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and
Information Technologists

Proceedings

of the

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Development Conference**

Industry meets Academia

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26 & 27 September

**Edited by
Vevek Ram**

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FOREWORD

This book is a collection of papers presented at the National Research and Development Conference of the Institute of Computer Scientists and Information Technologists, held on 26 & 27 September, at the Interaction Conference Centre, University of Natal, Durban. The Conference was organised by the Department of Computer Science and Information Systems of The University of Natal, Pietermaritzburg.

The papers contained herein range from serious technical research to work-in-progress reports of current research to industry and commercial practice and experience. It has been a difficult task maintaining an adequate and representative spread of interests and a high standard of scholarship at the same time. Nevertheless, the conference boasts a wide range of high quality papers. The program committee decided not only to accept papers that are publishable in their present form, but also papers which reflect this potential in order to encourage young researchers and to involve practitioners from commerce and industry.

The organisers would like to thank IBM South Africa for their generous sponsorship and all the members of the organising and program committees, and the referees for making the conference a success. The organisers are indebted to the Computer Society of South Africa (Natal Chapter) for promoting the conference among its members and also to the staff and management of the Interaction Conference Centre for their contribution to the success of the conference.

On behalf of the Organising Committee

Vevek Ram

Editor and Program Chair

Pietermaritzburg, September 1996

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THE INDEPENDENT ONLINE: A CASE STUDY OF INTERNET PUBLISHING

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Abstract

The independent online is the Internet service of Independent Newspapers, South Africa's largest newspaper group. This paper is a case study of the events of the past year, including the lessons, successes and failures in establishing the independent online. The independent online contains content from daily newspapers, weekend editions and national publications brought together into a categorised newswire. Currently more than 350 stories are added each day, with 100 additional items forming the weekly archives and company information. Search engines, back issues and a variety of specialist columns have been added to the site to provide readers with a variety of areas of information. Although the site has been live for almost one year, the past few months have seen the introduction of new hardware, redeveloped software, the establishment of a permanent facility within the building and considerable effort directed towards marketing and promotion. Future plans include presentations, training sessions, interactive games, specialised news delivery, advertising opportunities, website development and activities directed towards the youth market including school involvement and youth training. It is hoped that this paper will serve as a guide to those considering establishing a web presence in order that the pitfalls and problem areas can be identified and avoided

Background

The newspaper industry

Newspapers worldwide are experiencing declining circulation, particularly in the youth market. There is no easy solution to this problem and while many media companies have invested in the Internet, recent suggestions are that these projects have not delivered on their promise of increased revenue and improved productivity.

The newspaper industry is in fact a highly sophisticated information delivery network, not merely print production. Television companies, radio stations and newspapers are all closely tied to deliver information to audiences, and in many cases they are owned by the same multinationals.

Media is a fast changing industry and no longer limited by national boundaries and geographic location.

While there are those that feel that electronic publishing is a threat to print, others see it as a complimentary offering. There are ways of presenting information electronically which could not be achieved in print, similarly the convenience of print is unlikely to be achieved through electronic devices.

Each media company will take a different stance along this line and the nature of their business will determine whether the different media survive side by side. Right now, the debate rages and it will probably only be in the next 2 or 3 years that the market matures sufficiently for long term decisions to be made.

It is estimated that there are currently more than 6,000 newspapers published on the Internet, and while 1996 saw an explosion of titles, there is every suggestion that it is slowing down. Questions are being asked about the commercial viability of such start-ups, the impact on print, the reach to new audiences etc.

It remains an unknown, and while the media grapples with other problems, the Internet side of the business may not always be seen as a strategic necessity, and border on closure.

This paper does not give any conclusive answers to these problems, but considers the *independent online* in light of these problems and attempts to offer suggested actions.

Publishing and the Internet

As more of the media houses have migrated to electronic printing and publishing, so the nature of the information allows for easy transfer to other media. Electronic submission has moved closer to electronic distribution and eventually to electronic production.

This is not just an extension of the electronic networks, but a shift in focus from media houses as the distribution points to positions of origination.

We have all seen film scenes of journalists dictating copy down telephone lines or sending them via telex or telegraph to awaiting inputters for page setting and so on.

Technology changed this process only fairly recently with fax machines, acoustically coupled input devices and notebook computers. But the final product was still the same - copy in, print out. The main difference being the speed with which the whole print cycle could respond to incoming news.

To put this in context it took 5 days for news of Lincoln's assassination to reach London, it took less than 5 minutes for news of Kennedy's assassination, and the Gulf War was viewed in real-time.

The British press reporting on the Titanic cried 'All Saved', because they had no real news to go on.

In fact, there is still evidence of events being staged around print media deadlines, but the immediacy of delivery will inevitably change this.

The recent Minister of Finance's Budget speech is released to the Press early on the morning of the delivery in Parliament. Once he begins to speak the Press are released because by the time the Minister finishes speaking there is still a time delay before the speech is presented to the public. Not so with the Internet. We delivered the Minister's speech within 12 minutes of release from Parliament. This did not contravene any rules, but highlights the opportunities which this new medium presents.

The Internet remains unproved and its take-on has been almost entirely due to the electronic capture of material for print. There are few publications, if any, which have not grown out of existing print. Even HotWired, which is said to be commercially viable in its own right, grew out of its highly successful print version - Wired.

As a separate medium, it is too new and experimental, and in most cases remains R&D spending.

That does not mean that it will not become so, but it is following the characteristic growth curve of development and has yet to reach maturity.

The fact that news is the single most popular reason for surfing the Internet does suggest that the media has the edge in terms of an audience, but the commercial aspects have yet to be resolved.

In South Africa, with low literacy and other social difficulties, the newspaper readership is less than 5% of the population. Radio has by far the largest reach with an estimated 87% of the population, and television more than 50%. Electrification and telephone connections present a massive investment in order to make these services available to the entire population. Barely more than half of the population currently have electricity and Telkom is seeking international partners for a projected 4 million line installation scheme.

Despite the emergence of e-trading overseas in a variety of guises, the general public are not as yet willing to accept the risks. That is not to say that it will not happen, and happen fast, but for the time being it is consolidation of position, watch and wait. Once again, South Africa's sophisticated banking services are utilised by the minority and although the country has a history of adoption of technology, the take-on of Internet-based commerce is likely to lag behind developed countries.

The independent online

The *independent online* is the Internet service of Independent Newspapers, South Africa's largest newspaper group, and has been in existence for almost one year.

It is a group-wide project delivering material from daily and weekly publications with additional company and marketing information.

Currently there is no content created specifically for the online service, the material is 'lifted' from the production servers, formatted and delivered.

- The initial proposal to senior management was made in April 95 and development began in May.
- The service went live on August 1, 1995 and to date has won 4 awards, and has established a regular world-wide readership.

The site depends upon high content and low maintenance, with minimal graphics content and is aimed at the "average user". (While this may sound like an easily defined term it isn't, but we are using the term average user to mean someone

dialing in from home using a PC and Windows or similar. This means connection speed of 14400 or 28800, and probably with only a moderate skill level.)

Its existence depends entirely upon the content of the print publications and the voluntary involvement of editorial staff to prepare more specialised areas of the site.

Future development in commercial viability and content differentiation will be governed by the areas of the business, as acceptance of the media develops.

The remainder of this paper looks at these and other issues over the past year, and considers the options for future growth.

Building the independent online

Resources

The service began with running on a Pentium machine with the Linux operating system and some home-grown software to manage the news delivery.

A 'news tree' was constructed to categorise material according to subject rather than originating publication.

Access to the news services was required, and the material was available only after the normal editorial processes completed.

The server also acted as the mail server for Cape Newspapers and is connected to the backbone network. The Internet connection is via the Johannesburg centre of the Wide Area Network, and is controlled by the IT department.

Any additional resources had to be funded or in some way acquired.

There was no physical space allocated and the entire operation was housed in the DP department workshop.

Support and commitment

While there was a degree of support from management, it was essential to enlist support throughout the organisation through influence rather than authority.

Any new technology has its early converts or detractors, and the degree of commitment to this project varied considerably.

Some felt that it was a distraction from the real job of producing newspapers, some that it was an essential step for the future while others remained ambivalent.

Many of the senior management and editorial staff had little if any exposure to the Internet.

Over the past two years, the group has undergone considerable change in terms of the publishing environment, and while this was the necessary basis upon which to build the Internet site, there remained a resistance to additional change.

Since Independent Newspapers is a group of autonomous companies each with competing publications, consensus is a difficult achievement.

The organisation

Independent Newspapers in South Africa, originally the Argus group, is now owned by Dr Tony O'Rielly and the Independent Newspapers with its head office in Ireland. The new owners have invested capital in the group allowing for the migration to new technology, creation of new titles and various management and editorial changes.

The South African operation comprises three companies Cape Newspapers, Gauteng Newspapers and Natal Newspapers with the Independent Newspaper Company acting as national marketing and sales, and all under the umbrella of Independent Newspaper Holdings.

There are 12 newspapers: The Star, Cape Times, Daily News, Mercury, the Argus, Pretoria News, Saturday Star, Saturday Weekend Argus, the Saturday Paper, Sunday Independent, Sunday Weekend Argus and Sunday Tribune. In addition there are four national supplements: Personal Finance, Higher Education Review, Sunday Life and Business Report and a host of community newspapers and regional titles.

Each title has strong branding and dedicated editorial staff with advertising and marketing support both locally and nationally.

The *independent online* brings material from a number of these publications together under its own branding, with individual titles identifying specific content. Daily and weekly material is delivered in a variety of ways according to the editorial wishes.

The project works across the three companies reporting through the managing director's office of Cape Newspapers.

Speed wobbles

As a national project, the *independent online* depends upon the support of a variety of players, and in the early stages of development met with considerable resistance and was on the verge of closure.

The infrastructure has been contained, and it became an urgent requirement to seek additional equipment, and staff in order to reposition the service and alter the negative perceptions.

Problems are still being experienced in creating a truly national service, and as the Internet becomes a more widely used tool, there is a level of criticism about the service when compared to other titles.

Since the service resides in Cape Town this has been a source of criticism and has made close contact with other centres a difficult and complex task.

The visibility of the project within the group has been a focus of attention lately with 'house ads' appearing daily in the newspapers, and more recently with editorial appearing in different publications and larger advertisements of a more eye-catching nature.

The current position

Infrastructure

The site now has office space in Newspaper House, Cape Town, and this is intended for use as a training facility and presentation area. The connections to the backbone network are the same, but the possibility of the Internet connection being moved to Cape Town are being investigated, alternatively for an additional connection direct to the servers.

Hardware and software have been totally redeveloped and the visual and user interface aspects of the service changed.

This has been effected over the past three months, and in essence is a complete rebuild of the service.

Addresses have changed and search engines and reference services informed of the changes.

The fact that the website now has a permanent home is an indication of the changed perception and positive commitment to the project, but without continuous change involvement and improvement this may just as easily change.

Hardware

The site now runs on an Apple Workgroup 9150/120 server which has proven to be extremely stable and high performance. The old server is now acting as a mail server, and this will soon be migrated onto a new machine.

A Sun SPARCStation 5 has also been acquired and this will initially manage the mail and list services. Once this has been completed the old server will be used as a dedicated mail server and the Sun freed for process intensive applications, database services and website development for customers.

The Apple server is extremely easy to setup and manage and is a cost effective solution. With little prior knowledge of the environment the machine was up and running within a matter of a few hours.

Software

The core engine has been written in AppleScript and this is proving to be robust.

Much of the surrounding software has been downloaded such as the counter scripts and search engines. Some additional software has been purchased for development of private areas, online forms and performance improvement. Altogether the software has cost less than R30,000 and gives us the potential to create a wide variety of additional services.

The machines for data capture and the servers together form a sub-network, and access to the servers is restricted to material and software dedicated to delivery.

Design

The graphics have been redeveloped by Francois Smit of the Star and have aimed to create strong branding and fast download.

Simple clean images were the brief and using graphics filters the images have been reduced in size for performance without losing quality.

Since we are delivering predominantly text we aimed for a look and feel which does not detract from the content.

Business issues

Perceptions

Convincing the management that in electronic publishing the inevitable next development is Internet delivery sounds easy. It is not semantics, but a change of focus. Imploding the business into a delivery centre with no tangible product to a largely unknown readership is not a comfortable suggestion. You only have to look at the number of magazines about the Internet to see the absurdity of suggesting that a massive profitable business should turn itself inside out on a turn of a card.

Revenue

The issue of revenue generation will always arise, particularly when there isn't any! We took the view that it was an essential first step to create a service that delivered content, with strong branding and a reasonable track record of growing readership.

This we have achieved to some degree, and have the confidence to promote the service to customers and agencies.

One of the problems is that the website must be seen by the advertising departments as a viable product either as a supplement to existing channels or in its own right.

Creating a new set of rules and systems outside the existing departments simply confuses customers and could have a negative impact all round.

Therefore the politics and positions of these departments can have an influence on the speed of acceptance.

Similarly, pricing such services is an unknown, because it is not based upon consistent figures of readership, profiles etc. There is a need for statistical analysis tools to establish figures upon which pricing can be fairly and accurately based. The nature of the readership being a combination of local and international may lead to diminished interest in using the medium.

We are now looking at some means of attracting advertisers and paying services, but simple 'strip ads' has been more of a short term sponsorship approach - and one that has done more to create uncertainty than anything else.

Promotion

It is no use promoting a concept, but once there is a product, the need to aggressively promote becomes an imperative. Promotion internally is a difficult issue, particularly in an organisation which is undergoing the types of changes that the newspaper companies are today.

However, it all begins with creating confidence that this is not a plaything and that the people involved are serious and professional - I am in no position to be the judge of the level of success in the case of *independent online*.

The other side of the coin is external promotion and again, this is nothing new-standing on platforms, delivering speeches and presentations and like the guitarist who asks 'how do I get to Carnegie Hall?' is told 'practice baby practice'.

Project management

If you have an infinite number of monkeys with typewriters eventually they will produce the works of Shakespeare. That may be true, but a website is no different to any other publication - you have limited resources and a quantifiable output. The rules of systems analysis and design apply equally to a website as to a debtors system.

The difference is that with good systems in place, a simple interface to access information and a structure, the volumes of information that can be processed and viewed can increase considerably with little increase in resources.

We are now on our first rebuild, having initially developed software which had flaws and omissions, the rebuild has taken into consideration a number of reader enhancements and fundamental mistakes.

It was also achieved without any break in service - a little like changing the wheel of your car while driving.

A website for an event has a limited life and once completed the effort and lessons learned are transferred to the next development.

For a long term site the initial processes will live with you, and the impact will be disastrous.

Quality assurance

Most websites do not have the luxury of redundant equipment solely for testing purposes, but there is a need to ensure that prior to material being made public, there is an element of quality control. That does not mean merely checking

consistency of links, but viewing the site on different platforms, across different connections and with different people in order to find out what does and does not work.

It may become necessary to engage a sample of readers as a test sample, in order to gain views on developments before they are releases. Using feedback forms and other enticements may solicit reasonable comment, but again this will be an unknown sample in terms of the connectivity routes and other variables

Readership

The myth of traffic

The issue of traffic on the Internet is one which confuses service providers, website managers and readers alike, and there will have to be a more formal approach to these issues if the Internet is going to be taken seriously as an advertising medium and revenue source.

We have always excluded internal traffic from our figures, and as a result have always appeared to be 'relatively unsuccessful'.

But what is successful, is it attracting 'tire kickers' or genuine interest.

Similarly, how do you measure traffic - is it every page, each individual visit or a comprehensive analysis of log files?

Questions are asked of website managers which would appear to be naive and foolish if asked of print experts. For example, just because an advertisement appears in a magazine and you can recite the AMPS and circulation figures does it mean that a particular reader read that advert or made a purchasing decision? And yet we expect that level of detail from a website.

Taking snap shots of 'hits' on particular pages, excluding all internal traffic and then comparing the log files statistics gives us a reasonably estimate of readership in terms of content and volumes. Additional facilities for mail-back allow readers to give us their comments while browsing and often provide insights into how the service is actually used as opposed to how we think it is used.

We have found that feedback everywhere is the best method of soliciting comments.

Our recent addition of a simple search facility has borne out the idea that news material has an uncharacteristic value curve. On the day the news breaks it has immense value, within hours it has little if any value, and over time the value increases as it becomes background information on more recent developments.

This is one area that a printed newspaper cannot compete, and one which we feel will create the *independent online* as a complimentary product.

In essence our 'hit parade' is for our own use, but as audited services emerge we will subscribe in order to ensure the same degree of confidence that readers and advertisers alike attach to authoritative analysis.

It may all be smoke and mirrors, but in the same way that commerce on the Internet has always been secure (compared to credit cards transaction in stores) but is only gaining public confidence then if that is what it takes we will certainly offer our figures for scrutiny.

Requirements

Online readers are a fickle crowd, but after all they are the reason we are doing this in the first place, so it is important to take cognizance of their views.

We have continued to add according to the readers comments, such as stronger title branding, search facilities, access to archives, more specialist columns and special events.

The budget speech, the Argus Pick n Pay Cycle Tour results etc. are all examples of things we tried and found to be highly successful.

What this suggests is that readers want variety, interaction and fun. How do you make newspapers entertaining for the youth? Maybe the simple act of making it available on line is a starting point.

Lessons

Content is king

The *independent online* is updated daily and the general response has been very positive. While graphics and interaction are important we have aimed to achieve strong branding with minimal and consistent graphics. We are beginning to develop more processor intensive applications such as interactive word games and competitions, but always with the reader in mind. Download time must be kept to a minimum and every page must tell a story.

It's true that most websites are a 'triumph of presentation over content' a label we are trying to avoid.

The problem with constant updating of content is that unless the underlying systems and processes are robust the manual labour involved outweighs any benefits.

We estimate that by the end of the year we will be adding close to 1,000 items per day and the archive will be in the region of 250,000 items and the reader will have immediate access through the news tree to some 3-4,000 items. This can only be achieved through sound project management, attention to detail and constant monitoring of performance.

Influence not authority

Depending upon how the *independent online* and other Internet development is positioned will determine the level of support and resources available. Since it has yet to gain a critical mass, it is not likely to expand without careful consideration. Revenue generation will most certainly change the situation, but will have to come first. Promising that substantial investment will deliver is not going to be well received! Making things work and demonstrating success is more likely to receive favourable support.

In our case the resources are tightly constrained and there are numerous individuals whose support is required for long term success.

The website has to become an immediate consideration as an additional avenue for promotions, competitions, events, advertising and internal use.

To achieve this means working closely all across the organisation and paying attention to existing systems and looking for opportunities to simplify them. It is no use offering the websites an alternative if it disrupts existing processes - it has to fit.

Marketing and promotion

Simply having a website is fine if its main function is as an internal communications vehicle. Once it is available to the public, it needs to become visible through all other avenues of advertising and promotion. Making the URL visible in advertising, email and contact information on business cards and letterheads are just starting points.

Making sure that the website contains information that could not be used in print is one way of attracting visitors. For example, a new soft drink could use a website to include nutritional information; a new vehicle could display comparative performance information.

Again it has to be a long term campaign, which constantly points to the website as a place to go for more information and once there visitors should be enticed to return.

While a website may be cheap to run, the costs of promoting it could be substantial and can only be justified if promoting the content. In other words it must ride on all other marketing activities.

The elusive buck

The only people making money on the Internet are the service providers and page designers. The information providers have yet to see the Internet as a genuine sustainable revenue stream, and this must change. Having an Internet presence must represent a value added service to staff, customers and passing trade.

Linking to high volume sites is one way of attracting visitors, but more importantly becoming a high volume site will attract others, and your site will become a hub around which satellite sites orbit.

Savings are as important as revenue, and the recent emergence of the Intranet is an important lesson. Make internal use a valuable service and you may not care about the outside world.

One thing for sure is that anyone parting with money for an Internet presence is soon going to be asking the same questions they ask for all other services - what are we getting out of it?

Maintaining momentum

You can take months to plan and build your website but once it is up you are running and you have to constantly monitor.

Every time the website is ignored, you have to deal with the issue.

For example when we displayed the Budget Speech our own newspapers promoted a competitive site. Our own Internet directory ignored our presence, and there are numerous items which could be housed on the site which are currently outsourced such as telephone lists and marketing material.

There has to be a game plan and effort expended towards watching developments on the Internet, becoming involved in every facet of the business and applying this intelligence to the website and promoting it vigorously.

Problems

The Internet phenomena - death by media

Working in the newspaper business, it is particularly frustrating to see the negative side of the Internet receive the lion's share of coverage. It is almost a case of 'not letting the facts stand in the way of a good story', and combating it takes vigilance.

If we looked at road traffic in the same way we look at computer hackers no one would drive a car - we balance the risk against our own experience, and I feel that the media position today is one which will change as the Internet matures.

We can all make predictions, and few will be correct, but damning the technology is relatively easy.

What has been heartening recently is the increasing request for response to wire stories regarding the Internet - my chance to counteract the negative views presented. Becoming a spokesman within your organisation is important, because there is a lot of fear and uncertainty. If you can ease the concerns then the Internet will not be seen as a threat.

The quality of service

It doesn't matter how good your site is if the road to it is under construction or full of potholes. Particularly in this country we need to pay more attention to the quality of service we receive from service providers.

The recent public debate between Telkom and ISP's is just one example. The trading for bandwidth and the difference between virtual and real bandwidth is another.

As information providers we are as guilty as most in not ensuring a level of service that is compatible with our plans and traffic.

They say you can't manage what you can't measure, and one of the most difficult tasks is to grasp the interaction between service providers, extract statistics in some meaningful way and be able to make an informed decision.

The more points between you and the eventual visitor the more chances of failure, and the visitor will consider you to be the problem despite everything.

The ease of attack

By its very nature the Internet offers immediate satisfaction - good or bad. If you do something wrong you will know very quickly.

If you do have a thin skin, a fragile ego or a need for constant positive feedback then don't become the website manager - leave it to someone more resilient.

Mistakes are immediately global, so be prepared for criticism of content, service and every aspect of your service from everyone from the novice to the expert from friends and colleagues to distant strangers.

Conclusions

Creating a presence

"Any fool can create a website, and many do".

This is not meant to be unkind, but a realistic view that there is a lot of vanity press and noise on the Internet. In the same way that duplicators, laser printers and photocopiers were used (and still are used) to distribute masses of junk mail, in-house newsletters and leaflets, so there will always be a component of this in any media.

Just dumping material onto a server is NOT creating a website, nor is developing material and leaving it to luck that someone will stumble across it.

In our experience, 'content isn't everything, it's the only thing', and we have aimed to deliver a service for the average user. This means taking into account the average connection speed, the average hardware configuration and the level of skill. A tall order, but one we are striving to achieve. After all newspapers use the 'average man' or the 'girl on the Woodstock bus' as a measure of the target reader, a pragmatic measure and one which ensures the widest potential readership.

That is not to say that we are not aiming to create a world standard site, but that we depend upon the news delivery service of the group to provide the substance.

The *independent online* is a low-cost, low-maintenance, high-volume website and the efforts have been directed towards ensuring that as the volumes of material increase the manual effort required is kept to a minimum.

Good project management, careful planning and sound systems development principles are essential in order to avoid the backlog and maintenance overhead.

Many websites are not intended to be long-term presence and for these the rules still apply, except that the window is much smaller and therefore all of the actions need to be more carefully managed.

While the 'vanilla news service' is and will continue to be aimed at the average reader, there will be developments which take advantage of additional features. For example database applications, interactive scripts and identification systems. Inevitably these will become mainstream, and while we are not aiming to be a leading edge site, we do intend to provide a constantly improved system.

Maintaining a presence

Simply being there is not enough, there has to be a plan of action to constantly monitor feedback and to promote the website.

Contacting search services, adding URLs to letterheads and business cards, distributing press releases, placing advertisements and 'being out there' are no different than for any other product.

A website for an event has a limited life, and it is generally intended to act as a 'shop window' for future contracts to build more sites - a good advert begets more business.

A website that intends to have a long life has to deal with continuous promotion and that includes regular postings to searches etc.

As we found, changing the design can have a mixed reaction from readers. Some will be annoyed, and quite rightly since their bookmarks become invalidated and they now have to 'relearn' the site. It just goes to show that change is something that one doesn't have to enjoy!

Securing one's position

After the initial euphoria has died away, there will be the inevitable questions about 'where is the revenue', 'why can't we include this...' and 'it's not as good as site X'.

To many of these questions there are no adequate answers, but that doesn't mean that they can be ignored.

In our experience, the initial reaction is one of apathy and disinterest since the Internet may be an unknown even feared phenomena.

As the take-on gathers momentum, 'experts' appear all over the organisation and the comments become critical.

Beyond this, the views become more constructive, and the site has to take cognizance because, in our case, the information delivered belong to the editors and the company management.

Once the site is firmly bedded down and the process of daily updating and site management is routinised then the harder task of internal promotion must begin in earnest.

Justifying existence will depend upon the nature of the business, the politics of the management and the position of technology.

The easy part is dumping information on a server, the hard part is getting people to read it over and over again; and making the website another arrow in the quiver for

promotions, competitions, added value services for customers and really a valued extension to existing communications.

The future

We predict that the next 12 months will see a reduction in the number of websites and an increase in the number of reference services to allow visitors to assess the quality of sites. Such services will be the equivalent of AMPS and ABC figures for circulation and readership profiles, while other services will look at the networking of sites to determine quality and relevance.

The readership will inevitably increase and since these individuals vote with their feet so the concentration of traffic will be to quality sites.

This means motivating for long-term development and where there is no demonstrable revenue stream or cost savings this will also contribute to the declining numbers of 'vanity sites'.

The shake-down is going to be another example of the process of market forces and the secret will be in justifying existence in terms that are consistent with other projects and products.

If there was an easy solution I would keep it secret, but hard work and continuous support and focus on content will prevail.

What we are currently developing are tailored products such as content driven advertising, customised news, interactive discussions, youth targeted competitions and involvement.

Each will be closely monitored to ensure that they comply with our vision of low-cost high-content low-maintenance and growth.

