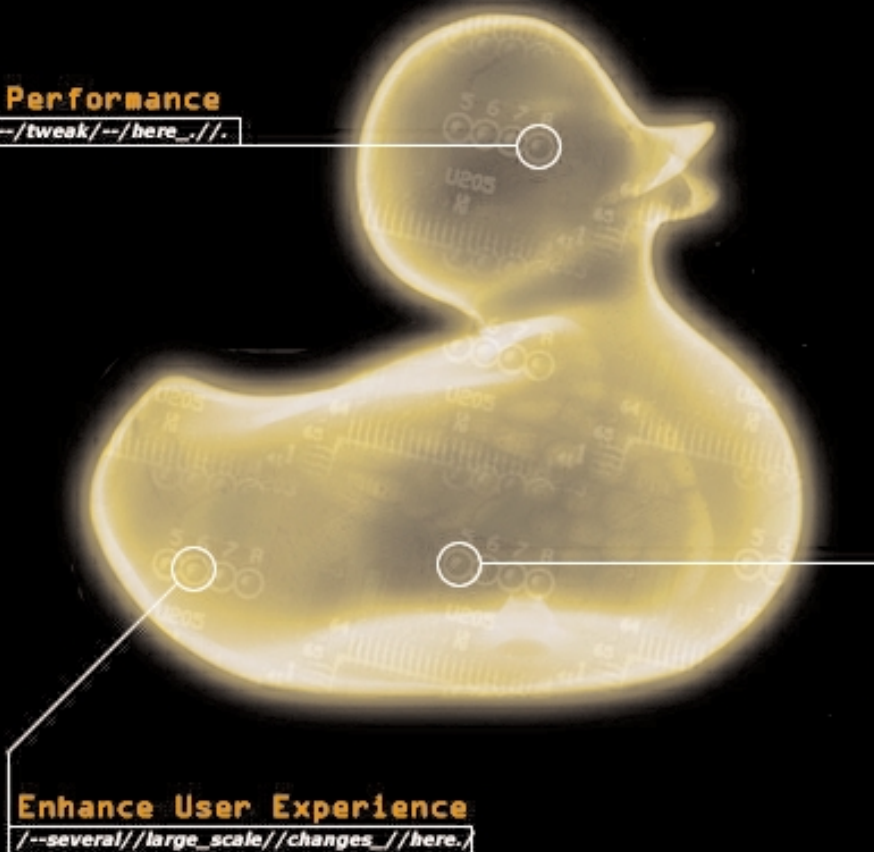


Web Performance Engineering

A new, comprehensive and effective approach to Web usability testing.

Boost Performance

`/_minor/--tweak/--here_//.`



Increase ROI

`major//overhaul//here.`

Enhance User Experience

`/--several//large_scale//changes_//here./`

A White Paper From Academy Internet

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Introduction

For the last few years organisations have been creating Websites, frequently investing a great deal of money in the process. These Websites typically fall into one or more of these three categories:

- **Internet - client facing sites**
- **Intranet - internal sites**
- **Extranet - supplier facing sites**

The reasons for creating a Website are numerous. In the early days of the Internet the 'reason' was frequently little more than the cry: "If Jones corporation has a Website then we had better have one as well". There was a real fear of being left behind, which often resulted in a rush to create a presence in this new space.

Fortunately the early hype of the Internet has been replaced by a pragmatic and bottom-line approach to investment in this area. Put simply, how does a Website enable us to make more sales and profit, improve customer lifetime value and/or cut costs. If it doesn't demonstrate a realistic ROI in one or more of these key areas then why should we continue to invest?

This attitude is sensible, but the grim reality is that most Websites are currently not delivering anything like maximum benefit, and in many cases will not stand up to any realistic ROI measurement. In fact, most Websites are positively failing to deliver on the purpose for which they were created.

Our perception is that most organisations are not addressing current failures - and the opportunities to do much better. Perhaps due to a lack of in-depth understanding or internal resources.

This white paper looks at how this challenge has arisen, presents a historical perspective, examines the opportunities for improvement that exist and proposes a structured, practical process; ensuring that organisational Websites deliver maximum value both for their intended audience and for the sponsoring organisation. The programme is called **Power Websites™**.

The current approach to improving Websites is primarily focused on what is generally called Web Usability Testing. We have found, for reasons explained below, that this is too narrow an approach to create maximum results. The **Power Websites™** programme is therefore underpinned by a set of activities that we call **Web Performance Engineering (WPE)**.

The Historical Perspective

The major takeup of the Internet in Europe started in 1996, although many organisations did not start to address the opportunities until 1998/9, some entering the arena even later.

"..almost every Website, whether internal on the Intranet, or external on the Internet/ Extranet, is massively underperforming."

In the early days little was known about the best way to develop a Website, whether to share information or use as a transactional tool. You've probably heard the saying, "in the land of the blind, the one-eyed man is king!" Most Web developers were working in this arena for the first time. Most companies lacked any internal expertise (this unfortunately is still often true today), and there were no foundations or experience to draw on about what worked and what didn't. A cultural attitude also existed (and often still does!) that said: "Invest the money in building a site and that's it." No on-going development as a planned activity, no feedback mechanism to steadily improve structure and content, no internal staff with responsibility and resources in this area and frequently a continued reliance on external contractors of varying quality.

This commentary is unfair to a small number of organisations who have bucked the trend and invested in steady improvement. Many of them are now on their third or fourth generation Websites and their success stands as a testament to what is possible for everyone else.

Another historical attitude that we still see is a surprising lack of clarity about the purpose of a particular site. What exactly do you want your visitors to do? And even where the answer can be clearly articulated, more often than not the Website does not reflect and achieve the required outcome.

The end result of what has happened is that almost every Website, whether internal on the Intranet, or external on the Internet / Extranet, is massively underperforming.

The Business Impact of Poor Usability

At the highest level, this substantial measure of underperformance has an impact in these three areas:

- **The Website is not enabling as big a cost reduction within your organisation as could be achieved.**
- **The Website is not generating as much additional revenue or sales leads as is possible.**
- **The Website is not leveraging your CRM (customer relationship management) and SRM (supplier relationship management) activities as much as it could.**

In essence - the poor performance of your Websites results in an unacceptable ROI and a lack of profit or contribution to your organisation's bottom line. There are many other ways that poor Websites negatively impact an organisation's performance:

Brand

There is often considerable investment in building brand image and gaining market positioning. Yet what do you think results from a poor Website experience? Frankly, the result can be catastrophic - that's the last time you see that visitor. The negative user experience may undermine all your careful brand building.

Employees and the Intranet

We hear client stories continually about poor take-up of the organisational Intranet. It doesn't get enthusiastic support, it gradually falls out of use. Do you wonder why?

Transaction Websites

Whether these are e-commerce sites where you expect purchasing to happen, or sites where order checking and process notification takes place, what is the result when the user experience is poor? Visitors stop using your site.

Poor returns on marketing

Many organisations are beginning the move towards integrated channel marketing. They see the benefit of driving prospects to the Web as a cost effective information resource - and also to transact in some instances. But suppose you get the traffic - and then nothing happens! What an incredible waste of marketing effort and resource. The sad thing is that within many organisations the end result is that future Web marketing gets reduced or even dropped, rather than the real issue getting addressed - underperformance of the Website.

Where and How Can Web Performance Engineering Benefit Your Organisation?

"Excellent usability is now emerging as a key competitive differentiator on the Web."

We've looked at the negative impact of poor WPE. Now let's look briefly at the most important areas where WPE can positively impact your organisation's effectiveness and profitability:

Higher conversion ratio

You have an e-commerce enabled site on which you spend marketing money generating visitors. Why not maximize the customers you get? Typically low conversion rates can see enormous improvements.

Higher average sales

Improved WPE, and the implementation of some specific techniques, can result in higher average sales. Given that overheads remain constant, these incremental sales contribute disproportionately to profit.

Greater customer lifetime value

How do we encourage users to return again and again and develop increased loyalty? Both can result from the application of WPE.

More qualified sales leads

Many business-to-business organisations use the Web to generate sales leads. More effective sites can result in much greater and more qualified enquiry levels.

Competitive advantage

Most users have many choices on who they build relationships and transact with. Excellent usability is now emerging as a key competitive differentiator on the Web. WPE delivers that differentiator.

Happier staff

WPE work on Intranets delivers higher usage, better communication and enthusiastic adoption of your internal systems.

Reduced support costs

Well designed sites can provide much improved customer support, resulting in less calls and emails to your customer support department. Result; lower costs.

Improved brand equity

From a negative impact on the brand, move to a positive impact. WPE makes the difference.

Favourable reviews

Has your site received negative reviews in the press? If not yet, your turn could come. A positive review is just like getting free PR.

Maximize your marketing budget

Fortunes are wasted on driving traffic to Websites that don't deliver.

Positive supplier and partner management

Persuading partners and suppliers to transact with you electronically through an extranet can be difficult enough and is even worse when no-one likes or can use the interface easily and quickly. WPE results in a much improved digital relationship.

The Business Case For Web Performance Engineering

"..organisations can expect to receive between 10 and 100 times the benefit for every pound invested in WPE"

The vast majority of Websites cause irritation, frustration and often anger in their visitors and unhappy people simply disappear elsewhere. It isn't about poor technology, lack of willingness to use the Web, or an audience that doesn't understand, it boils down to Websites that don't work. Jacob Nielsen, perhaps the leading 'guru' in this area, estimates that at least 90% of current Websites suffer from poor Usability.

Creative Good, an e-commerce consultancy, recently estimated that poor Usability was costing clients £10 billion annually in 'silent' losses. They also found that 43% of attempted purchases ended in failure.

Another study by Zona research found that more than 40% of online job applicants couldn't work out how to complete the application.

These examples alone illustrate the broad negative impact of not applying WPE. How do you make sure that you are not one of the 90% with disappointing Website performance?

The answer is to invest in WPE - not as a 'cost', but a sound business strategy offering quantifiable benefits that significantly outweigh the investment. The following example illustrates the substantial benefit that can arise from WPE:

Example

You have a large transactional site in the consumer marketplace, currently achieving £20m sales with a 5% net profit. Bottom line - £1m.

Your current conversion rate (visitors to customers) is 2%.

It is highly likely that following a WPE intervention the conversion rate could be increased to 3% - without any increase in marketing spend. Result - net margins on additional turnover improve to 8%.

This higher conversion rate is worth an extra £10m in sales at 8% net - £800,000 in additional profit - an increase of 80%, starting within perhaps 90 days!

The cost of achieving this increase in the bottom line? A tiny fraction of the potential benefit. As a rule of thumb most organisations can expect to receive between 10 and 100 times the benefit for every pound invested in WPE.

Sometimes direct financial measures are not the most appropriate. Consider the organisational impact of a poor Intranet. You may end up with disillusioned staff, low levels of knowledge sharing, duplication of work, increased process costs, the 'invention' of alternative systems and more.

There is plenty of evidence of the difference that WPE makes. Specific cases include, for example a:

- **400% increase in the use of the search function**
- **200% increase in clickthrough for feedback**
- **117% increase in use of 'what if' feature**
- **44% increase in survey completion**
- **37% increase in sales**

Frankly, the business case for investing in WPE is unquestionable.

Defining WPE and the Distinction With 'Web Usability Testing'

What do we mean by WPE and how does it differ from the more common conversation around 'Web Usability'?

Here is a definition of Web Usability:

"Usability is the broad discipline of applying sound scientific observation, measurement and design principles to the creation and maintenance of Web sites in order to bring about the greatest ease of use, ease of learnability, amount of usefulness, and least amount of discomfort for the humans who have to use the system."

Mark Pearrow, Website Usability Handbook.

Whilst we believe that Usability interventions, undertaken in accordance with this definition are very useful, there are more dimensions that should be addressed to create maximum organisational benefit:

Alignment with organisational goals

A key question for all organisations is how closely the Website matches organisational goals and how effective is it in achieving the desired outcomes?

This both overlaps and extends the earlier definition. In our view, it's not much use having a great Website with the highest level of Usability if the structure and content does not deliver on the core business proposition!

Defining or reviewing the organisation's goals for the Website forms one of our first priorities with WPE.

"Truly great Websites combine both form and function to create a user experience that is both aesthetically pleasing and truly usable."

Performance Testing

Slow loading pages, broken links, inoperative graphics and more all impact the user experience. They may not (in a narrow definition) impact Web Usability, if that is defined as the ability to complete a task. They do however, have a major effect on a users willingness to stay on the Website or to return in the future. This creates a negative perception of your brand image.

Therefore we consider performance testing a key component of WPE.

Competitive positioning

Your Websites do not live in a vacuum. Whether by accident or design you generally compete in an open and competitive market. Therefore we believe it is vital to know how your Website compares to your major competitors - both from a Usability perspective and a product and service delivery perspective.

A comment on Form versus Function

Designers often defend a Website on the grounds that it looks 'great'. However, we have seen Websites win design awards but are basically unusable. Although focusing primarily on function, WPE integrates form to produce a blended medium where everything works together. Truly great Websites combine both form and function to create a user experience that is both aesthetically pleasing and truly usable.

The Top Six Reasons Why Websites End Up Unusable!

"Many people with little or no user-interface design experience are making critical decisions about the look, feel and logical model of Websites."

If we understand how Websites end up with a low score for usability we will be better placed to avoid the same mistakes in the future. Here are the top six reasons we witness in the marketplace:

Reason 1

Web developers (internal or outsourced) who focus on the site's features or the technical implementation whilst not paying attention to the end user. We see this particularly with Intranet deployments, where developers assume that because the users are 'staff' they know what will work! This reason defies the first rule of good WPE: Know Your User.

Reason 2

Designers and developers are often highly technical with skills in programming and other analytical or creative areas. Users, however, act and think in a totally different way which is difficult for 'techies' to understand.

Reason 3

People in charge of Web developments are often entranced by Form, at the expense of Function. How often are presentations by Web developers focused on what the site will look like, rather than how it will be used.

Reason 4

In a word, fashion. Web designers love the latest widget and will do anything to incorporate it in their work. In fact, they believe they absolutely must - otherwise they are not at the 'cutting edge'. One terrible example of this (in our opinion) has been the explosion of flash animations at the entrance of business-to-business Websites. The worst are ones that you can't skip but are forced to watch! They rarely tell you anything useful and stop you getting on with the job.

Reason 5

Most people assume that good WPE just happens because we all have 'common sense'. In fact common sense seems to be in pretty short supply. Good WPE results from many iterations and regular development using scientific and methodical principles over a period of time.

Reason 6

Many people with little or no user-interface design experience are making critical decisions about the look, feel and logical model of Web sites. These could be either internal management staff or outsourced developers.

The Power Website™ Programme

Having presented the business case for investing in Web Usability testing, the rest of this white paper will address the specific approach to WPE taken by Academy Internet within its **Power Website™** programme. Although this is specific to our company, we believe that you can add significant value to your organisation by understanding the concepts and principles we will discuss. The specific business benefits of the complete **Power Website™** programme are:

- **Align your Web presence with your organisational goals**
- **Increase your return on investment**
- **Gain clarity on your competitive positioning**
- **Improve your conversion rate, sales, page views, effective delivery of information and more**
- **Reduce internal costs**
- **Maximise the effectiveness of your marketing spend**
- **Discover the problems with your site that drive customers away**
- **Understand how people really use your Website**
- **Address performance issues**

These benefits are achieved through a four part programme. Each part can either stand alone or be combined to deliver the most effective intervention to achieve the desired results. The four parts are:

- 1. Expert Survey**
- 2. Competitive Analysis**
- 3. User Testing**
- 4. Website Redesign**

Before we consider each of these in turn, we present an overview of how ratings and comparisons are assessed within the **Power Websites™** programme.

Severity Ratings

Where we identify usability problems these will be rated according to the following scale:

- 1. Usability catastrophe; imperative fix required immediately**
- 2. Major usability problem; important to fix and needs high priority**
- 3. Minor usability problem; low priority but definitely worth doing**
- 4. Cosmetic problem only; need not be fixed unless extra time available**

The highest priority is to address areas 1 and 2.

Comparative Ratings

Where we provide comparisons, for example with other Websites, we use the following scale:

- 1. Your Website is significantly worse / less effective in this comparison**
- 2. Your Website is slightly worse/ less effective in this comparison**
- 3. Your Website is about equal in comparison**
- 4. Your Website slightly better / exceeds the comparison**
- 5. Your Website substantially better / exceeds the comparison**

The highest priority is to address areas 1 and 2.

"..expert surveys can be implemented quickly, can identify many problems and can be easily repeated.."

Expert Survey

Pioneered by Jakob Nielsen, the heuristic evaluation technique (aka. expert survey) is a very valuable tool for the initial assessment of the health of a Web site. Lets clarify the meaning of heuristic - you are likely to come across it frequently within the context of User testing and evaluation.

The simplest dictionary definition we have found is: Heuristic; guiding in investigation, helping to learn. Put simply, it is a structured, scientific approach to investigation that results in learning or, in plain English, an 'expert survey'. The value of a heuristic evaluation is in the 'structured and scientific' nature of the approach. This results in a process that is repeatable, standardised and enables ranking and comparisons - quantitative (eg. scores) as well as qualitative (eg. supporting comment).

Limitations and benefits of an expert survey

Our experience is that heuristic evaluation may capture up to 70% of problems with a Web site. However the problems lurking in the remaining 30% or more can make it unusable in a context that wasn't considered! You can be sure that user testing, outlined in the next section, will find them.

A second consideration is that for expert surveys to be valid, they must be conducted by at least two (and preferably more) evaluators. Why? Because the number of usability problems found correlates closely to the number of evaluators. There is therefore a cost and resource implication of conducting an expert survey.

On the positive side, expert surveys can be implemented quickly, can identify many problems and can be easily repeated - for example if there is a Website redesign.

Scope of the expert survey

In the early 90's Nielsen created a list of 10 usability heuristics that has served as a starting point for usability testing for ten years. The 18 heuristics described here include the original list where it is still relevant and extends beyond it to additional heuristics, which we believe are now relevant.

Heuristic 1: System status visibility

Simply put; does the user know where they are in a process? Critically important on transactional pages. For example; 'Have I completed the order or not?'

Heuristic 2: Matching the Website to the real world

Nielsen says: 'The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms'. No 'industry jargon' unless it can definitely be assumed that users will be familiar with it.

Heuristic 3: Follow real-world conventions

Make sure that information appears in a natural and logical order, and use conventions that are unambiguous - particularly relevant when labelling action buttons. This also includes the need for 'natural mapping'. For example, we know that when we turn a steering wheel to the left, the car turns left.

Heuristic 4: Provide user control and freedom

This means that a Website should always:

- Provide clearly marked exits
- Support undo and redo transactions
- Make it harder to perform irreversible actions

Heuristic 5: Consistency and standards

Consistency and standards enable users to survive in an ever-changing world. Ignoring existing standards is foolhardy.

Heuristic 6: Preventing errors

Most Websites throw up errors at some stage. At least a sensible error message is better than none. It's probably far better to eliminate errors in the first place. We've lost count of the number of times that programming errors have made a Web site totally unusable!

Heuristic 7: Help users recognise and recover from errors

A pet hate of ours is forms that don't work because a site hasn't implemented client-side validation. If users make a mistake, how do you let them know it?

Heuristic 8: Recognition is preferable to recall

If we were asked to draw the reverse of a 10p piece, we are willing to bet that most people would get it wrong. We just can't recall the detail. But ask someone to pick out a 10p piece from a handful of change and we'll all get it right.

Subconsciously we 'recognise' features without having to remember them. This has big implications for user interface design.

Heuristic 9: Flexibility and Efficiency of Use

We need simple interfaces but with powerful features available for intermediate or expert users.

Heuristic 10: Aesthetic and Minimalist Design

What can we do more simply? Adding items to a page does not automatically make it better. Given the short attention span, the more items on a page, the less attention each one receives.

Heuristic 11: Help and Documentation

No matter how good your site, some users will need help - even if it is restricted to a FAQ file.

Heuristic 12: Chunking

Our perceptive system distils lots of information into 'chunks' that are more recognisable. This has important implications for writing and design styles for the Web and also for the placement of graphics.

Heuristic 13: Inverted pyramid writing style

Created by journalists - this process ensures that the most important information is always first, with information in decreasing importance relegated to deeper in the article. This enables users to get the most information in the shortest time.

Heuristic 14: Location of critical information

How often do we see important information lost below the bottom edge of the monitor - scrolling down is required to see it. Many users are frighteningly unaware that they can scroll vertically!

Heuristic 15: Gratuitous use of new 'features'

Don't use new technology just because it exists. Sites with frames are still problematic for most users. Much is wrong with the use of Flash, Java applets and more. A particularly issue of concern are Flash animations at the entrance to business Websites.

Heuristic 16: Making pages 'scannable'

Websites are read in a very different way from printed material. Good pages typically share at least three characteristics:

- Sans serif fonts
- Short hyperlinks separated by white space
- Short paragraphs with extensive use of cross-headings and utilising the inverted pyramid style

Heuristic 17: Minimizing download and response times

A critical heuristic. Slow downloads are probably the single biggest factor in losing visitors.

Heuristic 18: Ensuring maximum user access

This heuristic addresses performance issues such as cross-browser compatibility, the use of plug-ins, systems capacity for simultaneous access, systems reliability and more.

Key areas for investigation

To deliver client results across these 18 heuristics the expert survey may examine the following areas:

- **Mapping the Website to organisational goals**
- **Home Page / Key entry pages**
- **Navigation & Structure**
- **Links**
- **Alternative navigation aids**
- **Content and its organisation**
- **Site consistency**
- **Key Page Design usability**
- **Layout of product & information pages**
- **Text & use of graphics**
- **Reading & Scanning**
- **Use of language**
- **Search functionality**
- **Transactions processes**
- **Form usability**
- **Help Systems & user support**
- **Site Structure**
- **Error control and correction**

Performance criteria

- **Monitor resolutions**
- **Link integrity**
- **Download times**
- **Cross-browser compatibility**
- **Use of content requiring 'plug-ins'**
- **Load capability**

Log File analysis

Log files can reveal a great deal of information which is a useful aid to diagnosis and problem identification. This includes identifying main entry and exit pages, length of time on the site or page, actions taken by the user, technical capacity of the user and much more.

Regular review

The value of the expert survey service can be increased by:

- **Regular reviews at pre-agreed intervals to ensure changes have not negatively impacted the site**
- **Review prior to major changes to ensure that planned redesign has a positive impact.**

Deliverables

A detailed report covering the heuristics agreed. The report will identify problem areas, list their severity in terms of user problems and provide specific recommendations for improvement, prioritising key activities.

The following charts and tables will be included in the report:

- **Number of heuristic violations mapped against each heuristic**
- **Severity ratings mapped against each class**
- **Thematic trends - ie. Areas where major problems exist**
- **Specific recommendations**

An integral part of this service is the delivery of the report to senior management in an interactive session that allows questions and discussion of the issues raised.

A Web redesign workshop can be added as an optional extra. This would bring your content, design and Web management team together with our experts to create a specific plan of activity based on available priorities and resources.

Continuing support is offered to ensure that recommendations are correctly implemented according to the agreed plan.

The implementation of agreed design changes is also offered by Academy Internet.

"On the Web, the performance of your competitors' Websites compared to your own can have a significant impact on your future success."

Summary

Academy Internet WPE Consultants evaluate and rate the Website against the key factors.

The problems identified can be prioritised according to their impact on users to help an organisation identify which ones should be fixed first.

By identifying obvious or clear-cut usability problems, an expert survey provides a fast, efficient and cost effective method to generate significant performance improvements.

Warning!

An expert survey may miss at least one 'show-stopper' that could have a material impact on usability. That is because experts don't act like novice users and won't interact with your site in the way that new visitors might. This is a major reason for us recommending user testing following an expert survey.

Competitive Analysis

No doubt you have competitors. Even in the public sector there are likely to be other organisational Websites that are alternatives to yours. And, for certain, the Web is creating an increasingly competitive market. On the Web, the performance of your competitors' Websites compared to your own can have a significant impact on your future success.

A key element of the **Power Websites™** programme is therefore a detailed competitive analysis. Here are some of the benefits from going through this process:

- **Understand how your site compares to your competitors**
- **Benchmark industry and/or cross industry best practice**
- **Improve site performance to beat your competition**
- **Identify the priorities for site improvement**
- **Check how the customer experience on your site compares with the customer experience on your competitors' sites?**

Academy Internet will carry out a usability evaluation of your key competitors or best practice sites based on the heuristics used in the expert survey. Typically anything from 2-10 sites are surveyed and compared.

The competitive evaluation and analysis is based on the expert survey, using similar key factors. However the level of detail may be slightly less than the survey of your own site.

Your site's usability is carefully compared against that of your key competitors. Competitive analysis may be completed either before or after an expert survey on your own Website. There are pro's and con's of each approach, which can be discussed in detail with Academy Internet consultants.

Deliverables

A comprehensive comparison/ analysis report which will enable you to clearly identify your strengths & weaknesses and establish benchmarks for future usability performance.

A management workshop in which the finding of the report can be explored and actions for change identified. The issues may include strategic product development, customer service, business process and performance as well as Web site development.

User Testing

"Classic usability testing is truly the most Websiteful, most complicated, most rewarding tool in the WPE toolbox."

Classic usability testing is truly the most powerful, most complicated, most expensive and most rewarding tool in the WPE toolbox.

Whilst an expert survey provides valuable technical and usability feedback, for optimum results this should be supplemented with user testing. User testing provides reliable and robust information on how real customers use your Website and the problems they encounter. The result? Qualitative and quantitative feedback that reveals far more detail than the expert survey - and also picks up problems that the experts have missed.

Usability testing enables you to test, empirically, the usability of specific portions of your Website. Therefore, this tool is most useful when it is applied to critical types of transactions on the site, such as making a purchase, signing up for membership, completing a sales lead form and so on.

However, good usability testing will also demonstrate your site's effectiveness at delivering information, and of your visitors' ability to navigate to important pages. In usability testing, people whose characteristics (or "profiles") match those of the target user audience perform a sequence of typical tasks on the site under guidance and observation. A full video recording is made to ensure that every important comment and action is captured for later analysis.

Development of a test design document

The issues and questions to be answered and the characteristics of the desired participants are initially described in a test design document. Deciding which areas to test can be driven by client concerns, current customer feedback, prior heuristic (expert) evaluation, or a combination of all three. Identifying the specific usability issues at an early stage is very important.

Of course the results are sometimes surprising and reveal concerns that maybe have never surfaced before, including 'critical stops' - a problem so severe that it completely impedes the visitor from achieving their task.

The test design document will have a number of sections as described below:

Section 1: Purpose

What are the functions of the Website to be tested? What does the site do? Whom does it serve? What is the vision for the future? What is the reason for doing this testing?

Section 2: Problem Statements

Short, one-sentence summaries of the questions you are looking to answer through testing. For example, "Can our users easily locate relevant product information to choose the right products?"

Problem statements take the more abstract concepts developed in section 1 and start moving towards a narrower focus.

Section 3: User Profiles

You will need to test a slice of your entire user population using a sample. A key issue is to ensure that the sample is representative of the population.

Section 4: Methodology

In this section the way in which the test will be conducted is described in detail. This ensures that should the test be repeated by others, the same process can be followed.

Section 5: Test environment and equipment requirements

Here the equipment used and test layout is described. This section also enables budgeting and resourcing issues to be addressed.

Section 6: The test team

The team who will be involved with the test process are indicated. It will always be a minimum of two, but could include the following: Test monitor, Data logger, Timer, Video operator Website specialist.

Section 7: Evaluation measures

The methodology for determining success or failure of tasks is described, as well as any constraints placed on the participants (for example, not being allowed to use a search engine). Common criteria for task analysis includes the following:

- **Number of clicks needed to complete a task (could be compared to the minimum number as determined by the site specialist).**
- **Click path taken**
- **Total time elapsed - how long for the user to accomplish the task?**

Section 8: Task list

This section is the heart of the test plan. The individual tasks that have been developed to answer the problem statements in section 2 are described. Each task consists of several parts:

- **Scripted test - instruction to be read verbally**
- **Conditions for success - how will the goal be measured?**
- **Start state - what state will the computer and Website be at the beginning of the task?**

"Usability testing is a very powerful tool that will enable positive feedback to be obtained from 'real' users in a controlled and scientifically designed environment."

Section 9: Results

The section is completed after the usability testing has taken place. The data will be presented in various ways, including a matrix for all tasks and all participants. Various tables will enable the success or failure and other measures to be easily understood and interpreted.

The metrics will usually include:

- Effectiveness - eg. percentage of tasks completed
- Efficiency - eg. time to complete a task
- User Satisfaction - eg. rating scale for satisfaction with Website
- Error tolerance - eg. number of errors made and error system handling
- Learnability / memorability - eg. ease for new user/repeat user.

Section 10: Discussion and analysis

Other comments made by participants during testing or debriefing will show up here. Also expert comment and observations made by the test team.

Section 11: Recommendations for change

The recommendations will include severity ratings as previously discussed. The difficulty of making changes will also be rated.

How big should the user sample be?

Neilsen recommends having five participants per round of testing. Our preference is for four, split into 90 minute sessions across one day.

Ideally the participants will match one specific user profile. If there are multiple user profiles, different enough to suspect that site usage will vary, then multiple rounds of testing may be appropriate. In general we find that user testing yields excellent results with between 8 and 24 users.

Summary

Usability testing is a very powerful tool that will enable positive feedback to be obtained from 'real' users in a controlled and scientifically designed environment.

User testing enables a clear focus on:

- Critical tasks and functionality
- Features and functionality that will be used by most target users.
- Components that will cause the most problems if used

incorrectly.

- **Features that generated debate or disagreements during the original Web design process.**
- **Components where prior experience with related or previous systems leads Academy Internet or the client to suspect usability problems.**

Deliverables

- A detailed report covering the results achieved and recommendations for change, as described above in the section on the test design document. The report will identify problem areas, list their severity in terms of user problems and provide specific recommendations for improvement, prioritising key activities.
- An integral part of this service is the delivery of the report to senior management in an interactive session that allows for discussion of the issues raised and the answering of questions.
- A more detailed workshop can be added as an optional extra. As for the expert survey, this would bring your content, design and Web management team together with our experts to create a specific plan of activity based on available priorities and resources.
- Continuing support is offered to ensure that recommendations are carried through, or to complete further user testing when major design changes are implemented
- Implementation of the recommendations by Academy Internet is also available as a client option

Website Redesign

Each WPE assignment results in a report with specific recommendations for improvements. These recommendations may vary from minor textual and graphic amendments, to major navigational or database redesign.

Our experience is that clients vary widely in their approach to implementation. There are three predominant models:

1. The client has internal skills and resources to implement recommendations. Fine. We are very happy to hand over to client staff. Frequently it is worth running a workshop as part of the handover process, ensuring that all questions are answered and providing the benefit of our knowledge and experience in taking the best approach.
2. The client outsources the implementation of changes to their preferred Web development partner. No problem. If requested we will run a handover workshop as above.
3. The client has neither the internal skills nor resources, and/or does not wish to place the work with an existing Web development company (often they were responsible for the current site!). In this scenario we are willing and highly capable of picking up existing Websites, whether Internet, Intranet or Extranet, and taking them through either minor or major redesigns, implementing agreed recommendations in the process.

The key is for clients to understand that our preferred way of working is in close collaboration with the intention of providing as much service and value as we can deliver.

Technical and design competence

Academy Internet has specialist skills in the following areas: HTML, SHTML, Java, Javascript, CGI, SQL server, Cold Fusion, C++, Flash, Director, Sybase, Oracle and more.

We also have high-level design expertise and utilise all common design tools including Dreamweaver, Photoshop etc.

All work is carried out to ISO 9000 standards.

With our background in systems development we are accustomed to working in complex environments and with various back-end systems.

Getting Started

To deliver an effective WPE intervention a comprehensive plan needs to be designed. In the preparation phase there are a number of standard questions that we ask. You may find it helpful to have the list:

- **Why do you intend to perform a Usability evaluation of your Website?**
- **What is the scope of the evaluation? Which Websites, what level of detail?**
- **All or some of the four-part service outlined in this paper?**
- **What do you want to accomplish with the results you get?**
- **What is your preferred timeframe for the total study?**
- **Which Websites should be included?**
- **What plans are in place to implement suggested improvement changes?**
- **What do you think is currently wrong and/or could be improved?**
- **Do you control all the content of the proposed Websites, or is some contributed and outside your control?**
- **Do you have corporate design standards that must be adhered to?**
- **What information do you have about your user base?**
- **What previous Usability evaluations have been made?**
- **Whom is your main competition?**
- **What were the original design and performance criteria for the development of the Website?**
- **Are detailed Web logs available?**
- **What is your budget for this WPE intervention?**

These questions form the foundation of determining the scope of any intervention and building the plan to deliver the required results.

Frequently Asked Questions

We don't think we have a usability problem

All the surveys point to at least 90% of Websites having usability problems. Within our team, we can honestly say that we have never found a site that did not have the potential for significant improvement - from whatever its current level of usability.

The most important thing to remember is that poor usability is revealed in silent losses - few users ever bother to tell you that they aren't coming back!

Approximately how long does a WPE intervention take?

This obviously depends on the scope, but usually ranges between three and ten weeks.

Why shouldn't we complete this work internally?

A great question. Firstly, do you have people with the right experience in WPE and the time to do the work? Secondly, are their internal 'political' issues that could make it difficult to be truly impartial and independent? Thirdly, do you have processes for this work, test labs and the necessary software for the performance testing? Finally, have you ever tried to 'proof' your own written work - frankly its impossible to do well. Your staff are simply too 'close' to the Website to see what we will see.

If your conversion rate from browser to buyer is less than 100% there is room for improvement.

What is the use of a report?

The most important part of our reports are the recommendations for improvement, supported by clear prioritisation and showing the impact of making changes.

In most cases our reports are supported by workshops, enabling interactive discussion about the conclusions reached.

Finally, Academy Internet will be pleased to implement the recommendations - we will support our clients through the entire lifecycle of WPE.

When should we consider WPE as an important option?

If you have never employed WPE on your Website, then right now is the time to start. For the future, regular WPE is likely to ensure that Web redesign's are operating at maximum effectiveness, and is likely to both save and make you considerable amounts of money.

We know we have a usability problem, but we don't know which WPE options we should consider?

Call to arrange a meeting and to discuss your objectives. Our WPE consultants will help prioritise your needs and produce a detailed proposal for consideration.

Optional Extensions

"Negative experiences with e-learning abound."

Web Performance Engineering for e-Learning

This white paper has addressed the issues involved in addressing usability issues for Websites. However, with the growing development of delivering learning across the Web we see the beginning of similar challenges with e-learning programmes.

Negative experiences with e-learning abound, and usability issues include; ineffective navigation, boring 'page turners', bad design, poor instructional design and plain uninteresting and poorly structured writing.

With an entire division dedicated to the creation of e-learning solutions, including the creating of interactive and engaging e-learning content built on sound instructional design principles, Academy Internet is pioneering the use of usability techniques for the improvement of e-learning programmes.

Search engine placement

Not strictly a usability issue, achieving high placement on search engines is nevertheless an important marketing issues for many organisations.

Given that Academy Internet may already be engaged in detailed work on the Website, it is easy to extend the brief to include evaluating page design for top search engine placement and recommending changes that will impact your position.

Multi-platform WPE

"With the introduction of every new interface, usability will rear its head!"

Throughout this document we have assumed that the Website will be accessed through a computer interface. But the world is changing fast, and over the next few years we will see an explosion of interface devices on which Websites will be viewed.

These include; PDA (Personal digital assistants), Mobile phones, Public kiosks, Interactive TV, In-car systems and many other devices that we haven't even imagined as yet.

With the introduction of every new interface, usability will rear its head! And just as there was no accumulated experience in designing good usability in the early days of the Web, there is even less knowledge and experience of these other platforms.

Academy Internet will remain at the forefront of WPE, porting our expertise in Web interfaces to new platforms as they arise. Please talk to us if you are concerned about usability issues on platforms outside of the PC.

"..from 2004, all UK online businesses will face prosecution under the Disability Discrimination Act, unless they ensure their Websites are accessible to people with disabilities."

Design for Accessibility

Web accessibility is not the same as Web usability. But accessibility can be an important component of usability.

People with disabilities need to be able to use the Web as easily as everyone else. In the UK, the law requires accessibility to be seriously addressed in certain circumstances. In fact, from 2004, all UK online businesses will face prosecution under the Disability Discrimination Act, unless they ensure their Websites are accessible to people with disabilities.

Designing for accessibility will include considering these issues - relevant to many users beyond those specifically with disabilities:

- **Never assume anything about how users will try to use your Website. They might not be able to see, hear or move, or they might not be able to process some types of information easily or at all.**
- **They may have difficulty reading or comprehending text**
- **They may not have or be able to use a keyboard or mouse**
- **They may have a text-only screen, a small screen, or a slow Internet connection**
- **They may not speak or understand fluently the language in which the Web pages are written**
- **They may be in a situation in which their eyes, ears or hands are busy or distracted (eg driving to work, working in a loud environment)**
- **They may only have an early version of a browser, a different browser from the one for which the site was created, or a different operating system**

This is an incomplete list, but gives you the general idea that you cannot always assume how the user is attempting to access your content. The point of accessibility is to ensure that you will reach the largest audience possible by making your content easy to access.

Your site can be assessed for its accessibility and a report generated that will provide prioritised recommendations for improvements to current accessibility.

Benefits of the Academy Internet Approach to Web Performance Engineering

Thorough and comprehensive approach

The Academy Internet approach is thorough and comprehensive. Why? Part of our value system says that if something is worth doing it is worth doing well.

The benefit - all important 'angles' are covered and maximum value is achieved.

Proven scientific method

Academy Internet applies recognised scientific testing techniques and data analysis methods.

The benefit - valid data and recommendations that can be relied on.

Focused on business impact

All WPE recommended changes and improvements must ultimately be cost justified and deliver measurable benefits that outweigh the investment. This consideration is kept at the forefront of our consultant's minds throughout a WPE intervention.

The benefit - pragmatic approach that is always considering recommendations in terms of implementation cost and value to the client.

Clear recommendations for change with priorities

Our reports are specific, detailed and clear, indicating priorities, severity ratings and more.

The benefit - clear action plans and quantifiable results.

Focus & Experience

Academy Internet is totally focused on business transformation through Web and related technologies. Our client lists extends to more than 1,000 major organisations including 35 of the FTSE Top 100 companies.

The benefit - you can relax knowing that you are engaging with a partner who brings much experience of the medium.

Support through the entire cycle

Consultants all too often make recommendations and then leave the client with the major challenge of implementation. Academy Internet supports you through the full WPE cycle and will implement recommendations at your request.

The benefit - a trusted partner that enables quick & easy implementation.

Cost effective

We keep our overheads tight and, as a relatively small organisation, operate very efficiently. As a result our pricing model is very cost effective. Our chosen positioning is to offer interventions which offer the same quality levels as major consultancies, but with superior client service and more competitive pricing.

The benefit - you receive a highly effective service for a compelling price.

What to do Next

Call and talk to us for a 'no commitment' discussion. We will help you in scoping a WPE intervention, answer all your questions and provide a detailed proposal.

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