INFORMATION TECHNOLOGY DIVISION

STRATEGY & POLICIES 1997

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Version 1.1 January 1997

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INTRODUCTION

In recent years, the field of information technology (IT) has been one of increasingly rapid change. Advances in hardware, communications, database management systems (DBMSs) and graphical user interfaces (GUIs) have joined together to revolutionise the ways in which IT service providers can develop and deliver systems. At the same time expectations have grown for the rapid delivery, by IT, of systems that are both easy to use and yet flexible enough to develop with the changing needs of the business.

This document provides the necessary technical framework within which the company can continue to apply IT to deliver business benefits. It includes a brief description of each significant area of technology and states the HP Bulmer strategy and policy for this area, including any recommended standards and tools to be used.

This is not a full IT/IS Strategy document, but rather an essential policy statement that underpins and helps shape a more business focused top level strategy and systems plan. The policies embody the principles and practices pursued in the day-to-day implementation and running of IT within the company and will be reviewed on an annual basis.

1. TECHNICAL ARCHITECTURE

Introduction

The technical architecture is an outline of:

- the policies governing the choice and use of technologies
- the technologies that are used within H P Bulmer (HPB) for the storage and delivery of information, and for the development of information systems
- the corporate technical topology depicting the deployment of network and computer platforms and their internal components

Each component will be covered in more detail elsewhere in this document.

The architecture must be selected to allow information systems to be developed and implemented to meet the needs of the business. The key information needs for HPB are the provision of timely, relevant and accurate information in an easy to use form that will provide competitive advantage to our business processes.

Strategy

To provide a technical architecture that:

1. Optimises the provision of timely, relevant and accurate information to both office based and field based users in a form that is easy for them to understand and use.
2. Facilitates the rapid development and deployment of information systems.
3. Protects the main operational systems from the impact of end-user reporting which is provided for via a distinct Data Warehouse (*Figure 1*).
4. Facilitates adherence to Client/Server principles hence providing the flexibility and scaleability of information systems to allow them to keep pace with the changing business environment.
5. Runs on Open Systems (Unix/TCP/IP) where practicable for corporate applications, hence providing maximum vendor independence without compromising on interoperability or integration.
6. Provides access to a wide range of package software solutions.
7. Is robust, reliable and cost effective to support and maintain.

Policy

The technical architecture is shown in *Figure 2.*

The technical architecture allows for client server computing with the clients being Windows personal computers and the servers being UNIX based open systems.

Transactional level data is stored in SQL compliant relational databases, with Oracle being used for in-house developments. For efficient management reporting, aggregated data can be stored in multidimensional databases on either the server or the client with

Oracle's Express/PC Express products being used.

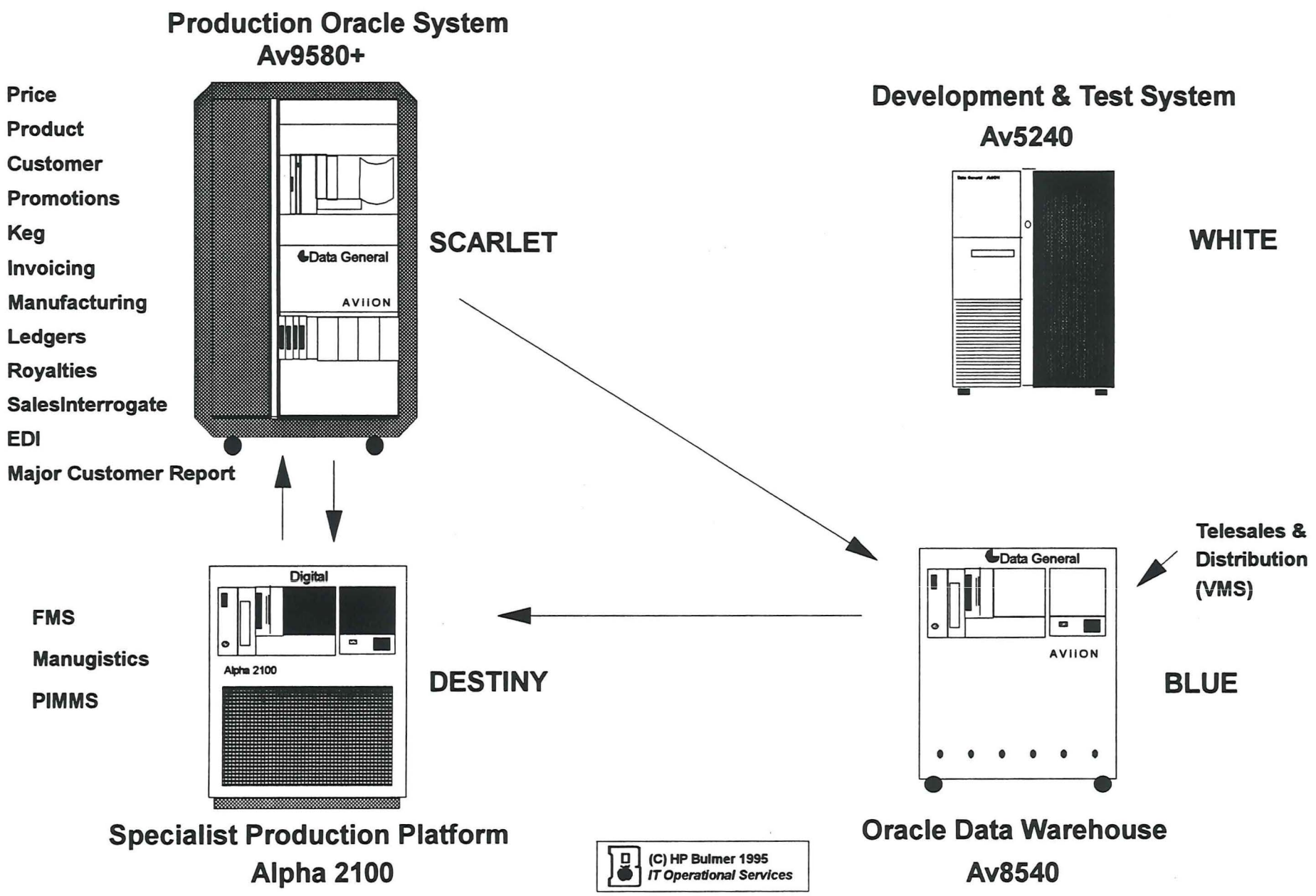
Users are provided with Microsoft Windows Graphical User Interface through which they can access their application programs and their office tools.

Loading and maintenance programs within the Oracle environment, where GUIs are not required, will be built using products from the Oracle tool set and Microfocus Cobol.

Issues

These will be addressed below as the individual components are discussed in more detail.

FIGURE 1 : HP BULMER
Unix/Oracle Environments



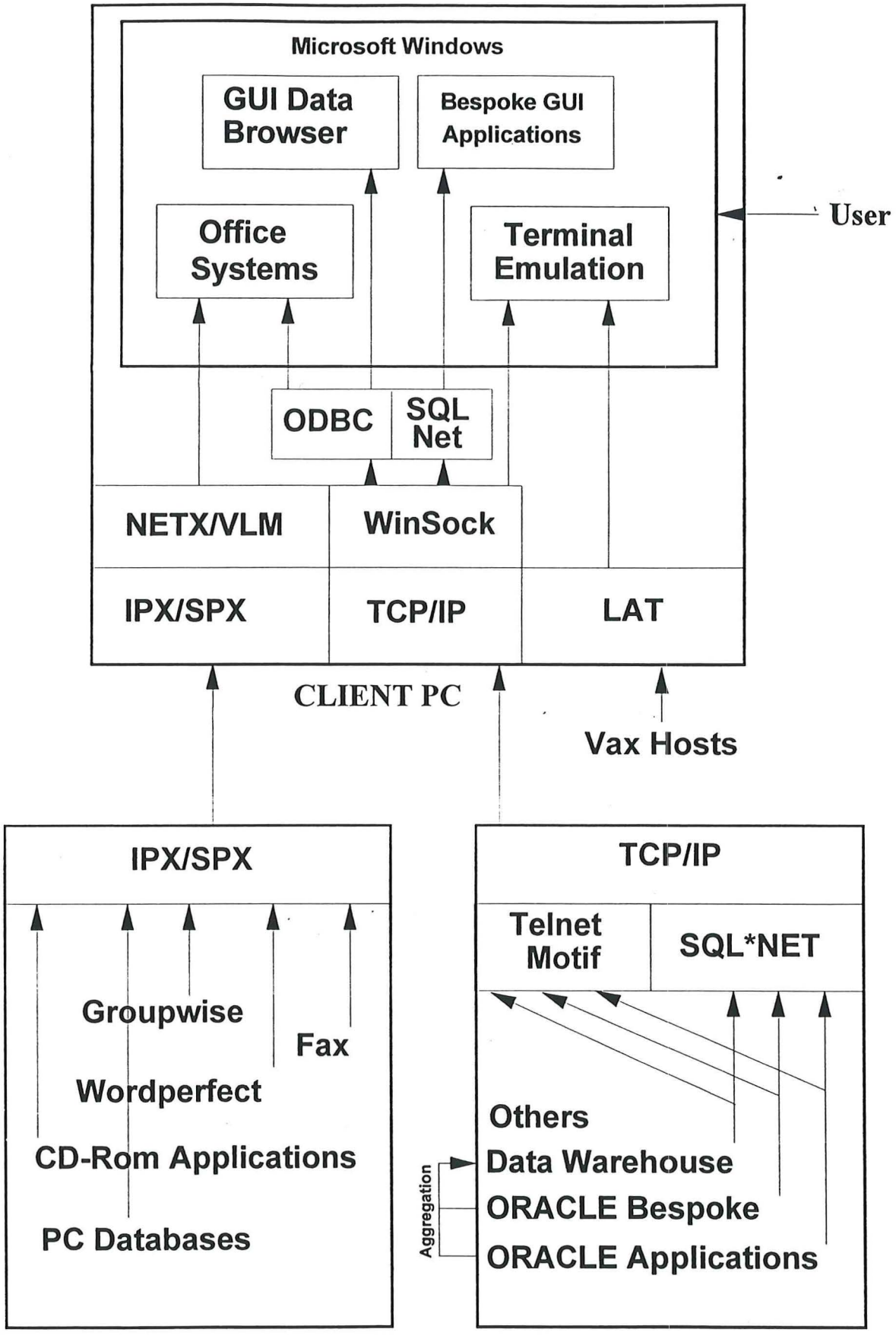

Microsoft Windows
GUI Data Browser
Bespoke GUI Applications
Office Systems
Terminal Emulation
User
ODBC
SQL Net
NETX/VLM
WinSock
IPX/SPX
TCP/IP
LAT
CLIENT PC
Vax Hosts
IPX/SPX
Groupwise
Fax
Wordperfect
CD-Rom Applications
PC Databases
TCP/IP
Telnet Motif
SQL*NET
Others
Data Warehouse
ORACLE Bespoke
ORACLE Applications
Aggregation
Netware File Server
UNIX Server

Figure 2

2. SYSTEMS DEVELOPMENT

2.1 The System Development Process

The past three years have seen an unprecedented resourcing of new systems development at Bulmer. In 1995 alone, new systems were implemented for Invoicing, Purchase Ledger, General Ledger, Sales Ledger, Stores & Purchasing and Profit Management, along with major amendments to Promotions, KIMS, DMS and Customer Complaints Systems, and new initiatives in Workflow and Data Warehousing applications. Although the majority of systems are now installed in modern Oracle database and tools technologies, the intensity of systems work is likely to be maintained for the foreseeable future, even if the nature of the developments moves towards information access and desktop delivery from more traditional systems and technology replacement.

Strategy

Systems projects will be business-led. Business processes will be analysed and rationalised as part of all systems projects. Systems developments will conform to the underlying technical architecture which is geared to providing an open, sustainable and cost-effective infrastructure for multi-user applications.

Policy

System projects are run by Steering Group and Working Party. A senior director or manager chairs the Steering Group as the User Sponsor. The IT Project Manager acts as secretary to the Steering Group and chairs the Working Party. The Steering Group will typically meet monthly and the Working Party, weekly. User resource must be made available to ensure non-IT issues are planned, resourced and implemented to agreed timescales and budgets. On major projects this is likely to involve a full-time User Manager.

Software packages, rather than bespoke development, should be used wherever possible. Bespoking of packages should be kept to the absolute minimum. Software packages will write to the Oracle Relational Database, running under the Unix operating system. Software development will be in the Oracle toolset. The Oracle CASE method will be used as the broad framework for progressing bespoke Oracle development.

2.2 Database Management Systems (DBMS)

The area of database management has developed rapidly over the past five to ten years with the advent of relational database technology that now dominates the market. All of the leading products in this area allow access to the data using Structured Query Language (SQL).

Our strategy for the past few years has been to develop new systems using this technology and systems such as Product & Customer Maintenance, Promotions, Invoicing and KIMS have been developed using the SQL RDBMS, Oracle. Oracle is now providing the capability to store procedures within the database, and have these automatically triggered by various database events.

RDBMSs are very efficient at storing large quantities of data and retrieving them

routinely. They are, at present, less efficient for carrying out ad hoc management reporting of the data. Nevertheless, this can be achieved by storing aggregated data in either an Oracle RDBMS 'Warehouse' or in a multi-dimensional warehouse. The Profit Management System has been developed using Express/PC Express technology to provide multi-dimensional drill down capabilities (using Oracle OLAP tools). The data warehouse can be a combination of both Relational Database and OLAP technologies.

Strategy
To store transactional level data in SQL compliant Relational Databases and to provide data warehouse developments that may be necessary to give acceptable response times for decision support enquiries.

To store as much procedural logic as possible within the database, as well as the data.

Policy
Our policy is to use an SQL compliant Relational Database for the store of all transactional level data. For in-house developments this should be Oracle.

The Oracle RDBMS and/or Express/PC Express are used to store aggregated data for decision support and management reporting applications.

Standards
ANSI SQL, ODBC.

Issues
The selection of Oracle for all in house developments simplifies the technical support. However, it is clearly recognised that, when purchasing software packages, the functionality and match to business requirements of the package is more important than the RDBMS. However, most mainstream package vendors now accommodate the Oracle RDBMS and so conflict between technical strategy and business requirement is unlikely.
The SQL standard only covers a subset of the functionality offered by RDBMS systems. The extra "proprietary" functionality will normally be used when developing systems in order to achieve acceptable response times from the database. This means that the applications will not be capable of being ported from one RDBMS to another very easily.

The ODBC (Open Database Connectivity) standard from Microsoft will allow PC applications to extract data from databases supporting ODBC without the user knowing which particular database technology is involved. Most RDBMS suppliers have committed to support this standard.

The use of multimedia is likely to increase rapidly over the next few years and so the storage and retrieval of audio, video and image items will be required. We will need to ensure that our databases can provide this capability.

The increased use of object orientation in GUIs and application development will lead

to the need for databases to be able to store and retrieve objects. The market here is likely to be a battle between the existing market leaders enhancing their products to cater for objects and new entrants with products designed from the ground up with object orientation in mind.

2.3 RDBMS Middleware

Introduction

The access of RDBMSs running on servers by client applications running on PCs require "middleware" to connect the two together. Each RDBMS supplier provides their own proprietary "middleware" capable of assessing only their own databases. Certain third parties provide "middleware" capable of accessing several of the leading RDBMSs.

Strategy

To provide the minimum number of different middleware packages necessary to allow access from PC applications to all data stored in RDBMSs.

Policy

SQL*Net is the "middleware" to be used for accessing Oracle databases.

Issues

Our current policy is adequate in our current environment where Oracle is the only RDBMS we have in use. If RDBMSs other than Oracle were being used, then "middleware" other than SQL*Net would be required to access them. Therefore there is a danger that more than one copy of "middleware" would be needed on PCs that need to access more than one RDBMS. This would be neither economic nor easy to manage. A third party product accessing the required range of RDBMSs would be needed. This is one of the benefits of restricting all our core applications to the Oracle RDBMS.

2.4 Programming Languages and Development Tools

Introduction

Stored database procedures and triggers are effective tools for improving data integrity and system maintenance. This technology is especially important where client-server systems are concerned and we need to maximise our use of the facilities now available in Oracle7. Ideally we will keep the number of development tools to an absolute minimum.

The advent of Office Products such as Groupwise and Lotus has set standards in Graphical User Interfaces that our users have found very good and easy to use. It is therefore very important that we deliver systems that are as easy to use and have the same look and feel. To do this it is essential that our system developers have suitable tools to make the screen design as simple and efficient as possible. The Oracle

Developer 2000 (Forms4) package has been chosen for GUI development.

Strategy
To have the minimum set of development tools to allow fast and efficient development of applications that have friendly easy to use GUIs.
To store as much procedural logic as possible within the database.
To assemble all key corporate data on the data warehouse and develop key informational systems for flexible, easy-to-use drill-down desk-top delivery.

Policy

For update and maintenance applications within the Oracle environment the Oracle Tool set may be used, supported where necessary by Pro-Cobol programming. This can include the use of automatic SQL*Forms generation. As much procedural logic as possible should be stored within the database.

Standards
ODBC, DDE
Oracle Developer 2000

Issues

This area of technology is one that is advancing rapidly and it is certain that new products with attractive new features will keep appearing. It is also one where large benefits can be obtained from a good skill base and library of commonly used building blocks. It is therefore very important to decide on a product that has a high probability of being kept in the top tier of those available; for these reasons, Developer 2000 has been chosen.

The Windows Style Guide is not a very tight standard for defining the "look and feel". Our systems development standards need extending to cover this area more closely. Any change in our GUI policy of using Windows would obviously necessitate a review of the GUI development tools policy.

With PC Express having been purchased by Oracle, we can expext to see the increasing integration of RDBMS and OLAP technologies.

The use of Oracle Tools for application development in the Oracle environment provides a dilemma. On the positive side the tools are designed for Oracle and so are effective and efficient at exploiting the Oracle functionality. However using them adds to the "lock in" to Oracle and reduces our commercial negotiating power.

The Oracle Tool set is developing rapidly and will undoubtedly provide a suitable set for all applications within the Oracle environment. It can provide DDE links and can be used in the Express environment.

The future of our bespoke applications using character-based Forms3 needs addressing with regard to the possible migration of these application to the GUI environment.

2.5 CASE

Introduction
Computer Aided Software Engineering, CASE, is designed to automate as much as possible of the systems development life cycle.

We currently use Designer 2000, which is strongly tied to the Oracle database and 4GL, and includes a code generator which can largely automate the production of simple applications.

Strategy
To make use of CASE technology to achieve cost and quality benefits across the systems development life cycle.

Policy
Oracle*CASE to be used for analysis and design in the Oracle environment; use of code generator at the Project Manager's discretion. Supplementary drawing tools are permitted for preparing Data Flow Diagrams etc in the Oracle environment where necessary.

Standards
Designer 2000

Issues
CASE tools are invaluable for enforcing rigour in analysis and achieving the production of highly robust systems. This is often at odds with the needs for fast flexible response from developers (RAD).

Standards in CASE have been slow to emerge. CASE Dictionary Interchange Format, CDIF, is now gaining support as a means of exchanging definitions, but the problem of moving linked diagrams has yet to be addressed.

As mentioned with development tools, the use of Designer 2000 increases our "lock in" to Oracle. However, in this case, the benefits of the links between the CASE tool and the database generation are believed to be worth it.

3. END-USER TOOLS

3.1 Office Tools

Introduction

The Gartner Group has recently estimated a difference in five year cost of ownership of over £10,000 per PC, between a well-managed and a badly-managed PC environment. Consequently it is essential we manage our PCs effectively. To do this it is essential to minimise both the number of different packages in use, and the number of individual versions of each being used. This in turn will require effective automated methods of software, distribution and management.

The two major players in this area, IBM and Microsoft, both have effective suites of applications that have little to choose between them. Corel, the new owners of Word Perfect Office have a widely installed base of Word Perfect users.

Strategy

To use only standard versions of software from the leading product vendors. The software should be from reliable manufacturers who are capable of developing the products in line with advancing technology.

Policy

Our policy is to implement standard versions of the following products on appropriately powered PCs:

- WordPerfect word processors
  and, if the graphics and tabling functions of WordPerfect are not adequate, to complement these with:
- Lotus 123 Spreadsheet
- Lotus Freelance graphics
- Netscape Browser
- Rightfax Fax software

Issues

HPB has suffered in the past from the creeping non-co-ordinated upgrade of PC processors and associated versions of operating systems and office software. One result of this has been that different versions of office systems have come into use, so that, for example, transferability and integration of spreadsheets has been hindered. In is essential that upgrades to new versions of office systems are co-ordinated on a company-wide basis. This may mean some of our more advanced users will not be able to have the very latest products on the market at certain times.

3.2 End-User Computing Database

Introduction

There have in past years been a number of end-user databases developed and deployed, in part because of the absence of corporate systems in some areas of the business, notably in engineering and production. Whilst corporate systems are now being implemented in some of these areas, the increased capability, ease of use and reduced

cost of database products now available, along with increased skill levels, means that there is a continued need for end-user development in some areas.

To date the main products used have been TAS and DataEase, neither of which are considered appropriate for future developments.

Strategy
To make available one standard database product for end-user computing. Both server and stand-alone versions will be supported.

Policy
To make Microsoft Access available for end user database development.
To have support skills in the Microsoft Access product, but not to support end user applications per se; (i.e. to be treated like spreadsheet applications).

Issues
There are currently 13 listed database systems in the TAS product and several others in DataEase. In addition, end user supported databases in the SMART package are also used in the Technical Division. Some of the systems in TAS and DataEase are considered 'corporate' and are supported by Operational Services, although skills are rather limited in these products.

A full assessment of TAS, DataEase and SMART databases is required, and a clear strategy for replacement/support/migration needs to be developed.

3.3 RDBMS Access Tools

Introduction
RDBMS Access Tools provide end users with the ability to produce ad hoc reports from data stored in the RDBMS. This does, in general, cause three difficulties. First, the end user needs to fully understand the structure of the data in the database; second, the risk that changes to the database structure could invalidate existing ad hoc reports; and third, machine performance can be a problem if reports contain processor-intensive searches through unindexed files or tables.

Strategy
To provide the minimum number of tools to enable end users to carry out ad hoc enquiries on the data stored in our databases on the data warehouse Unix server. Products should protect the users as far as possible from the complexities of the database design.

Policy
To protect our operational systems from the impact of end user enquiries by limiting such activity to a separate Data Warehouse box.

Issues

We are still evaluating products for use over Oracle databases. Products under evaluation include Impromptu, Business Objects, and Oracle's Discoverer 2000.

In addition, Oracle are also releasing new tolls for accessing OLAP data bases. These tools also have some capability in accessing linked relational databases. Our strategy needs clarifying as product capabilities become clearer.

4. THE GRAPHICAL USER INTERFACE

Introduction

The advent of Graphical User Interfaces in both the Apple environment and later in the Windows environment has revolutionised the ease of use and acceptability of software applications.

The great success of the Apple MacIntosh environment has been the simplicity in learning a new application due to the common "look and feel" imposed in this environment.

It is important that we provide the ease of use and ease of learning that come from a GUI with a common look and feel across all our information systems.

Strategy

To provide an easy to use, industry standard, GUI that allows all the information systems that are used to have the same "look and feel".

Policy

Our policy is to standardise on the Microsoft Windows graphical user interface. Windows 95 will be introduced on new PC's, and where necessary to improve performance or to solve technical problems on existing Windows 3.1 PC's

Standards

Windows 3.1/95

Issues

All PC software development is currently for the Windows 95 operating system. Continued use of Windows 3.1 will only be viable whilst 16 bit desktop applications can be retained. It is likely that in the next 12 months there will be an increasing demand for Windows 95.

5. IMAGE MANAGEMENT

Introduction

Image management is used to describe the management of items stored as bit patterns; that is, effectively, as a series of dots. The problem of this methodology is that vast amounts of data are required to store meaningful images. The management of images has become possible through the increasing capacity of communication networks, the improvement in data compression/decompression techniques and the availability of low cost computing power and data storage. It will allow pictures to be used within computer systems as easily as numbers and text have been in the past.

Strategy

To implement image management in line with industry standards.

Policy

The AVImage product from Data General has been adopted as the company standard for image scanning. The implementation of image management software will be directed by a cross-company Steering Group. This group will prioritise areas in which this technology will be applied.

Issues

Most products in this category are reasonably new to the market in the U.K., and maintenance and support is still undertaken in the U.S.A.

We must balance the need to progress this area rapidly to gain the clear business benefit, against the dangers of using pioneer products that are not readily supported.

6. WORKFLOW

Introduction

Workflow technology has been developed alongside Groupware and Imaging software and shares certain common features. Indeed, some products claim to fulfill several of these requirements, e.g. Lotus Notes may be regarded as both a Workflow and Groupware product.

Strategy

To introduce mainstream workflow products for form-processing and other process-related applications on a cost benefit basis.

Policy

There is no policy on products at present. The areas of the business in which this technology is introduced will be determined by a cross-company Steering Group.

Issues

We are currently evaluating the major products on the market, notably Lotus Notes and GroupWise. We may find that we use more than one workflow product as the features, functions and applicability of products varies. As with all new software categories, appropriate support and maintenance skills will have to be developed in the system support area.

7. DATA ARCHITECTURE

Introduction

Data Architecture is concerned with managing the development of the company database to achieve an integrated data resource. The aim is to minimise duplication of effort and manage the replication of data such that sources are consistent, coherent and clearly identified. Information about the database structures, (metadata), must be made available to developers and end users, and definitions of business objects in terms of the physical database must be developed and maintained for use within the business.

Strategy

The strategy for managing the development of the company database is to work with the systems developers to generate clarity about subject area databases and identify the proper areas as repositories and sources of data. These areas are to be formally defined and documented as a central resource, integrated with a logical data model of the company's business. Metadata about the physical databases is held in dictionaries and repositories appropriate to the development environment, and the strategic direction is to move this metadata increasingly into the physical database itself.

Policy

All Oracle database developments are reviewed by the Database Administration function. Our Strategic Architecture Model (SAM) includes a logical data model, Entity Relationship Diagram, and details of physical implementations are to be recorded in the narrative about the logical entities. The mapping of business objects onto SAM and physical database will be managed centrally in order to ensure consistency of terminology usage, and promote clarity within the business.

Metadata will be transferred from the development tools (CASE, dictionaries) onto the physical database to the maximum extent allowed by the database technology. At present, with Oracle, this means all database object descriptions, and will be extended as soon as the technology is implemented to include fully documented database procedures.

Issues

Different developments use very different methodologies. The policies adopted for Data Architecture are an attempt to strike a sensible balance between laissez-faire and an adequate level of central management and control of the database developments. In terms of conventional wisdom, the development of the logical data model on the back of individual projects does not contribute optimally to the direction of those projects and may be seen as an unnecessary burden by developers.

However, one reason why it is so necessary is the very fact that there has not been a commitment to a single and well-implemented methodology which would guarantee the production of adequate cross-project integration and documentation. Process is important as well as data. We need a common approach to process definition and documentation which is not adequately provided for in our present environment.

Our Package policy places serious limitations on the extent to which it is possible to achieve an integrated corporate physical database. We will inevitably acquire data structures based on inconsistent models and with incompatible naming conventions. It will require careful management within the policies already in place to ensure that the various physical implementations are fully integrated.

8. PLATFORMS AND OPERATING SYSTEMS

Introduction

The Platform and Operating Systems section covers the computers and their operating systems that are used across the Network, from the desktop computer, which provides the user both with access to the network and with local computing power, to the large corporate computers providing services to the whole network.

Strategy

Our Computer Platform will:

- Conform to Open System Standards
- Support a Client Server Architecture
- Provide a friendly, easy to use GUI to our users
- Provide access to approved corporate systems & packages
- Be robust and reliable
- Be cost effective to manage and maintain

Issues

To achieve this the ideal solution would be to have a common computer operating system throughout the network, from the desktop to the corporate server.

This would be technologically possible today by the use of UNIX workstations for the desktop supported by networked UNIX servers. However the dominance of WINDOWS/DOS based applications on the desktop and the current failure of Workstations to provide a cost effective UNIX alternative, make this unacceptable today.

Windows NT may deliver the common computer platform in two to three years time and its progress should be monitored carefully.

Until these technological shortcomings are overcome it is necessary to have policies for three types of computer platforms, namely: the corporate (application) server, the PC (office/small systems) server and the desktop.

8.1. Corporate (Application) Servers

Introduction

Over the past five years or so we have been pursuing a policy of migrating from our proprietary Data General environment, first to the Digital VMS environment, and then, since 1991, to Open Systems. During this time we have seen the support for Open Systems growing throughout industry and have been rewarded by being able to negotiate much better deals on hardware than were possible in the proprietary environment.

Strategy

To downsize our hardware platform to exploit cost reduction opportunities whilst retaining an open integrated platform that allows the effective implementation of the

maximum degree of business software.

Policy
Our policy is to continue our move to UNIX based platforms although these platforms must also be capable of running Windows NT. Purchase of platforms will be from any reliable supplier and will be based on an optimum mix of price/performance and third part software availability.

Standards
Platforms running Operating Systems compliant with the UNIX System V Interface Definition and the current version of the X/Open Portability Guide, currently XPG4.

Issues
The current industry trends support this policy and it is unlikely that it will be challenged in the near future. The advent of WINDOWS NT, initially into the Departmental LAN areas, could have an impact on the corporate server market. Companies such as Sequent and DEC are committed to support NT on platforms as powerful as our largest corporate servers. The arrival and market penetration of WINDOWS NT must therefore be monitored closely.

8.2 PC (Office/Small Systems) Servers

Introduction
We have a number of servers which provide the platform for shared office systems and local sharing of files and peripherals on PCs.. As well as acting as servers for the corporate E:mail and Office Automation products, these servers also provide file storage and networked printer access for Payroll, Personnel, Customer Complaints, and TAS Stores systems. A number of utility programs such as Phone disk, Internal Directory, Rail Planner and Flightlink are also available from the servers.

Strategy
To provide a resilient, reliable server environment for our networked PCs purchased from a strategic supplier and backed up with on-site hardware maintenance.

Policy
Our policy for PC servers is the use of Intel chip based PC fileservers running Novell Netware 4.1 as the operating system, and to be capable of running Windows NT in the future.

Issues
Novell have a dominant share of the LAN operating system market with their product, Netware. Data files will be held on the fileservers rather than the PCs, to enable centralised backup and security.

Each user will be issued with a unique username, based on their initials and a password that the user will be required to change on a regular basis.

The success of Windows 95 may see a shift in the market towards Windows NT as a server operating system. This could provide benefits in cost of ownership and resilience and performance, and consequently needs to be monitored and assessed over the coming months.

8.3. The Desktop Platform

Introduction

As mentioned above Microsoft Windows based applications running on Intel chip based PCs have, for the moment, achieved dominance on the desktop. This means that this desktop platform currently offers the widest selection of application software and unbeatable cost effectiveness.

Policy

Our policy for new desktop computer platforms is to use Intel chip based PCs running Microsoft Windows. The hardware is regarded as a commodity item and will be purchased from a strategic supplier. The supplier will be reviewed regularly. Our current supplier is Compaq for desktops and Toshiba for portables.

A standard configuration of hardware will be defined on an ongoing basis to ensure maximum possible protection of the Company's investment against premature obsolescence.

In order to minimise the support costs for the desktop platform our policy is to minimise the different configurations in use across the Company. This includes the standardisation of versions of Windows, DOS and associated end-user tools where possible.

Standards

PCs equipped with Intel Pentium Processors minimum speed 133MHz.
Current approved versions of Microsoft DOS and Windows.

Issues

Microsoft's current desktop operating system for the Intel chip based PC is Windows 95. This addresses many of the shortcomings of MS-DOS and Windows 3.1, in that it will run 32-bit applications, supports multi-tasking, has in-built support for networking and simplifies the configuration of hardware. As 32-bit applications become the standard for the PC, Windows 95 has become the de facto standard operating system for the desktop.

As Windows 95 and Windows NT merge to become one 32-bit operating system, the use of 16-bit and DOS based applications will diminish so that Windows NT will be capable of running all available packages for the Intel chip based PC.

UNIX based Workstations are developing rapidly and may eventually allow a common computer operating system from desktop to corporate server. The two key

restrictions to the growth in use of workstations at the desktop are cost and availability of Office Productivity software.

The option of leasing rather than purchasing desktop hardware needs to be reviewed regularly to ensure purchase continues to offer the most cost effective solution.

8.4 Mobile Computing

Introduction

As with desktop platforms, the Windows operating systems is dominent in the portable PC arena. It is important that mobile computers are stable and reliable because of their high support costs.

Policy

The hardware platform should offer reliability and high performance. Our current supplier is Toshiba, the market leader for portable PC's. This choice will be regularly reviewed. All portable PC's will use colour screens to meet the demands of modern graphical applications.

Windows 95 offers and environment suited to mobile users, and will be used on all portable PC's as the operating system.

All portable computers will include tools to allow support remotely using a modem and telephone line.

Standards

Toshiba Pentium Portable PC
Minimum 1GB Hard disk
Windows 95
V.34 Modems

Issues

Virus protection of mobile computers remains a problem due to the extensive use of diskettes.

There is a requirement for portable PC's to have high speed access to corporate data. Whilst modems are able to transfer data, their speed limits the development of true mobile integration. High speed technologies such as ISDN need to be constantly assesed for viability.

9. NETWORKS

9.1 Physical Infrastructure

Introduction

The physical infrastructure provides the connection between the end user devices such as PCs, terminals, printers and host processors, which include servers, minicomputers and gateways. These devices may be local, ie within the same building, on the same site or geographically remote.

9.1.1 Cabling

Strategy

To provide within the Plough Lane, Head Office a structured wiring system that is flexible and scaleable to meet capacity demands in terms of quantity and bandwidth.

To provide a robust and interference free cable system in manufacturing areas that can be provided within appropriate timescales.

The cabling will be cost effective to manage and maintain. It will conform to industry standards and have the capacity to transport both voice and data.

Policy

The site-wide Ethernet Local Area Network is based on Cabletron hubs containing repeaters and Ethernet switches linked together with the fibre-optic cabling. Cabling to the desktop for all new buildings will be in category 5 UTP. Existing thin Ethernet cabling will be changed over to category 5, where cost permits or where performance requirements dictate. The main computer systems are connected to a central Switch using FDDI. Connections to users are made using Ethernet via Fibre Optic Cable to each building.

For horizonal runs from floor outlet to central communication rooms up to a maximum length of 90m, use Unshielded Twisted Pair cabling conforming to category 5 or above.

For inter-building cabling within the same geographical site use FDDI grade optical fibre of at least 4 cores. All inter-building cabling connections to be diversely routed where possible.

Standards

10Base2, 10BaseT, 10Base FL, FDDI

Issues

Usage of bandwidth in areas other than the main block need to be monitored to assess the need to install category 5 cabling in order to provide switched Ethernet to the desktop.

The use of wireless communications will need to be monitored carefully as this could provide greater flexibility if cost, security and bandwidth are acceptable.

9.1.2 Local Area Networking Hardware

Strategy
To provide a secure, managed data communications infrastructure that is resilient, flexible, scaleable, transparent and has sufficient bandwidth capacity and latency to meet the existing and future needs of our business.

Policy
Our policy is to use a high speed collapsed backbone with switching technology on site using non-proprietary standards with the capability to migrate to higher speeds and technology when appropriate. The higher speed technology will be either Fast Ethernet, Gigabit Ethernet or ATM when this becomes viable for the desktop.

We will use Cabletron equipment for all of our Local Area Network hardware where possible.

Switched Ethernet will be used to connect repeated collision domains where geography and bandwidth requirements dictate. Where bandwidth requirements in a collision domain increase, the size of the domain will be decreased using more switched circuits.

The local site asynchronous network including Oceonics fibre-optic multiplexors, Micom multiplexors and Racal-Milgo line drivers will be largely phased out as the old proprietary Data General hardware is de-commissioned although some connections will need to be retained for printers and terminals in some remote locations on the Hereford site.

Management of all network devices to be SNMP compliant.

Standards
FDDI, SNMP, IEEE802.3, Ethernet II.

Issues
ATM is being much publicised as the preferred next technology leap, by-passing FDDI. Industry sentiment is that ATM vendors will not produce open standard products within the next two years.

Fast Ethernet or Gigabit Ethernet products are now available that provide high speed network connectivity. Fast Ethernet products are rapidly becoming the standard for desktop connections. Gigabit Ethernet may offer a more cost effective path to high speed hub connections than ATM.

Hub switching technology is available to provide "virtual" LANs. This now offers the possibility of improving network performance, security, management and availability and should be considered as part of future upgrade requirements.

At Plough Lane we currently provide shared 10 MBit communication to the desktop.

This is now being increased where necessary to enable the provision of a dedicated switched 10 MBit communication to the desktop via a 2.5 GBit backbone.

This will be in place by end F97.

9.1.3. Wide Area Networking

Strategy
To provide a reliable, low cost communications infrastructure that has sufficient bandwidth to run required remote applications.

Policy
For communications with our contract depots we will provide leased Kilostream circuits of 9.6 Kbits/sec. V.24 multiplexors at each end will connect servers and printers in the depots to terminal servers connected to the Hereford Local Area Network.

Communications to Symonds Cider will be provided using a high capacity Kilostream circuit connected to Newbridge multiplexors. The multiplexors interconnect Local Area Network, voice traffic, PABX networking and V.24 connections for terminals and printers.

Communications to Inchs Cider are provided using a 64Kilobit Kilostream and Tricom Voice/Data multiplexors. These are used to interconnect telephone traffic, Local Area Network and terminals/printers.

Communications to Bulmer Australia and Stassen for Electronic Mail will be via a dial-up ISDN terminal adaptor at each site.

For data communications with other outlying offices, we will use ISDN or V.34 Modems for access to the Hereford Local Area Network.

Standards
V.24, APNSS, V.34, V.120, ISDN

Issues
Switched Public Networks such as Frame Relay and ATM are currently under development - in time these could offer more cost-effective connection than dedicated circuits.

The use of the Internet as a means of wide-area access could provide cheap, high bandwidth communication, although security issues need to be addressed.

9.2 Network Protocols

Introduction
Network Protocols provide the common language by which devices connected to the

network can communicate. The Network Connectivity Software and Network Operating Systems that are employed dictate the protocols that can be used, though in certain cases a choice is available.

Strategy
To employ standard network protocols and network management protocols to avoid lock in to any one supplier and ensure maximum connectivity.

Policy
To use the de facto standard TCP/IP where possible alongside Novell's netware products based on IPX/SPX. To phase out the use of DECnet and LAT.
To employ the de facto simple network management protocol SNMP.

Standards
TCP/IP
SNMP
Novell IPX/SPX

Issues
The OSI have developed a new version of the IP protocol Ipv6 which will overcome the problems of the TCP/IP addressing scheme (see section 9.4 below). This protocol is probable 2 years away from widespread adoption.

9.3 Communication Services and Terminal Emulation

Introduction
Communication services allow devices to communicate across the LAN independently of a LAN Operating System. They are used on our network to provide connection between desktop platforms and the central minicomputers.

Terminal emulation software is required to enable desktop platforms to behave as terminals to central computers.

Strategy
To employ the minimum number of software packages to provide, transparently to the user, robust and reliable communication between our desktop platforms and our central minicomputers. This will be achieved through the use of TCP/IP at the lowest level.

Policy
TCP/IP will be used on PCs and corporate servers.

FTP will be used for file transfer between all classes of machines.
RNS for Windows will be used to provide TCP/IP on PCs running Windows 3.1.

Microsoft TCP or RNS will be used for Windows 95 PC's.

Reflections for Windows will be used for Terminal Emulation on PCs.

Field based users will use V.34 modems and the PPP dial-up protocol to communicate with the Local Area Network.

Issues

The performance of V.34 modems in the field limits the development of remote applications. Security of dial in access for roving users needs to be addressed.

9.4 Network Naming and Addressing

Introduction
The TCP/IP protocol, discussed above, requires that every device on the network has a unique identity consisting of a node name and an IP address. In order to avoid duplication of names or addresses it is essential that their allocation is managed across the complete network.

Strategy
To provide a standard naming and addressing system that enables communication to take place between all devices on the network without inhibiting communication with external bodies, in accordance with H P Bulmer standards.

Policy
Allocate IP address and node names in accordance with Company standards and record them in a central database, if possible using DHCP to automatically distribute the address to the client. Allocation is carefully managed to avoid any duplication.

Issues
The Domain Name Service, for translating device names into TCP/IP addresses, runs on a PC Internet server.

The limitations of IP addressing lead to difficulties in network configuration. The IP addressing policy should be reviewed in order to maximise security and to minimise problems.

9.5 Internet and Intranet

Introduction

The very rapid growth of the Internet, and even more recently the Intranet presents a wide range of far reaching opportunities. The Internet is currently widely used for electronic mail and for information publishing using the World Wide Web. Electronic commerce and trading using the Internet, whilst still in it's infancy is now a realistic

option.

The use of the Internet for information gathering and research using the World Wide Web, and the transfer of electronic mail is widely used within the organisation.

The Intranet is the use of Internet protocols and tools to build an internal source of information and for access to corporate systems through the Web Browser. Its benefits include easy access to multiple disparate systems, lower cost of hardware and software ownership, and simpler desktop configuration.

Strategy
To connect the HP Bulmer network to the Internet using a dedicated connection of suitable speed in order to provide the following services;

- HP Bulmer World Wide Web Server for Brands/Corporate Information
- Access to the World Wide Web
- Electronic Mail access to Groupwise users
- File transfer capabilities
- Access to Internet News

The use of the Internet to provide customers with a tailored web page giving access to statements, invoices, order placement, order tracking and pricing will be investigated and trialled if appropriate. There is an opportunity to improve customer service, and to strengthen customer partnerships. A number of organisations have already made steps in this direction.

Similarly, giving suppliers access to on-line information could improve the supply chain process.

The use of the world wide web for ordering will be investigated.

Policy
To use a firewall to prevent unauthorised access to HP Bulmer systems from the Internet. To carefully manage access to give maximum protection from external sources.

To provide facilities to report on use of the Internet for non business related activity.

Netscape Navigator browser for PC users accessing the Internet.

10. ELECTRONIC MESSAGE HANDLING

10.1 Electronic Mail & Groupware

Introduction
Groupware is the term applied to software designed to assist groups of individuals to work as a team. It is made up of various components including electronic bulletin boards, diaries, meeting scheduling and routing facilities generally built upon an electronic mail system.

Electronic Mail (E:mail) is the term applied to the software used to provide the transfer of electronic text messages with binary like attachment; these attachments can be spreadsheets, data files, programs, presentations, sound files, graphics, video, etc.

Strategy
To provide E:mail and Groupware systems to enable communications between all H.P. Bulmer computer users.

Policy
Use the Novell product 'Groupwise' for the core E:mail/Groupware application on all PCs.

Remote mobile users will use Remote Groupwise. They may connect to transfer E:mail using a modem; alternatively, by downloading/uploading their mail boxes when leaving/returning to the office, the use of a modem may not be necessary.

Any E:mail user should be able to send and receive messages via the Internet.

Issues
The key issue in any groupware implementation is one of culture rather than technology. How do you get the people to adopt the new ways of working? And how can we best address the skills gap that prohibits optimum utilisation of groupware products, particularly amongst managers?

Another issue is the impact on network traffic of widespread usage of electronic mail and attached files. Careful monitoring and planning for future network requirements is needed.

Security of E:mail messages needs to be addressed, particularly when exchanging confidential E:mail with outside agencies.

10.2 Fax

Introduction
Fax has grown rapidly as a communication medium over the last five years and is now almost universally available in the Western world. Currently we have several stand-alone Fax devices in the Post Room for central receipt and delivery of faxes. Some departments have their own stand-alone Fax machine connected as an extension to the telephone switch.

Strategy
To provide access to Fax from the desktop, but to retain stand-alone Faxes where required to send Faxes not originating from a computer system.

To provide incoming Fax to the desktop using a unique DDI telephone number for each user.

Policy
Rightfax for desktop Fax transmission and receipt.
Stand-alone Fax machines where required.

Issues
Group IV Fax using ISDN lines is now available, but not yet widely implemented.

10.3 Electronic Commerce

Introduction
Electronic Commerce comprises any commercial activity conducted by the company via electronic means.

This includes :-

i) e-mail
ii) EDI
iii) sharing information with trading partners eg EPOS data
iv) inter-enterprise databases
v) Internet activity

These electronic commerce activities improve the flow of information both between & within organisations. It is the leverage of this improved information flow to better enable the business operation which can give a company a competitive edge.

EDI is currently the principle business activity undertaken electronically and is defined as the exchange of structured data electronically directly between computer systems. EDI is already widely used in the market place in which HP Bulmer operates and the rate of growth in the number of trading partners and message types exchanged has seen a steady increase in recent years.

HP Bulmer are currently trading via EDI with 18 customers via a combination of message types including orders, invoices, credit notes, production plans & price files.

Strategy
To be in a position to identify & take advantage of the opportunities provided in the rapidly changing elctronic commerce arena.
This requires keeping abreast of technology & trading developments especially those presented by the Internet, having the knowledge and infrastructure in place to seek out and exploit these opportunities as well as proactively pursuing the traditional EDI

route in the immediate future.

This will involve the following :

i) Expansion of EDI with customers preserving & developing strategic partnerships

ii) Development of EDI through HP Bulmer supply chain leading to reduced stock holding levels & shorter order lead times

iii) EDI developments integrated with corporate applications

iv) On-going review of business practices within HPB and with our trading partners in the light of electronic commerce developments.

v) Ensuring that HPB has the infrastructure in place to take advantage of technical developments to grow the business.

Policy

EDI trading will initially continue using the TRADACOMS standards, primarily via the TRADANET network and for the immediate future using the Intercept Plus software.
The plan in F98 is to upgrade to a UNIX based EDI enabling package which will assist in the integration of EDI with the corporate systems.
As and when EDI via the Internet becomes a more viable and widely used option from both the security and resilience aspects HPB will seek to take advantage of it.

Standards

For EDI current message standards are to the ANA TRADACOMS standards, for the future the UN EDIFACT standards will be considered in anticipation of possible international trading developments.

Issues

The speed of developments in the electronic commerce arena, technology is currently racing ahead of business ability to understand and take advantage of the opportunities.

It is critical that we develop the business appreciation and vision of how improved information flow provided by electronic commerce can be exploited to improve the business operation both in trading partnerships and internally.

Recognition of the increased significance of data integrity for succesful EDI, and the need for consistency of data between HPB and trading partners systems along with procedures for its on-going maintenance.

11. VOICE COMMUNICATION

11.1 Telephone Systems

Introduction
The H.P. Bulmer telephone systems provides a telephone on each desk and in all necessary locations for internal and external conversations. These are connected to Private Branch Exchanges (PBX), in Hereford, Symonds, Inchs, Edinburgh, Belgium and Australia.

Strategy
To provide a reliable, comprehensive telephone service with equipment and networks provided by strategic suppliers.

Policy
To provide seamless voice communication between Hereford and Symonds with all incoming calls answered by operators at Hereford.

To use good quality but inexpensive analogue handsets wherever possible, but have the facility to enable connection of advanced featured analogue or digital handsets.

To provide Direct Dial In facilities with integrated voicemail for any member of staff with their own telephone.

To continue to use the ISDX corporate telephone switch installed in Hereford, upgrading the software/hardware and features as necessary.

To utilize trunk lines from more than one major national telecomms provider to give the most reliable and resilient service at the most economical cost. To use digital circuits to give improved quality where possible.

Issues
Developments in switch technology and, in particular, the integration of voice and data in one seamless network will see major changes in the next two years.

The switch at Symonds is currently rented at a high cost on a long term contract; this contract expires in 1999 and at this time voice communications with Symonds will need to be reviewed.

The liberalisation of the UK telecomms market has led to a plethora of providers offering reduced cost telephone calls. We will continually need to monitor these prices in comparison with BT and Mercury and consider changing our provider if service levels are comparable.

The Inch's telephone system is an outdated analogue model. This prevents full integration with the Hereford telephone system, and it's early replacement needs to be considered.

On site telephone cable is on the whole undocumented and has capacity problems, particularly around the factory. This leads to increased time and cost for modifications and additional requirements. There is also a legal requirement to keep up to date documentation of telephone cabling. A review of installed cable, and where necessary it's expansion needs urgent consideration.

11.2 On-Site Communications

On-site Communications is concerned with voice communications between people based anywhere on the site in Hereford and Stoke Lacy, but in particular where one or more of the communicators are mobile on the site. These communications are achieved by the use of the following technologies:

- On-site Paging System (Bleep)
- Mobile Phones
- Private Mobile Radio
- Public Address System (Tannoy)
- Voice Messaging

The choice of technology used is dictated by the average amount of time a person is away from their normal place of work, i.e. not contactable on the site-wide telephone system.

Strategy

To move towards the use of a single device for people who are away from a telephone, that they can be contacted on for more than 20% of the time. This device will probably be a hand-portable mobile phone, communicating using a micro-cellular system whilst in and around the Hereford or Stoke Lacy sites, but which will be capable of use on the public digital cellular networks when away from the site.

This will replace the on-site Paging System, Analogue Mobile Phones and Private Mobile Radio currently in use. The Public address system will continue to be used for emergencies and for calling people not equipped with the hand-portable mobile phones and the Voice Messaging System will continue to be used by all telephone users for the existing message-recording service.

Policy

The Public Address System is to be audible in all areas of the Hereford site.

Use mobile phones for short message communications for some roving staff.

Use Private Mobile Radio where long conversations need to take place with staff in inaccessible locations, such as working on manufacturing plant.

Issues
Advances are being made all the time and costs are decreasing in the micro-cellular market and it is expected that this will become economically viable technology within three years.

11.3 Mobile Telephones

Introduction
Over the last two to three years, the use of mobile phones has become widespread within H.P. Bulmer. Current mobile telephones which operate over cellular radio networks can be used in most parts of the U.K. to call other mobile phones and fixed phones on the international Public Service Telephone Network (PSTN).

Strategy
To use one airtime supplier for all mobile telephones to maximise cost benefit and contract conditions where possible.

To migrate to the digital telephones connecting to the Orange network and conforming to the PCN standard for UK based staff. To use GSM for internationally based staff or staff spending a large amount of time abroad until PCN is widely available in other countries.

Policy
Mobile phones are a commodity item and will be purchased through the Purchasing Department from Orange for PCN, or a Motorola Airtime dealer for GSM.

To use private circuits to Cellnet to reduce the cost of mobile calls to/from Hereford over the Cellnet network whilst cost effective to do so.

Change all Vodaphones and non-Motorola Cellnet contracts to Orange as soon as possible, but in agreement with the user.

All mobile phone invoices to be recorded for the purpose of cost monitoring before being forwarded to the user for payment. To have one invoice for all Orange phones.

Standards
ETACS, GSM, PCN.

Issues
Security of the analogue network is very weak, with cheap, readily available scanners able to listen in on any conversation. GSM digital network access only available in European and Far East countries - USA has own standard.

12. INFORMATION SECURITY

Introduction

The purpose of information security is to ensure business continuity and minimise business damage by preventing and minimising the impact of security incidents. Information security management enables information to be shared, while ensuring the protection of information and computing assets. Security requirements are drawn from three sources:-

> The set of risks, threats, and vulnerabilities unique to the technology environment at HPB.
>
> The unique set of principles and objectives for information processing developed by HPB in support of its business processes.
>
> The set of statutory and contractual requirements prevailing at HPB in its organisation, and in its trading relationships with customers, suppliers, and other third parties.

It is important that security policy supports these requirements but it is vital that the implementation, or absence, of security controls in the IT infrastructure does not impede efficient business operations.

In principle information security policy at HPB is aimed at providing maximum protection in those areas of greatest risks, while balancing cost and bureaucracy in relation to the degree of risk.

The IT information security policy and controls are based on the British Standard Code of Practice BS7799 taking into account the key controls for smaller organisations as identified in PD007, the guide document to BS7799. These key controls are as follows:

- information security policy document
- allocation of information security responsibilities
- information security education and training
- reporting of security incidents
- virus controls
- business continuity planning process
- control of proprietary software copying
- safeguarding of organisational records
- data protection
- compliance with security policy

12.1. Security Responsibilities

The security of an individual information system is the ultimate responsibility of the owner of that system, normally a senior business manager or director, although owners of information systems may delegate their authority to individual user managers but must ensure that delegates are aware of the role and extent of these responsibilities.

The security of the corporate-wide shared information and assets (servers, networks, databases, software) is the responsibility of the IT function.

12.2. Security Policies

12.2.1 Access Control

It is essential both from commercial and legal standpoints that the network, and the data on it, are protected from improper use. The first, and most important, protection is provided by access control.

Strategy
To establish a security system that limits access to any part of the network to authorised users whilst minimising the overhead in the use and maintenance of the system.

Policy
Access to systems is controlled by a username and password assigned to an individual. Authorisation for access is obtained via a New User Authorisation form (NUAF), which needs to be signed by the senior line manager, the System Owner, and two IT Managers.

Issues
There is a need to resolve the issue of more than one user accessing the same account (ie using the same log-on).

There is a need for an exit procedure when staff leave the company.

12.2.2 Data Backup & Recovery

The reliability of any component of the computer network will never be 100%, and, in failing, data may become corrupted or access to it may be lost. Consequently it is essential that the necessary procedures are in place to minimise the impact of any data loss or corruption and to ensure all systems operate correctly after the failure is rectified.

Strategy
To provide robust and reliable backup and recovery procedures for data stored anywhere on the computer network, whilst minimising any restrictions to access to the network.

Policy
Our policy for centrally-held computer data is to back up to Digital Tape drives. This involves the replacement of magnetic tape drives used previously. For our corporate UNIX applications, a nightly backup will also be taken to the Data Warehouse box, to act as a 'hot' standby.

For corporate data stored on PC servers, our policy is to back up to DLT where available but otherwise to robust DAT tape drives.

For desktop PCs, our policy is to recommend that critical data is stored on the PC servers, and for data held on local hard disks (normally laptops) we offer a backup service which users can book - this requires the laptop to be left with the IT Help Desk for approximately an hour.

Issues

Storage and retrieval from DAT drives is slow and so is speeded up by use of data compression in conjunction with use of a number of DATs in parallel.

The rate of growth in size of the company data means there is a constant quest for higher capacity and faster storage media.

The need to stop access to carry out data back up conflicts with the need to provide access to information at all times. Consequently we need to develop procedures to allow for on-line data backups. RAID architecture on our UNIX machines offers data mirroring and fault tolerance. This technology reduces the frequency at which data backups are required and consequently reduces the associated costs.

Optical Discs offer high capacity storage albeit at lower performance and so provide a cost effective media for data that is not being changed.

The involvement of users in the backup of data held on PC s on the desktop undoubtedly increases the risk of backups not being carried out. Centralised backups for the critical SCADA system need to be introduced as soon as possible, as the system develops.

12.2.3 Virus Protection

A virus is a PC software program that causes detrimental effects to programs and/or data, ranging from simple annoyance to outright destruction or corruption. A virus attaches to a software program, example 1-2-3, and exhibits its symptoms on execution of that hitherto normal program. However, the virus may attach to any other program executed on the infected PC and from the PC to a network PC file server and subsequently to all PCs on the network. Viruses are usually disseminated on floppy disk, especially those sourced from shareware and games suppliers, and higher education establishments, but there is a potentially greater risk looming with the advent of access to the Internet.

Strategy

To implement controls to prevent viruses being introduced onto HPB PCs and networks, and to detect any viruses that may bypass these security controls.

Policy

Prevention Unauthorised software is forbidden to be introduced onto PCs - this is supported by a specific clause within the standard HPB contract of employment and attendant disciplinary procedures.

Detection Third party proprietary software (currently Intel Lan Desk Virus Protect) is used to detect viruses by identifying known virus patterns in software programs during periodic 'sweeps' of PCs during log on to the PC network. In addition, the virus pattern file is transferred to the end user PC from the network thereby affording protection to PCs between the 'sweeps'. This is especially important in protecting laptop PCs whilst they are away from the office network. Regular updates of virus patterns are obtained from the third party software supplier.

12.2.4 External Access to HPB Network

Although third party access is not a key control defined in the PD007 guide to BS7799 it warrants attention within the HPB IT environment because of the number and frequency of third party service providers who dial into the HPB network, the significant number (circa 50) field based laptop users who also dial into the office network at Hereford, and the existence of a world wide web page on the Hereford network.

Strategy
To provide facilities that ease the access to the HPB network for external users but which provide verification and/or audit of the external access.

Policy
A 'firewall' software package insulates the HPB web server from the rest of the HPB network.

Field based employees with laptops will use 'Landial' which validates access to the HPB network by dialling back to the registered users.

Third party service providers will by preference dial in via the Internet firewall which will verify the source computer identity (IP address), or alternatively if the supplier does not have Internet access they will use Landial.

Issues
Although access to the HPB network by field based laptop PCs is controlled, the access controls to the field based laptops themselves are somewhat limited. These laptops contain sensitive business information related to the Profit Management System.

12.2.5 Business Continuity Planning

Business continuity planning involves identifying and reducing the risks from deliberate or accidental threats to vital services and facilities. The planning process includes the following:
- Identification and prioritisation of critical business processes.

- Identification of the potential impact of various types of disaster on business activities.
- Identification and agreement of all responsibilities and emergency arrangements.
- Documentation of processes and procedures
- Education of staff in the execution of emergency procedures.
- Testing and updating of the plans.

The planning process should focus primarily on keeping critical business processes running, including staffing and other non-computing requirements, not merely on the fallback arrangements for computer services.

Strategy
To facilitate fallback arrangements for computer services in order to service the overall business continuity requirements of the HPB Crisis Management Group (primarily the Group Executive).

Policy
There are two policies that provide contingency computing facilities in the event of a disaster; the first policy relates to the use of dual computer rooms; the second policy relates to the use of third party computing facilities.

a) Dual Computer Rooms
The computing facilities that run key business applications are located in two separate computer rooms so that if the primary room is destroyed the secondary room can provide a fall back service of approximately 50% processing capacity. All Oracle applications software and data are copied to the facilities in the secondary computer room on a daily basis and this will therefore provide a rapid recovery from a disaster in the primary room. All tapes are held in a store that is located away from both computer rooms. In the event of a disaster in the primary computer room some of the procedures in the Crisis Contingency Plan (see next paragraph) will be invoked in order to reinstate the disaster site to an operational condition.

b)Third Party Facilities
The Distribution Management System (DMS) is such an important application that a company wide plan is in place to recover from the loss of the primary computer facilities. The plan provides for several multi-disciplinary teams to work together to initiate emergency procedures that will deliver contingency computing facilities in the very short term, and to reinstate the disaster site to its original function in the medium to long term. There is no computer hardware in the secondary room that will run DMS, so the plan includes the steps needed to call off and install replacement equipment under an agreement with third party suppliers (Digital). This policy will be extended to cover a newly installed Digital Unix server until such time that a second such server is installed in the dual computer room scenario.

Issues
Policies for disaster contingeny for corporate business applications on PC file servers (including SCADA and office automation applications) are currently being finalised.

12.2.6 Copyright Software

Unauthorised copying of licenced software is an illegal act and is liable to unlimited fines or imprisonment.

Strategy

To ensure that all software in the company complies with copyright law.

Policy

Prevention As with virus protection the copying of licenced software by employees is forbidden - again, this is supported by a specific clause within the standard HPB contract of employment and attendant disciplinary procedures.

Compliance Proprietary software is used (Intel Landesk) to carry out random checks of user PCs to ensure that all software is properly licenced.

12.2.9 Data Protection Act

It is the responsibility of the Group Secretarial function to obtain and maintain appropriate registrations under the Data Protection Act. The registrations are held by Group Secretarial Department.

Group Secretarial Department will keep the Group's commercial activities under review to ensure appropriate registrations are obtained in a timely fashion when appropriate.

12.3. Incident Reporting

Security incidents should be reported through management channels as quickly as possible. Breaches of security are not limited to the obvious incidents such as disasters, hacking, and viruses.

Strategy
To provide a central point for the reporting and resolution of security incidents.

Policy
All security incidents will be reported to the IT Helpdesk without delay. The IT Helpdesk will route the incident to appropriate staff within IT and the business and will ensure that a successful resolution to the incident is provided. Examples of security incident are:

- software malfunction
- corruption or loss of business information
- malfunction of computer hardware
- viruses
- suspicion of security weaknesses

12.4. Compliance

Strategy
To ensure that the information security policy is adequate and is being enforced.

Policy
To undertake annual reviews, possibly with the assistance of third party service providers. The review will include a re-assessment of areas of risk as well as an investigation of the level of compliance with the information security policy. The costs of the reviews will be built into annual revenue budgets.

12.5. General Issues

12.5.1 Education
The policy does not include a statement regarding responsibilities and procedures relating to the education of staff in the information security policy.

13. SYSTEMS MANAGEMENT

Introduction
Systems Management covers all factors associated with ensuring an effective service is provided by all areas of the network.
Certain specific areas are covered by sub sections below.

Strategy
To employ suitable tools and procedures to optimise the service levels available from all areas of the network.

13.1 Performance and Resource Management

Introduction
It is essential that the performance of the network is monitored carefully both to detect any problems and to gather information about the levels of use.

The latter information, together with a clear understanding of planned new developments can then be used to plan the level of resources required for the future.

Strategy
To monitor the performance of all aspects of the network to ensure effective operation and to gauge the level of use.
To combine the usage data together with a knowledge of planned developments to plan resource requirements over the next five years.

Policy
The policy for provision of corporate server resource is to provide slight over-resourcing to avoid performance bottlenecks, and to reduce the level of capacity planing needed within systems development. The policy on performance monitoring software tools is to employ the best of breed for each platform.

Issues
There is a need to complete the implementation of the Oracle monitoring tool BMC Patrol to provide more proactive database monitoring.

13.2 Desktop Management

Introduction
Desktop Management covers aspects relating to bringing the desktop PCs into a managed environment such as that enjoyed by our central computing systems. Primarily this involvers PC configurations and software installations.

This is a critical area from the point of view of managing our support costs. As mentioned above, a recent Gartner Group report estimated a difference in five year cost of ownership of over £10,000 per PC, between a well managed and a badly managed PC environment.

Strategy

To provide a consistent and managed PC desktop environment that will :

- Minimise problems
- Reduce support costs
- Enable software version control
- Facilitate transparent and easy access to data wherever it resides

Policy

Only fully tested and approved software configurations to be installed in operational environments.

Issues

Management tools are required to provide electronic software distribution and software version control. A remote diagnostics tool for PCs is also required to enable more effective response to problem resolution.

14. IT TRAINING

Introduction

Desktop technology is now a fundamental part of the business, used by senior management to shop floor workers. The introduction of Windows-based software has increased functionality and provided a platform to increase user productivity. However, it has also increased the I.T. skills gap across the company.

Strategy

To review individuals' I.T. skill levels and provide the appropriate training/monitoring to ensure users optimise all software available to them in line with job requirements.

Policy

To provide -

- all users with formal training in the basics of the new Windows packages;
- to run workshops in specific topics and aspects of PC software to advance skill levels;
- to provide support on the desktop via computer-based training;
- to monitor by individual or department, methods/procedures for use of PC software;
- to provide assistance and advice to the Learning Centre and encourage users to make use of all facilities provided;

Issues

There is still a reluctance by managers to allow time for training for both themselves and staff. Lack of training results in ineffective use of software, thereby reducing some of the potential productivity gains achievable with Windows-based software. Lack of training will also cause increased workload in the I.T. Support areas.

The I.T. skills gap within the company has narrowed in recent years, but is still a concern. Firstly we must assess individuals' needs. The best approach would be to include IT skills as a core competency in the annual appraisal system, building and maintaining a matrix of skill levels. There are software packages available which record and provide ongoing training plans in line with job requirements.

15. STRATEGIC SUPPLIERS/MANUFACTURERS

Introduction

Virtually all areas of Information Technology are developing incredibly quickly with the result that new products, often from small suppliers, appear on the market with features well ahead of the competition. However, it is quite normal for the larger, more well-established competition to rapidly catch up the early lead, resulting in small suppliers being unable to compete in the medium to long term. It is therefore important that the selection of supplier for our technology is assessed equally, if not more so, than the current feature list of the product itself.

Strategy

Suppliers of IT products should be assessed for their ability to be long term players in the market place and their capability and vision to develop the product in line with our strategy.

Policy

IT products from small suppliers should only be adopted for general use if it is believed that their functionality provides significant business benefit and will not be available from a strategic supplier in an acceptable timeframe. Our current list of strategic suppliers/manufacturers includes:

Server Hardware & Operating Systems:
- Data General
- Digital

PCs/Portables and peripherals:
- Compaq
- Toshiba
- Hewlett-Packard

Application Software, Relational Database & Multi-dimensional Database
- Oracle (including OLAP Division)

PC & Network Software & Operating Systems:
- Microsoft
- Lotus (IBM),
- Novell

Telecomms & Telephony
- BT
- Mercury
- Cellnet
- Orange

Network Hardware
- Cabletron
- Tricom

Issues

By choosing strategic suppliers, wherever possible, there is a danger of "lock in" to that supplier developing with consequential reduction in the ability to negotiate advantageous

commercial terms.

Many advances in IT now come from small companies which cannot be considered as strategic suppliers. In order to build up an understanding of these new technologies it is useful to carry out pilot studies. The expectations of participants in these pilots must be managed very carefully.

16. OUTSOURCING

Introduction

The outsourcing (or facilities management) industry is maturing rapidly, with suppliers offering wider and more varied approaches and customers becoming more discerning as lessons learnt in recent years sharpen their appreciation of key issues. A recently published study[1] draws five conclusions from the experience of recent years:

- The outsourcing of IT should not be the result of exasperation with current performance or a desire to get rid of a problem. This is likely to lead to unsuccessful outsourcing, because an organisation which cannot successfully perform its own IT is unlikely to be able to specify and organise the outsourcing of it.
- Organisations should be very careful not to outsource those aspects of IT which are strategic to their business or which differentiate them from the competition.
- 100% outsourcing of an organisation's IT is likely to be problematic, particularly in the long-term.
- Companies should put their own house in order prior to outsourcing. Many organisations outsource elements of their IT which are less than efficient and the price is agreed on that basis.
- Even after correct outsourcing decisions have been made, the client company must not assume they can wash their hands of any further involvement. One important key to success is for the client to manage the vendor and evaluate performance on an on-going basis.

Strategy

To outsource IT activity as appropriate to ensure the optimum cost-effective management of IT services and systems at HP Bulmer.

Policy

a) **Systems Development**

Use HP Bulmer employees to manage key systems projects whenever possible.
Complement Bulmer analyst programmer staff with suitably skilled contract staff in major projects.
Ensure cross-training of Bulmer staff to cover contractor turnover.
If in-house resources do not allow completion of projects within required timescales, due consideration will be given to outsourcing entire systems projects.

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1 These conclusions are based on a survey carried out by Guy Fitzgerald, Professor of Information Systems, Birbeck College, and Leslie Wilcocks of Templeton College, Oxford, and published by Business Intelligence ('The Outsourcing of IT: Revenge of the business manager, or legitimate strategic option?' - 1994). The survey was based on a questionnaire completed by 162 managers/directors, plus 25 detailed interviews. 81% of the respondents were in the UK, the remainder from other European countries.

b) **Applications Maintenance**
Outsource package maintenance to package suppliers (AT&T, Oracle, Peterborough Software, Softa, IRI).
Retain a multi-skilled cross-functional team in-house to support and maintain bespoke applications. Opportunities for outsourcing the maintenance of bespoke applications will be kept under review.

c) **Computer Operations and Hardware Management**
Use outside maintenance contracts for minicomputer maintenance.
Complete rationalisation of hardware infrastructure in line with Strategic Plan, and continue to drive cost out of Operations area.

d) **HelpDesk and PC Support Services**
Retain localised Help Desk Service. Use specialised contract labour as required for specialist support on Lotus, but build up spreadsheet expertise across the IT support functions over time.
Use outside maintenance contracts for PC hardware support.
Build up in-house training and workshop capability.

e) **Networking and Telecommunications**
Retain core skills in-house for strategic planning and management.
Use contract staff for project implementation (Mercury, WestCom, TriCom)

f) **Database Administration**
Retain these skills in-house for Oracle systems. These are essential for the operational management of our key corporate systems. Use contract staff as required for extra, project-related, DBA work.

Issues
Outsourcing is a sensitive issue and must be treated discreetly.
Initial views from two major suppliers in early 1995 suggest that there is no clear case for outsourcing any further elements of IT at HP Bulmer at present. However, HP Bulmer policy and options will be reviewed periodically.

17. YEAR 2000

Introduction

The change of century on 1st January 2000 poses a significant problem for computer systems that were designed to process dates stored in a six digit format (DDMMYY). These problems will be most evident in systems that undertake date comparison processing, as for example effective price agreement dates in sales order processing and invoicing, and where reversing the date into YYMMDD format is used to sort information in date sequence. This 'millennium date' issue is in the main concentrated in systems that were developed over a decade ago, when third generation languages (3GLs) like COBOL and their associated file management systems were prevalent and moreover the new millennium seemed far enough away to exclude it from design considerations.

More recent development technologies have enjoyed 8 digit date formats as a default and are far less likely to suffer from the change of century. At H P Bulmer we are fortunate in that the bulk of our core systems have been replaced over the last 5 years using modern technologies (Oracle) and development methods. Even so, it would be foolish to make the assumption that all of our Oracle developments will escape the net when the year 2000 arrives.

Strategy

Provide year 2000 compliance in all of our core systems , but avoid any costly changes to those systems that are planned to be replaced within the next two years.

Ensure suppliers of our major packages commit to year 2000 compliance in the same timescale.

Provide sufficient funding and resource to ensure that year 2000 compliance is achieved within a two year horizon ie. by December 1998

Any new systems implemented from now on will be tested for year 2000 compliance.

Alert end users to check systems developed and maintained by themselves (spread sheet, word processing, PC databases etc.)

Policy

a) Packaged Software

Distribution Management System (DMS)	This is a COBOL package that services our sales order processing, warehouse management and despatch operations. A draft contract has been agreed with the software vendor (Weir Systems) to complete changes by September 1997 at the latest.
Oracle Manufacturing and Financials	Oracle have committed to year 2000 compliance in the next release of the application (10.6) which is planned to be implemented in Spring 1997.

Manugistics Production Scheduling	Discussion is yet to take place with the vendor.
Acumen Sales Forecasting	This package is planned for replacement in 1997/98.
PS2000 Payroll/Personnel	This package is planned for replacement in 1997/98.
Trader Export Documentation	Discussion is yet to take place with the software vendor.

b) Bespoke Software

An initial audit was carried out in September 1996 and areas of the bespoke software need to be investigated more thoroughly in order to assess the size of the task. This will result in a detailed plan of change that will span the two years up to the end of 1998. The plan will focus on any critical operational systems as a priority and in order to minimise disruption of the business will spread the user acceptance testing of the changes over the two year period.

Issues

It is important that investigation and testing of year 2000 functionality is undertaken in a coordinated and controlled fashion within the remit of a project group. End users need to be aware of the testing plan and their part in it and be advised not to try out year 2000 compliance on live systems in an adhoc and experimental fashion.

Just as our customers are coming to us with queries about our policy for the year 2000 it is key that we commence the process of asking our own suppliers about their position on this issue, most particularly those suppliers that service our supply chain.

18. BULMER INTERNATIONAL

Introduction

Increased significance of the expanding international operation and the associated need for good communications links necessitates the development of an IT Strategy incorporating Bulmer International.
The international operation includes HPB Export (Hereford), the subsidiaries of BAL and Stassen as well as the internationally based sales force.

Strategy

The strategy is to ensure Bulmer International systems and technical infrastructure are appropriate to local requirements and product availability and yet are in line with corporate standards for products and services.

Consultation and joint forward planning of investment programmes is essential to ensure the optimum evolution of policy issues and that mutual benefit can be gained from experience to date.

Policy

Systems replacements should be considered within the HPB IT strategy with the use of Oracle Applications being encouraged wherever appropriate.
Common areas of new developments (eg scanning) should be reviewed and common solutions implemented across the group.

HPB IT will provide support and guidance to BAL and Stassen on any issues as required and will proactively promote regular dialogue in order to further develop the working relationships. The exchange of IT personnel across the group will be considered as and when appropriate on technical and systems implementations.

The international saleforce should be provided with PCs suitably configured with modems and printers plus the appropriate software to support their roles as well as providing them with the communications links with HPB Hereford.

Communications links will be provided across the group with e-mail functionality between HPB UK, Stassen, BAL and the international salesforce.
Additionally full video-conferencing functionality between the three main international sites is planned for F98.

Standards

Groupwise is the HPB corporate e-mail package. The use of Microsoft wordprocessing, graphics and spreadsheet packages in conjunction with GroupWise will be supported locally at Stassen and BAL.

The major corporate applications are based on the Oracle RDBMS running under Unix with use of the Oracle Applications packages where appropriate .

Document Reference: G:\Infotech\share\reports\itstf972.wpd