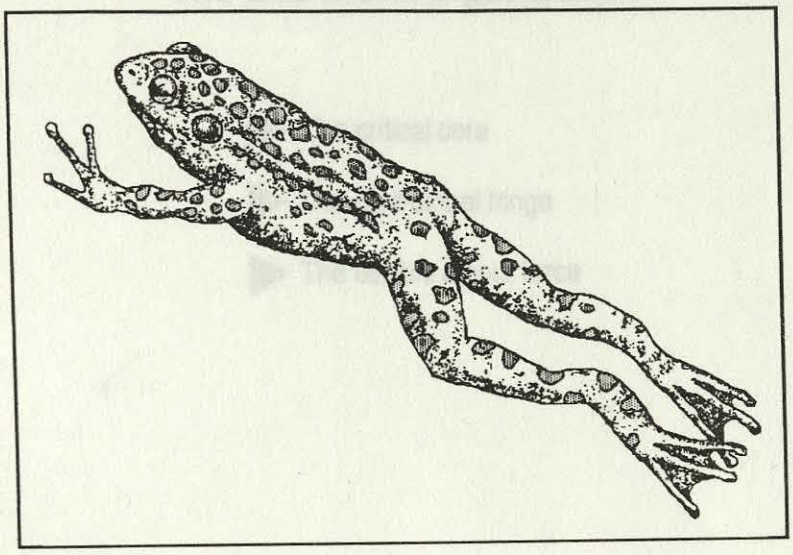
Where economics drives and technology permits, larger shamrocks become inevitable. This should, however, be a matter of careful decision, not of gradual drift.

Successful shamrock organisations will employ technology and education to achieve a highly productive core workforce. These employees have their jobs empowered and enriched by technology and are organised as self-managing, federally controlled workgroups. Some of these people will be the crucial front-line employees in the factory or the shop. They are not the worker bees of old, but will be equipped to do the work of three people and will, as a result, be paid the wage of two, at least. This will require a significant investment in

technology training and education, and a new attitude by managers – one of trust and empowerment, rather than control. This is where the Japanese have shown the way – half as many people, paid twice as much because they are at least twice as good and three times as productive, thanks to technology. Traditional organisational structures and management practices are no longer appropriate. Technology will facilitate the new approach by providing the channels of communication and integration for the organisation.

Shamrock organisations are difficult to manage, and as organisations, compete on a global basis, so this complexity is increased. Federation and a federal management style is the answer. Federalism is the reverse of delegation and comes about when individuals, groups, or even enterprises, come together and decide that they can do some things better together than separately. The centre of a federal organisation then becomes a facilitator and an enabler, rather than the director or controller.

The new dispersed, fragmented organisations, managed on a federal basis, are not in place yet, largely because managers resist them. They are difficult to control and require energy, but Charles Handy argues, they are inevitable because information technology makes them feasible and they satisfy the social and demographic needs of society as well as the needs of business striving for flexibility and competitiveness on a worldwide basis.



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The new organisations

- Shamrocks
- Federalism
- Professionals
- Schools

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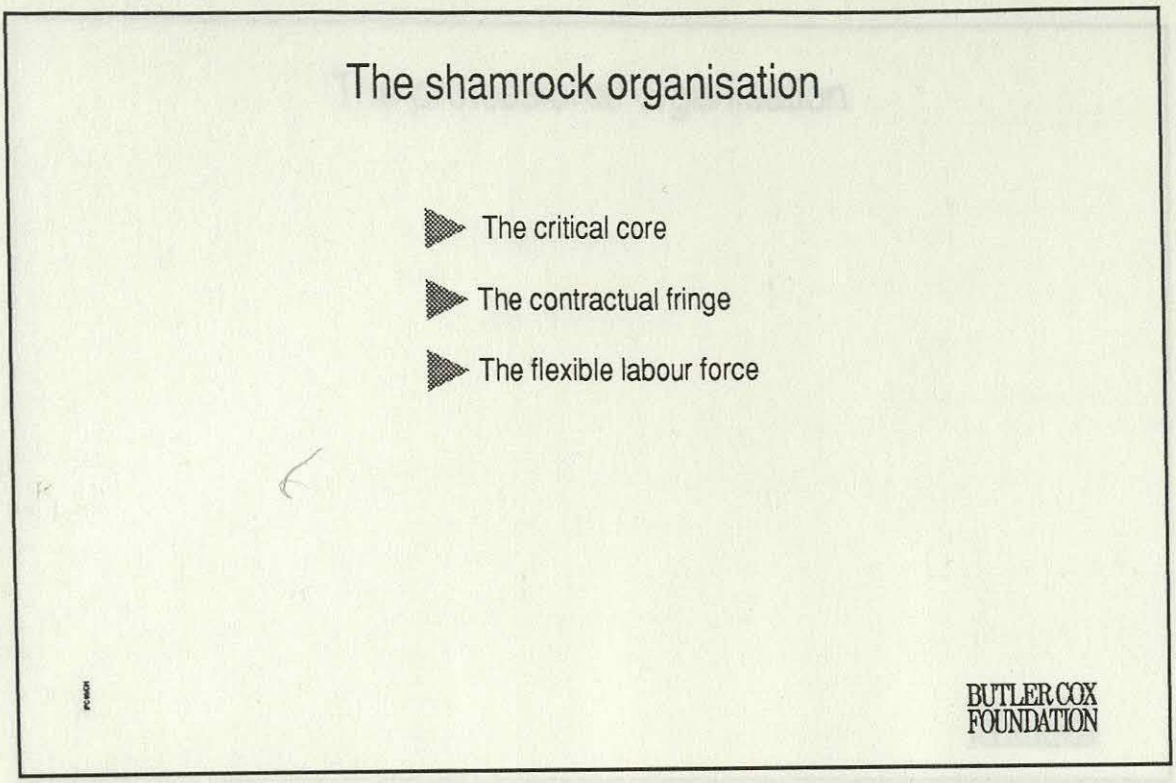
The shamrock organisation
The critical core
The contractual fringe
The flexible labour force
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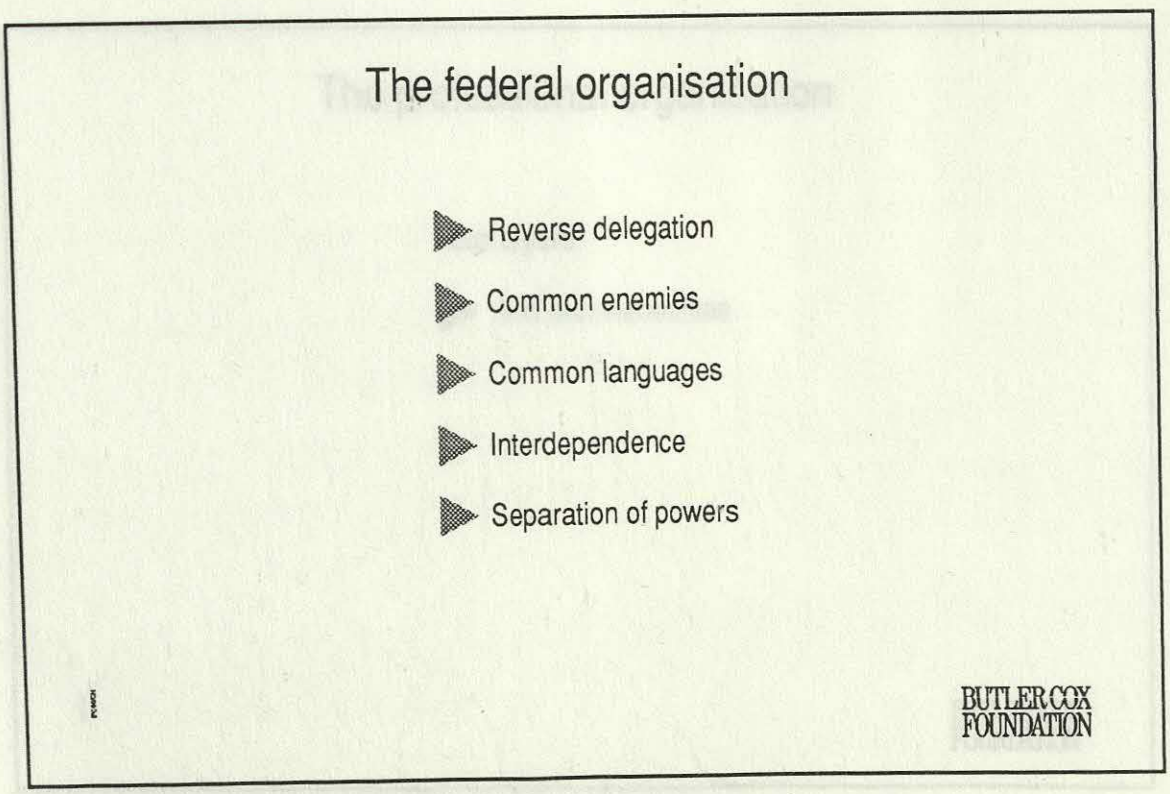
The federal organisation
Reverse delegation
Common enemies
Common languages
Interdependence
Separation of powers
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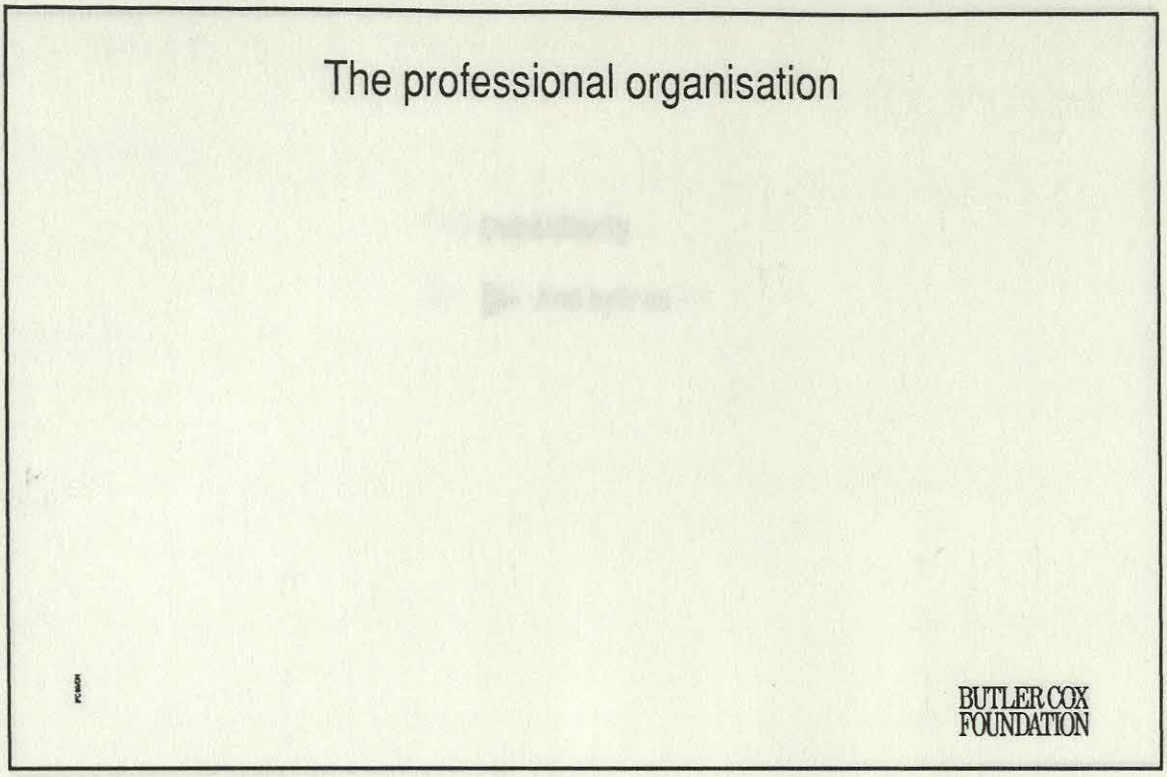
The professional organisation
BUTLER COX
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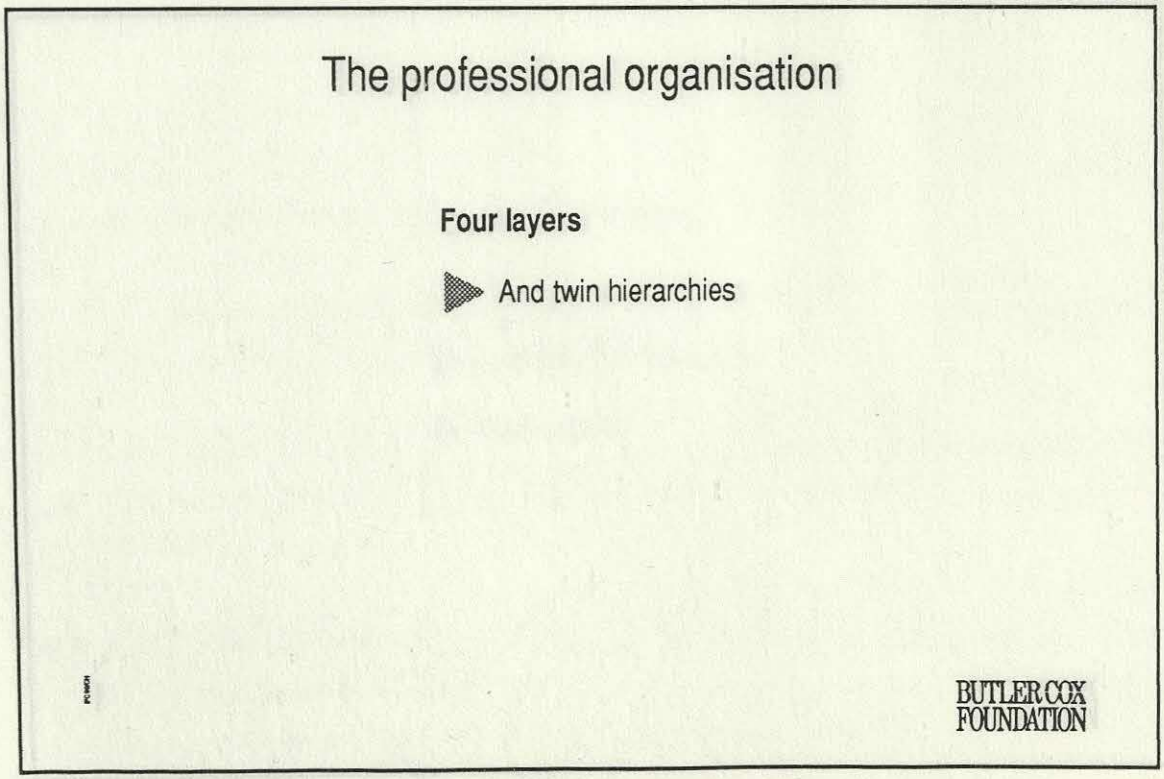
The professional organisation
Four layers
And twin hierarchies
BUTLER COX
FOUNDATION

The professional organisation

Subsidiarity

- And bylines

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The professional organisation

Clubhouses

- And personal phones

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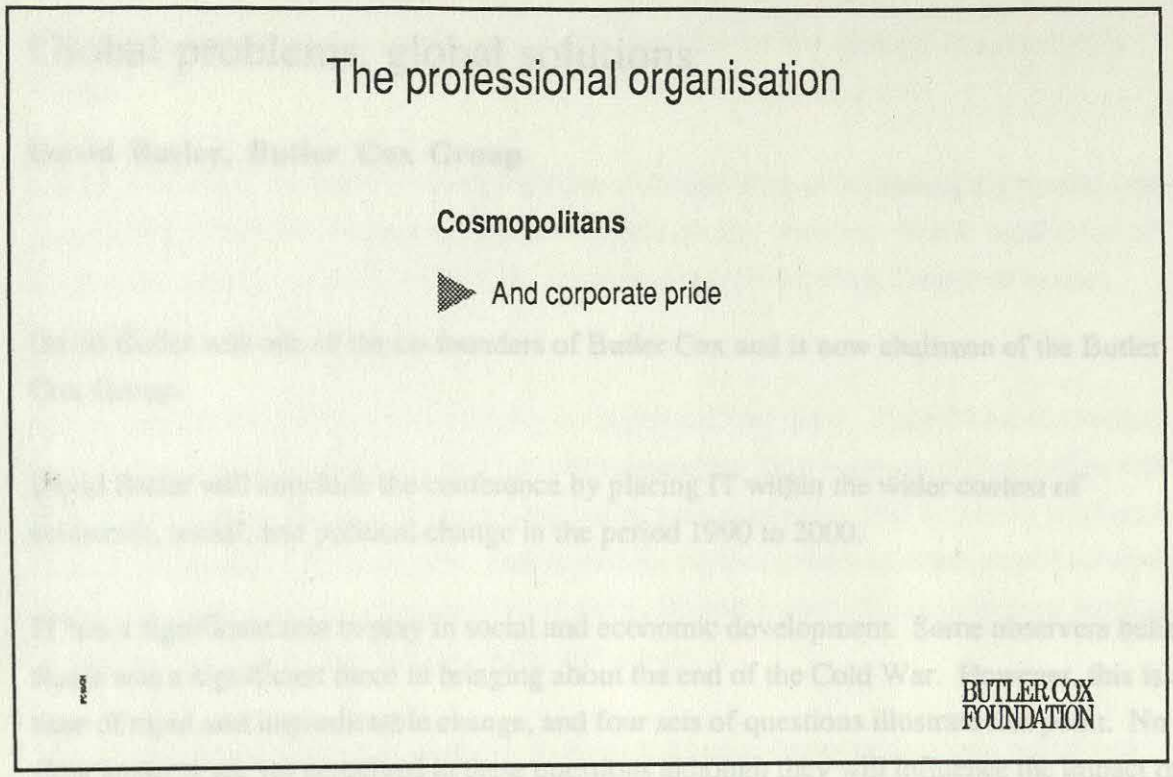
The professional organisation
Cosmopolitans
And corporate pride
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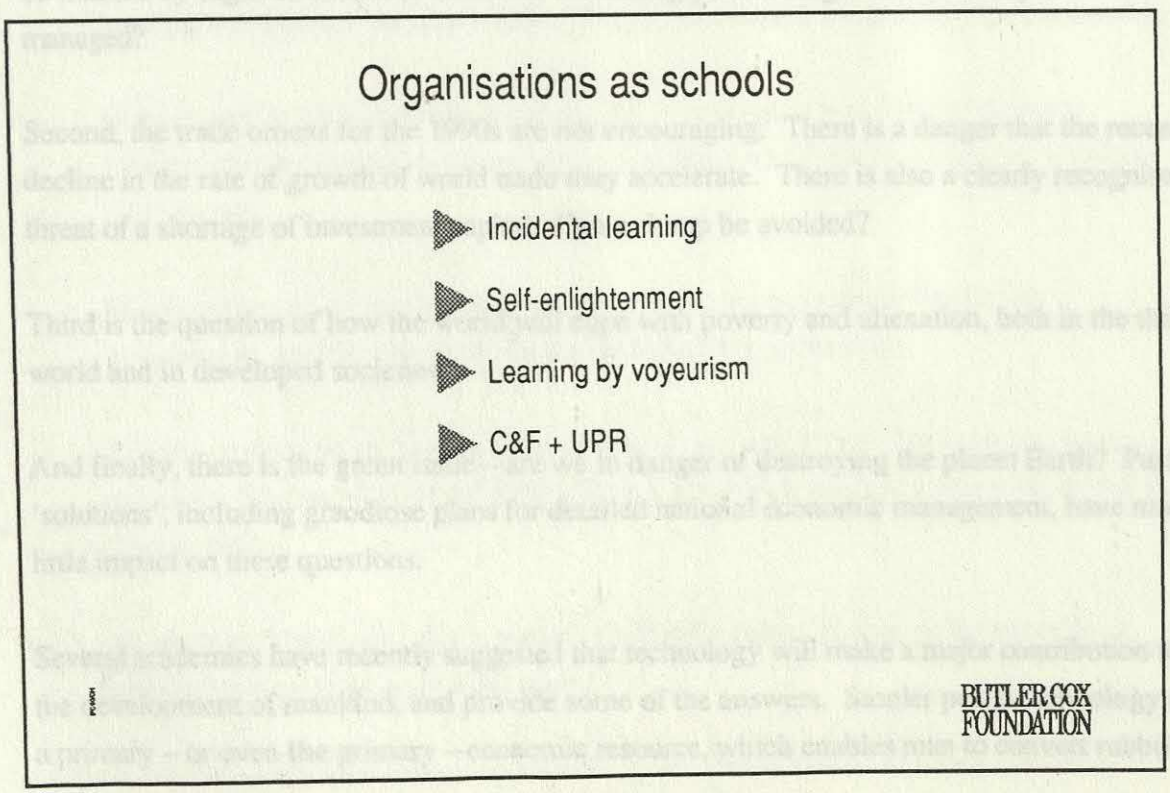
Organisations as schools
Incidental learning
Self-enlightenment
Learning by voyeurism
C&F + UPR
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Global problems, global solutions

David Butler, Butler Cox Group

David Butler was one of the co-founders of Butler Cox and is now chairman of the Butler Cox Group.

David Butler will conclude the conference by placing IT within the wider context of economic, social, and political change in the period 1990 to 2000.

IT has a significant role to play in social and economic development. Some observers believe that it was a significant force in bringing about the end of the Cold War. However, this is a time of rapid and unpredictable change, and four sets of questions illustrate this point. No clear answers are yet perceived to these questions although they will influence the impact of IT over the next decade.

First, over the next decade, even though the global war has receded as a threat, the 1990s will be marked by regional conflicts which are increasingly menacing. How can they be managed?

Second, the trade omens for the 1990s are not encouraging. There is a danger that the recent decline in the rate of growth of world trade may accelerate. There is also a clearly recognised threat of a shortage of investment capital. Can a slump be avoided?

Third is the question of how the world will cope with poverty and alienation, both in the third world and in developed societies.

And finally, there is the green issue – are we in danger of destroying the planet Earth? Past 'solutions', including grandiose plans for detailed national economic management, have made little impact on these questions.

Several academics have recently suggested that technology will make a major contribution to the development of mankind, and provide some of the answers. Stonier posits technology as a primary – or even **the** primary – economic resource, which enables man to convert rubbish

into wealth. IT differs from other technologies because its raw material (knowledge) is infinite.

Daniel Bell views mankind as emerging from a twilight zone of accidental discoveries into a more ordered universe where knowledge is systematically codified. Bell's 'axial principle' implies the creation of knowledge maps whereby the links between spheres of human understanding can be charted.

Shoshanna Zuboff adopts a more overtly sociopolitical approach. Zuboff sees the modern world as a mesh of interlinking structures dominated by the possessors of knowledge and power. IT changes the role of those involved in such structures, first by giving workers a conceptual model of the enterprise, and second by requiring them to **think** about that model if they are to do what managers require of them. Zuboff's vision is revolutionary, leading to a massive democratisation of knowledge and power.

The IT practitioner has a responsibility to provide a bridge between the likely social and economic realities of the next decade and the academic visions. IT can play a role in many areas:

- IT can make corporations more effective, but needs to work within a broader alliance of managers and other functional skills. The IT practitioner must effect this partnership.

- IT has a role to play in wealth creation, and in helping to avoid the great slump. Markets need to operate as efficiently as possible, and IT can be employed to help in this process.

- IT can make society more efficient – witness the experiments in France, the Netherlands, and Singapore involving investment in technology.

- IT can – and must – be employed to make national and regional government more effective. The inability of governments to achieve their goals is a major hazard for the human race.

- IT needs to 'come out' after a period of self-effacement, to lose no opportunity to operate on a national and global stage.

Three domains

The domain of macro-economic and geopolitical reality

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Three domains

The domain of Bell, Stonier, and Zuboff, where IT changes the very structure of life

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Three domains

The domain of mundane information technology – the 'data processing world'

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Four sets of unanswered questions 1990 – 2000

- Global and regional conflicts
- Omens of an impending slump
- Poverty and alienation
- Destroying planet Earth

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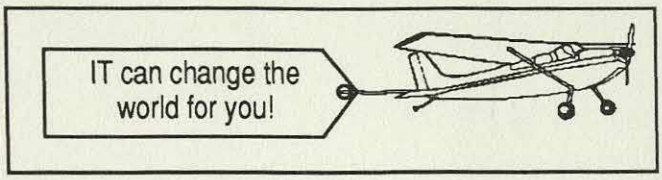
Three advocates of a wider role for IT



- Daniel Bell
- Tom Stonier
- Shoshanna Zuboff

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Five key areas for IT's advancement into a major role 1990 – 2000

- An alliance strategy within corporations
- Electronic markets help avoid the great slump
- IT makes societies more efficient
- IT makes government work better
- IT sheds its workaday, mundane image

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