



# **The Guernsey Benchmarks 2002: Smarter online business practice**

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## 1. Introduction

Web sites are now a staple requirement for all businesses, however a surprising amount of sites are still poorly designed. These sites are not only a burden, complicating rather than simplifying the process by which the user buys a ticket or orders an item, they can even put a prospective customer off permanently.

Based on a combination of new research and existing investigations into the field of usability, this booklet in association with the Guernsey Board of Industry provides a benchmark for the successful business web site. The basic rule being: bad design is bad for business; good design is good for business.

The Digital World Research Centre (DWRC) at the University of Surrey, investigates how to make the digital world a better place to work in. It looks at hardware, software, and at the social changes all around us to analyse how they are affecting one another. What is discovered again and again is that irrespective of how clever and innovative technology might be, usability levels are often so poor that they prevent the benefits that digital technologies could provide from showing themselves.

One of the reasons for the quality of web sites varying so much is that web design is still largely a task undertaken most often if not always, by people with a graphic design or a computer sciences background. Often these groups are less specialised in 'usability skills' and so have little apart from their own practical experience to guide them. This does not mean that web sites are poor of course; but it does mean that the usability is not what it could be.

It was with this in mind that the Board of Industry's e-Business Team sponsored research at the DWRC. Scientific research was brought together and, on a pilot basis, state-of-the-art investigations into the problems of usability on web sites was completed.

In brief, the DWRC collected and summarised some of the most important scientific research from the fields of cognitive and physical ergonomics relevant to web design, and undertook some experimental and qualitative investigations of a sample of web sites to investigate usability.

The aim of *The Guernsey Benchmarks 2002: Smarter Online Business Practice* is to help organisations within Guernsey and further afield ensure good levels of site usability, which will result in a far more engaging online experience for the user and a far more successful online business proposition for the organisation.

## 2. How to read this booklet

This booklet firstly sets out the composition of a typical web site. It contains all the features we expect to find when logging onto a site for the first time.

Secondly it identifies the fundamentals of effective web design in terms of its usability, setting out some general properties of good sites.

Thirdly this is broken down further into the seven maxims of site design: a simple way to ensure that your web site fulfils the basic requirements of effective usability.

After this we examine some of the scientific issues one needs to understand to ensure optimum website usability. Starting with *physical ergonomics*, we explore the impact of physical attributes on a web site, for example the size of the font used for text.

We then turn to *cognitive ergonomics*, which concerns itself with how the mind comprehends and processes information, for example how much information a person can manage when they are trying to navigate around a site.

Subsequently, we introduce what is called a '*Grammar of Use*' for web sites. This is a term that labels how people work their way through a web site effectively. This depends upon, but is not guaranteed by, good physical and cognitive ergonomics. Effective '*Grammar of Use*' depends upon the correct balance of both these factors.

'*Grammar of Use*' involves the user's motivation for visiting a particular site and the goals that they want to achieve whilst there. Users will have a notion of how tasks can be completed. This will be based partly on what the site makes available in terms of information and process, and partly on what they have experienced previously.

People assume that they can rely on the patterns used in everyday life when using a web site, and so will have difficulties when they discover that designers have developed a language of their own. How people navigate the site is referred to as '*Grammar of Action*'.

Through incorporating the rules of '*Grammar of Use*' into web sites, designers will be able to provide an environment which is familiar to the user, thus encouraging them to feel more comfortable and ultimately fulfil the objective of receiving, purchasing or downloading from the site.

Ease of use is only part of what makes a site acceptable. Finally, we explore the element of trust. This booklet emphasises that people must have trust not only in the site itself but also in the provider of the site, for smarter business to be conducted on line.

Having outlined the fundamentals of 'usability architecture' of a web site, ranging from the size of fonts to navigation and trust, we then summarise in the form of a checklist the key elements required in delivering and sustaining an effective business web site.

### **3. The composition of a typical web site**

A typical web site is composed of the following basic features:

- 1) A URL - the address that people use to enter it.
- 2) A Home Page - the first page that opens when the site is called up.
- 3) (Usually) several other pages that have information and functions that are specific to the purpose of the site.
- 4) Each page will usually have several sections that divide up the page into areas that deal with different properties and functions.
- 5) Each page will have links that may be special words, icons or buttons that allow you to jump directly to other parts of the site.
- 6) The action of moving around a site by activating links is called navigating.
- 7) Some pages will have fields into which the visitors can enter information.
- 8) Sometimes fields have special properties to reduce the amount of typing that is required of the user. These may include scrolling arrows.
- 9) Often there will be menus that may be pop-up menus or pull-down menus. When a menu is activated it shows a list of items that the visitors may need, either to enter into a field, or to help with navigation.
- 10) The browser application, which provides access to a web site, will provide a tool bar or menu bar at the top of the 'browser window'. This will allow the visitor to leave the site, close the site, go back several pages, etc. Most browsers allow this tool bar to be customised.

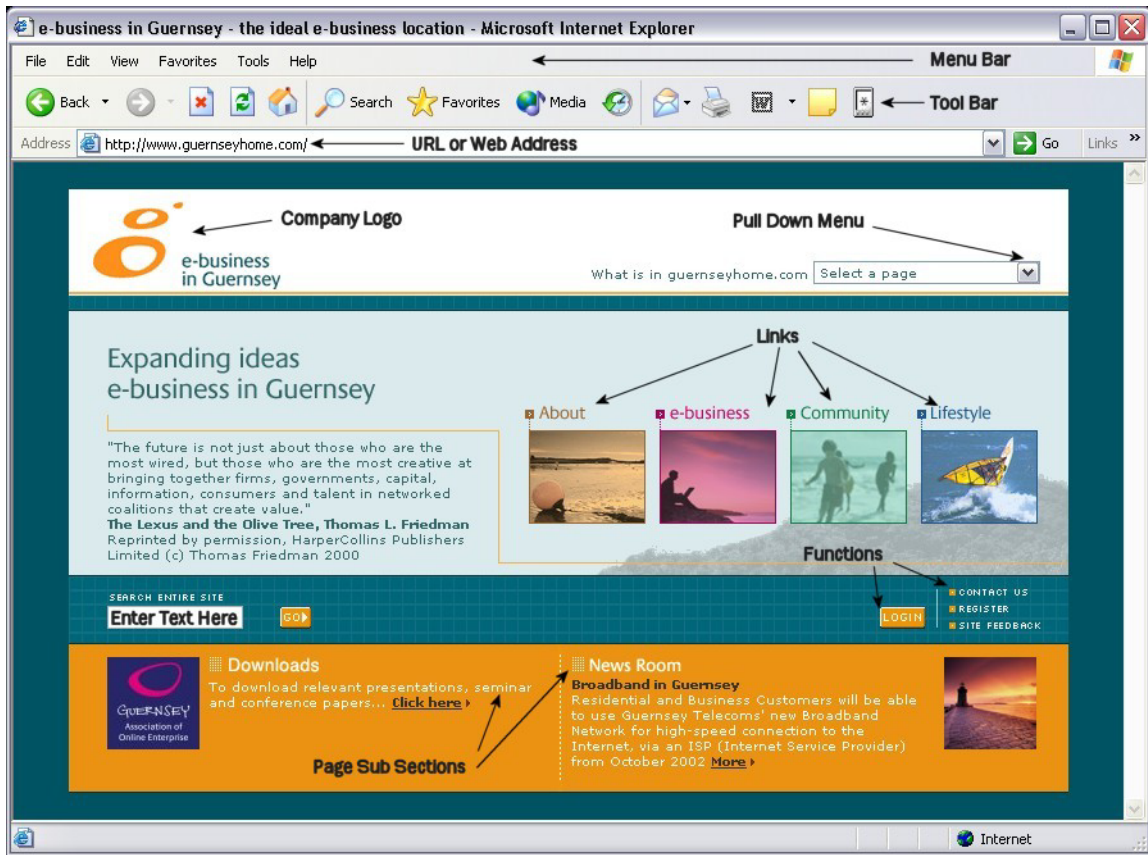


Figure 1 – An example of a typical web page with the key aspects labelled.

## 4. Some general properties of good sites

Through our research into effective web sites we have identified properties which every site should have. These are listed below:

- 1) The Home Page should be easily found.
- 2) The Home Page should be easily identified when opened (i.e., the user must know that they have got there).
- 3) It should be easy to:
  - Navigate throughout the site
  - Find appropriate buttons and fields
  - Identify click-able items
  - Enter appropriate information
  - Move to appropriate pages
  - Retrace steps as required
  - Perform searches
  - Exit the site
- 4) A site should be accessible for visitors, irrespective of what hardware or software is used.
- 5) A site should support visitors with special needs (colour blindness, movement tremor).
- 6) Each page of a site must have the following features:
  - Logo, title and URL
  - Log In and/or Log Out buttons
  - Content required for goal to be achieved
  - Tools for navigation
  - "Home Page" access button
  - "Return" or "Go back one or more pages" button
  - An "Index Frame" with labels and buttons to access other pages
  - Appropriate white space to help legibility



7) General layout:

- a) The layout of all pages should be consistent. This includes placement: elements should be in the same place on each page (for example the "Go Back" button or Index Frame).
- b) Conventions: a site should follow the convention for layout unless there is special reason not to. All sites that do not follow these conventions will be judged in terms of those conventions (i.e. the user will ask; "Why have they done this differently?") The user might find using the site difficult because of its lack of familiarity. The example in Figure 1 shows conventions that are now well established and should be followed.

Key conventions:

- Place buttons or links to access other pages in an "Index section" down the left hand side.
- "Home" and "Back" buttons repeated at foot of page.

8) Links should be obvious: whether underlined text, coloured text, buttons, or icons.

9) Minimise the need for scrolling:

- If possible the whole of each page completely visible on the screen without scrolling.
- If scrolling is necessary, make sure that at all times a "Home" and a "Back" button are visible, and provide a "Go to Top of This Page" button.

10) Avoid or minimise "banners" that are not directly necessary for the main goal of the page.

## **5. The maxims of site design**

*"A site is for users. The users are not for the site."*

Below are seven rules which should be followed to ensure your web site fulfils the basic requirements of effective usability:

- 1) Make it easy for users to achieve their goals.
- 2) Allow users to focus on their task in hand.
- 3) Features not needed should not be present.
- 4) Users must reach the goal for which the site was designed.
- 5) In a business site users should not be lured into exploring the site just for fun.
- 6) A site should be designed to ensure that what is necessary and sufficient is not confused by unnecessary decoration.
- 7) A web site should not require a user to think about how to use it.

## 6. A science-based approach to the design of usable web sites

### 6.1 Ergonomics

Ergonomics is the scientific discipline that makes technology match the physical and psychological properties of the human. A technology with good ergonomics is "user friendly". It is easy and pleasant to use, reduces errors, and reduces workload. Users may not realise why it feels good to use, but they will be left with the impression that the web site has been designed with them in mind.

Ergonomics covers all types of technology and naturally has implications for web sites:

- *Physical ergonomics* uses anatomy and physiology to ensure that the site is well matched to the way that the senses take in information, and the way that muscles allow movements to be made.
- *Cognitive ergonomics* takes account of attention, perception, and memory to aid thinking and decision-making.

#### 6.1.1 Physical ergonomics

*Character size - All characters must be big enough to be readable.*

The smallest text character should be at least 3mm high when it appears on the screen, and bigger if viewed at a distance of more than 500mm. This is the minimum size that will serve most users with normal vision providing that other characteristics such as colour constraints and contrast are satisfied (as outlined below).

*Text density - Information should not be crammed onto a page by using small densely packed text, tables or icons.*

*Figure and ground - Figures should be easy to distinguish from background and should ensure visual stability.*

In designing visual displays "figures" appear on a "background". Text characters or objects are "figures", and the screen on which they are written is "ground".



**Figure 2 – Example of figures and ground.**

*Contrast - There should be good brightness contrast between figure and ground to ensure legibility.*

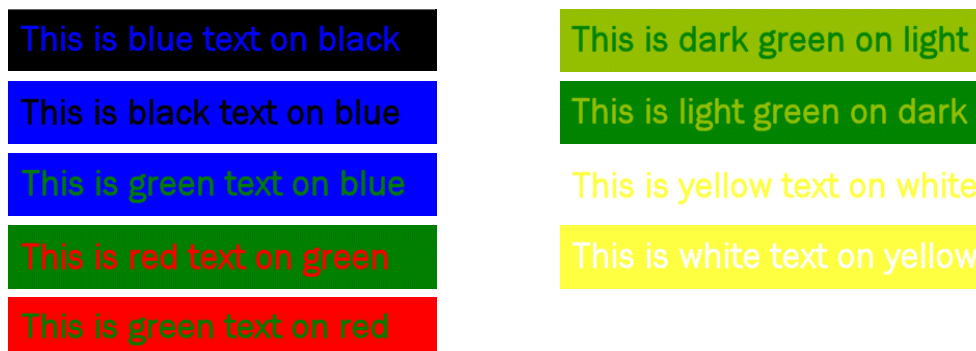
A contrast ratio of at least 5 to 1 between figure and ground is desirable. Contrast sensitivity decreases with age, and if low contrast ratios are used, older users will have difficulty in reading the display. Patterned backgrounds can also reduce legibility.

*Colour - Be restrained in the use of colour.*

Users find it hard to 'process' more than about 5 - 7 colours to identify objects uniquely by their colour. A computer can display a vast array of colours, but this does not mean that people will be able to read images easily.

*Certain combinations of colours should never be used.*

The deep strong blue that is called "blue" on many computer graphic palettes should never be used on a black background, or vice versa, as it is almost completely illegible. Certain combinations of strong red and strong green, and strong green and strong blue dazzle the eye and are hard to read. If brightness contrast is low then colour boundaries of figure and ground are unstable.

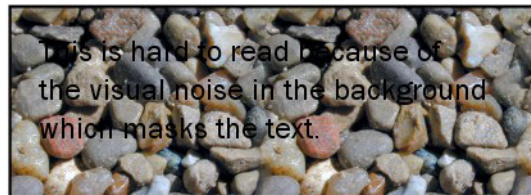


**Figure 3 – Examples of colour combinations and contrast.**

Approximately 15% of men (and a far smaller proportion of women) have some colour blindness: the most common is reduced ability to distinguish red and green.

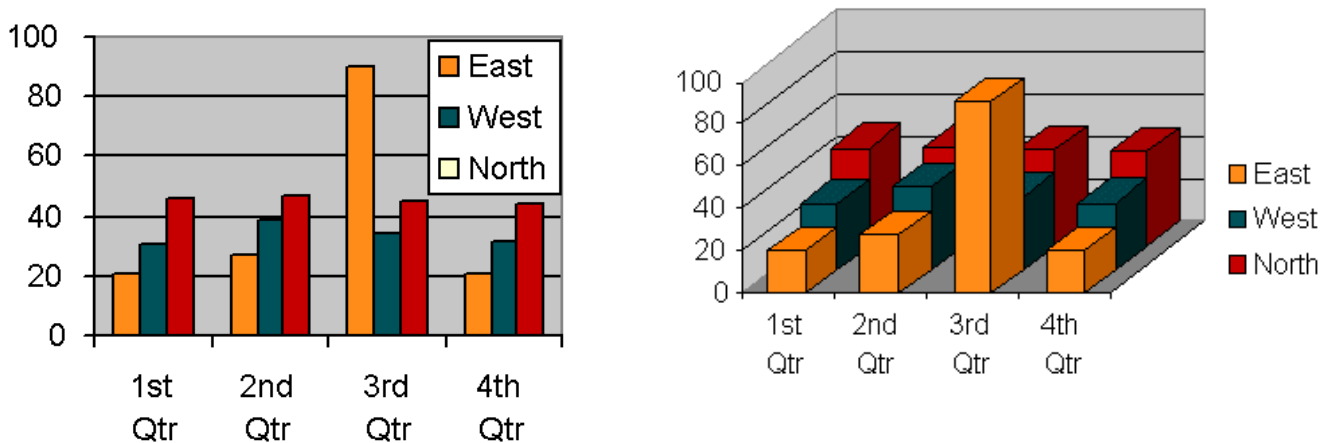
Visual noise and "chart junk" - *Keep the design visually simple and clean without noise.* Web sites convey messages. Hence visitors must pick out the message from background "noise". In vision, noise is anything on the page that is not part of the message you are trying to read.

Noise always makes it more difficult to see a message. Any text, fancy symbols, unnecessary icons or banners, are noise and will make the site harder to read. Any background "wallpaper" is noise.












**Figure 4 – Background noise can make text hard to read.**

Any graphics features that carry no information or hide information are noise or "chart junk". The 3-D graph in Figure 5 contains no more information than the 2-D graph and it is actually harder to read the heights of the bars. Never use 3-D graphics when 2-D will show the same information.



**Figures 5 – Chart junk makes graphs hard to interpret.**

There is an almost infinite variety of fonts and symbols available on a modern computer. But the use of elaborate patterns and colours distracts rather than helps the reader. Visual Junk makes the visitor uncertain as to which items on a page serve a function, and which are just for decoration.

None of  this  helps the  
Reader    to understand  
what is being  said   
although  it certainly  
catches the  (eye)

**Figure 6 – An example of text junk.**

Sound and speech - *Use sound to confirm inputs.*

Sound, speech or music can be triggered by clicking on a link to signify acceptance. Sound can also be used as warnings or to describe an error made by the system or by the user.

To be easy to hear, the level of an auditory message should be at least 55 dB (decibels) SPL above absolute threshold for hearing, and for speech to be easily intelligible it should be at least 10 dB above any the background noise<sup>1</sup>. There should be a control for loudness (slider or virtual knob) on the relevant page. A sound level above 90 dB SPL should never be used as it will damage the user's hearing.

Size of icons - *The speed and accuracy of movements is governed by "Fitts' Law".*

“If you move a cursor across a screen to a link (or a finger to a key), then the smaller the target and the larger the movement, the more time it will take to be accurate.”

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The intensity of sound is measured by means of instruments that measure the sound pressure level (SPL) in units called deciBels. Subjective loudness is closely related to the SPL. If one sound has a SPL that is 6 dB greater than another, then it is twice as intense physically. Zero SPL is defined as the quietest sound an average person can hear. Sounds more than 90 dB greater than the threshold damage hearing, and prolonged exposure causes permanent damage. The average quiet office environment has a background noise level of about 55 dB.

When designing the layout of buttons, fields or links look carefully at the patterns of expected movement. If the user must make a series of movements in a sequence, as far as is possible make sure that targets are large and distances small.

System response time - *The system should respond to commands very quickly and with little variability.*

The response time to a mouse click, a keystroke, or the movement of a cursor must be less than 0.1 seconds for it to appear there is no delay.

Some response times need to be carefully designed. Menus should remain open and require a second click to release them rather than disappearing as soon as the cursor moves out of the field. Response times of the system as a whole should be as short as possible, but above all, consistent.

Currently, differences in the speed or compression capacities of different networks may cause variation in system response time. It is best to orient a design to the most common speed or network compression levels.

Links, buttons and other targets - *Any targets that may be needed should be visible at all times.*

It should not be necessary to scroll to or to open a new page to find the required link.

By convention, text links tend to be in "[blue](#)" and underlined, and when clicked should change to [pink](#) or pale [violet](#). (It may be necessary to use other combinations in special cases where the background is coloured or to match the colour theme of the site).

Flashing text, moving banners, etc - *Movements or flashes will distract the viewer.*  
Any rapid changes in a visual display tend to attract the viewer's attention. The eyes will move involuntarily to the changing element, and viewers will then have to redirect their attention. Avoid the inclusion of anything that changes except under the control of the viewer unless you want to attract their attention.

### **6.1.2 Cognitive ergonomics**

Cognitive ergonomics is concerned with how the mind processes information. To analyse this, cognitive ergonomists distinguish various kinds of behaviour, two of which are important in web site design: rule based and skill based behaviours:

- *Rule-based behaviour* is the most common everyday behaviour, and consists of "IF / THEN" rules. "IF you want to go to the original page THEN click on the Home button."
- *Skill-based behaviour* is completely automatic, and is either the result of experience, or of a very cleverly designed web page where it is so obvious what to do that no thought, or little practice, is required - after one experience most people will automatically click on the icon of a house to return to a home page.

A good web site will let people use skill-based and rule-based behaviour. We need to consider the following aspects of user psychology to ensure this.

Use perception not thought - *Minimise the amount of thought required to use the site.*

Users of a site for online banking should not have to puzzle about where on the screen they must input the amount of money to be deposited. That required feature of the site should JUMP OUT without any need to look for it.

Perception - *What users perceive in a web site is key to their successful use of that site.*

Links to other pages should look and act like links, and nothing else. Fields into which text is to be typed should look like a field that will receive input. Controls for scrolling, or up and down arrows to allow pre-defined entries to be selected should look like what they do. Icons that are click-able should be visibly different from icons or pictures that are simply illustrations. The use of these sorts of tools should not require the user to think.

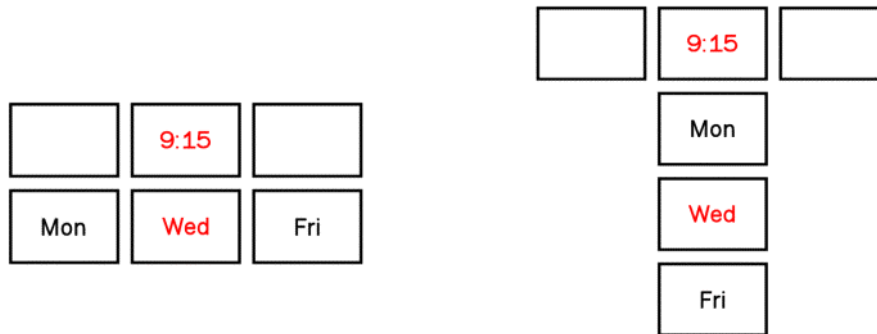
Feedback - Not only is perception at the outset important, but so too is feedback once a task has started. When any active element is clicked or activated, it should indicate that it has received the command. For example, an auditory signal, such as a beep or a click, should accompany a successful input by the user to the screen.

Stimulus-response compatibility - *Deliver what is natural to users.*

Some arrangements of display and control seem particularly natural to users. When display and control relationships are in accordance with "stimulus-response compatibility", actions will be fast, easy, and usually error free. When stimulus-response compatibility is violated, the opposite will be the case.

Figure 7 shows three windows, which display the time of departure of a plane on Monday, Wednesday, and Friday. To display the times the visitor has to click on a link labelled "Mon", "Wed" or "Fri". The left hand arrangement is much better because it has high stimulus-response compatibility.





**Figure 7 - Example of stimulus-response compatibility.**

Affordances - *An object's affordance is what it seems to give you a chance to do.*  
 Good design should use pictures, buttons, icons, and objects that afford the opportunity for the action that is required of the user. The more strongly perceptual affordance is supported, the faster, more error free and effortless will be the response of the user.

For example, a push button (or a picture of a button) suggests to the viewer automatically that it is something to be pressed. A pair of arrows suggests that they can be used to move something up or down.



**Figure 8 - Examples of a push button and scroll arrows.**

Remember when localising a site for use in different cultures that affordances may change. (It is better to avoid switches, for example, since a switch that is "on" is typically up in North America, down in Europe, and to the right in Japan!)

Attention – *Remember to attract and guide your users' attention.*

A well-designed site will minimise the amount of 'attention' that has to be given to using the site. To enable this there are particular dimensions of attention that need to be understood.

Visual attention is the primary sense used in navigating web sites. We move our eyes to point to what we want to attend to. Something that is visually easy to find will require very few eye movements.

A special case of effortful direction of attention is experienced when a new page is generated. In theory, good sites minimise switching between pages, since this is time-consuming, tends to interrupt information processing, and puts a load on memory and attention. In practice most sites consist of more than one page, so the design of seamless switching between pages is of the utmost importance.

**Attention catching and directing is an area of real concern with web sites** - several principles can be applied to catch and guide attention:

- Anything that is markedly **DIFFERENT** in physical properties such as size, colour, or contrast from objects around it will tend to attract the attention automatically.
- Anything that suddenly changes or moves will tend to attract the attention automatically. This includes a sudden sound that occurs as the cursor moves over the target.
- Attention will tend to follow stereotypic signs and icons. An arrow will tend to make attention move in the direction of the arrow.
- Attention will tend to be directed to the top left of a newly generated page (for Western users, but to other areas for other cultures).
- When moving from page to page, a viewer tends to look first at the part of the new page that was focused on last on the previous page.

The above principles are hints to capture and direct attention as desired. They are also ways to distract attention if misused. A blinking banner with moving text will repeatedly make the eyes jump to it even if the intention of the user is not to read it.

Mental load - *The rate at which people can process information is quite limited.*

Usually errors will increase in relation to workload increases, and as the difficulty of the task increases users will either slow down or make more errors. Moreover, users will soon become tired, inefficient, and will dislike the experience.

Mental workload arises from:

*Choices and Decisions* – choices and decisions cannot be avoided because the purpose of most web sites is to offer them to the user. But the more choices there are and the more

rapidly they have to be made, the greater the mental workload. It is worth noting that factors such as poor contrast or poor legibility, or ambiguity in the meaning of symbols, icons or text add unnecessary choices and hence increase workload.

There are two kinds of memory, long-term memory and working memory (sometimes called short-term memory). Working memory is particularly important in navigating and using web sites. It is very limited, which is why links or pages that have been previously visited should be shown in a different colour.

*Demands on attention through overloading the user's memory* - users rely on working memory as they move from page to page. New information received by the brain tends to over-write older information, and information is lost as time passes (over a period of a few seconds) unless it is constantly rehearsed.

One implication from this is that the need to open a new page ought to be avoided, but not at the cost of crowding a page with information to the point of illegibility.

*Let the system carry the load* - An example of bad practice is where the software used for the site increases the load rather than decreases it.

One example is that of a car rental company's site which asks the user to enter the "country code" where the user lives. To help the user fill this section there is a link that finds the correct code. However when the link is clicked, a new page opens, hiding the main page, and a field is offered in which the user can type the name of their country.

When this is done, the software looks up the country code. For example, if "United Kingdom" is entered into the field, the software replies with "GB" and inserts it in the correct place in the previous page.

This trip to and from the new page disrupts the contents of working memory for the original page. Moreover it is not necessary to create this new page, since the software is capable of encoding the country name on the original page, without the need to switch back and forth!

*Support ease of navigation - avoid anything that creates a load on working memory.* Make sure that users do not become lost in successive pages, and cannot find their way back. An example of an appropriate tool is a "progress strip" across the top of each page showing the current page highlighted, and the others available for direct navigation if needed - by name not just by number.



**Figure 9 – A progress strip enables users to identify where they are in the transaction or a series of successive pages.**

Beyond this there are some basic features that all pages should have to ensure that navigation is eased:

- "Home" should always be available.
- "Back" should always be available.
- Index of Options relevant to the page should always be available.
- Avoid scrolling if possible.
- If scrolling is needed, provide "Home" and "Back" at all times.
- If an error is made, do not erase all information on the previous page, only that which is incorrect.
- Always give clear and helpful feedback when an error is made.
- Try to avoid the URL becoming very long and complex or incomprehensible.

### **6.1.3 Cognitive walkthroughs**

*These illustrate the importance of layout consistency.*

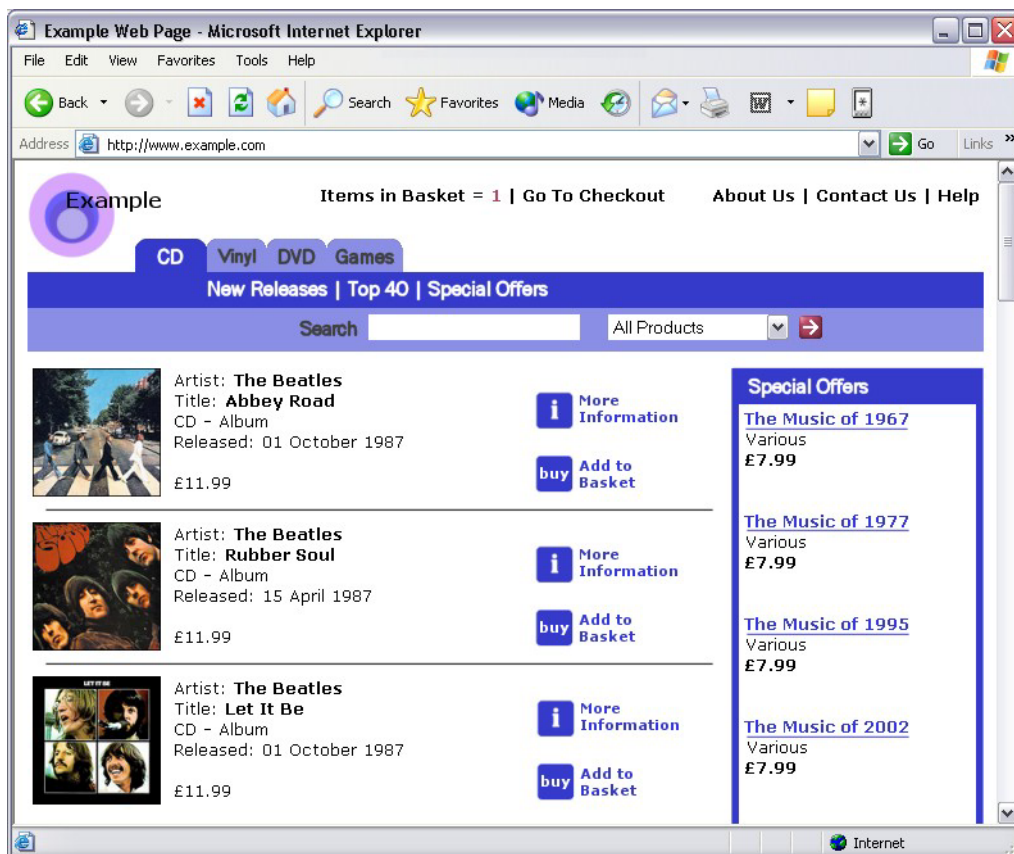
One method to study how people use a technology involves video-recording them performing a task with the technology, and asking them to explain what they are doing as they do it. This technique is called a Cognitive Walkthrough. It provides evidence of what users think they are doing, why they are doing it, some quantitative measures of task completion times and rates, and some insight into the character of their experience, such as whether it makes them feel good, agitated or confused.

Cognitive walkthroughs are especially good at providing evidence of how successfully people can undertake a task that requires several steps or some kind of navigation. In using web sites navigation occurs when a user has to select a hot spot or button that allows them to issue a command to move from one stage in a process (say of buying something) to another stage (such as completing a transaction).

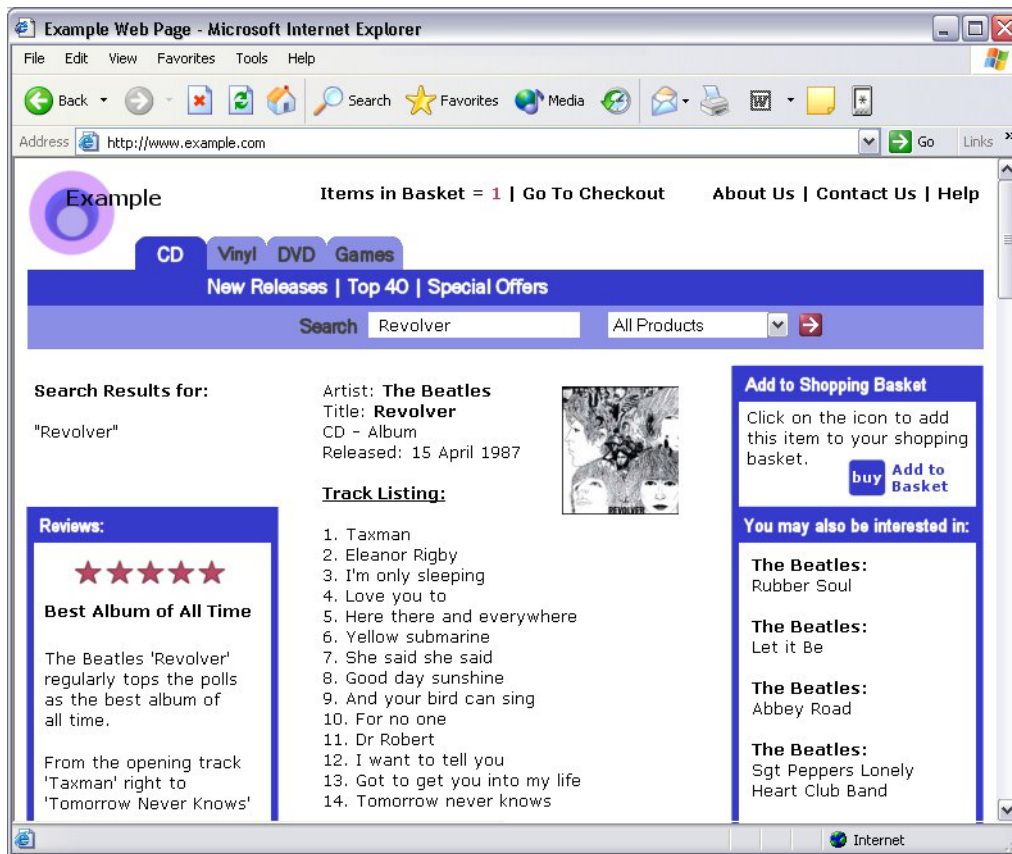
The importance of maintaining consistent relative positions was demonstrated through the use of a cognitive walkthrough method in our studies.

We asked our subjects to undertake a series of tasks on an e-commerce site. The first of these was to locate a set of products and choose one for purchase by selecting and using

the “Add to Basket” button. We then asked them to undertake a second search and again choose an object for purchase. Both tasks involved the selecting of the same “Add to Basket” button. Users were video-taped whilst undertaking these tasks and asked to explain what they were doing and why.



**Figure 10 – This is what they saw the first time they undertook the task.**



**Figure 11 - This is what they saw the second time.**

### 6.1.4 Analysis

The cognitive walkthroughs from the pilot study undertaken in Guernsey demonstrated that most users found it more difficult to complete the second task.

The first task used a page with a simple design. It included a button on a location allowing users to find it and complete the task in significantly less time than the second task. Even subjects who had visited the site before, completed task two only slightly quicker than first time users.

On average, the time taken to complete each task was as follows:

- Simple button – 6 seconds
- Complex button – 55 seconds

The reason the subjects had these difficulties is that the site designers placed the 'Add to Basket' button in a different location on the second page. Thus the first time a user selected a page listing items to purchase, the button was placed immediately adjacent to

the item in question. When a different page was selected, the button was located in another area of the screen.

Each subject understood the task to be completed and perceived that it would be easy to undertake prior to visiting the site. However, as the second task took longer than expected to be completed, the subject became increasingly frustrated.

The change in location may have seemed to the designers to provide an efficient layout for each individual page. But this does not take into account the way in which a user's mental model is formed by the pages seen, and how that model influences the way in which future pages are read.

The important lesson from this is that consistency of layout, in this instance maintaining a constant relative position, makes a site easy to use. Keeping the layout the same is not merely a matter of looking good; it means that users know where to go, what to expect and how to interact with a site. The layout of a particular page should not be seen as an isolated act of design. All pages must be seen in the context of the overall web site.

## **6.2 Grammar of use'**

When visitors interact with a site, they have fairly complex tasks that they need to undertake and these do require a specialist knowledge. When accessing a site, visitors expects that it will provide them with the tools to act on that knowledge, this is known as '*Grammar of Use*'. One element of this relates to the consistent and logical use of categories. One category set might be for types of goods, such as CDs, Videos or CD/Roms, whilst another might be for selling, buying, or ordering. Similar categories should be located in similar relative positions on each page. This will ensure that users complete the task effectively.

Pilot research shows that although applying traditional ergonomics to web site design helps usability, additional factors must be considered to create the ideal user-friendly site. This is because web sites nearly always require more than simply good physiological and cognitive ergonomics.

How users navigate the site is referred to as '*Grammar of Action*', the following elements of which should be applied to all web sites.

Ensure a consistent layout '*Grammar*' - *Users of a web site will assume that the way a page is laid out is intended to make it easy to achieve tasks and processes.*

They also assume that each and every web site will offer its own way of doing this, within the broader parameters of convention.

Whatever a site is intended for, users will always assume that the layout ‘Grammar’ is consistent throughout a site. One important element of consistency relates to the use of categories. Similar categories must look the same; distinct categories must look different. These differences should be reflected in layout, otherwise users will persistently go to the wrong place on the screen to undertake a task.



**Figure 11 – An example of ‘Grammar of Use’.**

In Figure 11 the blue line offers order information and other generic administrative categories. At the end of the blue line, it also offers access to The Beatles home page. Since users cannot understand the relevance of administrative tasks to The Beatles button, they will ignore that button. In this way, the site is lessening its opportunity to promote, and therefore sell, these products.

Experiments on Guernsey used eye-tracking technology and were particularly useful in helping to provide evidence to support this theory. Eye-tracking analysis allows one to monitor the way attention moves over a web site, both within and across a page, and how it is caught and held by particular elements. Although users were indeed looking at The Beatles button with their eyes, their mind could not see it because it was positioned alongside buttons for dissimilar administrative categories. The subject had identified the ‘Grammar of Use’ of these categories by starting at the left of the screen, and working his eyes across the page, as with normal Western reading.

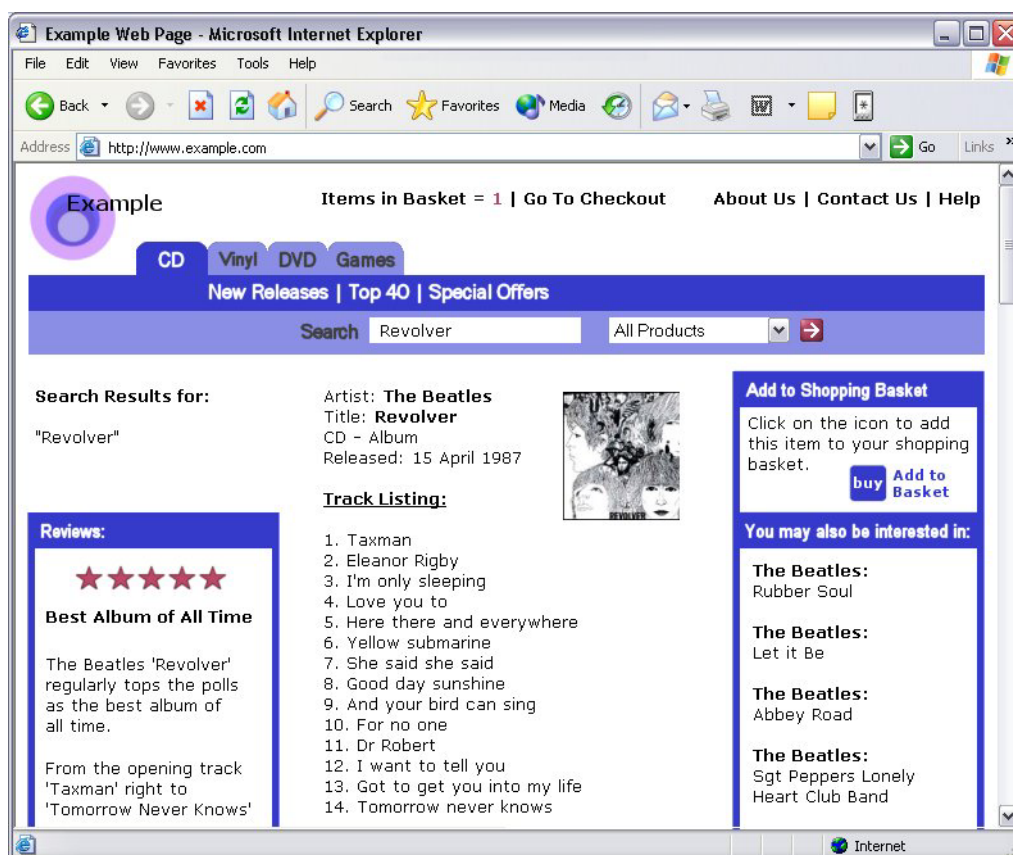


Before reaching The Beatles button, the subject had already determined the category set, and so looked elsewhere on the page, Test results showed that on average subjects focused 14% of their glances at the correct area of the screen and yet still continued to look elsewhere.

Relative proximities - *Buttons are understood to do one type of task, tables and other highlighted spots, other kinds of work.*

This must remain the same throughout the user's experience. As with 'Grammar of Action', a user will also assume that the 'Grammar of Location' remains consistent throughout a site. Any move away from this will result in most users being unable to recognise that button for what it is.

See Figure 11 where the "Add to Basket" button is placed in the same relative position for all articles. In Figure 12 the button is placed in a different area of the screen. Users will find it hard to locate this button and hence may not purchase the product.



**Figure 12 – The 'Add to Basket' button is in a different location from Figure 11.**

Avoid obscure categorisation - *Web sites are directories for information, whether that information is about services, products or the web site itself.*

The way that information is categorised should make sense and be recognisable to the user. A company must avoid using a supplier's categorisation rather than one which is more familiar to its customers.

Scroll blindness - *Though users may scroll down, they do not give as much attention to the information beneath the scroll 'horizon' as they do to information on the first screen they see.*

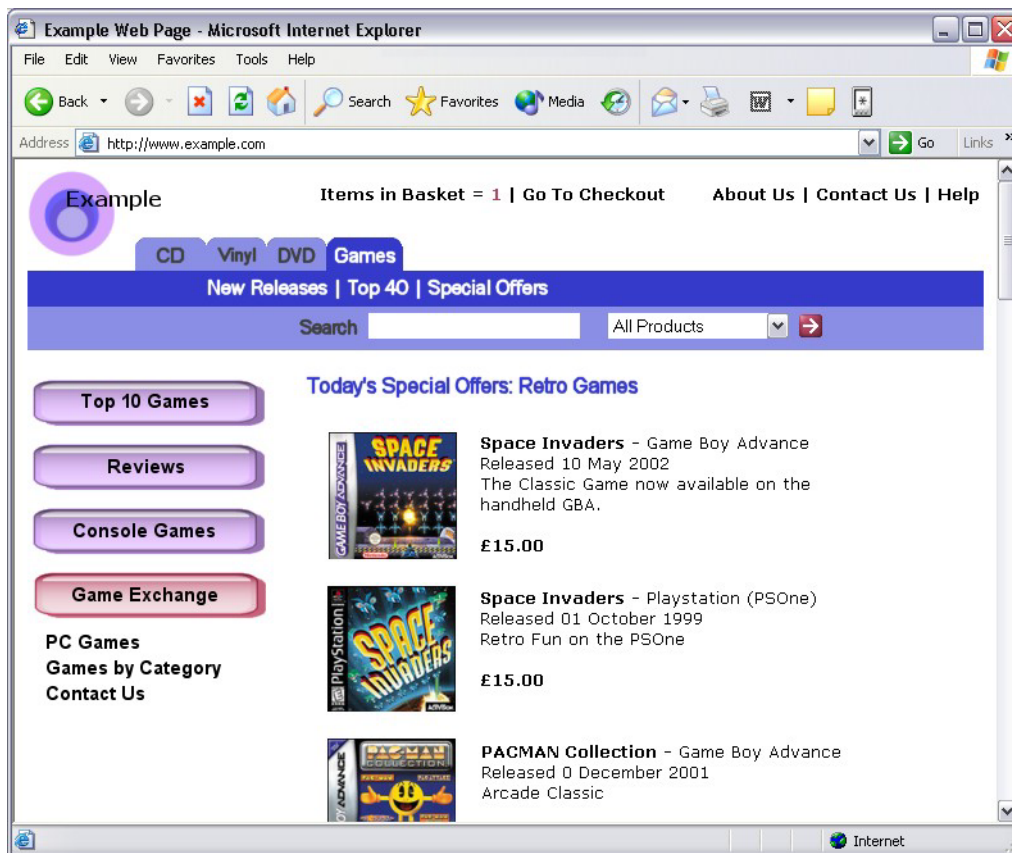
Users tacitly assume that what lies beneath the first screen is the "small print" that they need not worry about.

Accordingly, they give less attention to those parts. Therefore any important information should not be placed beneath the screen horizon.

Do not mix 'Grammars' - *Users will assume that designers had some kind of 'Grammar' in mind when they designed the site.*

Therefore altering the design of information (or icons representing types of information) for aesthetic reasons, or even in the hope of helping users, will hinder comprehension.

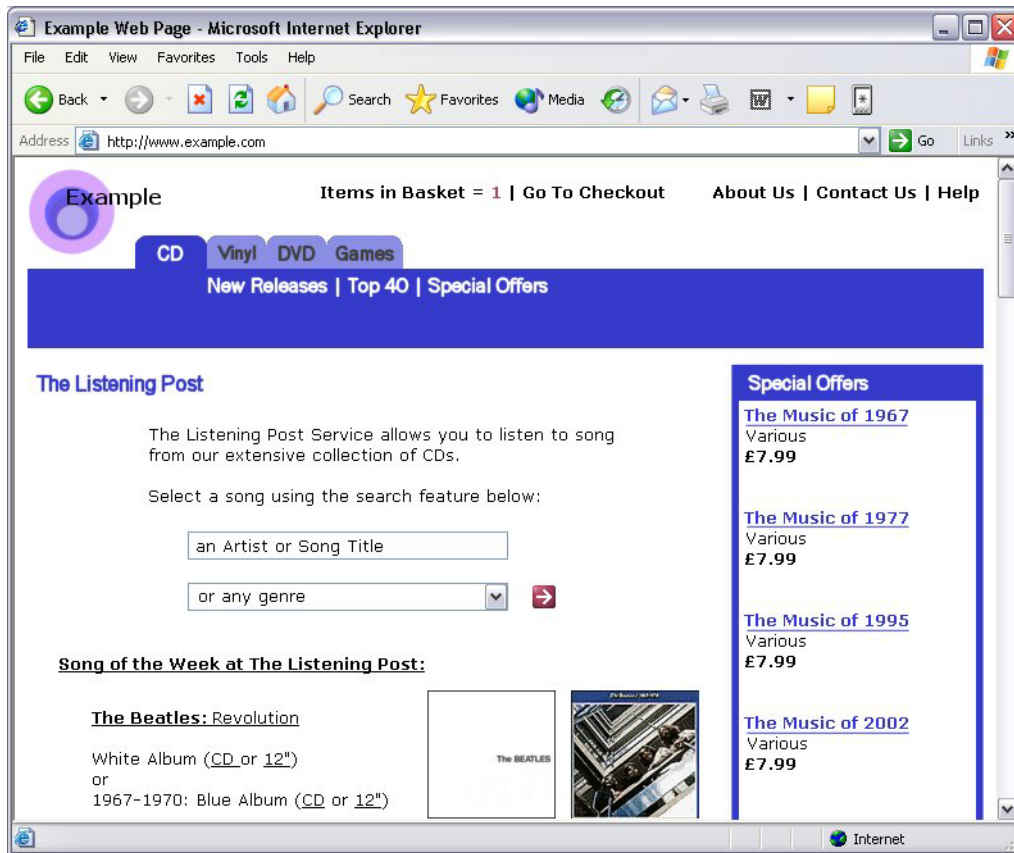
The example in Figure 13 shows a page that three different types of buttons in the left hand section, offering the user access to "Top 10 Games", "Games Exchange", and "PC Games". As each button is designed differently, the user is led to believe that each has a different function when in fact they do not.



**Figure 13 – A page displaying three different types of button on the left hand side.**

Do not obscure ‘Grammar of Action’ instructions - Users are willing to learn how to use a site and rely on instructions to do so. However, these instructions must be consistently supplied and must not obscure the task they are meant to help users complete.

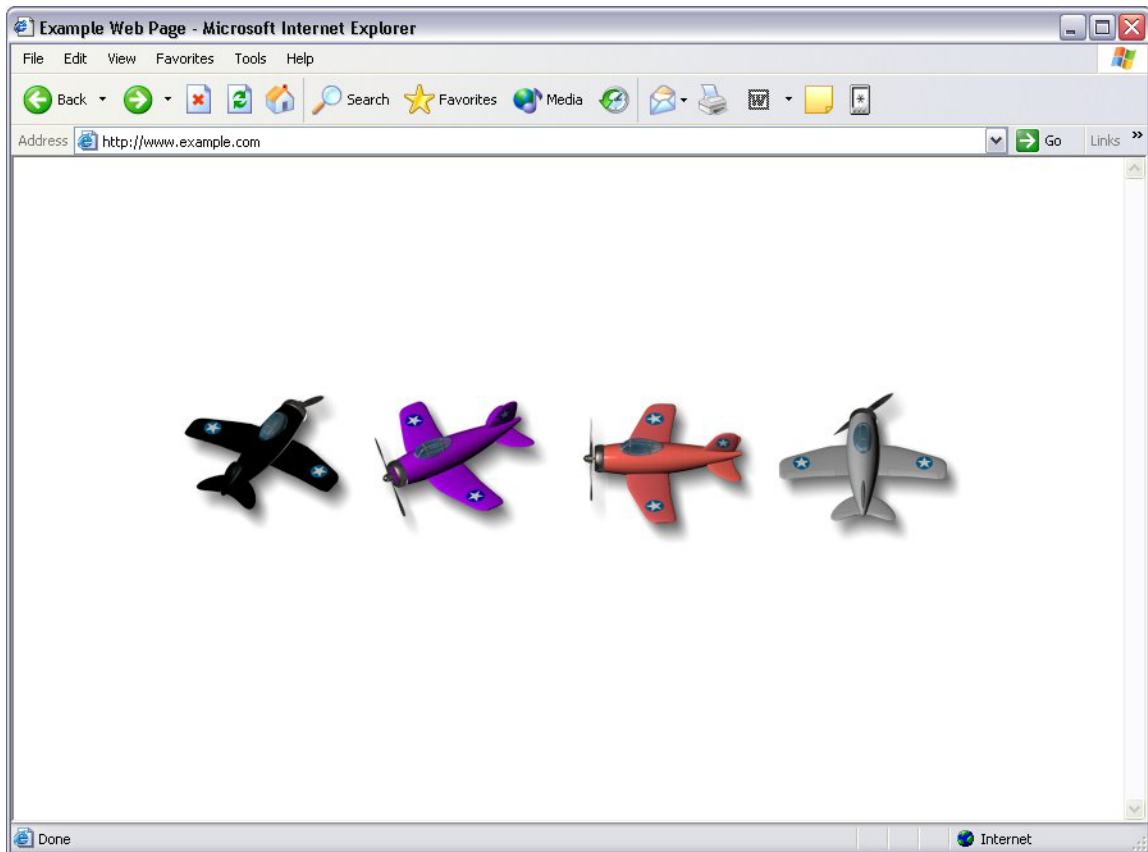
In the example in Figure 14 the “Listening Post” task is supported by two data entry opportunities. The first has been made distinct from the second by the designers, and thus is treated as distinct by the user. In this case, very few users will enter data into the box that says “an Artist or Song Title” since they will assume that that is the instruction for the box beneath it, namely “or any genre”.



**Figure 14 – An Example of Grammar of Action.**

*Always make a 'Grammar of Action' visible - Though users will have their own expectations as to what the use of a web site will entail, they rely on information provided to guide them. If there are no instructions users will become confused.*

Figure 15 offers an example of a page where no grammar of action has been provided whatsoever. Users will reach this page and will be at a complete loss as to what to do.



**Figure 15 – This page has no ‘Grammar of Action’. Initially it is not clear of what to do on this page or the pages purpose.**

### 6.3 Trust

Feelings of trust are usually associated with human relations, but our research has shown that it is also significant in interaction between a person and any other "agent", even a machine. The degree of trust that a person has in a technology will influence whether and to what degree they will make use of that technology.

Trust is a subjective attitude and can therefore alter with experience. If the behaviour of a system is predictable, then it comes to be seen as dependable, and ultimately the user will have trust in it. Trust can be greatly reduced even by a single failure of the agent or technology to perform well. Several such failures will reduce trust for a very long time, and indeed it may never recover.

In the context of web sites, there are several different kinds of trust:

- The page provides reliable information.
- Inputs from the user are correctly handled.
- Successive visits to the site it will continue to function as it has in the past.
- The motives of the owners of the site are trustworthy and honest.
- The experience of using the site will be pleasant and not too demanding.
- Any financial transactions are accurate.
- Confidentiality will be preserved.
- Security will be sufficient.
- The quality of products and services offered will be satisfactory.
- The users' privacy will not be abused (for example by giving away addresses to other sites).

Since there is a strong relationship between the measure of trust and a user's willingness to use a site, it is important to ensure that the site promotes this trust. Fundamentally, the behaviour of the site must be predictable and dependable, both in its performance and in its output.

The site must be stable and properties of the site must not change arbitrarily. Any changes that do occur should be easy to adapt to, and their reason explained. Demands that the user change his or her software or hardware should be very rare, and every effort should be made to retain backward compatibility.

Successful localisation will encourage an emotional bond with the site and also its dependability in the eyes of the user. In addition to components of localisation such as, address formats or dates, there are other cultural differences that are more subtle and yet of equal importance. For example in some cultures white or red are colours associated with death and mourning, whereas in others black is so associated. Some logos may contain symbols that have different meanings in other cultures. Words may have very different meanings.

Whether people will perform a task themselves or leave it to another agent depends, in part, on a subjective balance of belief in their own capabilities and trust in the behaviour of the agent. If the trust is greater than the belief then the agent will be used. For example, only if I trust an online retailer to find a book, more than I trust my ability to visit and search large bookshops, will I tend to use that site. This underlines the extreme importance of ensuring that a web site is perceived as trustworthy by those who use it.

It is very important that every site has a "Contact us" link. Of course any users should receive replies to queries as soon as possible if trust is to be maintained. However well designed a web site is, however user-friendly, if it is not trustworthy it will not be used.

## 7. Usability checklist

By providing a comfortable, safe and controlled environment as well as the right tools for the job, internet users will be able to follow the course of action most desired i.e. to pass through the web site with speed and ease resulting in the purchase of an item, or the placing of that all important sales enquiry.

*The Guernsey Benchmarks 2002: Smarter Online Business Practice* booklet provides a guide to achieving this ideal. Match your site against the checklist below to ensure your site is fulfilling its potential.

### Title and purpose

- Do the home page and title make clear what the site offers?
- Will the site always be found by search engines such as Google, Yahoo, Lycos, etc. when users enter their choice of search keywords?

### Minimise misses

- Can users always find what is needed?
- Is the site able to fulfil the task it claims to perform?
- If it has an internal site-specific search engine, is this complete? For example, If a financial site offers mortgages, but the user searches using the words "home purchase loans". The site will be missed. Or if the user reaches the site but the index has unusual phrases or the links are not well defined and well organised, the user may never find the part of the site they are searching for.

### False positives

- Make sure the site is not taking the user to things that are irrelevant. For example if a car manufacturer's site forces the user to go through pages with many kinds of products (trucks, vans, sports cars, etc.) when all that is wanted is a small saloon car. A car rental site may force the user to read about many kinds of vehicle for rental which are of no interest, before dealing with the users' real requirements.

### Stability

- Long term: The content of a site should not change frequently or users will be uncertain what the site offers.
- The properties (design, layout) of the site should not change frequently or skill-based behaviour cannot develop.
- Short term: Features within the site should not respond so rapidly that they cannot be controlled by the user e.g. when using a pop-up or pull-down menu.

## Localisation

- Is the site adapted to different users? When an address is asked for, is the first entry "country" so that when a country is entered the format for the address adapts, e.g. post code, order of entry of number, street, town, etc.
- Is there an alternative language for "foreign" users?<sup>2</sup>

## Legibility

- Are all parts of the site legible? Are all fonts, icons, buttons, and navigation tools the appropriate size?

## Physical ergonomics

- Are the physical characteristics of items correct, including: colour, contrast, brightness, size of text, input devices and requirements of actions?

## Cognitive ergonomics

- Are the demands on perception, attention, memory, and decision making, matched to the properties of users?

## Input/interaction devices

- Is a full range of input/output devices supported?
- Are the needs of users with sensory or motor handicaps supported?<sup>3</sup>

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<sup>2</sup> The most extreme example of localisation is the ability of the site to change the language in which it is presented, a particular difficulty when languages use different character sets or orthographic forms, such as Korean, Japanese, or Arabic. Major programming effort is required.

A simpler example of localisation that any good site should support changes address formats. When asking for a postal address, ask first for the country, and reconfigure the address field and any date fields to match the convention for the user's country. Compare the following:

Addresses:

123 Western Avenue,  
Boston  
MA 01234 -5678  
USA

123 Western Avenue,  
London NW3 2PL  
United Kingdom

123 Avenue Gilot  
04123 TAROT CEDEX  
France

Dates:

6/27/02

27/6/02

27/06/02

Another example of localisation problems is that of dealing with financial aspects of delivery such as customs duties and other forms of tax which apply only to certain countries and certain products.

Note that if localisation is provided, it should be performed as soon as the user indicates what country he or she requires, and the chance to select this option should be early on the Home Page.



## Trust

- Do all aspects of the site support stable and appropriate levels of trust in users?
- Can users trust the functions of the site?
- Can users trust the quality of the services provided?

## Consistency

- Are the general characteristics and conventions of all pages of the site the same?

## Affordances

- Do buttons, links, scrollbars and fields behave as users expect?
- Has localisation been applied?

## Speed/accuracy

- Are the response times of buttons, pull-down menus or links appropriate, or too slow or too fast?

## Personalisation

- Is there the option of storing personal data once entered for subsequent use?

## Privacy

- Is privacy honoured?
- Is appropriate encryption used?
- If cookies are loaded, are users asked for permission?

## Simplicity

- Is the site as simple as it can be?

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<sup>3</sup> Some users will be visually impaired: can the site handle a request for enlarged text? Can sound be used as a substitute using text-to-speech? Some people - for example those with Parkinson's syndrome - will find it difficult to control a cursor with a mouse, and will have particular difficulty with unstable pull-down and pop-up menus. What provisions can be made? Can the response time be varied? Or can click-open/click-close menus be used? Can the size of field into which the cursor has to be introduced, or the size of scrolling arrows be altered?.

## **8. Further information and useful links**

**e-Business team, Guernsey**

[www.guernseyhome.com](http://www.guernseyhome.com)

**Digital World Research Centre**

[www.surrey.ac.uk/dwrc](http://www.surrey.ac.uk/dwrc)

**Website Usability – by Dr Jacob Nielsen**

[www.useit.com](http://www.useit.com)

**Homepage Usability: 50 Websites Deconstructed**

Nielsen, J. and Tahir, M. 2002.

**UK Web Design Agency**

[www.ukwda.org](http://www.ukwda.org)

**Royal National Institute of the Blind**

[www.rnib.org.uk](http://www.rnib.org.uk)

**World Wide Web Consortium**

[www.w3c.org](http://www.w3c.org)

**European Union Information Society**

[www.europa.eu.int/information\\_society/index\\_en.htm](http://www.europa.eu.int/information_society/index_en.htm)



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