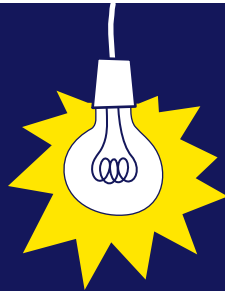# Website Maintenance

Abridged extract from
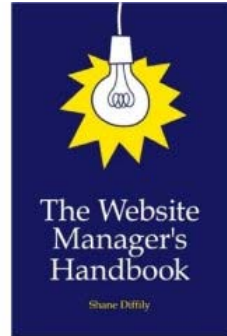*The Website Manager's Handbook*
(Chapter 2) by *Shane Diffily*

"Genuinely useful for helping think through the key issues of website management"
Gerry McGovern. Author of *Killer Web Content.*

The Website Manager's Handbook

This document contains an abridged extract from "Chapter 2: Website Maintenance" of *The Website Manager's Handbook* by Shane Diffily.

The Website Manager's Handbook gives you a practical model for the management and maintenance of your website or intranet. Through it you can learn about all the processes, people, technology and other resources you need to manage a successful site.

Join the hundreds of web professionals and universities who rely on *The Website Manager's Handbook* for advice about online operations.

Visit www.diffily.com/book for more.

The Website Manager's Handbook
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Praise for *The Website Manager's Handbook*

"Very clear and well written…a lot of practical depth…I'm sure that someone managing—particularly a large website—would find it genuinely useful to help them think through the key issues in website management."
Gerry McGovern. Author of *Content Critical*.

Table of Contents

What is Website Maintenance?

Website Maintenance comprises all the activities needed to ensure the operational integrity of your website or intranet. In other words, it is about doing all the things needed to make sure your site runs smoothly and according to plan.

The activities from which Website Maintenance is composed are:

- **Website Publishing**: To keep content up-to-date.

- **Website Quality Assurance**: To spot errors on a site.

- **Website Feedback Monitoring**: To manage communication with website visitors.

- **Website Performance Monitoring**: To measure success.

- **Website Infrastructure Monitoring**: To supervise hosting.

- **Change Control**: To manage technical and other changes in a co-ordinated way.

These activities are usually carried out by members of a Website Maintenance Team.

Website Maintenance Team

A Website Maintenance Team is responsible for expediting the tasks of site maintenance.

The variety of roles on such a team is usually quite broad and may include the following:

- Website Maintenance Team Leader

- Publishing Representative (Editor)

- Quality Assurance Representative

- Feedback Monitoring Representative

- Website Performance Representative

- Infrastructure Monitoring Representative

- Change Control Representative

It is worth bearing in mind that if your site is small, you may not have to allocate one person for each activity. Instead, you could combine several roles together.

For example, an Editor could also act as a Team Leader, as well as look after Quality Assurance or Feedback Monitoring.

Yet, even such small teams must still have all necessary skills represented. This is because each one is vital for maintaining a quality web presence.

How many staff you need

A useful device for deciding the number of people you need for your maintenance team is 'Website Scale'.
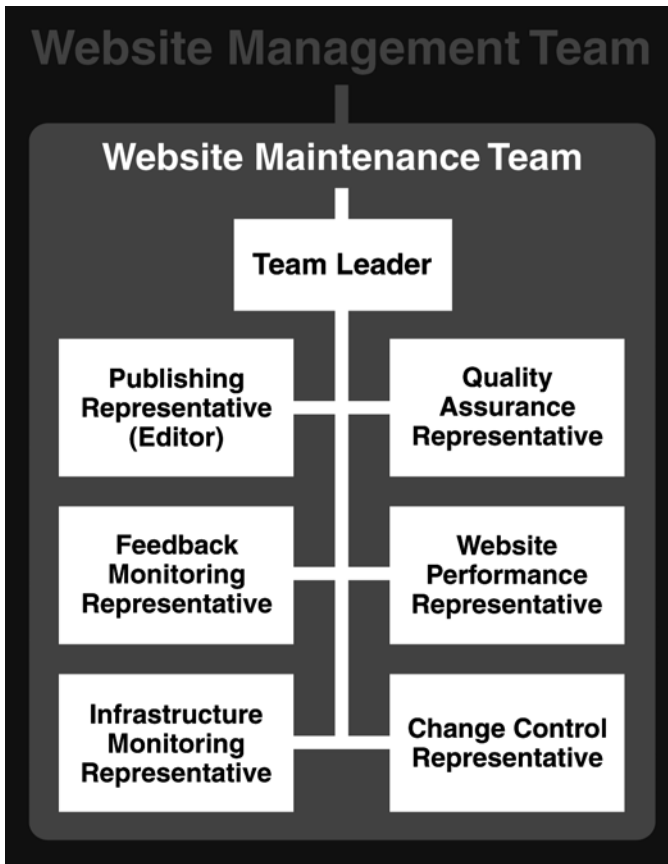
Figure 1. The Website Maintenance Team.

Website Scale is a means of classifying a site in terms of three parameters:

- Size

- Complexity

- Levels of activity

Any site can be represented in this way—from a small, plain text website to a massive corporate intranet.

Website Size

A website's size is an estimate of the total man-hours required to produce and maintain all the content that it contains. This can then be used to calculate the number of people required for support—particularly the activities of Website Publishing and Quality Assurance.

Small Website	**Content Man Hours per Annum** : 1,500–4,000 **Staffing Levels for Content Publishing and Quality Assurance**: About 1–2 people.
Medium Website	**Content Man Hours per Annum** : 4,000–10,000 **Staffing Levels for Content Publishing and Quality Assurance**: About 2-3 people.
Large Website	**Content Man Hours per Annum** : 10,000+ **Staffing Levels for Content Publishing and Quality Assurance**: From 2-3 people upwards.

Figure 2. The three levels of Website Size.

Website Complexity

Complexity is a function of the intricacy of the technology used to develop a site. There are three levels of website complexity:

Basic Website

Such 'brochureware' sites simply contain plain text with perhaps a few supporting images and downloads, e.g. PDFs.

Dynamic Website

On a Dynamic site content is stored in a database and published according to the requirements of site visitors. Some also offer basic interactive services, e.g. Discussion Forums.

Transactional Website

A Transactional website is one that uses the internet for facilitating business operations or generating revenue. Sites of this type rely on databases and other advanced technology for collecting and processing orders.

Some indicative figures for the staffing of a Technical Team are indicated in the following table:

Basic Website	**Content**: Plain content (HTML/XHTML). **Staffing Level for Infrastructure Monitoring and Change Control**: 1 person (for a small to medium sized site).
Dynamic Website	**Content**: Dynamically generated from a database. **Staffing Level for Infrastructure Monitoring and Change Control**: 1 or 2 people (or more on a very large or busy site).
Transactional Website	**Content**: Fully transactional content, e.g. eCommerce. **Staffing Level for Infrastructure Monitoring and Change Control**: From 1 or 2 people upwards (many more on a large or busy site).

Figure 3. The three levels of Website Complexity.

Website Activity

Website Activity is a measure of the traffic experienced by a site, e.g. Page Impressions, Visitors, Visits, etc. A website with heavy activity is unlikely to function properly without a full complement of maintenance personnel.

A **Busy** site that is also **Large** in size and **Transactional** in nature may need dozens of staff to keep it going.

Quiet Website	**Page Impressions**: 0–100,000 a month
	Total Team Staffing: Between 1 and 3 people.
Intermediate Website	**Page Impressions**: 100,000–1,000,000 a month.
	Total Team Staffing: About 2-3 people.
Busy Website	**Page Impressions**: 1,000,000+ a month.
	Total Team Staffing: From 3 people upwards (many more on a very busy Transactional site).

Figure 4. The three levels of Website Activity.

Activity 1
Website Publishing

There is no point in having great information online if you have no mechanism for looking after it. As we will now see, a good system of this type must be built on the twin pillars of a **well resourced team** and an **orderly process**.

Website Publishing Team

A **Publishing Team** is the group of people responsible for managing the lifecycle of online content. Such a team is typically composed of an Editor and representatives from each major areas of publishing activity, including:

- Content Contributors

- Designer

- Developer

- Moderator

- Legal Reviewer

Figure 5. The Website Publishing Team.

Website Editor

A Website Editor is answerable for everything that is published on a site, e.g. accuracy of information, suitability of images, etc. The core activities for which she is accountable are concerned with the lifecycle of content, such as:

- Reviewing and editing work-in-progress

- Maintaining existing content

- Responding to user comments about existing content

- Planning and commissioning new content

To co-ordinate these activities the Editor may convene a regular **Website Publishing Meeting** at which everyone involved in the creation, review and approval of online content is gathered.

Content Contributor

Content Contributors are commissioned to produce new features or update existing content for a website, based on the requirements of a Publishing Schedule. Ideally, Contributors should be experienced professionals (e.g. journalists) who have been specially recruited for their skills.

Moderator

A Moderator is responsible for the regulation of User Generated Content, e.g. wikis, discussion forums, user contributed video or imagery, etc. Websites with vulnerable audiences (e.g. children) need particularly detailed oversight.

Legal Reviewer

The role of a Legal Reviewer is to ensure that all content intended for publication on the web is in compliance with the law (and any other regulations or policies). In a small organisation where no legal department exists, the Editor may adopt this function.

Designer

The role of a Designer is to find the optimum solution for the visual and interactive presentation of content on the web. Designers usually work closely with Content Contributors, Developers and the Editor to create an agreed outcome.

Developer

A Developer converts content and design into a web-readable format and then publishes it on the internet.

The traditional approach for making web pages is to build a HTML file into which text, images and other media are inserted. Medium-to-large scale sites may also use other 'server-side' and 'client-side' scripting languages such as ASP, PHP, Ruby, JavaScript, etc.

Website Content Management

In recent years some Developer activities have been superseded by Website Content Management (WCM).

The advantage of WCM is that it allows Content Contributors to publish directly to the web—bypassing the coding 'bottleneck'. WCM also results in great savings of time for Developers themselves and allows them to focus on more valuable activities.

Website Publishing Process

The objective of a Publishing Process is to ensure content is created, reviewed and approved in a controlled manner. A typical process of this type could reflect the following steps:

Step	Roles	Description
Step 1	Content Contributor	Content is produced by a Content Contributor in accordance with the stipulations of a Briefing Document.
Step 2	Editor	When received by the Editor, he reviews it and makes whatever changes are necessary.
Step 3	Legal/Regulatory Reviewer	When approved by the Editor, the completed content is sent for Legal/Regulatory Review.

Step 4	Designer & Developer	Following Legal/Regulatory clearance, it is prepared by the Designer and the Developer.
Step 5	Editor	When the content is complete, it is common for the Editor to have a final review. In the case of sensitive items, e.g. homepage, the Website Management Team may wish to clear changes before they golive.
Step 6	Developer	The content is returned to the Developer who places it on the live website.
Step 7	Editor	When the content is live the Editor conducts a final review to ensure it is presented as intended.

There are several benefits to such a system. These include:

- It prevents unauthorised content being published.

- It allows work to be monitored and scheduled more effectively.

- It allows publishers to anticipate the stages through which work must pass before going live. (This helps shape expectations about how soon items can be expedited.)

- It has the knock on effect of encouraging Content Contributors to produce better quality content (as they know it will be reviewed before being released).

Publishing Resources

Each member of a Website Publishing Team needs some form of toolkit to help them produce good content.

Editor's Publishing Pack

The Editor's Publishing Pack contains all the resources required to ensure rules for language, style and design can be properly adhered to. These include:

- Website Standard

- Website Style Guide

- Company Policies

- Organisational Identity Manual

- Dictionary

- Thesaurus

- Grammar Guide

Content Contributor's Publishing Pack

The Content Contributor's Pack generally contains all of the same elements as the Editor's Pack, though some may be abridged form only.

Legal Reviewer's Publishing Pack

This consists of extracts from legislation and regulations, as well as a collection of company policies against which web content must be compared.

Designer's Publishing Pack

The Designer's Pack contains much the same resources as found in the Editor's Pack, though other specialist items are also included.

This includes a library of images, typefaces and audio-visual material, as well as the design software needed to develop them.

Developer's Publishing Pack

A Developer's Pack contains the software needed to create and edit website code.

Activity 2
Website Quality Assurance

Quality Assurance is the activity that makes sure a website is operationally sound and in conformance with an organisation's standards.

The two main activities of Website Quality Assurance are **Data Collection** and **Data Analysis**.

Data Collection

The aim of this task is to collect the data against which a website can be examined for issues of quality. This includes:

- Checking for broken links

- Checking for missing content, e.g. images

- Checking for missing browser titles

- Checking the spelling and grammar of content

- Checking for missing metadata

- Checking the file sizes of pages to ensure they are not too large

- Checking for browser compatibility

- Checking that applications are functioning correctly, e.g. an online hotel reservation form

- Checking that legal and regulatory guidelines are being adhered to, e.g. data protection and privacy

- Checking that pages conform to your organisation's Web Accessibility standard (if any)

- Checking that the Website Design standard is maintained

A variety of automated tools are now available that make data collection much faster and easier.

Data Analysis

Data Analysis examines all the information that has been collected and from that an Issues Log is compiled. The purpose of this log is to list items that are in violation of a QA checkpoint, e.g. broken links, oversized images, etc. These can then be allocated to Developers for adjustment.

Activity 3
Website Feedback Monitoring

Website Feedback Monitoring is a process for regulating and responding to communications from your site's visitors in a controlled and timely manner. This process is often overseen by a Feedback Co-ordinator.

The role of a **Feedback Co-ordinator** is to ensure customer messages are acknowledged and responded to in a timely manner. His duties include the following:

1. Collect the feedback

2. Acknowledge receipt of the query

3. Investigate (if appropriate)

4. Make a full response and manage any follow-up correspondence

5. Archive

The manner in which feedback is managed can differ based on the channel through which correspondence is received. This includes:

- Email

- Bulletin Board

- Chat

- Instant Messaging

- Satisfaction Ratings

- Telephone

- Post

Email

Where feedback is received by email, receipt of customers' messages should be acknowledged either immediately or within 24 hours. Acknowledgement emails may also be automated if large numbers are received.

Figure 6. Web form from Wired.com showing how feedback can be sorted by type.

Feedback Bulletin Board or Discussion Forum

Bulletin boards are sometimes used to gather feedback. Feedback received in this way may be responded to in a manner similar to email.

That is, acknowledgements and subsequent messages are posted on the board for the attention of all users.

Online Chat

Chat is resource intensive and is only recommended for websites that have appropriate levels of staffing. Where communication is authorised by this method, the most important requirement is to set the times during which service is available.
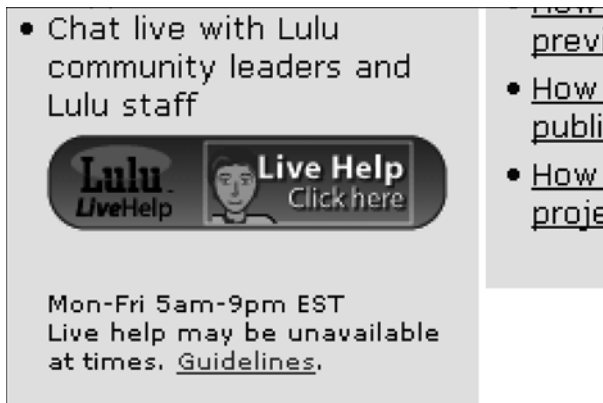
Figure 7. Online chat service from the self-publishing firm, Lulu.

Instant Messaging

Instant Messaging follows much the same model as Online Chat. The drawback is that website visitors must have appropriate software available on their computers.

Satisfaction Ratings

Many websites now include in-page features that allow visitors to rate content and provide comments about it. Such ratings are then sent to authors, who use them as a basis for improving information.

Figure 8. Satisfaction rating form from Microsoft.com

Telephone

In the event that your website is unavailable, one of the few remaining feedback channels is the telephone. Contact in this way may be necessary if, for example, a website is undergoing maintenance and needs to be shut-down temporarily.

Post

Good old 'snail mail' can also be used to submit feedback. As such, you must make sure a postal address is published somewhere on your website.

Activity 4
Website Performance Monitoring

Website Performance Monitoring is the activity that gathers and analyses data against which the success of a website can be evaluated.

To this end, it is important that your Maintenance Team know the **Key Performance Indicators** (KPIs) against which their site is being evaluated.

KPIs are the targets that have been selected by management for determining online success. The three most commonly used are:

- Website Activity (traffic)

- Visitor Feedback (this was explored in Activity 3)

- Subscriber/Sponsor Feedback

Website Activity

Website Activity is a measure of the traffic experienced by a site. The three most frequently monitored figures include:

- **Visits**: A visit is an instance of a unique visitor accessing a website.

- **Visitors**: A visitor is the originator of a visit, i.e. the person who browses a website.

- **Page Impressions**: A Page Impression is a 'hit' on a page that contains content. (The recent growth of Rich Internet Applications built on AJAX and Flash means there is now less emphasis on this as a metric of success.)

Financial KPIs are of great importance for many firms. Such measures encompass the following themes:

- **Acquisition**: The cost and value of attracting visitors.

- **Conversion**: The cost and value of making a sale.

- **Retention**: The cost and value of customer loyalty.

The Tools of Website Traffic Analytics

A huge market has grown around technology called **Website Traffic Analytics**. These are tools that extract and analyse data about web traffic.

Many products of this type are free and can be downloaded from the internet. However, high quality analysis usually requires investment in a professional system. These come in two forms:

- **Standalone Solution**: Where software is installed directly on the computer that hosts the website and then analyses its activity logfile, e.g. WebTrends.

- **Application Service Provider Solution**: Where measurements are gathered over the internet using 'tags' that are placed into every page on a website, e.g. Google Analytics.

Figure 9. A screengrab from the website of Google Analytics.

Subscriber/Sponsor Opinions

As seen already, Feedback Monitoring is crucial for any site that wishes to maintain a happy audience.

However, the opinions of ordinary site visitors are only part of the story. There are two classes of user whose comments and suggestions are of even greater significance. These are:

- **Subscribers**: A subscriber is a power-user of a site, e.g. someone who has registered as a member of a discussion forum and who uses it very regularly.

- **Sponsors**: A sponsor is someone who is willing to pay for the services provided by a website, e.g. by paying a fee to post an advertisement online. They therefore constitute an important stakeholder group whose opinions must be listened to.

Many Dynamic and Transactional websites boast large audiences of both subscribers and sponsors.

Activity 5
Website Infrastructure
Performance Monitoring

The aim of Infrastructure Performance Monitoring is to create procedures for the supervision of site hosting. Website hosting refers to the service that allows a website to be stored on and accessed from the internet.

Typically, the group of people in charge of this area is called the Technical Support Team.

Technical Support Team

The size of your Technical Support Team and the range of skills represented on it depends on the complexity of the infrastructure you have in place. For example, a single person with rudimentary skills may be all that is needed to look after a small Basic site. However, a big, busy Transactional website will require many more personnel.

The most common skills included on a Technical Team are:

- **Software Management**: The maintenance of the software used to host a site.

- **Hardware Management**: The maintenance of hosting hardware.

- **Information Systems Security**: Web security.

- **Data Maintenance**.
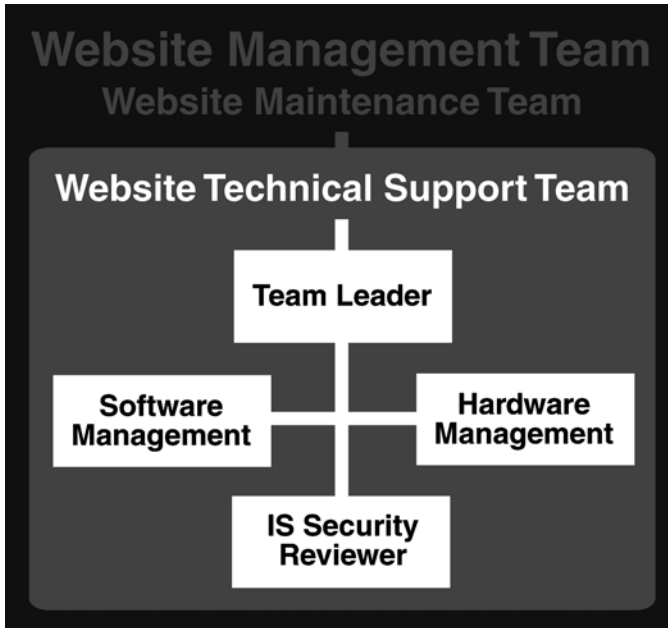
Figure 10. Website Technical Support Team.

Service Level Agreement

An SLA is a document that stipulates metrics by which the technical performance of a site can be assessed. The most common measures represented within an SLA include:

- **Website Availability**: The percentage of time that a website is up and running.

- **Website Reliability:** The number of unplanned outages that occur on a website.

- **Website Responsiveness:** The speed with which a website responds to traffic.

A range of technology is available to monitor site Availability, Reliability and Responsiveness. Among the analysis they provide is:

- Server response times

- End-User response times

- Server error rates and types

- Processor loads

- Hard disk utilisation

- Bandwidth utilisation

- Traffic patterns

- Queue sizes

- Timeouts

Performance Monitoring tools like these are essential for sites that aim to provide a high level of service.

Activity 6
Website Change Control

The responsibilities of site maintenance extend beyond issues of immediate operations. They are also concerned with developments that have the potential to affect future integrity. In this sense, a mechanism is needed by which the impact of amendments can be managed.

Change Control is a process for implementing technical and other updates to a website in a timely and non-disruptive manner.

Change Control Process

The process by which Change Control is managed comprises four steps. These are:

1. Identify the nature of the change

2. Identify the scale of the change

3. Identify any possible impact

4. Proceed or re-evaluate

1. The Nature of the Change

The most common amendments covered by Change Control concern the infrastructure of site hosting and the technology used to deliver content[1]. These can be grouped into four categories:

- Changes arising as a result of software maintenance.

- Changes arising as a result of hardware maintenance.

- Changes arising as a result of the initial release of content using a new technology.

- Changes arising as a result of marketing activity.

2. The Scale of the Change

The scale of a change measures the amount of an existing infrastructure that is affected by it. It also determines the quantity of resources required to make the change happen.

3. The Impact of the Change

The impact of a change is a measure of its effect on site visitors, business operations or site administration. Managing impact is all about minimising the risk that any of these will be affected.

There are a number of attributes that should be reviewed before any activity commences. These provide a means of identifying elements that are particularly vulnerable to adjustment, such as:

- Event Sensitive Applications

- Business Critical Content

- Frequently Used Content

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[1] Amendments that arise from the ordinary activities of Publishing or Quality Assurance are excluded (unless they involve significant new technology).

4. Proceed or Re-evaluate

Once all the facts have been considered, the decision to proceed with the change (or not) must be taken.

Where the evidence suggests that the risk of a negative impact is within acceptable limits, the project can proceed as planned. However, where the risk is unacceptable, the change itself or the process of implementation must be reconsidered.

Contingency and Testing

In case things go wrong, a contingency plan should be put in place for every change that occurs. For example, if a software upgrade fails, it must be possible to halt the implementation and revert to a previous state with no loss of data.

Finally, once a change has been made, website testing must ensue to make sure the site continues to function as intended. The affected site should also be closely monitored for several weeks. This is because the full impact of a change may not become obvious for some time afterward.

About the Author

Shane Diffily has many years experience in website management. He is currently employed as a Senior Analyst with iQ Content—one of Europe's leading web consultancies (www.iqcontent.com).

As an experienced writer, Shane has published several articles for the respected design journal Alistpart.com. He has also written numerous case studies on technology and business for The Irish Times 'Business2000' (Ireland's leading broadsheet newspaper).

Shane lives in Dublin, Ireland.

Visit www.diffily.com for more articles and advice about website management and maintenance.

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