Analysis of the Optimization Process of Corporate Website Design

An analytical study through examples of optimization process of corporate website design caused by internal and external factors

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Abstract: Corporate websites have become an indispensable part of modern day business. These websites have such functions as providing system infrastructure for sending/receiving information, delivering content and distributing product information by e-mail or membership-based sites, and assisting the optimization of corporate marketing techniques in response to changes in the internal/external environment. The purpose of this study is to clarify the ways and processes by which corporate website design has been optimized in response to environmental changes. In this study, the Official Website of Mitsubishi Electric Corporation will be used to analyze the purpose, concept and measures taken to optimize a corporate website in the face of changes to laws, standards, technologies, market requirements and internal needs.

Key words: Corporate Website, Optimization process

1. Introduction

While public use of the Internet commenced in the 1980s, commercial use did not commence until the mid-1990s. By 2010, it could be said that the Internet had become an indispensible component of social infrastructure.

For corporations, websites have become more than simply a vehicle to offer product information; by utilizing various communication methods, they are fast becoming an invaluable business tool.

1.1 Purpose of this Study

Websites form the basic system infrastructure that companies use to disseminate information, and website content and information on site members are used as the foundation for web-based marketing activities.

Studies that focus on the transition and optimization of university websites have been published in the past [1]. However, while information on website transformations in the public or educational sector can be relatively easy to acquire, corporate websites can contain trade secrets and as a result, no study has been made that looks at the historical record or provides an overall analysis of the subject.

This study aims to clearly outline the transition of corporate website design to leave a record (Objective 1), and show how corporate website design has been optimized to meet changing internal and external business environments, in addition to demonstrating how the optimization process takes place (Objective 2).

1.2 Method and Objects of Study

The way in which corporate websites have evolved differs between companies. However, there is a common thread that can be seen between all of them: corporate websites have evolved in line with societal demands and technological advances.

The authors of this study believe that these commonalities allow us to look at the website of the company to which they belong (hereafter, 'the company') as an example.

Using the company's official website (hereafter, 'company website') as an example, this study will use internal documents and interviews with relevant parties to demonstrate what aims, concepts and policies have driven the optimization of the website's design in an attempt to deal with changes in the law, company regulations, market demands, and internal business requirements.

2. Creation of a website-dedicated organization and website construction basic policy

2.1 Website Launch Stage (1995-2000)

The company site was established in 1995, and was a coming together of sites built by individual business divisions.

In order for the general website to be managed in an organized manner, a 'Company-wide Internet Strategy' was proposed. The strategy was reviewed at a management meeting in August 2000. The outcome was the creation of a website-dedicated organization called the Digital Media Group (hereafter, 'website team').

- 1) Purpose of the Website Team
 - i. Through a strategic restructuring of the company-wide site, work actively to make an appealing case for the company's IT-related activities, and establish an IT brand image.
 - ii. Promote marketing techniques that are of an interactive nature that can guarantee the early acquisition of information online that may lead to sales.
 - iii. Lay the foundation for a company-wide structure, and by bringing together sectionalized management of the website under a single managing entity, implement planning and operation of the website in a fast and effective manner.
- 2) Role of the Website Team
 - i. Lead strategic projects on the company-wide website
 - ii. Manage costs associated with these projects, and be responsible for their planning/operation.

2.2 Basic Guidelines and Concept

(1) Formulation of Basic Policy and Concept

The following outlines the objectives of the site, and the basic policy and concept behind it that were put forward at the time.

1) Objective and Scope of Renewal

In order to create a website with strong brand power, the site required a renewal, and needed to be established as a media tool through this revitalization. By offering business units Web-based marketing functions, it was expected that the site would contribute to the company's overall business.

- 2) Basic Policy Framework to Achieve Objectives
 - With usability (defined as the ease with which end users can interact with a website to perform their required tasks) serving as a basis for evaluation, aim to create an attractive and functional website.
 - ii. Present a unified interface and design to users.
 - iii. Leverage the ability to easily update the website and present timely information.

- iv. Ensure proper security measures are in place, in addition to conducting infrastructure improvements and developing/operating systems.
- 3) Formulation of Website Concept Based on Basic Policy Framework

The basic concept behind the new site (as shown in Figure 1) was as follows:

- Web Infrastructure Service: System infrastructure, the foundation of website information transmission, was to be offered.
- ii. Site Management: Below the top page, the site was divided into the categories of individual customers, corporate customers, and corporate information.

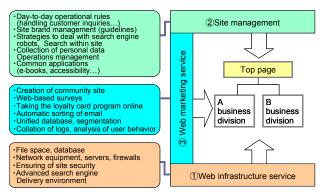


Figure 1. Basic website concept

- Later, this became the de facto standard. Guidelines were established that covered day-to-day operational rules, the maintenance of content quality, and brand management.
- iii. Web Marketing Service: By establishing the website team within the Corporate Advertising Division, the company was able to achieve optimum Web marketing service functions..
- (2) Clarification of the Role and Positioning of Each Division
 - i. Role and Positioning of the Website Team
 - The website team is responsible for the overall control and guidance of the website, ensuring that the site has a unified design, and Search Engine Optimization (SEO) and Search Engine Marketing (SEM) strategies are in place, accessibility/usability needs are met, inquiries are properly handled, and infrastructure is in place through the implementation of a common set of measures.
 - Various types of administration manuals were then prepared for internal users in order to comply with these measures. The website team receives all types of applications and consultations, and oversees content upload and emailing.
 - ii. Positioning and Roles of Business Divisions, Manufacturing Facilities, and Affiliated Companies Business divisions, manufacturing facilities, and affiliated companies were expected to comply with website guidelines and written requests. Each division was then required to construct, produce and manage pages featuring products and services they were responsible for.

3. Corporate Web Design Optimization Process

3.1 Summary of Website Changes

Between 2001 and 2011, four distinct stages were identified in the overall optimization of the company website. In addition to six complete (or 'total') renewals, optimization in the form of reconstruction and the introduction of new technologies, in addition to steps such as system reviews, took place across individual sections of the site. Figure 2 details the overall optimization and renewal process.

3.2 Total Optimization 1: Improvement of Web Brand Power

The study will now look at first and second stage renewals, part of the initial optimization process of 'building a

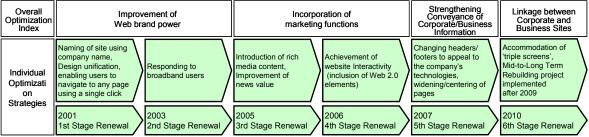


Figure 2. Timing of major renewals and their purpose

powerful web brand'.

3.2.1 1st Stage Renewal (October 2000 to April 2001)

(1) Usage Appraisal

In order to clarify current problem areas, appraisal of website usage took place as follows:

- i. Usability evaluation: The company's Design Division was brought in, and a user test conducted. In this test, participants were given a set of tasks, and a record of their click pattern was taken. A picture was built of possible problem areas in website usability.
- ii. First study by external consultants: The results of a Website Scorecard conducted by Nikkei BP Consulting in 2000 found that while websites of competitors scored above the 200 level, the company website only garnered a score of 150; this was considered to be quite a low score at that point in time.
- iii. Second study by external consultants: A Nikkei BP Consulting, Inc., Web Brand Survey(Jul.-Aug., 2001) found that the company website ranked 701st out of a total of 800 sites.

(2) Identification of Requirements

Based on the findings of the aforementioned usability evaluations, we arrived at a set of site requirements that general users would have. At the same time, a study conducted by an external consultant clarified the company's requirements.

(3) Solution Proposal

A solution proposal was then formed. Figure 3 shows what the site's top page looked like at that time.

 i. Site name change: The company's name was featured on the site's masthead. This was in an effort to promote an awareness among users



Figure 3. 1st Stage Renewal top page

that they had arrived at the company's corporate website.

- ii. Unification of design: In order for each page to share a sense of unity and consistency, headers and footers were required to feature the same base color to express the company's corporate identity. The company logo was also formatted for display to give each page a consistent look and feel.
- iii. Improvements in navigation: The company website contained about 300 menu items, the top page was designed so that users could easily jump to any menu on the site with just one click.
- (4) Evaluation: Site reports based on solution proposal

With the completion of the company website platform, becoming the foundation for website brand power improvement. An investigation of usage patterns again took place. The Website Scorecard showed that the site scored 249 after the renewal process had taken place, a jump up from the previous score of 150. In fact, a Nikkei BP Web Branding Survey found that out of 800 corporate websites the company's made an impressive leap from 701st place to 89th.

3.2.2 2nd Stage Renewal (Dec 2001 - Apr 2003)

During this period, priority was placed upon changing the user environment to meet specific user needs.

(1) Identification of usage patterns

According to a study conducted by Video Research, Ltd(http://www.videoi.co.jp/release/pr20040130.pdf)., concerning changes in the number of people going online using broadband networks, the number of broadband users overtook the number of narrowband users in April 2003. Broadband users soon made up the majority of those online in Japan. Corporate Websites soon found themselves making adjustments to best deal with this new environment.

(2) Identification of requirements

For the most part, they are the same as the requirements found at the time of the first renewal. However, user demands regarding the benefits offered by campaigns or a member's only site and organizational needs related to the handling of changing user needs in the face of an evolving Internet were added to the original requirements this time around.

(3) Solution Proposal

Figure 4 shows the top page of the site. With growing campaigns and a member's site with expanding content, a solution proposal that addressed user needs in changing environment brought about by the evolving nature of the Internet was put forward.

Separate pages for narrowband and broadband users were prepared, and coding on the site would send users to pages according to their browsing environment and deliver content that was most appropriate to their network environment.



Figure 4. 2nd Stage Renewal top pages

(4) Evaluation

According to the Nikkei BP Web Brand Survey, the website was ranked at 111th place in June 2002; after coming in 102nd in the June survey the following year, it showed that the initial ranking was not a temporary result and the website had been stably maintained. Additionally, the Nikkei BP Consulting 'Website Scorecard' rated the top page usability as being at the same level of sites considered to display best practice.

3.3 Total Optimization 2: Incorporation of Web-based Marketing Functions

The study will now turn to the 3rd and 4th stage renewals as the site underwent the Second Total Optimization Index ('Incorporation of Web-based Marketing Functions')

3.3.1 3rd Stage Renewal (December 2003-April 2005)

There were now demands for greater protection of personal data and for there to be enhanced security offered to users. At this time, server capacity also had to be increased to handle the growing number of marketing tools featured on the site, in addition to the growing numbers accessing it.

(1) Identification of usage patterns

A survey conducted in November of 2003 by Video Research Net-com, Ltd., found that broadband users reporting that they were obtaining most of their information from online sources, rather than from TV.

(2) Identification of requirements

'User Requirements' changed little between the 1st and 3rd Stage renewals. 'After support' was added in the 3rd Stage renewal. Users came to demand greater user-friendliness, and after the 2nd renewal, they had greater expectations when it came to accessing campaign/member sites, etc.

'Organizational requirements' in terms of 'Brand image' saw the addition of a request for richer content in Stage 3. There was a greater focus on SEO and SEM responses to search engines, and these were included as part of the 'Site Management' category.

In the category of 'System infrastructure', the 2nd Stage renewal saw the inclusion of Web marketing tools development requirements, and the 3rd Stage went further to propose a rebuilding of the system infrastructure in order to achieve this.

Finally, information security and protection of personal information were added to the 3rd Stage renewal in order to meet societal demands. The enforcement of the Personal Information Protection Law and the resulting Information Security Management System (ISMS, JIS Q 27001:2006(ISO/IEC 27001:2005) accreditation scheme also reflected greater public scrutiny of the way in which personal information was managed.

Up until the 3rd Stage renewal, the approach was based on determining user and organizational requirements and then resolving each one. However, after the 4th Stage renewal, this changed to one of extracting what the purpose or intent of these requirements were, and then taking action accordingly.

(3) Solution Proposal

Rich content introducing the company's technologies was incorporated into the site. As Figure 5 shows, the top page featured a main visual that was either a company advertisement or a feature on a certain product. The main visual was programmed so that it automatically changed after a set period, and displayed a different image each time a user revisited the top page. In this way, a sense of dynamic change and freshness was

achieved, and the news value of the top page enhanced.



Figure 5. 3rd Stage Renewal top page

In addition, an application was implemented on the site that automatically converted content to a text-based format in order to enhance accessibility to meet the standards specified in the JIS X 8341-3 industrial standard ('Guidelines for older persons and persons with disabilities-Information and communications equipment, software and services - Part 3: Web content'), issued in June 2004.

(4) Evaluation

There was no significant change in Nikkei BP Web Brand Survey results during this period, with the website placing 130th in June 2004, and 106th in June 2005. Both usability and website brand image were improved to a great degree. In addition to enriching web marketing approaches and other tools, the site was managed in line with ISMS guidelines for the protection of personal information protection and security.

3.3.2 4th Stage Renewal (April 2005 – April 2006)

(1) Aims

The main aims of the 4th Stage Renewal were as follows:

- i. Establish a higher degree of interactivity with users in the Web 2.0 era.
- ii. Enhance the news value of the site (deliver the latest information and ensure updates take place regularly)
- iii. Improve usability (simplify menus) and accessibility.
- iv. Create a more visually appealing layout and color scheme with female users in mind.
- v. Simplify the steps needed for users to arrive at the page they require.

(2) Solution

In order to achieve greater news value and interactivity on the top page (Figure 6), four images of varying sizes were prepared for display in the main visual area, and these changed order according to the number of page requests.

(3) Benefit

In addition to being able to better gauge the popularity of particular products or content through these processes, by changing around the products or content the company wished to promote, a positive marketing effect was anticipated.



Figure 6. 4th Stage Renewal top page

3.4 Total Optimization 3: Strengthening Conveyance of Corporate/Business Information

The study will now look at the 5th Stage renewal and the road to the 3rd Total Optimization,.

3.4.1 5th Stage Renewal (April 2006 – December 2007)

This period saw a further increase in Internet network speeds and greater capabilities added to the company website. Further clarification of page organization and the significance of each area of the layout was required, as was the optimization of display standards for headers/footers. Information obtained from access logs regarding end user display sizes was also used to consider optimum display width.

(1) Aims

Major revisions to the site included:

- i. An appeal to 'technology' on the top page.
- ii. A modernization of the interface, and providing greater convenience through enhanced usability.
- iii. A W3C (World Wide Web Consortium) Web standards-compliant site structure.

(2)Solution

The width of the site was to be increased and the layout centered, as opposed to being set to the left as it had

been up to that point. At the same time, headers and footers were being given a renewal, and improvements were made to the design and functions of the top page. With the aim of delivering more 'technology' on the top page and enhancing usability, the main visual (iv below) was positioned to be a vehicle to deliver company information, and i-iii and v were included to achieve greater user friendliness.

As Figure 7 shows, the driving concepts behind the key areas of the top page were as follows:

- Search function: Screenshots of the pages displayed in search results were featured in an advanced search function.
- ii. Usability Feature 1: With a direct link to 'Product List', the most visited page on the site, visitors could find what they were looking for with even greater ease.
- iii. Usability Feature 2: There was a greater requirement for investor information and news on CSR activities, and links to this



Figure 7. 5th Stage Renewal top page concept

- sort of information that the company wished to put front and center on the site were created. CSR activities are generally defined as initiatives to assess and take responsibility for a company's effect on the environment and impact on social welfare.
- iv. Making an appeal to 'technology' to raise corporate value: this area featured unembellished thoughts and stories behind the products from engineers in an attempt to garner user empathy with the technologies involved. This was a feature that was hoped to raise corporate value.
- v. Search keyword ranking: Based on search logs, a ranking of what kind of content was being sought out by users was displayed. It became possible for users to come across products or brands that they might not have seen with a regular menu structure.

(3) Result

All users now saw a top page that reflected the company's business at that time and showcased its technology. Furthermore, the database storing search terms was utilized in a way that improved usability.

3.5 Total Optimization 4: Linkage between Corporate and Business Sites

The study will now analyze the 6th Stage Renewal taken towards the fourth Overall Optimization Index, which examines the linkage between the Corporate and Business Information sites,.

3.5.1 Stage 6 Renewal (January 2008 – October 2010)

During this period, there was particular importance placed on 'triple screens' (large-screen TVs, PC monitors, and mobile phone screens), 'triple media' (mass media, owned media, and social media), and user experience. Reflecting this trend, the Stage 6 Renewal commenced in November 2010.

(1) Aims

With the theme of 'Without Thought', keywords such as 'touch panel feeling', 'adapted for triple screens', and 'affordance' (the quality of an object, or an environment, that allows an individual to perform an action) were investigated.

(2) Solution

As Figure 8 shows, buttons were enlarged so that, much like on an ATM touch panel interface at a bank, users could more easily click on items and drill down to more detail on any screen size. In addition, a tab was created that allowed users to view pages they had visited on the site, and see related pages.

Display functions underwent debugging not only on PC displays, but were also confirmed on game consoles, tablet PCs, smartphones, etc.

(3) Results

A more intuitive interface was achieved for users of touch panel displays, such as tablet PCs or smartphones.



Figure 8. 6th Stage Renewal top page

4. Organization and Discussion of the Analysis Results

4.1 Consideration from organizing results

This study will now consider the individual optimizations made in response to changes in laws, standards, technological trends, and market/societal demands. Figure 9 traces the history of changes made to the company website.

(1) Consideration of Laws and Standards

In response to the JIS X 8341-3:2004 standard, which came into effect in June 2004, offering website content in text only for the visually impaired was proposed. This resulted in an application to render website content in text introduced to meet the standard's requirements (vi). To meet societal demands outlined in the newly established Personal Information Protection Law and the Companies Act (corporate law), the company acquired the Information Security Management Standard (ISMS) (vii).

Additionally, to comply with corporate information system security regulations, fault management/business management came under the scope of the Project Management Office (PMO).

(2) Consideration of Technological Trends

Advancements in line speed had a huge impact on the website in its early stages. With faster connectivity came an acceleration of the inclusion of video and rich content. The 2nd Stage Renewal addressed the changing nature of user environments (v). After use of broadband networks became more widespread, the 3rd Stage Renewal commenced with a focus on the news value of content (viii). An application to render Website content in text only (vi) was a response made possible by new technology.

Additions that resolved market requirements included a visual search engine that featured screen captures of pages returned in search results (xi), and a Content Management System (CMS) based around 'one source, multi-use'; both Web pages and print versions of these pages were made available in an effort to place precedence on Web-based delivery of corporate information (xii). Related to this, a site printing system that produced pages printed out at A4 size was introduced (xiii).

The 6th Stage Renewal (xvii) saw changes made to accommodate 'triple screens' and touch panels. In addition, integrating servers through virtualization lead to the completion of the 'Mid-to-Long Term Rebuilding of the

Official Site' plan, the foundation of the company's corporate/business information dissemination strategy (xviii) and the way in which internal technological demands were resolved.

We can see that these steps improved convenience for users, and evolving technologies allowed for greater enhancement of content.

(3) Consideration of Market demands

Responding to requests from customers who wanted to enjoy a variety of services, a community site (member's site) was established (iii). The 2nd Stage Renewal addressed the changing nature of user environments (v), presenting screens corresponding to both narrowband and broadband users to meet market demands. In order for users to browse the site and register membership with confidence, the company acquired the Information Security Management Standard (ISMS, JIS Q 27001) (vii), the result of which was stricter handling of customer information. With a heightened awareness of Web 2.0, the 4th Stage Renewal built on this with the introduction of bi-directional interactivity on the top page (ix). As a measure to offer greater convenience to the user, a visual search engine (xi) and a site printing system was introduced (xiii). To handle new devices and technologies, the 6th Stage Renewal (xvii) saw changes made to accommodate 'triple screens' and touch panels.

The responses to market demand lead to improvement of service, greater convenience, more flexibility in the user environment, and enhanced safety and security.

(4) Consideration of Internal Requests

The first individual optimization step in the 'Company-wide Internet Strategy' was the establishment of the website team (i). The website team then placed the company's name on the site as part of the 1st Stage Renewal (ii). The step of using the company's name the URL (iv) was, together with (ii), an essential part of ensuring the penetration of the company name among users - these were responses to priority internal requests. In addition, a

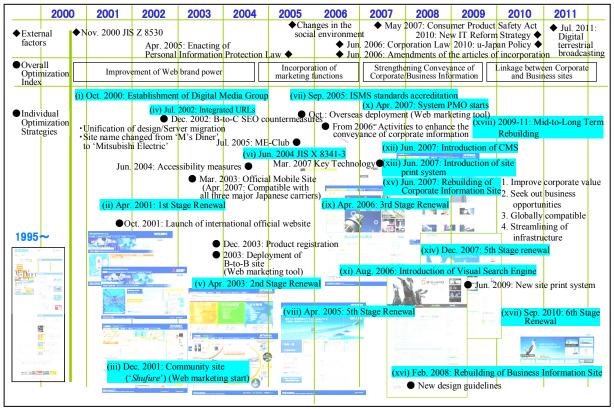


Figure 9. Tracing the changes made to the Mitsubishi Electric Website

community site (member's site) was established (iii) that formed the foundation for web-based marketing. The 3rd Stage Renewal commenced with a focus on the news value of content (viii); the 4th Stage Renewal with a heightened awareness of Web 2.0, built on this with the introduction of bi-directional interactivity on the top page (ix), part of a policy of attracting customers. The formation of the PMO (x) was the answer to the corporate management request for an efficient system to oversee various projects. The site printing system (xiii) and deployment of a 'one-source, multi-use' strategy through the use of a Content Management System (CMS) (xii) led to the extinction of printed and bound versions of the Annual Report and Environmental and Social Report. Part of the effort to improve corporate value was seen in the appeal made to the company's technology on the top page as part of the 5th Stage Renewal (xiv). Rebuilding the Corporate Information Site (xv) was also seen as raising corporate value. Meanwhile, the rebuilding of the Business Information Site (xvi) took place with the aim of laying the ground for greater business opportunities, and the 'Mid-to-Long Term Rebuilding of the Official Site' plan, the foundation of the company's corporate/business information dissemination strategy (xviii), centered on server consolidation through virtualization technology in order to improve security and efficiency.

From the above, we can see that internal requests served to strengthen the organization, support marketing efforts, improve operational efficiency, and enhance corporate value.

4.2 Results

A summary of the conclusions derived from Objectives 1 and 2 follows.

(1) Result of Objective 1

As the analysis, outlines, and considerations explained in this study show, the goal of setting out the transition of the company's website design over time and leaving a record has been achieved.

- (2) Result of Objective 2
- 1) The following patterns were found in the optimizations outlined in 4.1:
 - a) Internal and market demand was born out of laws and standards, and was resolved by introducing (or operating) new technology.
 - b) Stimulated by new technology, internal demand was born. Market acceptance was then gained through measures that leveraged new technology.
 - c) Internal requests were derived from market demand, and were resolved by introducing (or operating) new technology.
 - d) New technology was born out of (or discovered by) in-house requests. Market acceptance was then gained through measures that leveraged new technology.
 - It can thus be seen that laws and standards, technology trends, and market and internal demands mutually influence each other, and the pattern of development is determined by where the starting point for each lies.
- 2) Considering the entire optimization process, the following solutions have been applied to each indicator:
 - a) Site construction using a human-centered design (HCD) process and, by improving the quality of site design by following production guidelines and various management manuals, website brand power improvement.
 - b) Development of various marketing tools, attracting customers by offering news-worthy content and interactivity, and providing reliable operation of web marketing functions using ISMS etc.
 - c) Corporate and business information dissemination by continuing to strengthen the implementation of crossorganizational management structure unity of expression through a common format and display standard lead

by a Liaison Committee

d) Attraction of customers to the business site from the corporate site, and through evaluation of the business sector site, result in the strengthening of cooperation between corporate and business sites.

3) Overarching Key Factors

- a) Hypothesis/verification form: In the first to third stages, an idea of what the site should look like was hypothesized based on usage. Solutions were then drawn up, which were the followed by implementation and verification. From the fourth to sixth stages, the ideal state was derived from discussions as in earlier stages and solution plans, implementation, and verification stages followed.
- b) PDCA (Plan-Do-Check-Act): Renewal was based around HCD. HCD is PDCA, and ISMS is also PDCA.
- c) Organization: The dedicated organization, liaison committee, and management meetings made it possible to achieve a structure that served each requirement.
- d) Mid-to-Long Term Rebuilding of the Official Site: By the time 2007 came around, the future of the mid-to-long term rebuilding plan came into view. In 2008, the ideal structure was envisaged and plans were drawn up, and these were enacted during the period between 2009 and 2011.
 - It was via these steps that it became clear how website design could be optimized to get closer to the goals of the site: raising corporate value and creating business leads.

4.3. Conclusion

Through various optimization processes, the basic goals of raising corporate value and creating business leads were achieved. By creating a structure that reflected user feedback, providing a suitable system infrastructure and applications, in addition to a systematic approach to development, it became clear that the site was now an established form of media.

This process started with basic usability, and evolved into marketing, not only strengthening the ability to disseminate corporate/business information, but also enhancing cooperation between the corporate and business sites, shifting away from individual optimizations towards ones that encompassed the entire site. This showed that rather than being a collection of explanations from individual departments about their respective products, systems, and services, the site was a vital part of corporate communications and contributed to the corporate brand the company was seeking.

It can be seen that by a systematic approach, disparate design elements were unified under a common interface and a unified user experience created. Through the use of the company website as a platform for disseminating corporate and business information, marketing activities could take place under secure management, and the website dedicated organization was able to fulfill its roles and responsibilities in overseeing the company-wide website strategy project.

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