UNIVERSITY OF GLOUCESTERSHIRE

ORACLE BEVERAGES SHOWCASE
THE BUSINESS BENEFITS OF AN OPEN SYSTEM STRATEGY

THE BULMER EXPERIENCE

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1. Introduction

I would like, first of all, to talk through the agenda; first of all a look at Bulmers the company to put you in the picture as regards what we do.

Then, looking at the IT inheritance we had in the early 90's from a period of serious under investment in the 80's - the sort of problems we've had there will be very well known to most of you. Then, looking at what we did to try and manage those problems, the piecing together of new IT and IS strategies in the early 90's, and then the other sections, looking how we've implemented the strategy. Open systems have been very much key to that implementation. So, first of all, looking at the migration of ORACLE from proprietary to UNIX environments, and at the same time a quick look at some of the bespoke developments we've put into place on our Open systems platform. And then, more recently, the creation of a data warehouse, for management information, which is being used as the data repository for systems like Profit Management.

2. Company Profile

Bulmers headquarters is in Hereford, UK, largely undiscovered by tourists, but a lovely county. The turnover last year was £252M; so a medium, small to medium sized company; last year, pre-tax profit was £19.6M pounds and employees numbered about 1200; 500 approximately are computer users, of which 400 have PCs; all of the computer access is via a network - one large logical network for desktop PCs. Looking at the success of the company over the past 5 years: whilst most sectors of the drinks industry have in fact

struggled or declined, ciders have been buoyant. The cider market has grown, since 1988, from 65 million gallons to a record 88 million gallons last year, partly because of the large amount of marketing spend that Bulmers and, indeed, other cider manufacturers, have put into cider advertising; on the back of that, we've managed to grow our pre-tax profit consistently over that period , and half year results this year were £12M pre-tax profit, so I think we will be on track again to continue that upward trend.

Our products are probably fairly well known to you, at leat I hope they are. Strongbow is the world market leading cider, and is found in a large number of outlets across the UK. You may also, be aware of Woodpecker, again unrivalled as a fine leading brand. Just to mention Scrumpy Jack, which is coming up fast as another premium sector drink. So it's mainly ciders, but we also distribute beers and soft drinks, San Miguel, Dab, Red Stripe, Amstel, Buxton, Orangina. So these we distribute - but our core business is cider making.

The supply chain is fairly simple; our main raw materials are applies, cider applies; they come largely from Hereford. 60% of our supply is produced locally, of which half are from our own orchards in Hereford. There's a primary process, cider production, which is now the subject of a major development project. Packaging components come in - bottles, labels, cans - internal packing of the bulk of it, though we do go out to contract packing and then come back into the packaging hall, through to the warehouse and then distribution - - some direct trunk deliveries to our customers, some into our depots. We have four of our own depots and four others that we hire. Payment of duty at the gate has been of interest to the brewers because the cider industry has for many years paid duty when the product leaves the warehouse, whereas the beer brewers have normally paid it somewhat earlier when they have made the beer. So our system, the distribution management system, which has been geared to manage payment of duty at the gate, has been of some interest to brewers. When we do get returned stock it goes into a special duty paid area, and if we have to decant it again it'll go back into duty paid and then duty will be reclaimed; so a fairly straightforward supply chain in Hereford.

I should mention though that we have a company doing very well in Australia; we have our

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own production facility in Australia producing Strongbow White. We also last year bought the leading cider manufacturer in Belgium, Stassen, and some of their products we're now importing into this country and you'll find those available. Fruit flavoured ciders - blood-orange cider, peach flavoured cider - you'll find those in most of the major multiples now. So the international side is, I think, one that we will be growing and will be the focus of increased resource in the future.

3. The Eighties Inheritance

Right, so that's the company, now back to IT: the sort of picture we inherited, I think will be familiar to many of you. But I'd like to sketch that out, look at what we've done about it and then come back and try and review how we have moved forward on these different elements.

I became Systems Development Manager in January 1990. Our systems were non-documented. One of the first things I tried to do was to get my project managers to document just what systems we had and particularly the interfaces between them and this is a quick sketch of the sort of thing they came up with. Very few systems in inventory management or production - that was almost non-computerised apart from a few PC systems that the engineers brought in - typical of the engineers, they normally bring these in themselves if no one else has. A key issue which will be seen running through this is data maintenance - the number of separate customer and product maintenance screens within these systems. In sales order processing we had a manual input of basic customer data and basic product data, similarly in invoicing, similarly in stock accounting and credit management, in post sales analysis, sales reporting and pre-sales forecasting. Production planning was a spreadsheet, with again product being maintained there, and in the raw materials side similarly. So multiple maintenance of key corporate entities was a problem. That, of course, meant not only that values might be different but also that the basic concepts - and indeed what were then essentially hierarchies and groupings of customer and groupings of product, into brand or customer group or trade sector - tended to be different. These systems had evolved in isolation through the 1970's and 80's with particular concern for the functional requirements of different departments, but very little concern for overall global IT

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information management.

The software products tended to be disparate - a lot was in Cobol, some of those were developed in an old 4GL called STYLE, that sprang up in the early 80's and disappeared in the late 80's and is now difficult to support effectively. We had CQCS and many other products and no clear relational database strategy at all. Hardware was proprietary, it was Data General proprietary, but the plan was to replace all DG proprietary systems by 1994/5. We've slipped about a year on that. In another eighteen months, when the few remaining key systems are off the two remaining DG mini computers, we will have got rid of the old proprietary environment.

This constituted a fairly lethal, if not particularly uncommon, cocktail - of different IT problems and issues and one that, unless you do something very radical - for example outsourcing the entire current IT infrastructures and starting afresh, which I know some companies have tried - unless you do that (which we didn't, we tried to work piece by piece, bit by bit, iteratively), you don't get out of that mess quickly, and it really has taken us 5 or 6 years to now start to see the light at the end of the tunnel. So hardware: proprietary; software systems:- disparate and non-documented; business practices: complex convoluted and non-rationalised. I think we've made some impact on this last issue - not enough - and that's something we need to improve for the future. Data: multi-various files of our core corporate entities, varying hierarchies and poor quality; and an exaggerated overhead with five or six different departments maintaining those basic entities. Not surprisingly, management information, where it existed, tended to be contradictory. IT staff were inadequately skilled. The sort of skills they have now - on desktops, on networking, on UNIX, in ORACLE and, more recently, in data and business analysis - were largely non-existent. We had about twenty staff in 1988, we've now got about forty-five, so we have increased our staff considerably, plus we have about another ten contractors on top of that. Management awareness was pretty limited, which has been a problem - and still is to some extent, although this has, and is, improving rapidly.

4   The new IT and IS Strategies 1990-91

So that was the inheritance. I can move on to what we tried to do about it. Clearly we needed new IT and IS strategies; IT, being the technical side on hardware, software, communications. IS is more on the application side, the systems side. The two are clearly overlapping, with various strands within in each, and forward planning has to somehow try and mesh them all together in a coherent plan. The first one we addressed was IT strategy and then IS strategy shortly after that in the early 90's. If I can just get back to the problems of customer and product maintenance around, in particular, invoicing. The first major bespoke project, called OASIS (Order and Sales Invoicing System) started in late 1989 and should finish this year. So it's taken four or five years, it's been a £3M project in all - a lot of that is staffing costs, very little is hardware and software costs. Initially, it was to replace the invoicing system, which has just celebrated its twenty-first birthday this year. The invoicing system is restricted by all sorts of archaic and obsolete relationships, particularly as regards product and customer data. Trying to introduce what now is required, which is a very flexible view of customer, is fraught with problems. If you're trying to jam changes in customer relationships into a very strict hierarchy, it makes a mockery of the system. On the OASIS project we soon realised we were grappling with not just replacing an invoicing system, but with addressing a whole range of issues around creating centralised corporate customer and product maintenance systems, and that has really been one of the main achievements of that project. Apart from customer files in other systems and product files in other more remote systems, invoicing, once it receives the appropriate file from distribution, has to go away and check the price system, check the promotion system and check a thing we call royalties - post invoice discounts. Each one of those systems had their own product and customer maintenance as well, and of course surrounding that you had departmental issues, business issues, forms, procedures - a very complex web of business practices to try and unravel. And this project - OASIS - has not succeeded totally in doing that, but it's certainly moved us forward a considerable way.

Because of the complexity of business practices, we couldn't find a package suitable to

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enable us to just get a package in for that, and so it was the OASIS project which was the catalyst for selecting a corporate relational database and a set of development tools.

In June 1990, we chose ORACLE, which since then has been adopted as our corporate database. We had ORACLE in the company from the mid-1980's. An end user - the marketing services manager - had brought the product in as a repository for the Stats MR data on outlets, so we had some experience of ORACLE. We looked at other options, we looked at RDB, and SYBASE briefly. So in June 1990, ORACLE and ORACLE tools were chosen for bespoke developments. In fact in 1987, Coopers & Lybrand had come into the company. One key recommendation was to move from proprietary DG, to proprietary VAX and get new packages in all main core business areas. By 1990, we had started that process and we had got one major package implementation in, the distribution management system, which took about three years to implement; so we'd started a move from proprietary DG to proprietary VAX. In 1991 we re-evaluated that strategy; following the choice of the ORACLE RDBMS, we also decided that we would not continue the migration to proprietary VAX, but would move to UNIX.

So 1991 witnessed the adoption of UNIX (no preferred hardware supplier). We felt at that time the maturity of UNIX was probably just about right for us. What drove that in the main was cost of hardware. The new distribution management system (facilitating payment of duty at the gate) was implemented from 1989 to 1991; total project cost was £2M, total hardware cost was £1M; so the hardware constituted half the total project cost of a project based on proprietary VAX. It was this, I think, that drove us to say it is now worth moving to UNIX All of our core corporate systems since then have been based on ORACLE under . UNIX. The only other exception was the Payroll/Personnel system. This runs on a PC server linked to desktop PC's; it is Peterborough software PS2000. Thus by 1991, the key elements of a new technical strategy had been established.

The distribution system was a standard package, which we got from AT & T Istel but it was heavily bespoked by us. We didn't have a central telesales system before then and creation of a new sales order processing cycle from telesales, credit control, despatch note facsimile

printing to load scheduling, picking from the warehouse, confirmation of picking, despatch note print at the depots and then journey reconciliation and production of a file for invoicing engendered new business procedures. Earlier this year, this project won the DEC User award for systems integration. The project integrated two main packages; - telesales and WHAMS (warehouse management) - and used Powerhouse for key management reports. And recently we've posted the key order status data across to the ORACLE data warehouse. Benefits which are signed off are £400K per annum from various sources; staffing, inventory, reduction of out of stocks. Stock traceability is not even costed there, but product traceability which the system give us in the event of a recall is vital.

So 1991 saw a new IT strategy set, with one major bespoke project - 'OASIS' - underway in ORACLE and ORACLE tools with some Pro-Cobol for certain transaction requirements. What we hadn't got though, was a particularly good relationship with business management. We had an IT strategy, but our information systems strategy required a new look. Coopers Lybrand had left a two year plan and a five year plan that had proved unworkable in practice. We commissioned a brief review from Hoskyns in 1991 who reported: "the management structures that exist are not adequate for managing the contribution of IT to the business. IT appears to be dislocated from the business as a whole. A new strategy for the delivery of information systems is urgently required - has a long history of being seriously underfunded." Following that, I interviewed all our senior management, about twenty-five of them, in Michael Porter fashion, i.e. what are your business objectives? What are your critical success factors? What are your performance measures? What are your business information requirements? They were asked to rank them in priority, low, medium, high, very high; their business requirements were classified into different types of system requirement - planning, control, decision support, transaction processing, short term solutions, long term solution.

These system options were put to the Group Executive and a five year plan emerged. This was a fairly crude process, there's no doubt about that. Not all of the things that the text book would have you do were done by any means, but I think it provided the bridge to our business management; and at the same time I took over as head of IT in November 1991. I

reorganised the division and made our five systems project managers report both into me and to the sponsor director of each systems project; so the project manager had a dual master, myself but also the user sponsor director of each project. This engendered the ownership of systems projects by business management which has been key. Also, on the major projects, we insisted on a full time user manager to complement the IT manager, and that is working, generally, very well. To give you an idea of the ground we had to cover, less than 25% of the business requirements were met by current systems in 1991. We had the new telesales system and the warehouse management system implemented (this being the main system on the VAX) credit control and capital monitoring. The remaining systems identified were either in existence but in need of urgent replacement, being developed, or non-existent. The majority was non-existent - product profitability, call planning, national account communications, customer profitability etc. Those systems were the subject of a loose five year plan that is periodically reviewed by me with senior management. Ownership of those systems projects emerged as key. The IT strategy was in place, the information systems strategy, although by no means to text book standard, was in place, and providing an effective 'steer'. We had something there on paper, we had commitment from senior management, we had a charter on which to move forward.

5. OASIS and Centralised Maintenance

So let's now just look at how the implementation of IS and IT strategies has been pursued. 1992-93 saw the continuation of the OASIS project, and the start of a second major bespoke project in ORACLE, called KIMs (Keg Information Management System). At the same time, we were migrating all our ORACLE systems from VAX, because remember Coopers Lybrand had pointed us towards VAX, and in 1990, we'd put ORACLE on a VAX. We were thus moving ORACLE from VAX to UNIX and, at the same time, continuing two major bespoke developments. OASIS created a central product maintenance system and a central customer maintenance system, one area of maintenance of our basic corporate product and customer data. Changes to product and customer data go overnight to the Distribution Management System (DMS). The central systems feed the old invoicing and will feed the new invoicing system, and they feed the promotions, the pricing and the KEG information

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management systems; so it started to reverse and rationalise the chaos of multiple maintenance we had in 1990. The OASIS project initially attempted to solve all related data problems globally in one go. Eventually we were forced by the enormity of the task to restrict our scope somewhat. There are still 'pockets' of maintenance in some of the older systems, with different hierarchies and different structures. The remaining two years of our five year plan should see these final links put into place and the old systems replaced. OASIS has gone about 50% of the way. The other links will be swept up by replacement projects that should complete over the next 18 months - the supply chain project - the whole manufacturing area which is now well under way - the ledger replacement project which is just starting, the forecasting and sales reporting area, the retrospective discounts and the profit management project. So I hope within two years to have completely changed the flow of data as regards product and customer information and that we will have one system for central product and customer maintenance. This will continue to bring increasing benefits in terms of consistency of management information, particularly in the sales and finance areas, and in reduction of data maintenance staff.

6. Keg Information Management Systems (KIMS)

The Keg Information Management System was the second major bespoke project we have undertaken in ORACLE We have 33 Keg technicians (engineers) who make approximately 1,000 calls per week between them in public houses around the country. We have our keg dispense equipment (this is not the kegs themselves, but the keg dispense equipment, the font on the bar, the cooler and the python) installed in tens of thousands of outlets up and down the country. So we have to schedule the work of 33 technicians to call on those pubs, install that kit or repair it. That has been a big problem for years. The KIMs system does two things. First there is a central ORACLE system, based around the customer database, that schedules and monitors their call pattern geographically - they're spread all over the country. Second, the system downloads that call schedule overnight to those technicians via a modem link to a Psion hand held terminal, which they plug in at night in their homes. So they have their call schedule for about six or seven calls a day. We do it on a two day rolling basis,

updated every night. Whilst that is downloaded to them nightly, at the same time, coming back to the centre, the system records what they installed on the central database. That asset base (which is worth millions of pounds), all that equipment, is our most expensive and valuable asset. So it's very important that we know what has been installed, in what pub, right down to part level. It's important for auditing reasons and others. The project was progressed in two phases. First of all the engineers scheduling and monitoring database was implemented in early 1992 and then engineer communications, using Psion hand held terminals, went 'live' just before Christmas 1993. This system has enabled us to gain significant business benefit, which we'll come to later.

These two bespoke projects have been progressing over the past two years; KIMs is now finished and OASIS will finish shortly. At the same time through 1992-93, we moved the KIMs and OASIS systems, as they were being developed, from VMS to UNIX; our UNIX boxes are DG Avions, although we have no preferred supplier. In May 1993, all ORACLE systems development and testing, which was also on VMS, was moved across to UNIX box number two. These two things were going on at the same time, and we learnt a lot of lessons through that. Migration is by no means that simple, especially when you're simultaneously developing the systems that you are migrating.

7   Data Warehouse and Corporate Data

Moving on to the last couple of years, I would like to briefly discuss the data warehouse and ORACLE package implementations. Picking up the theme of hardware again, we'd moved all our systems and our development and test environment to two UNIX boxes. In mid-1993, we commissioned a third UNIX platform, which we see as key for our future management information strategy. This will allow users much greater access to corporate data than hitherto, and help address the problem of management information. We have the OASIS price, product, customer, promotions and KIMs systems on one Avion, and going in over the next eighteen months will be new invoicing, manufacturing and ledger systems all on the same UNIX box. This is our strategy: UNIX one for all the production systems; development and test on UNIX box two; and another UNIX box (UNIX three) for Data

Warehouse.

The warehouse receives all the ORACLE tables overnight - twenty-four hour refresh. The warehouse receives key data from the telesales/distribution, and that has now been put in place and is being cross-matched with invoice and sales data; also payroll/personnel data can be brought across if required. The warehouse box is being used for end user access and reporting in an ad hoc manner. There are the benefits of allowing end users to get in their box without performance implications for the main production 'live' ORACLE systems.

What we've managed to do over the past nine months is rotate these boxes as requirements have grown. If, for example, UNIX one requires an upgrade, we may require a larger UNIX machine, move UNIX one down to the warehouse and move the warehouse box to be the development and test box. If one falls out the end, we can either sell it or use it for optical storage and retrieval, which is something else we're now progressing. So I hope to be able to stick to that strategy of having three main boxes and rotate them upwards and round as processing, disc and memory requirements dictate.

Just a little bit on the warehouse. I'm sure many of you will be aware of these concepts. We are dealing with integrated management information, rather than operational data. The warehouse takes all the operational data initially, but then there is the issue of subsetting and indexing that data - i.e. Metadata - data about data. So the data is summarised and refined and it should be date-stamped. Key, again, to all this is customer and product data, especially for profit management for reasons we'll see in a minute. The beauty of the warehouse is that although we are trying to make this all one technology (ie ORACLE under UNIX) we aim to incorporate data from the old legacy systems. We still do have the old 'MIRACLE' ledgers on proprietary DG, we still have the PC payroll, we still have DMS under VAX. The idea of the warehouse is that you don't necessarily bother about trying to rationalise all this (although we are over time) - you get that data across to the warehouse and then you deal with it there, you aggregate it, you set up your corporate structures there for ad hoc and summary reporting. So ORACLE on the warehouse is now set up and delivering significant benefit in terms of management information.

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In 1993, I appointed a Data and Quality Manager in IT. His initial brief was to draw up a corporate data model. We now have a functional hierarchy for the whole company, we have an entity relationship model for the key corporate entities, and we have detailed corporate product and corporate customer entities signed off by all senior management; this gives us quite a problem actually, because the company requires some relationships that are not embodied in our current product and customer central systems, which were built in part to feed some of the old legacy systems, notably invoicing. So there's going to be an enhancement programme, even for our central customer and product systems. But the first implementation of the new structures will be on the warehouse.

We've also selected an ad hoc reporting tool for warehouse users. I think ORACLE's offering in this area is not that strong, although the new Windows version of 'data browser' may close the gap. We've in fact got down to two for the ad hoc enquiry - Impromptu from Cognos versus Business Objects - both of which are good in many ways, neither of them are perfect. We have selected Impromptu, and have given that out to just a handful of users at the moment.

The two pilot systems on the data warehouse have been daily sales report information and distribution order information. All our salesforce (they are still using paper reports although we have a pilot project to automate that underway at the moment) report on paper on what they called on and when. It comes in on paper, it's manually entered into ORACLE.. Impromptu gives now gives the sales planning people ad hoc interrogation of that daily sales reporting system; the order history is transferred across to the warehouse overnight from the distribution system which gives ad hoc access to key data from order interrogation. We are now working on a third larger system concerning profit management. Why profit management is so different, and has forced us to take the customer and product issues a step further, is because not only does the system receive central corporate and product data, but also must receive cost and value information from many other systems. So if you do have different relationships, structures, hierarchies within those 'feeder' systems, a profit management system forces you to finally determine the corporate structure for product and the corporate structure for customer. Underlying all this has been the work of the data and

quality manager.

The whole area of data analysis and business analysis has been a new skill area for us and we've used contractor resources quite effectively for much of this work. Linked to this is the use of Case tools. Of the three Case functions, Designer, Dictionary and Generator, we're using two quite effectively. The functional hierarchies and entity relationship models are done in Case Designer; we have three dedicated workstations which the five systems projects share. Our functional hierarchy for the whole company is called SAM (Strategic Architecture Model), and is embodied therein. It's also very useful - the functional hierarchy - for scoping and mapping our five systems projects and just checking that we don't have different projects working the same functional area, and if we do, addressing those issues. It's something that's quite new for the business this, it's something we're trying to bring in, trying to make management aware of the importance of it, trying to get them involved in it, trying to push the whole issue of data ownership forward. We're not using Case Generator in anger yet. We tried to use it a year or two back on the OASIS project, and found it wasn't that effective. We hope very much this year to have another go at Case Generator and just see if we can move from the entity relationship model, and DFD level, into screen design and beyond. But Case is used as the central repository for all the information modelling done through the systems development projects and gives us this unifying framework for systems development.

What I haven't spoken about much has been the recent ORACLE package selection. Our hand was to some extent forced on manufacturing in that a multi-million pound process development project was underway, and the installation of SCADA systems (supervisory control and data acquisition) meant that we had to feed it with product specification data at short notice. We chose ORACLE manufacturing, without doing a full requirements analysis for the full supply chain, although recent operation analyis suggests that the package will go in successfully, and that's well under way; and the ORACLE Ledger project has been authorised, and is now underway. Over the next year or so, I see the five year systems strategy reaching a certain point, when all of our old systems will have been replaced. We should see new invoicing and the end of the OASIS project this year, with ledger and

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manufacturing packages coming in over the next 18 months. Profit management and salesforce field communications will roll out this year. We've been trying to make a serious start on EIS for some time. I think the longer you delay it and the more you get your infrastrcture and systems replacement advanced, the better the EIS is going to be, so I'm not too worried that we haven't pitched in yet. I've spoken to several people who have, and it can be a nine day wonder. It's OK for a while but unless it's dynamic, unless it can be readily updated, it is a problem, and I think the time is now just about right, using the warehouse as the main data repository for EIS.

8   Concluding Remarks

Just briefly then summary and conclusion, to pull together a few strands. The migration of ORACLE to UNIX platforms is well proven, and really hasn't given us too much of a problem. We did initially try ORACLE on a couple of other UNIX platforms as well as DG, so migration to other platforms shouldn't pose too many problems if required.

One thing that did take us by surprise was the memory requirement under UNIX. We needed about a 300 or 400% increase on what we'd expected in terms of memory against the VMS, the VAX operating environment. This has been no great problem, because memory tends to be a relatively cheap commodity these days. Performance monitoring - we all know UNIX is not a particularly mature environment for systems development or systems monitoring in the way that something like VMS is based, but that is changing rapidly. Similarly, for developers, things like editors and debuggers are far less sophisticated than under VMS. Each time we bought those three DG boxes, we have said we should now try something esle? Should we try HP? Sequent? etc. We've come close to it. I think the important point is there is always that option, so it always give you a good bargaining hand with the hardware supplier. All UNIX servers we've bought to date have been Data General Avions, although we have SUN workstations for CASE. But there is a small overhead of having more than one flavour of UNIX for bespoke systems development. If we are developing on DG UNIX (DG-UX), to implement on an HP-UX platform, for example, then you've got to get another box in the middle so that you can try your ORACLE under DG-

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UX, under HP-UX before you put it live on HP-UX. So there are likely to be some overheads. The idea of being able to just mix and match your different hardware with different UNIX operating systems, at the moment isn't quite there, but I'm sure it will move towards that quite rapidly.

On the system strategy, business ownerhship has been the key. This presents us with some problems, certainly, because not everyone fully understands the type of issues we're trying to deal with, but at least it brings them very much into the party, gives them ownerhsip - business managers are made ultimately responsible for systems project delivery. So systems development is project led with the corporate data model trying to act as a unifying framework. Case is useful but not yet really improving productivity, but I hope we can move that forward very soon now. The main benefit from UNIX has been in hardware costs. In the DMS project hardware cost £1M out of a £2M project - hardware was half of it. The old proprietary Data General boxes, those two that are left, cost three-quarters of a million, and a quarter of a million pounds respectively in 1990. We're now paying £50/60,000 for a box with similar power.

As regards business benefits from our systems projects, the OASIS project has enabled us, with the new price and promotion systems, to collapse the price change process from fifteen man weeks to eight man days. My comment on that is why on earth is it still taking eight man days? It should possibly be eight man hours, and I think it tells a story about the need still to rationalise our business practices considerably, buy it's still a major benefit. In 1990, our promotional spend was 100% over the original budget, The promotions monitoring system is very much control orientated; we've now cut that overspend to less than 10% on original budget - so better control on promotions has been a material benefit. The KIMs system has meant that we've been able to close the Manchester depot, out of which worked some of the technicians; and in the post-MMC era, when we've got to get our salesforce and keg people around more pubs, we have been able to expand their call rate and decrease the number of technicians from 39 to 33. The KIMs system has another angle to it. 'Knowing our customer base' is absolutely vital, being able not only to audit those pubs, but profile them as well provides a very powerful competitive edge. Consider the keg technician with

his hand held terminal. He visits the Plough on the corner, he's finished that, he's put the new Strongbow font it. If he has time, he can then, from his Psion, call up the six nearest pubs in that Post Code area where our ORACLE database thinks we have a keg unit. So the "secondary visits" for our keg technicians are downloaded overnight, but he can then pick them off, go and do an audit at a nearby outlet. So that's a key benefit. From the supply chain our estimated benefits are somewhat around £90,000 a year for stockholding, stock obsolescence being another £80,000 a year, various other benefits adding up to something like £370,000 a year. That's what we've signed off per annum, in a project that will probably cost £1M, all in, so about a three-year payback. And remember also that our DMS system, which we are now downsizing to hardware costing 25% of the original hardware cost, has signed off benefits of over £400,000 per annum. This downsizing, which will save us a futher £100K per annum in reduced maintenance, has to some degree been brought about by Open Systems, which have driven the cost of proprietary hardware like VAX down considerably over the past 2 years.

Finally, how far I think we've got, looking at the problems we had in 1989. Hardware - this was obsolete and expensive to maintain - there has been major progress there; we still have these two old Data General boxes costing us £100K a year in maintenance. And the VAX, as mentioned, costs us about £70K a year maintenance, plus a disaster recovery overhead; but we've got our UNIX strategy in place; we've got the hardware configuration in place, and there's a plan to consolidate that, probably leaving the downsized VAX in place for a while with the sales order processing system on it. Software was disparate, unsupported, undocumented - again I think major progress, again there is a clear strategy now - ORACLE under UNIX.

Business practices are an area in which I want my team to work increasingly to the benefit of the company. I don't think we have made as much progress as we could have done. Our pricing is still far too complex, we have all sorts of problems really, all sorts of obsolete business practices. There has been some progress,but there's a long way to go yet on that, and this I think will be our focus over the next couple of years. The data issues - OASIS has

helped us move forward a long way on that. I would hope over the next two years we'll move very rapidly to close the gap and have a central product and customer systems feeding everything with corporately agreed structures. Management information - some move forward, I think the warehouse/end user access is something that we need to roll out now, and that will help in that area considerably along with an EIS system. Staff skills - we have a lot more now, a lot better in terms of ORACLE , networks, desktops, business and data analysis. Of the five project managers I have, two have just completed MBAs, and two others are doing DMSs - Diploma in Management Studies - so that is helping and we're trying to encourage that as much as we can. Management awareness - very relative this - it's come on an awful long way. There's still a long way to go on that and I think, again, workshops, briefings, me trying to get over to senior management what IT is all about is important. We are now quite computer 'aware'; but not particularly computer 'literate'. That is one of my major challenges for the next couple of years.