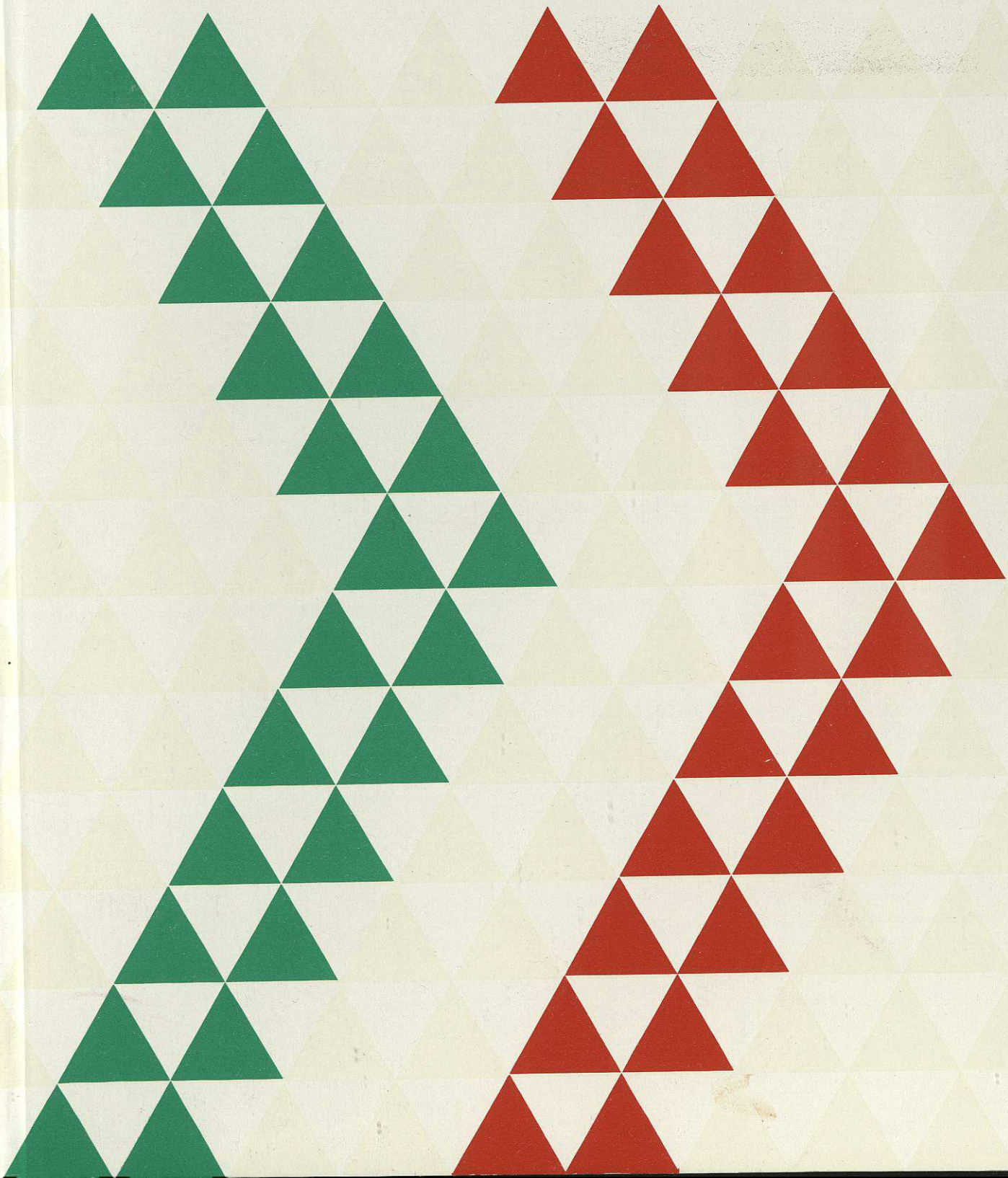
International Conference
Session Summaries

BUTLER COX FOUNDATION

Vendor Strategies: Implications for Users
Rome, 26-28 October 1986



BUTLER COX FOUNDATION

Vendor Strategies: Implications for Users

International Conference, Rome 26-28 October, 1986

INTRODUCTION

The annual international conference for members of the Butler Cox Foundation was held at the Excelsior Hotel, Rome, between 26 and 28 October 1986. The aim of the conference was to help Foundation members assess the impact for their organisations of the structural changes occurring in the IT marketplace. This document contains summaries of the presentations made at the conference.

The summaries were prepared by Butler Cox consultants during the conference and are intended as an aide-memoire. They are not a verbatim transcript, but present as faithfully as possible an interpretation of the main points made by each speaker. For the sake of brevity, some points have necessarily been condensed or omitted.

Where appropriate, the summaries include a selection of the visual aids used by the speakers. We have also included a brief summary of the main points to emerge overall from the conference.

INTRODUCTION

La Conférence Internationale annuelle des Adhérents à la Fondation BUTLER COX s'est tenue à l'hôtel Exelsior de Rome, du 26 au 28 octobre 1986.

Le but de cette conférence était de donner à nos Adhérents les éléments d'information nécessaires pour pouvoir ajuster leur stratégie informatique en fonction des modifications de structure qui se font jour dans le marché de la technologie de l'information. Ce document présente l'ensemble des synthèses des interventions faites au cours de cette manifestation.

Ces synthèses ont été préparées par les Consultants de BUTLER COX au fur et à mesure du déroulement de la Conférence et ont pour objet de n'être qu'un aide-mémoire. Ce ne sont pas des compte-rendus au mot à mot, mais ils représentent aussi fidèlement que possible les éléments principaux présentés par les Intervenants.

Une sélection des supports audio-visuels utilisés est également jointe à chaque texte partout où cela s'avère nécessaire. Enfin, nous avons inclus dans ce compte-rendu une synthèse générale rappelant les points principaux qui ont été présentés au cours des sessions.

Vendor Strategies: Implications for Users

International Conference, Rome, 26-28 October 1986

Contents

BUTLER COX FOUNDATION

Photoset and printed in England by Flexiprint Ltd., Lancing, Sussex

Summary of the conference

Within the major strategies pursued by vendors that directly influence their customers, the conference identified two of the utmost importance. These were the integration of systems and the development of standards. In comparison with these two concerns, it became apparent that more detailed technical and commercial considerations were of secondary importance.

These two issues are hardly new. They have been debated before at Foundation conferences. But on this occasion they were debated in a somewhat different sense. In the past, integration and the standards that facilitate integration have been regarded in a somewhat technical light. Integration is a way of building bigger and better systems. Standards are a way of ensuring uniform practice in an installation. At this conference, however, much more emphasis was placed on the business needs of the end user. Integration is a must because the business problems and activities of the enterprise are themselves linked to one another. Standards are a must because they promote the delivery of systems that meet urgent requirements rather than systems with a two or three-year lead time.

There was no doubt that the information systems community was advancing towards integration and standards, through such initiatives as OSI. The question was whether they were advancing at a sufficient speed. Will the delegates at this conference look back in five years and reflect that complacency had prevented them from grasping the real opportunity? Or will they look back and judge that their rate of progress had been neither precipitate nor tardy? To this question David Butler, who closed the conference, gave a simple answer: he did not know. It was as yet unclear whether the rate of progress was sufficient. The key task was to monitor developments and to be ready to accelerate if this proved justifiable in cost/benefit terms.

Keynote address

David Butler, Butler Cox

David Butler is Chairman of Butler Cox. He is well known for his work on information systems at board level and for his analyses of world IT markets.

Mr. Butler set the scene for the conference and raised several questions for later speakers to develop.

His talk was divided into:

– A tour of the IT market.

– A survey of changing strategies.

– Implications for users.

A TOUR OF THE MARKET

A major influence on the market is the emergence of alliance strategies, mergers or associations. Mr Butler analysed the Burroughs/Sperry acquisition and the alliances pursued by Olivetti. He also identified the four most obvious targets for further acquisition.

The scale of investment necessary to compete in IT is also vast. Will the IT industry rationalise itself, as the aircraft and motor industries have?

Growth in the IT industry has been slow in 1984/5/6, after the huge market growth in 1982/3. It is uncertain whether high growth will resume in 1987/8.

IBM has described 1985 as a "trying year". Return on equity fell. Inventories are high. Rentals are declining in favour of sales. An important trend is the growth of service revenue, over $11 billion in 1985.

AT&T is attempting to challenge IBM, using Unix system V release 3 as an alternative software standard. But the strategy is faltering. AT&T's data processing revenue grew in 1985 by only 12 per cent. Return on investment is only 10 per cent.

SESSION D'OUVERTURE DAVID BUTLER
Le message d'ouverture de David Butler, Président de Butler Cox, comporte trois éléments principaux:

TOUR D'HORIZON DU MARCHE

Le phénomène prépondérant est actuellement le nombre élevé de fusions, OPA, Associations de toutes natures, qui se pratiquent dans le monde des fournisseurs (constructeurs et prestataires) informatiques. La fusion Burroughs/Sperry, les tractations autour d'Honeywell et les alliances diverses d'Olivetti en sont de bons exemples.

Un deuxième phénomène mis en évidence est celui de l'importance décroissante des marges de profit de ces mêmes fournisseurs.

LES STRATEGIES SONT-ELLES EN TRAIN DE CHANGER?

Il est possible qu'après la convergence de l'informatique, de la bureautique et des télécommunications, une convergence nouvelle et encore plus étendue apparaisse: elle regrouperait la technologie de l'information, celle de la communication avec le marché de l'édition et du spectacle.

Cette nouvelle convergence s'adresserait alors à un marché énorme et multimédia et certains constructeurs vont tenter d'en couvrir une superficie maximum. Ceci explique que certains fournisseurs chercheront d'abord à occuper le terrain et ensuite à rentabiliser leurs investissements.

Le deuxième élément possible de changement de stratégie est lié aux espoirs mis dans le développement de l'informatique domestique qui ne se sont pas matérialisés.

Troisième élément: beaucoup de fournisseurs ont essayé, récemment, de "shunter" l'informatique et de s'adresser directement à l'utilisateur. Cette tactique s'est avérée peu payante. La fonction informatique continuera à s'occuper du choix des matériels et des fournisseurs dans la plupart des cas.

Enfin, les vendeurs s'aperçoivent de plus en plus de la nécessité de vendre des systèmes et non du matériel, des solutions et non de la technologie. Ils s'identifient de plus en plus à des sociétés de services.

ARE STRATEGIES CHANGING?

The structure of the world market may be changing in a fundamental way. Just as the technology of computers, telecommunications and office systems converged to create IT, so publishing, entertainment and IT are converging to create a new, multi-media market.

In recent years the emphasis of IT companies has been on growth rather than profitability, as vendors seek first to occupy the new markets and make it profitable later.

Consumer markets for IT were at first regarded as a new Eldorado for vendors. Then they collapsed. Now a new view is being taken. Consumer markets are seen as part of a continuum of large business users, small business users, schools and individuals.

Many vendors expected to sell to end users, while the MIS function declined. But the MIS function is tenacious, and still influences most choices.

Finally vendors have been obliged to sell systems not hardware, solutions not technology. They are all seeking to become system houses.

IMPLICATIONS FOR USERS

Mainframe computers are now a commodity, bought and sold by major users to minimise cost.

As the price of PCs declines, the employee may take on part of the corporate IT cost.

Over supply in the IT industry produces short-term benefit for users (lower prices) but long-term risk (reduced choice).

Even IBM has restricted freedom. In relation to the new world market (publishing, entertainment, IT) IBM is rather small.

AT&T is launching a challenge to IBM's de facto standards. It may or may not succeed.

In this new world of rationalisation, low growth and alliances, the MIS director's role is both crucial and increasingly difficult. To succeed, the MIS director must also seek alliances — with his colleagues, and his end users.

How major users can influence suppliers

Gary J Fernandes, EDS

Gary J Fernandes is senior vice president of Electronic Data Systems Corporation (EDS) and a member of the EDS board of directors, with responsibility for EDS's business in the communications, manufacturing, distribution, and retailing industries.

Mr Fernandes outlined the factors that had determined the strategies of the IT industry, before going on to indicate why he believed the situation was starting to change in favour of the user. He concluded by urging major users to insist that their suppliers should, if they wished to do business:

- Commit to a long-term relationship with their users.
- Commit to the independence of users to buy from different vendors.
- Commit to meeting the real needs of users.

THE FACTORS DETERMINING THE STRATEGY OF THE IT INDUSTRY

In the past, and to a considerable extent today, vendors had decided the strategy of the IT industry. The main factors determining this strategy were technological developments and the desire by vendors to maximise their own profitability.

While many, but not all, technological developments had served the interests of users well by improving IT hardware cost effectiveness, this was not the case with the second factor — the desire to maximise vendor profitability. This need was best served by vendors who adopted a strategy that entailed:

- Committing users to a particular vendor's product line.

COMMENT LES GRANDS COMPTES PEUVENT-ILS INFLUENCER LEURS FOURNISSEURS?

Gary Fernandes est Vice-Président d'EDS, société de services et le plus important client privé mondial d'équipements informatiques.

Historiquement et encore à l'heure actuelle, les fournisseurs étaient les seuls à déterminer les développements stratégiques de l'industrie informatique. Cette évolution était essentiellement basée sur des concepts technologiques et également sur le désir des fournisseurs d'accroître leur profit.

Ceci avait pour effet de ''fidéliser'' généralement le client auprès de son fournisseur, le premier étant bloqué techniquement par les choix qu'il avait faits.

Cet état de fait, beaucoup plus à l'avantage du fournisseur qu'à celui de ses clients, commence cependant à changer. Les premières actions d'indépendance commencent à s'exprimer au travers de standards comme l'ISO, de systèmes d'exploitation comme UNIX ou des standards MAP pour la productique.

Monsieur Fernandes fait ensuite l'analyse des facteurs qui vont accélérer cette évolution: il en identifie deux principaux:

- le fait que la technologie de l'information devient de plus en plus un outil stratégique pour l'entreprise,
- la complexité croissante de l'environnement informatique et des besoins de ses utilisateurs.

La conjonction de ces deux éléments a amené le concept ''d'intégration des systèmes'' qui comprend:

- le choix, en commun avec l'utilisateur, des divers moyens technologiques qui peuvent satisfaire ces objectifs stratégiques
- le contrôle de cette technologie et des fournisseurs qui en amèneront les éléments
- la focalisation de la responsabilité pour assumer la bonne intégration de ces systèmes complexes

En conclusion, Monsieur Fernandes estime donc que les seuls fournisseurs crédibles seront ceux qui admettront ne pas être seuls capables de satisfaire la totalité des besoins de leurs clients et donc qui admettront la complémentarité entre fournisseurs. En conséquence, ceci donnera aux utilisateurs un moyen de pression plus grand que par le passé.

— Persuading the user to purchase a low-cost, low-profit-margin, entry-level system from that product line.

— Moving the user as fast as possible towards the high end of the product line, where unit gross margins were much higher.

— Locking in the user to the product line, to prevent him from purchasing from competitors.

The lock-in effect was accomplished through two major vehicles — proprietary operating systems and communications protocols. The operating system committed users to make investments in software that could not be transferred to other, competing, operating systems without major write-offs of past investment. Communications protocols committed users to the hardware and software available from only one supplier.

These historical industry strategies had, in many cases, worked against the interests of the user community. Mr Fernandes cited examples of building societies in the United Kingdom whose desire to merge had been frustrated by the incompatibility of their systems, and by two United States airlines who experienced major business problems with incompatible reservation systems when they merged.

Despite this generally negative picture, some headway had been made. Mr Fernandes pointed to the slow development of Open System Interconnection standards and the work of the ISO, to the emergence of Unix as a possible vendor-independent operating system, and to the impact that General Motors had had with its insistence that suppliers should meet its MAP (manufacturing automation protocol) standard for factory-automation equipment.

FORCES OF CHANGE

Mr Fernandes identified two major forces that he felt were leading to a situation where users could (and should) play a much greater role in determining IT industry strategy. These were:

— The emergence of IT as a strategic business tool for users.

— The growing complexity of the IT environment and of users' needs.

To illustrate the first point he quoted two examples of industries where IT was of strategic importance — the financial services industry in general (and the Stock Exchange in particular), and the retail industry where EFT/POS was having a direct impact on companies' competitiveness. It was unthinkable that the IT-adoption strategy that might determine the success or failure of major corporations should be left in the hands of vendors.

Regarding increasing complexity, Mr Fernandes focused on three factors:

— The proliferation of products that make up the new systems required by major organisations.

— The globalisation of markets that create very complex system coordination, communication and support requirements.

— The accelerating pace of technological change that requires users to design and invest in systems that can meet both current and future needs.

A result of these two major forces — strategic importance and complexity — had been the emergence of a fundamentally new concept — systems integration — that involved:

— Helping the user to identify how technology could best help his competitive situation.

— Managing the technology and the vendors who provided the technology-based products.

— Centralising responsibility for the integration of all IT products into operational systems that really address the users' needs.

Such a concept concentrated buying power to the extent that users could, for the first time, become a major influence on vendors.

COMMITMENT FROM VENDORS

To bring this new-found influence to bear, it was important that major users should, as far as was practically possible, insist that they would only do business with vendors who were prepared to commit themselves to meeting their needs. In particular, he identified the need to insist on commitments from vendors in three areas:

— Commitment to a long-term relationship to support and develop the user's systems.

— Commitment to the user's independence from a single or restricted group of suppliers' products.

— Commitment to meeting the user's unique requirements, rather then seeking to satisfy them with ready-made, off-the-shelf, easily deliverable products.

The changing information industry: an investment banker's view

Bernard Goldstein, Broadview Associates

Bernard Goldstein is a partner with Broadview Associates, the New Jersey based merger and acquisition investment bank which plays a leading role in the information industry's merger and acquisition arena. Mr Goldstein adopted a very broad view of the information industry — one that encompassed communications, information and entertainment. The justification for this was the continuing trend for the boundaries between each of these to blur and overlap. This market is in the process of becoming the world's largest with worldwide revenues approaching $2 trillion by 1990. Over this period the annual growth rate will be in the order of 20 per cent per annum. The breakdown of the (US) market is shown in Figure 1.

Definitions and categories within the industry are very dynamic. For example, 'education' is today categorised as a professional source, but looking ahead it will soon be redefined as (at least in part) a software product.

The IT market is characterised by the large number of Fortune 500 corporations that have entered via an acquisition. About 50 per cent of the top 500 are in the market, with 77 corporations having made their entry in the first half of 1986. This is more than entered in any of the previous six years. The corporations entering the market come from a variety of market sectors, as shown by Figure 2. Other business sectors (accountancy firms, communications, and transportation) are also entering the market.

Figure 1 Breakdown in the US IT market in 1990

Sector	*$ billions*	*% of total*
Services		
Communications	160	17
Information	230	24
Entertainment	100	10
Total	490	51
Products		
Consumer electronics	60	(6)
Office equipment	110	11
Business operations equipment	300	32
Total	470	49

The pattern of acquisitions and mergers in the IT industry is in sharp contrast to other industries. Whereas industry as a whole has a medium to long-term pattern of a declining number of acquisition transactions (from a peak in 1969), the pattern in IT is of a steady increase in activity, with a peak in 1985 of 203 US transactions representing a total value of $2.68 billion. This pattern is being continued in 1986.

The types of acquisitions are illustrated in Figure 3. Of these acquisitions/mergers, 66 per cent were private companies. The reason for this pattern is evident from a comparison of the premiums paid

---

L'EVOLUTION DE L'INDUSTRIE DE L'INFORMATION: POINT DE VUE D'UN BANQUIER

(Note: la présentation de M. Goldstein fera l'objet, en janvier 1987, d'une publication séparée comprenant l'intégralité de son discours.)

Le marché de l'information (communication, information et spectacle) est estimé par M. Goldstein à 2 trillions de dollars en 1990. Il en estime la croissance à 20% par an.

C'est un secteur qui bouge: alors que les activités industrielles n'engendrent qu'un nombre décroissant de fusions ou d'activités de sociétés, le secteur de l'information est en effervescence.

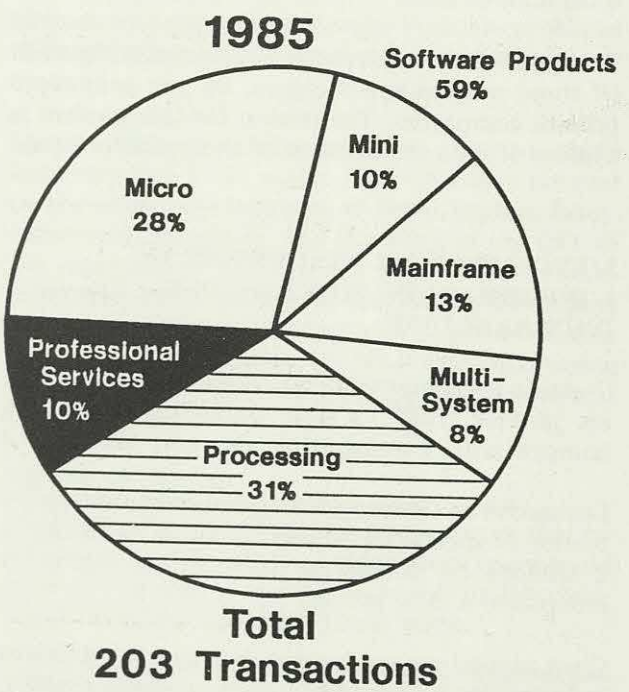
M. Goldstein présente ensuite les domaines de ce secteur qui seront en forte croissance; parmi ces derniers, le plus important sera l'activité "intégration des systèmes".

M. Goldstein termine en analysant les tendances principales qui influeront sur le marché informatique de demain.

Figure 2 Types of company making acquisitions in the IT industry

Sector	*Number of acquirers*	*Number of acquisitions*	*Notes*
Publishing	14	49	Dun and Bradstreet McGraw Hill are the most active. Online databases are a national monopoly/oligopoly.
Insurance	11	20	Strategic fit to financial services. Many more will be active.
Financial services	13	34	
Aerospace	6	25	Heavily oriented towards systems integration.
Electronics	16	45	Need to differentiate products. All but IBM and Digital must look for niche markets.

Figure 3 Types of acquisitions as a per cent of total activity



over the market value for IT companies. The comparative P/E ratio of IT companies versus industry as a whole is also favourable (see Figure 4). The consequence is that despite the continuing growing pains of the IT industry, shareholders are well rewarded in comparison with other industries (see Figure 5).

However, different segments of the IT industry provide shareholders with dramatically different

Figure 4 Acquisition premiums paid for software/ information services companies 1985

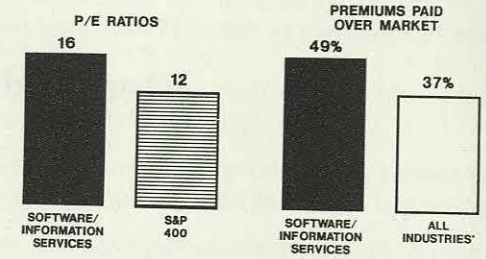
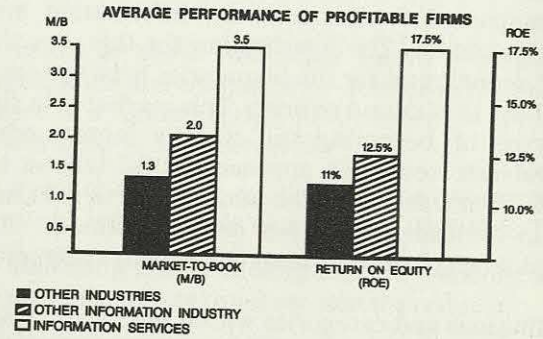


Figure 5 Despite its growing pains and challenges, the information service sector rewards its shareholders handsomely



returns. Mr Goldstein segmented the industry as follows:

- Interaction services.
- Business equipment.
- Office equipment.
- Entertainment services.
- Consumer electronics.
- Communications services.

The difference in performance between information service firms and hardware product firms is shown in Figure 6.

Broadview Associates has identified the following four critical success factors for mergers and acquisitions:

- Go for longer-term marketplace-driven opportunities (rather than synergy).
- View external development in a strategic context and not as 'deal-making'.
- Stay close to known experience and available expertise.
- Consider cultural compatibility issues.

Enterprises also need to appreciate the trade-offs between make/joint-venture options. These are illustrated in Figure 7.

Looking ahead, a major growth area will be systems integration. Evidence of this is a Wall Street Journal/Booz-Allen survey of near-future user issues. The key issues are perceived as:

- Improved communications/information transfer.
- Improved access to internal information systems.
- Improved document preparation.
- Introduction of decision-support systems.

In addition, the environment is becoming more complex:

- There are proliferating protocols and sources of supply.
- More complex architectures, such as LANs, fourth-generation languages, and voice/data/image integration.
- More integrated decision making.

The role of the systems integrator is illustrated in Figure 8. This business can be attractive for the following reasons:

- Large, established multi-billion dollar public-sector market.
- Rapid growth, primarily in the private sector.
- High return on investment (20 per cent) potential.
- Low asset intensity.
- Fragmented competition.
- Large, high-revenue projects with recurring revenue potential.
- Contributes to 'account control'.
- Can pull through conventional products and services.
- Limited technological risk (compared to product businesses).
- Positive relationships with sub-contractors.

In conclusion the following 'Infotrends' are reshaping the IT business:

- New technologies.
- Joint marketing of capability products and services (hardware/software/data).

Figure 6 Analysis of return on investment

	Top preferences (better than 20%)	*Average performances*	*Laggards (less than 5%)*
IS firms	19	56	25
Hardware product firms	7	47	46

Figure 7 Understanding of make/buy/joint venture has become a critical success factor in recent years

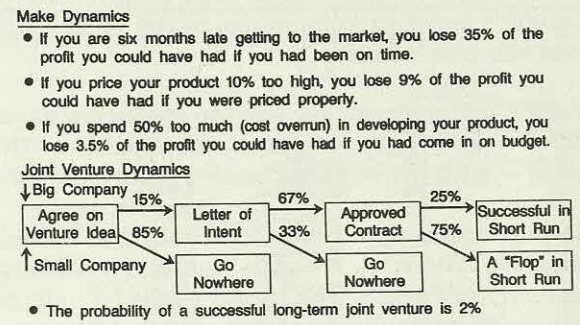
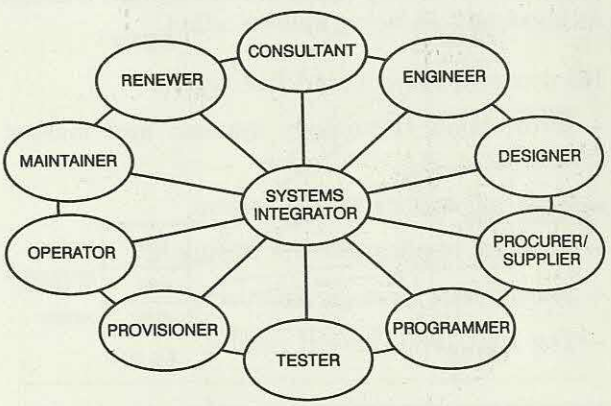


Figure 8 Systems integrators play, and can link together multiple roles



- Price pressures as hardware prices fall.
- Increased specialisation in vertical and horizontal markets.
- Integration of specialised functions.
- Mounting pressure on marketing effectiveness.
- Globalisation of the marketplace.

Resolving market conflicts

Federico Di Trapani, Olivetti

Ing. Di Trapani is a vice president of Olivetti with responsibilities for corporate marketing. Olivetti, in the words of the session chairman, is one of Europe's major success stories in the IT industry over the past decade.

Ing. Di Trapani's subject was the reconciliation of the strategic requirements of the market — the users — with the strategic needs of the suppliers.

He emphasised at the start of his talk that he was going to describe several trends as Olivetti currently saw them. The trends might be right or they might be wrong; in an age of high dynamism, or, one might say, high confusion, it is impossible to be certain. The difference between the two was whether one had a sense of direction or not. The audience was invited to share Olivetti's viewpoint on direction, on its current vision. The viewpoint might not be wholly right, but being right was not as important as being able to adapt.

His presentation covered five topics:

- Information technology systems and market trends.
- Strategic implications for users.
- Strategic implications for suppliers.
- The Olivetti strategic approach.
- The 1981-1985 Olivetti results.

LE MARCHE INFORMATIQUE ET SES CONFLITS

Monsieur Di Trapani, Vice Président d'Olivetti, présente ses vues prospectives du marché informatique sous les aspects suivants:

1 Ce marché futur sera caractérisé par:

- La distribution des systèmes d'information.
- La multiplication des postes de travail intelligents.
- L'intégration de l'informatique et de la bureautique.
- La tendance vers un environnement multi-fournisseurs.

2 Les conséquences pour les utilisateurs:

- Une approche "bottom-up" deviendra nécessaire pour les application de nature individuelle car il faudra offrir un haut niveau de flexibilité à l'utilisateur.
- L'utilisation de technologies présentant le meilleur rapport coût/efficacité pourra devenir un facteur d'instabilité.
- L'introduction de nouveaux standards ira également contre la continuité.
- La flexibilité souhaitée au niveau de l'utilisateur final pourra prendre la précédence par rapport à l'intégrité globale des données et des solutions.
- L'acquisition de progiciels sera favorisé plutôt que l'application spécifique.
- Le développement d'une politique multi-constructeurs sera à l'avantage de l'utilisateur plutôt que l'homogénéité apportée par un constructeur unique.

Monsieur Di Trapani présente ensuite les mesures intermédiaires qui permettront de mieux préparer cette évolution:

- Apprendre à faire co-habiter l'approche "Top-down" avec celle "Bottom-up".
- Assurer la migration des postes de travail élémentaires vers des postes intelligents.
- Augmenter la disponibilité des ressources collectives (bases de données, télécom, etc.).
- Utiliser les réseaux locaux comme moyen d'intégration entre serveurs et postes de travail.

Monsieur Di Trapani conclut en présentant la stratégie d'Olivetti et explique la politique d'acquisition menée par sa société: un constructeur doit être capable d'offrir des produits variés intégrés dans une même solution.

Enfin Monsieur Di Trapani présente les résultats financiers de sa société.

TECHNOLOGY AND MARKET TRENDS

The important structural trends in the use of information technology are:

- A decentralisation of information systems.
- The spread of intelligent workstations.
- The integration of data-processing and office-automation applications.
- The increased sharing of resources and services.
- The adoption of multivendor environments.

This structural change was driven by two forces: the price/performance improvements made available by technology, and the continuous development of standards. The result is that we are now in a position to implement what has been envisaged conceptually for years.

The quantified figures for the trends in the market (amalgamated from various projections) could be depicted as shown in Figures 1 to 4.

The figures themselves were not important; it was the underlying trends that needed to be recognised, particularly in terms of architectural change. The trends involved changes in attitude, not just technology. For example, until recently there was a reluctance within companies to adopt packaged software, at least without extensive customisation. Now there was a recognition that packages would play a major part in future systems plans. The PC had greatly contributed to this change of view.

STRATEGIC IMPLICATIONS FOR USERS

The development of departmental systems based on standard hardware and software was increasingly favoured because of the dramatic evolution of microelectronics together with the associated reduction in prices, the increased cost of applications development and maintenance, and the increased need for higher productivity.

The interface with the user was no longer the dumb workstation. Increasing power was being put directly at users' disposal. The technological drive behind this move will probably last until the end of the century. The possibilities that this opened up were not yet fully understood, but their consideration was fundamental to medium and long-range planning.

In addition, the evolution of common standards was perceived by Ing. Di Trapani as helping to reduce significantly the development and maintenance workloads; more systems would be built from basic technology blocks and off-the-shelf products.

Figure 1 Information technology market trends

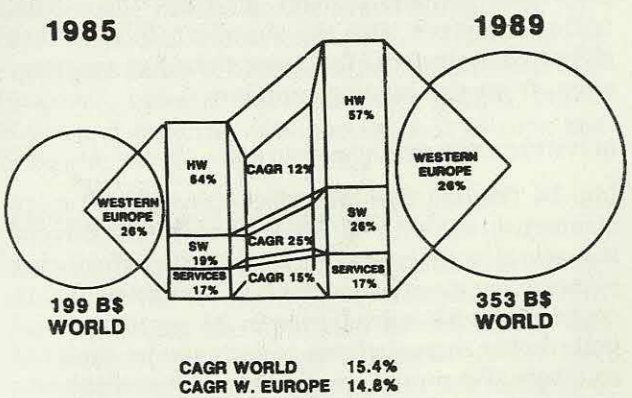


Figure 2 Hardware trends (Western Europe)

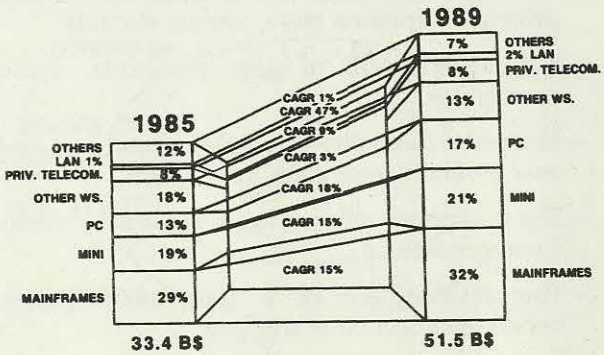


Figure 3 SW trends (Western Europe)

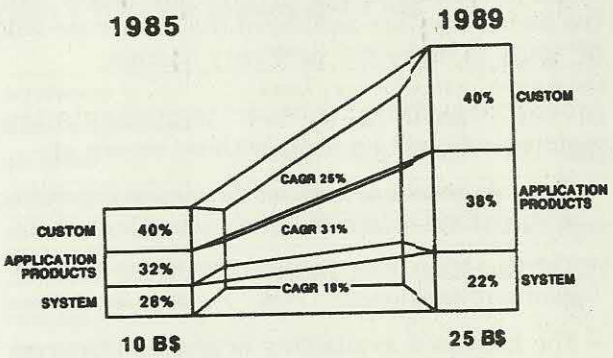
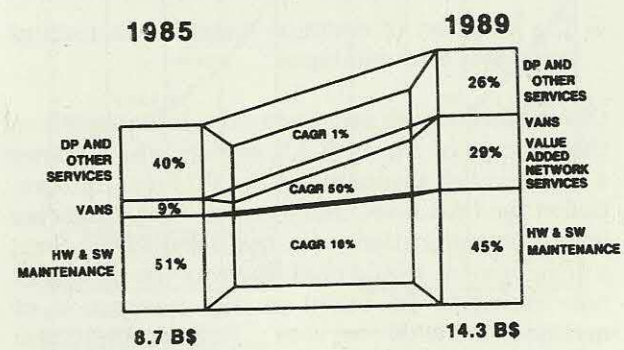


Figure 4 Services trends (Western Europe)



Another significant implication for user strategies was the change from top-down to a mixture of top-down and bottom-up systems evolution. Mainframe-driven applications have favoured the top-down approach with the emphasis on a high degree of integration at the applications level and a low degree of flexibility at the end-user level. Departmental systems, on the other hand, demanded a bottom-up approach with a high degree of integrity at the information level and a high degree of flexibility and a high modularity at the end-user level.

However, all this change raises contradictions from the user's viewpoint:

- The exploitation of new technology with a better price/performance ratio, versus stability.
- The introduction of new standards, versus continuity.
- Increased flexibility at departmental and end-user levels, versus data integration.
- The adoption of packaged software, versus customisation.
- The development of a multivendor policy, versus homogeneous services.
- The need to plan for tomorrow's evolution, versus short-term planning.

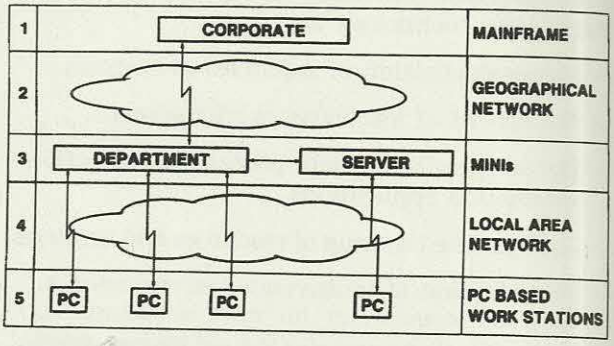
These problems will not be solved overnight. But the sooner they are addressed the sooner we will be ready to make the necessary change.

In the transitory period, implementation requirements will be dealt with by means of:

- The coexistence of systems developed top-down with systems increasingly developed bottom-up.
- The migration from dumb workstations to intelligent workstations.
- The increased availability of shared resources (databases, communications, etc.).
- The use of LANs to establish common integration interfaces for workstations and servers.
- The adoption of common system tools such as languages and databases.

Olivetti foresees an architectural solution based on the concept of the PC/LAN server, which allows a high level of autonomy at the PC level, integration at the LAN level, and integration at the server level (communications, databases and so on). Such a development would open the way for wide-area networking to be based on the integration of multiple PC/LAN servers. This architectural solution could be depicted as shown in Figure 5.

Figure 5



The market would then be influenced by the emergence of strategic standards for mainframes, for geographical networks, for minicomputers and/or servers, for LANs and for intelligent workstations. As yet, these standards are not all at the same level of maturity.

STRATEGIC IMPLICATIONS FOR THE SUPPLIER

No one supplier can cover all the market requirements from its own products. But with the emergence of standards, many companies will be able to offer their products as pieces of a larger solution, which must be able to integrate different products from different suppliers. The concept of multivendor policies has been with us for the last few years, but so far, few companies have developed the capability to integrate and operate in this way.

Distribution channels must also change. Up to now, manufacturers have tended to customise different solutions for different markets. Now it is becoming possible for users to pull together the offerings to meet their own requirements in different situations. The proliferation of individual distribution channels will also open up the smaller end of the market, making systems integration available to smaller organisations and less-complex situations.

Another point that is changing as a consequence of multivendor policies is the emergence of more post-sales problems. Who provides the single, lasting interface with the supplier? This requires global commitment, far more than just maintenance, from the leading suppliers.

OLIVETTI'S STRATEGIC APPROACH

Ing. Di Trapani then described Olivetti's strategy commensurate with the above trends. First Olivetti is a world-wide company with 32 manufacturing plants in eight countries, with 12 laboratories in six countries, with subsidiaries in 32 countries, and with dealer organisations covering more than 100 countries. Personnel are distributed geographically and by function as shown in Figures 6 and 7. The

Figure 6 Group personnel by geographic area as of December 31, 1985

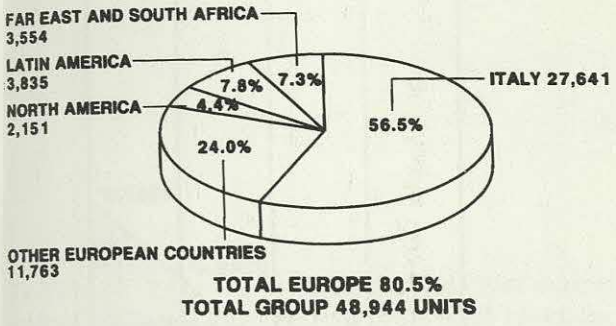
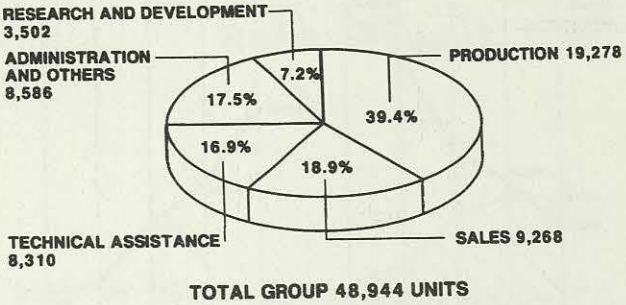
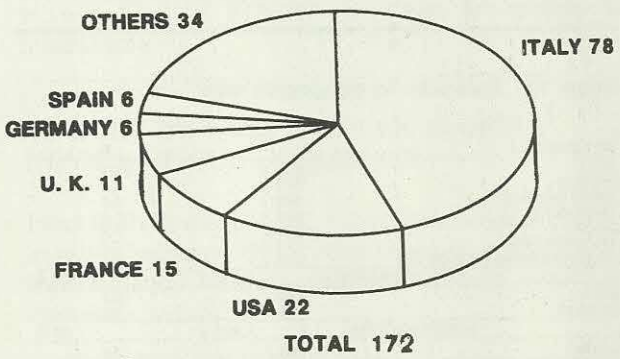


Figure 7 Group personnel by function as of December 31, 1985



company had followed a vigorous policy to expand its world coverage by means of various different types of partnership as shown in Figure 8.

Figure 8 Partnerships – ventures and acquisitions



Olivetti's strategic approach was to address the combination of office automation, data processing, and telecommunications on a world-wide basis, covering the major industry sectors, through a variety of distribution channels, and offering a complete range of capabilities in terms of hardware, software and services. To do this, its internal growth and development has to be substantially augmented by capital ventures, alliances, joint ventures, and acquisitions. Amongst other things, this policy allowed access to fast-moving, small companies. Often, such companies are the only ones able to implement new ideas quickly enough.

Examples of capital ventures included Stratus and Filenet; examples of alliances included AT&T and Toshiba; examples of joint ventures were SEVA, SIAB and Decision Incorporated; and examples of acquisitions were Triumph Adler, Microage, and Acorn. These business partnerships provided access to new technologies, new products, new markets (geographic and industry sector), and new distribution channels.

Olivetti's overall marketing approach relied on a balance between direct and indirect channels. Unlike its US competitors, Olivetti is unable to rely on a very large home market, so Olivetti had to regard the whole of Europe as its domestic market. However, Olivetti does not regard the United States and Japan as unimportant, but Europe has to be the number-one priority.

OLIVETTI'S RECENT PERFORMANCE

Some might regard Olivetti's objectives as presumptuous, but the company's performance in recent years, pursuing the approach as described, was testimony to the strategy's success so far (see Figures 9 to 12). The financial world has recognised this record, as Figure 13 shows.

Figure 9 Five year summary (billion lire)

	1981	1982	1983	1984	1985
NET REVENUES	2,887.9	3,341.4	3,763.2	4,578.0	6,140.5
ANNUAL GROWTH RATE %		15.7	11.8	22.5	34.1
NET INCOME:	95.6	102.8	295.3	356.0	503.7
NET INCOME / REVENUES (%):	3.3	3.1	7.9	7.8	8.2
SHAREHOLDERS' EQUITY	582.4	954.8	1,202.1	1,958.3	2,279.7
NET FINANCIAL INDEBTEDNESS	844.4	862.9	726.0	319.3	190.0
NUMBER OF EMPLOYEES (YEAR END)	53,471	49,763	47,800	47,613	48,944

Figure 10 Per capita revenues trend

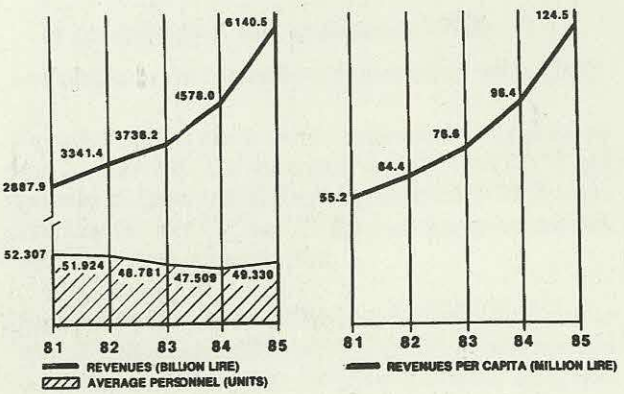


Figure 11 Net financial indebtedness/shareholders' equity

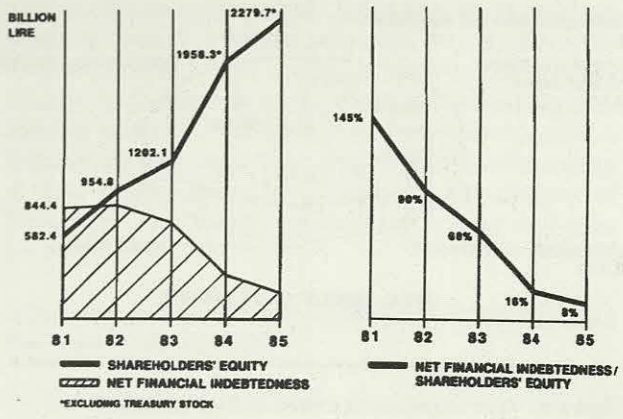
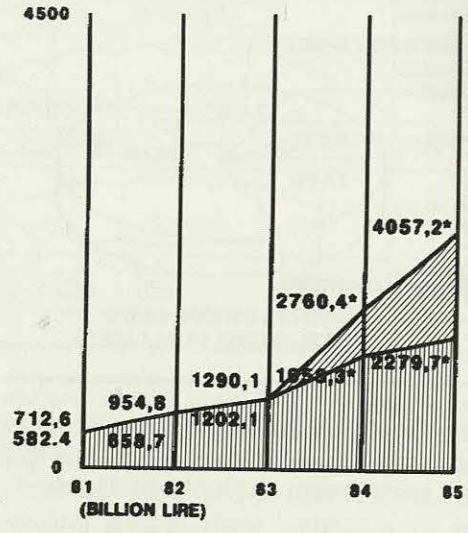


Figure 12 Revenues by geographic area

(BILLION LIRE)		%	
ITALY	2,074.2	33.8	
FRANCE	575.3	9.4	
GREAT BRITAIN	388.1	6.3	
GERMANY	326.1	5.3	
SPAIN	263.5	4.3	
SWITZERLAND	130.2	2.1	
OTHER EUROPEAN COUNTRIES	453.5	7.4	
EUROPE	4,210.9		68.6
U.S.A.	906.7	14.7	
CANADA	134.7	2.2	
NORTH AMERICA	1,041.4		16.9
BRASIL	156.7	2.6	
OTHER LATIN AMERICAN COUNTRIES	184.9	3.0	
LATIN AMERICA	341.6		5.6
JAPAN	183.3	3.0	
AUSTRALIA	122.0	2.0	
OTHER COUNTRIES	241.3	3.9	
REST OF THE WORLD	546.6		8.9
TOTAL	6,140.5		100.0

Figure 13 Stock Exchange capitalisation■



■ CLOSING PRICES ON MILAN STOCK EXCHANGE
FOREIGN STOCK EXCHANGES WHERE OLIVETTI IS LISTED: PARIS, FRANKFURT, GENEVA, BRUSSELS

STOCK EXCHANGE CAPITALIZATION
SHAREHOLDERS' EQUITY
*EXCLUDING TREASURY STOCK

Unix's role in the computer industry of tomorrow

Robb Wilmot, CBE

Dr Wilmot, the previous chairman and chief executive of ICL, is an independent consultant specialising in competitive strategy and policy in the IT industry. In 1985, he co-founded European Silicon Structures.

Dr Wilmot began by asking: "why is it that the use of information technology has not yet had a dramatic effect on productivity outside of the factory? And why is it that the traditional IT industry is not growing?" His answer was "lack of innovation". Symptoms of this malaise include the failure of MIS departments to come to grips with modern organisational practice, the availability of low-price PC clones from South East Asia being sold by retailers, large users forcing the pace with initiatives like COS (corporation for open systems) and MAP, the insistence of every supplier on having its own "unique" version of Unix and the emergence of new suppliers like EDS.

User organisations also cut themselves off from innovative products by adopting a single-vendor strategy. And suppliers are inhibited from producing innovative products because the largest users will not buy them.

However, General Motors' MAP initiative should be applauded. GM recognised that the 'information processing component' of building a car was very significant and needed to be automated as far as possible if GM was to be able to compete with the Japanese. GM determined this could only be done if it could innovate freely in its information systems — hence MAP. Furthermore, GM acquired EDS so it could have a vendor-independent capability for creating and implementing its systems strategy. And in early 1986, GM announced its commitment to Unix.

GM recognised that Unix has the potential to provide portability both for applications and hardware. It provides the potential to break away from being locked in to a single vendor and from short-life applications.

In addition, much of the innovation going on today in the IT industry is created on Unix — RISC machines, parallel processing, non-stop systems, AI-delivery systems written in C, distributed databases etc. For example, parallel microprocessor systems (up to 20 mips) costing $1,000 per user (including a terminal) are now available, compared with a cost of $15,000 per user for a typical mainframe.

LE ROLE DE UNIX DANS LE MARCHE INFORMATIQUE DE DEMAIN

Pour le Dr Robb Wilmot, Consultant Indépendant, le ralentissement du développement de l'industrie informatique trouve son explication dans les éléments suivants:

— absence d'innovation

— difficultés qu'ont les informaticiens à bien comprendre le fonctionnement de leur entreprise

— choix d'un fournisseur informatique unique ce qui crée une dépendance bilatérale, le client étant limité aux offres de son fournisseur et le fournisseur par le conservatisme de la base de sa clientèle.

UNIX, malgré son développement commercial plus lent que prévu, reste malgré tout la meilleure solution pour se libérer d'un fournisseur exclusif. Les avantages sont nombreux mais il existe encore trois facteurs d'inhibition:

— les problèmes de définition des normes ISO pour certains aspects

— la prolifération des versions d'UNIX

— l'absence de logiciels d'application sous UNIX

Certains outils commencent cependant à apparaître sur le marché. Un exemple en est UNITECS qui permet la conversion de programmes COBOL sous MVS ou DOS et CICS to UNIX tout en amenant des performances supérieures.

En conclusion, le Dr Wilmot est convaincu que le rôle d'UNIX sera déterminant pour se libérer des contraintes et obtenir une productivité informatique accrue, une fois dépasssé les freins actuels.

There are three factors presently preventing Unix from fulfiling its potential. The first is the muddle about Open Systems Interconnection. The various initiatives have to be coordinated and completed (file transfer and X-400 electronic mail for example) and network management standards have to be defined. The standard committees have to become more market driven.

Second, suppliers must each stop trying to build a better or different version of Unix. Instead they should support the X/OPEN initiative, which aims at providing an applications platform that allows the use of multiple vendor systems, but with applications conforming to the X/OPEN interface. But the X/OPEN group also needs to complete its work, particularly in the database and transaction processing areas. Again, the acid tests should be the requirements of the marketplace, not what the X/OPEN committee would ideally like to happen.

The third factor holding Unix back is the lack of commercially significant applications software. Software vendors will not commit to Unix until there is a substantial amount of software — the classic Catch 22 situation.

However, there are now tools available for converting existing software to Unix. For example, a small company called Root-Unisoft has now carried out 150 such conversions to Unix System V. This company has a tool called UNITECS (Unix Transfer Environment Control System) that can convert Cobol applications from MVS or DCS CICS to Unix, reducing the application transaction response times to sub-second in the process. This tool can be used to transfer applications from the central data processing centre to the business divisions. UNITECS will be available for use by MIS departments in 1987.

Unix will soon be available for the complete range of hardware, from $1,000 workstations to 100 mip processors. Developments like X/OPEN and UNITECS provide the basis for Unix-based application software. The 'C' language can be used for all types of applications (engineering, commercial, academic and AI). The OSI model provides the mechanism for moving information between systems. And Unix allows information systems innovation to be evolved to the organisation's middle management.

It is only be adopting a bold strategy based on Unix that organisations will be able to break free from a limited single-vendor innovation strategy. It is, in Dr Wilmot's view, the key to unblocking the productivity log jam outside the factory, and to using systems for competitive advantage.

The vital connection — vendor and customer

Per Olofsson, IBM Europe

Per Olofsson is vice president, services and support, with IBM Europe. He reviewed IBM's strategic direction. He began by stating IBM's view of today's information-processing environment and the rapidly evolving marketplace, which incorporates an increasing variety of people with constantly changing and overlapping requirements. Because of this wide range of computing needs, IBM recognises that the right solution to a customer's needs is often derived by using a combination of products, and may incorporate a variety of computer architectures. He emphasised that IBM's customers want total solutions from their suppliers and provided an insight into how IBM intends to cope with this challenge.

IBM'S DIRECTION

IBM's strategic plans consist of three main elements:

- To strengthen its partnership with customers by developing a more effective working relationship with its customers' professional and management teams. This will be achieved by aligning IBM's organisation more closely with customer sectors and by providing more industry-specific solutions.
- To provide increased in-depth support for developing and integrating applications to provide 'total solutions' for business problems. In order to do this IBM will offer the broadest range of the highest-quality products in the industry.
- To allow customers to maximise the return on their existing investments in IBM equipment by extending the existing IBM architectural frameworks, thereby providing a foundation for orderly growth.

Mr Olofsson cited several important specific actions that IBM will take to achieve its goals. Although IBM will continue to offer individual products from which customers can choose, it is working on a new application development framework that can be used across all three of IBM's future mainstream operating environments — System 370, System 36/38 and the PC. The company also plans to allow

---

LE LIEN VITAL ENTRE CONSTRUCTEUR ET CLIENT

Monsieur Per Olofsson, Vice Président IBM Europe, affirme que sa société est parfaitement consciente du fait que les clients d'IBM veulent des solutions complétes et que ces solutions demandent souvent l'emploi d'un ensemble de produits matériels et logiciels. En conséquence, il décrit l'approche que sa société suivra:

- La première mesure consistera à renforcer les liens avec ses clients et à proposer des solutions spécifiques à des secteurs d'activités.
- La deuxième mesure sera d'augmenter les niveaux d'intégration des applications pour proposer des "solutions totales" aux problèmes présénts par les entreprises.
- IBM développera également ses outils d'architecture pour offrir une rentabilité maximum à ses clients.
- Enfin, la connectivité des architectures de réseaux IBM sera augmentée pour permettre l'inclusion plus facile de matériels concurrents.

Monsieur Olofsson décrit ensuite les évolutions des gammes de matériels. Les grands systèmes continueront à être basés sur l'architecture 370. La gamme moyenne présentera une connectivité plus facile entre Systèmes 36 et 38 et l'annonce récente du système 9370 permettra à la fois l'exploitation d'un noeud intermédiaire de communication et d'applications et facilitera la connexion avec des réseaux non-IBM. En ce qui concerne le poste de travail, les intentions d'IBM sont de diminuer les différences entre les modèles existants en proposant une structure de base pour le poste de travail plus un choix d'options.

Dans le domaine des télécommunications, IBM se propose de contrôler voix et données au travers d'un réseau de communication basé sur ses produits. Il confirme également son support des normes ISO et ISDN.

increased connectivity between IBM networks and other vendors' equipment by continuing the development of the four existing architectures — system network architecture (SNA), document interchange architecture (DIA), document content architecture (DCA), and SNA distribution services (SNADS) — while incorporating support for the newly emerging ISO standards for open systems interconnection (OSI).

LARGE SYSTEMS

IBM's large systems products will continue to be based on the extended System 370 architecture with enhanced hardware, software, and data management integration to provide 'total-solution' facilities.

MID-RANGE SYSTEMS

In the mid-range, more than one systems architecture will be made available. In addition, improved connectivity between System 36 and System 38 will be provided to allow customers to use those systems in both data-processing and office applications.

The recent announcement of the 9370 system has added a new dimension to the System 370 range. IBM sees this new offering as being very attractive to organisations who are distributing System 370 applications to remote users, because it is well suited to co-exist with non-IBM systems and act as a middle-layer node in both IBM and non-IBM networks.

WORKSTATIONS

IBM's workstation strategy is to reduce the number of differences in the various models by providing a single workstation structure with more options. The company's key objectives in this area are:

- Focusing on the user.
- Making solutions easier to learn and use.
- Providing tailored solutions.
- Ensuring a consistent user view.
- Protecting customer investments.
- Being the industry's price, performance, and quality leader.

TELECOMMUNICATIONS

The most important element of IBM's telecommunications strategy is to allow customers to control their entire voice and data communications network with IBM products. IBM is committed to the development of the emerging international standards, particularly OSI. The company is also committed to supporting the standard for integrated systems digital networks (ISDN).

CONCLUSION

IBM believes that the key to making the vital connection between vendor and user is to incorporate the customer's view into everything it does at every level of business.

The changing PC scene

Eckhard Pfeiffer, Compaq Computer Corporation

Eckhard Pfeiffer is senior vice president of international operations for Compaq Computer Corporation. He directs all of Compaq's international activities in 39 countries including sales, service, and technical support.

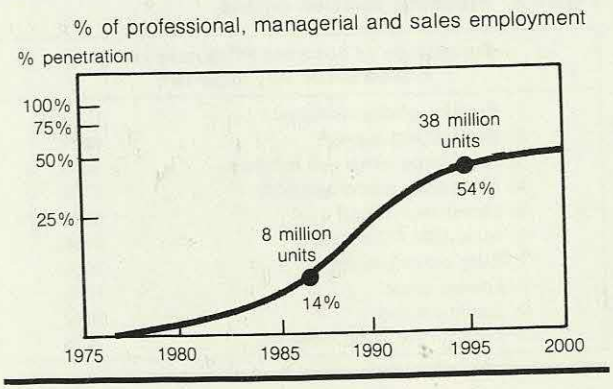
The PC business is developing rapidly. IBM introduced its business-oriented personal computer in July 1981, and now has nearly $7 billion in PC sales. The growth has been aided by software (such as Lotus 1-2-3) that exploits the potential of the hardware. The business PC market, with an annual growth rate of 35 per cent, is the one really bright spot in a computer industry that is otherwise in a slump.

The PC market is expanding. With the shift from an industrial to an information-based economy, office workers will continue to be one of the fastest growing segments of the workforce, and by 1995 Compaq believes that 54 per cent of office workers will use a personal-computing resource. This will lead to rapid growth from the current installed base of 8 million PCs to an estimated 38 million units by 1995. Of the current base, more than 3 million were installed in the last 12 months. This growth can be seen in Figure 1.

THE ORGANISATIONAL COMPUTING ENVIRONMENT IN 1995

The hardware environment is moving from three tiers to two: from mainframes, minicomputers, and PCs to mainframes and PCs. The PC is now the basic building block of office automation and information processing. When tied together with various communications approaches, PCs can create an organisational computing system that is

Figure 1 PC penetration of office opportunity



LA SCENE CHANGEANTE DU PC

Le développement du PC a été foudroyant et ne semble pas prés de s'arréter: Tel est la prédiction de Monsieur E. PFEIFFER, Senior Vice President de Compac Computer. Le PC fut introduit aux USA en juillet 87 et représentera un chiffre d'affaire de $7 milliards en 1986. C'est le seul secteur vraiment dynamique du marché informatique avec 35% d'augmentation par an. La prévision annoncée par M. PFEIFFER est qu'entre 1986 et 1995 le nombre de PC croîtra de 8 millions à 38 millions.

Le rôle du PC va également changer: En tirant profit des dévelopements technologiques futurs, le PC de 1995 offrira toutes les fonctionalités des postes de travail évolués et couteux d'aujourd'hui. Il confirmera donc le rôle d'outil individuel qu'il a aujourd'hui. De plus, il remplacera également les architectures des "minis" telles qu'elles existent actuellement: le PC servira de concentrateur de communication, et de gestionnaire de réseaux et de périphériques.

Techniquement, le PC futur sera un 32 bit à 8 mips de puissance, 16 Mb de mémoire adressable, à écran plat couleur de 1 million de pixels. Il comportera des interfaces évolués dont la voix et coûtera quelque $5000.

En matière de logiciel d'exploitation, M. PFEIFFER estime que le standard actuel IBM PC/DOS est "bétonné" et qu'il restera le standard pour de nombreuses années encore.

Les PC continueront à être vendus par des revendeurs : La demande des utilisateurs doit faire l'objet d'une réponse complète et seule l'association de matériels, "add-ons" et logiciels divers pourra y répondre. Le revendeur est donc le mieux placé pour apporter la bonne solution.

more than the sum of its parts. By the mid-1990s, these building blocks will provide intelligence throughout large and small organisations. The computing environment of the mid-1990s will have three tiers of applications focused on:

— Individual productivity.

— Workgroup productivity.

— Company productivity.

Individual productivity will be supported by faster, and greatly enhanced, applications in the areas of word processing, spreadsheets and forecasting programs, graphics, and more useful desktop organisers and time managers. However, the most dramatic difference will be in the introduction of artificial-intelligence technology, which will facilitate learning and customisation of the applications. It will also bring expert systems to the desktop. Communications will come of age and will enable electronic mail to really work, as well as facilitating access to databases and other outside information. Finally, the PC of the mid-1990s will have the capability of running applications that today require expensive workstations.

Workgroup productivity is less well understood. Workgroup-computing solutions provide shared resources in a way that makes teams of individuals with common interests and goals work together more productively than they could before. These solutions are currently typified by the first generation 'top-down' office automation systems based on minicomputers. By the mid 1990s, networked industry-standard PCs will provide the basis for communications, time management, easy information access, common database management, and peripheral sharing. Some applications currently being run exclusively on mainframes will be distributed to workgroup-computing resources.

Company productivity will be supported by the use of mainframes, which will be used for corporate databases and as a master corporate communications controller. The mainframe will be used as the controller and integrator of computing resources, and will monitor critical processes. Most traditional applications will have been distributed to high-performance PCs.

Perhaps the term 'personal-computer resource' is a more appropriate term for such powerful processors.

THE PERSONAL COMPUTERS OF 1995

Extrapolating from current technologies, the personal computer of 1995 will have the following characteristics:

— 32-bit architecture running at 8 mips.

— 16M bytes of sub-100 nanosecond directly addressable RAM.

— One gigabyte of fixed secondary media with a 10M byte removable disc.

— A five-inch colour flat-panel display with one million pixels.

— A comprehensive communications workstation including data, voice, video, telephone, and modem.

— A footprint of 1.5 square feet.

— Price of between $3,000 to $5,000.

THE PC INDUSTRY STANDARD

Although there has not been a formal definition of a PC standard, a de facto standard has emerged in terms of the ability of PCs to use the same software and add-on hardware as the IBM PC. This standard has promoted the development of an infrastructure that has allowed the rapid expansion of the PC market. In fact, the market has developed so rapidly and now has such a volume, that we can say with absolute confidence that the existing standard in the PC market is set in concrete.

The industry is now solidly behind the standard PC to the extent that it is genuinely independent of IBM. Indeed, last year the rest of the industry shipped more PC-compatible machines than IBM shipped PCs.

Despite the low-price end of the PC market showing the characteristics of a commodity market, to the despair of dealers, price is not the decisive buying criterion for the majority of business users. They value functionality, performance, and reliability above price. Figure 2 shows the results of a survey to identify and prioritise business PC buying criteria.

PC TECHNOLOGY

The long-term industry trend is to continue to reduce prices by between 15 per cent and 20 per

Figure 2 Purchase decision criteria

Percentage of business PC buyers rating characteristic very important	
1. Product quality/reliability	92%
2. Service and support	91%
3. Runs large variety of software	86%
4. Financially sound company	77%
5. Latest technology	62%
6. Runs IBM PC software	61%
7. Easy communications	56%
8. Lowest price	18%
9. Easily carried	10%
10. Easy to use while travelling	3%

cent a year. The potential is limitless and there is an ever shortening cycle of hardware innovation, which spurs software innovation, which leads to wider application, which makes the market even more attractive. It is interesting to note the market impact of hardware innovation mediated by software shown in Figure 3.

The next step in this innovation is the introduction of machines based on Intel's 80386 chip. Over the next several years, the existing 80286-based machines will consolidate their position as the mainstream technology for the business PC, while 80386-based machines will begin to be used by 'power users', spurring innovation by the demands they place on the software.

The increasing power of PCs will also benefit first-time users because the more powerful machines can incorporate power AI techniques to make the machines easier to use for the novice.

PC DISTRIBUTION CHANNELS

Sales through retail channels have played a dominant role in the PC industry and this role is predicted to grow. By the mid-1990s, direct sales of PCs from the manufacturer will account for only 20 to 25 per cent of sales, with their focus being on mainframes and providing connectivity at the company level.

Indirect sales channels will therefore account for 75 to 80 per cent of PC sales. This is the most efficient means of getting PC products into the hands of customers and then properly supporting these products with training, software, support, and maintenance. The retail distributor can act as a systems integrator, putting together specific solutions from the products available, without the vested interest of a sole supplier.

Figure 3 New solutions

PC generation	*Hardware*	*Software*	*Market growth*
1	Apple II	Visicalc	10-fold
2	IBM PC	Lotus 1-2-3	10-fold
3	COMPAQ DESKPRO 386	?	10-fold

THE OFFICE AUTOMATION REVOLUTION

The office automation revolution has been predicted for a decade. It was predicted to take the form of a large, comprehensive, integrated approach that would drive the industry from the top down. Certainly, several such offerings have been relatively successful, but they do not constitute a revolution. In fact, the revolution is here in the form of the personal computer. The PC will be the single most important driving force in office automation for years to come.

The personal computer has created the first true standard of the office automation industry. The PC offers a clear growth path with the potential for total connectivity. Industry-standard PCs are doing what office automation was meant to do — they are increasing the productivity of office workers. With a PC-based office automation system it is easy to add new applications, and it is less costly.

If industry-standard PCs are used as the basis for office automation, there is a clear innovative growth path that can be seen over the next decade. This innovation will flow from more than 1,000 hardware companies and more than 4,000 software companies who serve the thousands of dealers in this market.

Strategic moves in the software industry

Philippe Dreyfus, CAP Gemini Sogeti

Mr Dreyfus is vice chairman of CAP Gemini Sogeti. In the early 1960s he created the word 'informatique', which five years later became the name of a French ministerial department and is formally recognised by its entry in the dictionary of the Académie Française.

In the course of his wide-ranging presentation, Mr Dreyfus reviewed the macro-economic forces shaping the evolution of the IT industry and impacting both vendors and users. He also reviewed the key issues facing the software industry, and gave his personal assessment of the health of the industry in Europe. His talk ended with a clear statement of the two main strategic objectives of the industry: to preserve its competitiveness in world markets, and to evolve into a free and balanced partnership between hardware manufacturers and users.

MACRO-ECONOMIC FORCES SHAPING THE INDUSTRY

Mr Dreyfus identified two main periods since the second world war: the period to the late 1970s, and the past five years. In the earlier period, the Western economies were preoccupied with coping with rapid and unprecedented growth. The period was characterised by innovation, new product creation, full employment, inflation and high salaries, and a rapid growth in the white-collar workforce. In the IT industry it was a sellers' market, with vendors dictating product and service strategies, and the availability of products to users. One reason this was possible was that, in the post-war boom period, cost pressures gave way to the need for IS departments to deliver services to their organisation as fast as possible.

Since the late 1970s, growth had slowed to produce intense competitive warfare, increased real costs, and apparently permanent levels of high unemployment. This had produced a sharp change in the IT industry. It is now a buyers' market, and vendors are responding by increasingly acknowledging the power of users to demand improved service levels and responsiveness. Internal IS departments are increasingly being required to contribute to their companies' competitiveness, and new application development effort is being switched from the back office to 'mission-critical' applications. The work of the IS manager had also become considerably more complex, with many new choices needing to be made. These choices included: single- or multi-vendor strategies, make-

---

L'INDUSTRIE DU LOGICIEL: EVOLUTIONS STRATEGIQUES

Monsieur Philippe DREYFUS distingue deux périodes principales dans l'évolution du marché informatique: Le règne des fournisseurs (jusqu'en 1978) et celui des clients (actuelle). Les données du marché sont donc en train de changer et le marché tant moins demandeur, les lois de la concurrence vont pouvoir enfin commencer de jouer.

En outre la fonction informatique, tout en croissant en complexité, sera appelée à prendre un rôle stratègique grandissant dans l'entreprise: Monsieur DREYFUS s'attend à ce que le Dirigeant Informatique soit de plus en plus fréquement appelé à un poste de direction générale au fur et à mesure de la prise de conscience de l'importance croissante de la fonction informatique par les entreprises.

En ce qui concerne l'industrie du logiciel et des services, il est probable que son rythme de développement (20% par an) se maintiendra et qu'elle atteindra un chiffre d'affaire de $40 milliard en 1990. Monsieur DREYFUS fait remarquer l'incidence négative que la taille des marchés européens et leurs spécificités peuvent avoir par rapport au marché américain.

Le souci dominant des sociétés de services européennes est de préserver leur indépendance par rapport aux influences puissantes des Etats-Unis et du Japon. La menace principale est liée aux relations complexes qui s'établissent entre constructeurs et sociétés de services. C'est dans ce domaine que les utilisateurs ont un rôle important à jouer: Ils doivent, dans leur propre inérêt, encourager le développement et la sauvegarde d'une relation bien équilibre entre les constructeurs et les sociétés de services.

or-buy decisions, choices on standards, on interfaces, and on integration, and choices between investment in mainframes, minicomputers and microcomputers. Cost control had also become a much more important issue as the IT spend had increased and as profit margins had contracted. Mr Dreyfus suspected that an increasing number of IS managers would step into the role of chief executive officer as the strategic importance of IT was recognised.

THE SOFTWARE INDUSTRY

The software industry, worth some $16 billion in 1985, was expected to grow by 20 per cent a year to reach $40 billion by 1990. One of the key constraints to its growth was the need to recruit suitably qualified staff. With staff losses in the industry averaging 12 to 15 per cent a year — a result, amongst other things, of the high pressure on individuals in the industry — and the near impossibility of recruiting and absorbing new staff at a rate faster than 25 per cent of its workforce a year, internal organic growth was effectively limited to between 10 and 13 per cent per annum. The extra growth would come partly from acquisition, and partly from new business entrants to the industry. These included manufacturers, accounting firms, large system integrators (from the aerospace, defence, electronics, telecommunications, and engineering industries), computer bureaux and computer users.

THE INVESTMENT STRATEGY OF THE EUROPEAN SOFTWARE INDUSTRY

Mr Dreyfus explained why the European software industry was apparently failing to invest in world-beating application software packages, and outlined the areas into which investment was being directed. The fragmented nature of the European market — divided by different languages, cultures, regulations, and dominant national IT vendors (sharing their markets with IBM) meant that European software suppliers could never achieve the home market economies of scale necessary to compete with US package software producers. Instead, investment was being channelled into such areas as telecommunications, software engineering tools and methodologies, expert systems and artificial intelligence developments, financial-sector applications (such as smartcards, telebanking and retail-banking systems), and the important area of CAD/CAM/CIM. The penetration of overseas markets, where European companies had a much better track record than US software companies, was also absorbing considerable investment.

KEY OBJECTIVES OF THE INDUSTRY

The European software industry was healthy and strong and, in the changed environment of the 1980s, had two key objectives: to increase its competitiveness in world markets, and to preserve its long-term independence from strategic control from the United States or Japan. The greatest threat to this independence was from IT manufacturers, with which the software industry had a complex three-way relationship: as a customer and supplier, as a competitor and re-marketer and as a partner.

It was in this latter capacity — as a balanced partner — that Mr Dreyfus felt the most urgent need to develop the relationship. He believed that users had an important role to play in encouraging the development and preservation of a true balance in the partnership between manufacturers and independent software suppliers.

THE BUTLER COX FOUNDATION

Butler Cox & Partners

Butler Cox is an independent management consultancy and research organisation, specialising in the application of information technology within commerce, government and industry. The company offers a wide range of services both to suppliers and users of this technology. The Butler Cox Foundation is a service operated by Butler Cox on behalf of subscribing members.

Objectives of the Foundation

The Butler Cox Foundation sets out to study on behalf of subscribing members the opportunities and possible threats arising from developments in the field of information systems.

New developments in technology offer exciting opportunities — and also pose certain threats — for all organisations, whether in industry, commerce or government. New types of systems, combining computers, telecommunications and automated office equipment, are becoming not only possible, but also economically feasible.

As a result, any manager who is responsible for introducing new systems is confronted with the crucial question of how best to fit these elements together in ways that are effective, practical and economic.

While the equipment is becoming cheaper, the reverse is true of people — and this applies both to the people who design systems and those who make use of them. At the same time, human considerations become even more important as people's attitudes towards their working environment change.

These developments raise new questions for the manager of the information systems function as he seeks to determine and achieve the best economic mix from this technology.

Membership of the Foundation

The majority of organisations participating in the Butler Cox Foundation are large organisations seeking to exploit to the full the most recent developments in information systems technology. An important minority of the membership is formed by suppliers of the technology. The membership is international with participants from Australia, Belgium, France, Italy, the Netherlands, Sweden, Switzerland, the United Kingdom and elsewhere.

The Foundation Research Programme

The research programme is planned jointly by Butler Cox and by the member organisations. Each year Butler Cox draws up a short-list of topics that reflects the Foundation's view of the important issues in information systems technology and its application. Member organisations rank the topics according to their own requirements and as a result of this process members' preferences are determined.

Before each research project starts there is a further opportunity for members to influence the direction of the research. A detailed description of the project defining its scope and the issues to be addressed is sent to all members for comment.

The Report Series

The Foundation publishes six reports each year. The reports are intended to be read primarily by senior and middle managers who are concerned with the planning of information systems. They are, however, written in a style that makes them suitable to be read both by line managers and functional managers. The reports concentrate on defining key management issues and on offering advice and guidance on how and when to address those issues.

Butler Cox & Partners Limited
Butler Cox House, 12 Bloomsbury Square,
London WC1A 2LL, England
☎(01) 831 0101, Telex 8813717 BUTCOX G
Fax (01) 831 6250

France
Butler Cox SARL
Tour Akzo, 164 Rue Ambroise Croizat,
93204 St Denis-Cedex 1, France
☎ (161) 48.20.61.64, Fax (161) 48.20.72.58

The Netherlands
Butler Cox BV
Burg Hogguerstraat 791
1064 EB Amsterdam
☎(020) 139955, Telex 12289 BUCOX NL
Fax (020) 131157

United States of America
Butler Cox Inc.
150 East 58th Street, New York, NY 10155, USA
☎ (212) 486 1760 Fax (212) 319 6368

Australia
Mr John Cooper
Consultants (Computer and Financial) PLC
Level 7, 20 Bond Street, Sydney, NSW 2000
☎(02) 237 3232, Telex 22246 MACBNK
Fax (02) 237 3350

Italy
SISDO
20123 Milano – Via Caradosso 7 – Italy
☎ (02) 498 4651, Telex 350309 SISBDA I

The Nordic Region
Statskonsult AB
Stortorget 9, S-21122 Malmo, Sweden
☎ (040) 1030 40, Telex 12754 SINTABS