

Wenke Design's Art Licensing Initiative

By

Jason A. Hauer

Submitted to
the Faculty of the Information Engineering Technology Program
in Partial Fulfillment of the Requirements for
the Degree of Bachelor of Science
in Information Engineering Technology

University of Cincinnati
College of Applied Science

June 2003

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Jason A. Hauer

Date

Tom Wulf, Faculty Advisor

Date

James F. Sullivan, Department Head

Date

Acknowledgements

I would like to give appreciation to Mike and Tina Wenke of Wenke Design Studio for their contributions throughout this entire process. Their creativity, attention to detail, organization, and passion about their work provided for a rich working relationship and environment. Professor Tom Wulf's encouragement, authenticity, passion about his work, and openness for questions and feedback helped me throughout this process but also reflected to me as to what it truly means to be both a professional and an outstanding person. Finally, I would like to give special thanks to my wife, Tracy, for her support, encouragement, and sacrifice throughout this entire project.

Table of Contents

Section	Page
Acknowledgements	i
Table of Contents	ii
List of Figures	iv
Abstract	vi
1. Statement of the Problem	1
2. Description of the Solution	4
2.1 User Profile	7
2.1.1 Administrators	7
2.1.2 Potential Clients	7
2.2 Design Protocols	7
2.2.1 Web-based Programming	8
2.2.2 MySQL 3.23.52 RDBMS	8
2.2.3 Application Design	8
2.2.3.1 Site Diagram	9
2.2.3.2 Wenke Design Home	10
2.2.3.3 Mike Wenke	10
2.2.3.4 Mike Wenke Biography	10
2.2.3.5 Mike Wenke Images	10
2.2.3.6 Mike Wenke's Products	10
2.2.3.7 Wenke Design	11
2.2.3.8 Wenke Design Biography	11
2.2.3.9 Wenke Design Images	11
2.2.3.10 Wenke Design Products	11
2.2.3.11 Tina Wenke	11
2.2.3.12 Tina Wenke Biography	12
2.2.3.13 Tina Wenke Images	12
2.2.3.14 Tina Wenke Products	12
2.2.3.15 Contact the Studio	12
2.2.3.16 Management Section	12
2.2.3.16.1 Customer Database Section	13
2.2.3.16.2 Image Management Section	13
2.2.3.16.3 Administrator Authentication	13
2.2.3.17 Navigation	13
2.2.3.18 Database Design	14
3. Deliverables	15
4. Design and Development	16
4.1 Timeline	16
4.1.1 Senior Design I	16
4.1.2 Senior Design II	17

4.1.3 Senior Design III	18
4.2 Budget	19
5. Proof of Design	20
5.1 Multi-tier Web Application	20
5.2 Back-end RDMS	20
5.3 Dynamic Front-end	20
5.4 Authentication	21
5.5 Wenke Design Studio	22
5.6 Mike Wenke	23
5.7 Tina Wenke	26
5.8 Wenke Design	29
5.9 Contact the Studio	31
5.10 General Navigation Hyperlinks	33
5.11 Web-based Administrative Console	33
5.11.1 Insert Image	34
5.11.2 Delete Image	35
5.11.3 Client Data	36
5.11.4 Client Search	36
5.11.5 Client Index	37
5.11.6 Client View All	38
5.11.7 Client Details	39
5.11.8 Update Customer Data	40
5.11.9 Add New Client	41
6. Testing Procedure	42
7. Conclusions and Recommendations	42
7.1 Conclusions	42
7.2 Recommendations	43
References	45

List of Figures

Figure Number	Page
Figure 1. Competitive Solutions	3
Figure 2. Site Diagram	9
Figure 3. Images Table	14
Figure 4. Client Data Table	14
Figure 5. Software Budget	19
Figure 6. Hardware Budget	19
Figure 7. Hosting Budget	19
Figure 8. Authentication	21
Figure 9. Wenke Design Studio Home	22
Figure 10. Mike Wenke Bio	23
Figure 11. Mike Wenke Illustrations	24
Figure 12. Mike Wenke Products	25
Figure 13. Tina Wenke Bio	26
Figure 14. Tina Wenke Illustrations	27
Figure 15. Tina Wenke Products	28
Figure 16. Wenke Design Bio	29
Figure 17. Wenke Design Illustrations	30
Figure 18. Wenke Design Products	31
Figure 19. Contact the Studio	32
Figure 20. Navigation Bar	33
Figure 21. Insert Image	34

Figure 22. Delete Image	35
Figure 23. Client Search	36
Figure 24. Client A – Z Index	37
Figure 25. Client View All	38
Figure 26. Client Details	39
Figure 27. Update Customer Data	40
Figure 28. Add New Client	41

Abstract

Wenke Design's Art Licensing Initiative provides an informative, Web-based view of Wenke Design through a collection of popular illustrations and biographical information. Wenke Design, a full service design company located in Cincinnati, Ohio transitioned into an art licensing company. The company was having difficulties accessing and collaborating with a broad, national population of potential clients. Previously, clients requested expensive portfolios for viewing with limited knowledge of the company and the products and services they provided. This resulted in an expensive waste of the company's time and resources.

This application helps solve the company's urgent business needs by providing customers with a gateway into its business. It does all this while eliminating the expense of mailing paper-based portfolios by focusing marketing efforts towards interested clients. Combining HTML and PHP interfaces with a relational MySQL database provides Wenke Design with a dynamic, internally managed solution. Potential clients now have the ability to view artwork, meet the studio and artists, and leave contact information for personal interaction with Wenke Design. A simple content management console allows administrators to add and delete illustrations and provides an interface to client information.

Wenke Design's Art Licensing Initiative

1. Statement of the Problem

Wenke Design, a full service design company located in Cincinnati, Ohio transitioned into an art licensing company. They were having difficulties accessing and collaborating with a broad national population of potential clients.

Through several conversations with Wenke Design I came to understand that most art licensing companies are independently run small businesses with limited resources. My research from Gartner Inc. reported that 48% of small businesses planned to increase Information Technology spending in 2003 (8). As a result of this lack of resources and knowledge, many licensing small businesses were looking at information technology solutions to streamline business processes.

While in the business of creating illustrations for companies on a contract basis they were inundated with unexpected business success resulting from a large number of clients interested in licensing their work. The success was not just an opportunity for innovation; it demanded innovation. The company was forced to ask what basic changes were appropriate within the way it defined its business, technology, and markets (4, p. 42). Wenke Design felt that a transition into the art licensing industry was the right choice to continue to build their business.

Their basic problems were process driven. They had a need of business operation changes across the board, and specific solutions to solve stagnant business processes. Innovations based on process needs require a self-contained process. The specifications for the solution can be defined clearly and should focus on widespread realization that there ought to be a better way (4, p. 73).

They had a specific need also centered on a lack of brand awareness. Branding is important in the art licensing industry. A well-known brand name reduces risk (3, p. 121). Building a sense of branding around the name “Wenke Design” gives them the ability to build a solid foundation of clients.

Their marketing process consisted of mailings of sample portfolios to interested prospects. They were inquiring on the basis of seeing a single piece of the company’s work or word of mouth advertising. Sending these portfolios of illustrations to these interested, yet largely uninformed companies yielded a high level of frustration. The portfolios were expensive to produce and frequently not returned.

As a small business it was also hindered by the amount of capital it had at its disposal. However, the amount of development capital spent is justifiable within a solution that improves efficiency and reduces overhead (12).

The Wenke’s desire to use a technological solution was low. Their top priority was to exert most of their art knowledge work to their business as possible while still keeping overhead to a minimum. Because of the potential overhead impact of outsourcing any solution, they wanted a quick, non-technical interface for content management.

Through these discussions with my client, I compiled a list of what was needed in any information technology solution that would allow them to solve their business problems and needs:

1. Business process needs:

They were spending too much time on day to day licensing operations:

- Tracking down lost portfolios

- Describing how illustrations look

They needed a way to eliminate non-interested consumers resulting in the:

- Reduction of mailing costs
- Reduction of expensive viewable samples being unnecessarily tied up
- Reduction of un-necessary printing costs

2. They needed a branding/marketing tool that:

- Tells the story of Wenke Design
- Informs clients of who is already using their illustrations

3. Usability / Maintainability

- Simple content management interface

4. Budget

- Incur a low amount of overhead

Each company has dynamic problems that may not be able to be universally matched. The key to a successful technological solution is to enhance specific business processes, solve problems, and provide solutions to various needs. There were a number of solutions available to licensing companies as detailed in Figure 1. (12).

Business Solution	Impact On Business	Price
Agent	Increase royalty revenue	10-30 % of revenue
Internet	Increase royalty revenue	Initial development, maintenance
Self – Promotion	Increase royalty revenue	Travel expenses, reduced design time

Figure 1. Competitive Solutions

As a first time expansion into a new market, small businesses looking at advantages in the market place would be best served with a Web-based solution because of the price/lasting impact on consumers. This route would also allow them to capture

customer data and create other specific marketing processes at a later date. Because most small businesses lack knowledge outside their current industries, Wenke Design looked to outsource what they couldn't develop themselves.

2. Description of the Solution

Wenke Design's Art Licensing Initiative, WDALI, is a multi-tier Web application that acts as a marketing tool. Combining HTML and PHP interfaces with a relational MySQL database, WDALI provides Wenke Design's potential clients with the ability to view artwork, meet the studio and artists, and leave their personal information with Wenke Design. I used open source-based applications to develop this solution because of the overall cost advantage.

I proposed to create a multi-tier Web application for Wenke Design that would solidify their business process needs, act as a marketing/branding initiative, be easily administered, and provide an affordable key to the success of their business. This application addresses several problems with one dynamic solution.

The Internet is considered important to overall business strategy (2). A solid information technology infrastructure, coupled with effective e-commerce applications that are consistent with the firm's broader business strategies, can be leveraged to gain considerable competitive advantage (3, p. 123).

Business Process Needs: The Internet's greatest impact has been to enable the reconfiguration of existing industries that had been constrained by high costs for communicating, gathering information, and accomplishing transactions (10, p. 66). Wenke Design was spending too much time on day to day licensing operations: tracking down lost portfolios, and describing what its illustrations look like. WDALI solved these

business process needs by reducing mailing costs and removing un-necessary printing costs.

A Web site is also an increasingly acceptable way for clients to check out creative firms or individuals with whom they are considering doing business, the virtual equivalent of a portfolio (6, p. 222). A virtual portfolio provides an authentic experience to interested consumers and eliminates non-interested clients. Consumers have the ability to preview illustrations through a Web-based virtual portfolio.

Branding/Marketing: The primary purpose of Internet sites is not to sell but to provide specific product or account information and to enable site visitors to learn about the company (9). In this sense, a Web site is analogous to a yellow pages or source book ad, with a substantial difference: a Web site offers nearly infinite potential to describe to a visitor what one does, and to show examples of one's work (6, p. 230). I developed a Web-based branding/marketing tool that:

- Tells the story of Wenke Design
- Informs customers of who is already using the company's illustrations
- Provides a simple interface to capture client information

Usability: I implemented a management console that allows Wenke Design to keep application illustrations dynamic without having to outsource this task and incur additional overhead. The management console allows site administrators to:

- Insert new illustrations into the database for viewing
- Delete illustrations from the application
- Insert new client information
- Modify client data

- Search through client data

Wenke Design's multi-tier Web application was developed using open source products. Because of the potential high cost of hosting a non-open source based Web application, PHP was used to develop the Web application pages, and MySQL was used to develop the database. The nucleus of this Web application is a MySQL database consisting of image information and client data. PHP is the most popular language for writing Web applications (1, pg. 33). The PHP and MySQL relationship is very strong and the two development communities work closely to make sure the products work seamlessly together (11).

2.1 User Profile

The two types of users of WDALI are at the same level of Information Technology literacy. The two types of users are administrators and potential clients. They both are familiar with basic Internet functionality including:

- Typical browser navigation structures such as the address bar, back and forward buttons, and hyperlinks
- Typical Internet forms that require information to register for an event or to order an item

2.1.1 Administrators

The administrators of WDALI are responsible for keeping application illustrations dynamic. They use Web-based forms to update and delete images, and to insert, update, and search through client information.

2.1.2 Potential Clients

The client group includes independent consultants, product development vice presidents, home-based free lance art directors, and product line planners. They are responsible for buying art for products their companies manufacture. The site content and navigation meet user requirements of easy access to images, company information, and initial contact information.

Their level of IT literacy is expected to be at the level discussed in section 2.1.

2.2 Design Protocols

This project had two areas of emphasis, within the Information Engineering Technology program. The main focus was on dynamic Web-based programming supported with a back-end RDBMS.

2.2.1 Web-based Programming

Significant HTML was used to construct the application interface. Server-side scripting language PHP was used to interact with the back-end RDBMS.

2.2.2 MySQL 3.23.52 RDBMS

A MySQL database is the core of this Web-based application. Using a creative naming scheme, it provides a central structure that allows administrators to manage site content.

2.2.3 Application Design

This section includes several concrete, design related elements that provide detailed analysis of WDALI. Provided are a site diagram and an analysis of each application page.

2.2.3.1 Site Diagram

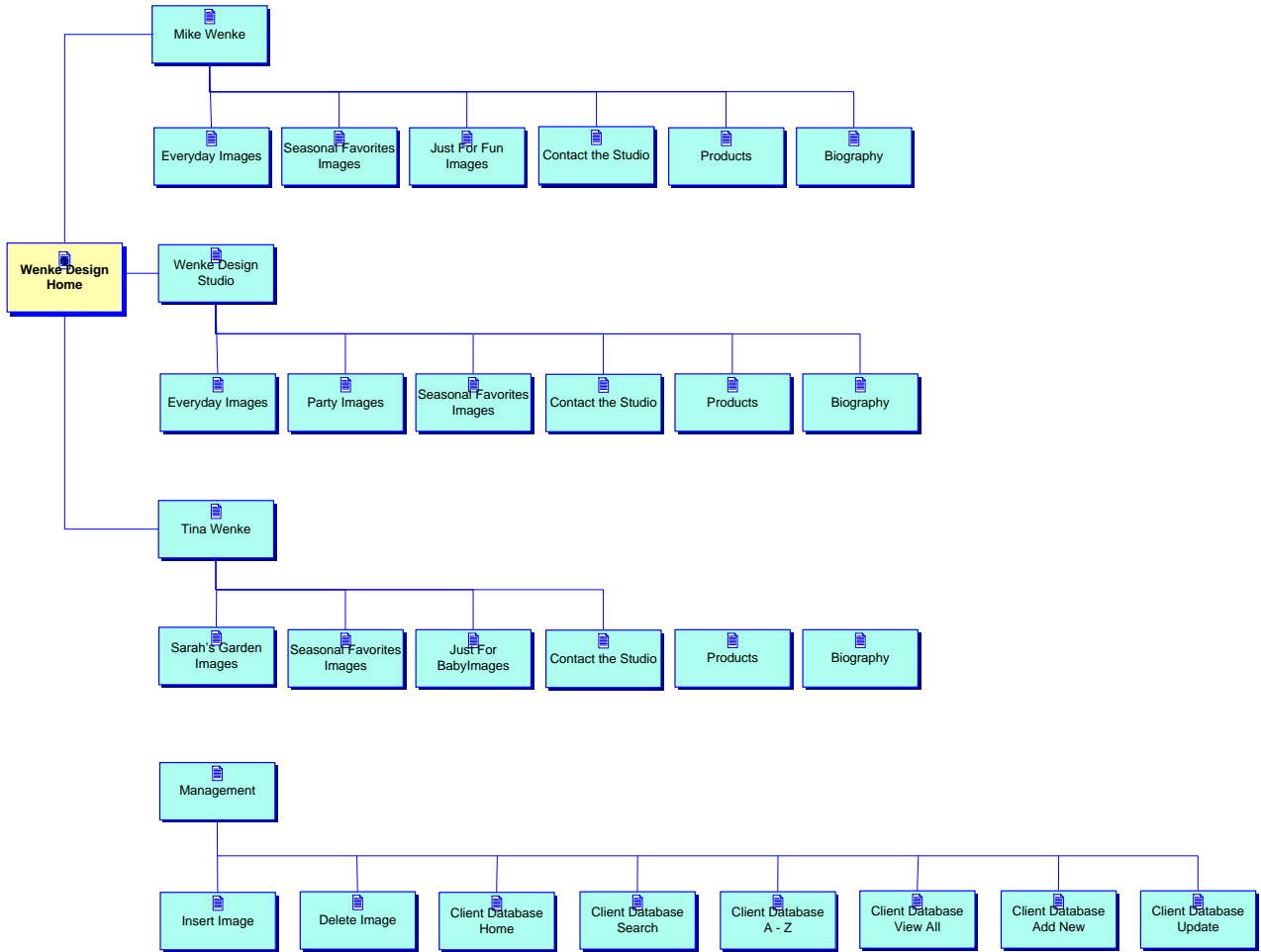


Figure 2. Site Diagram

2.2.3.2 Wenke Design Home

The home page is an introduction to the company, Wenke Design, and invites the user to explore three aspects of its business. Upon entering wenkedesignstudio.com, the potential client finds a concise paragraph about Wenke Design.

2.2.3.3 Mike Wenke

This part of the application provides an immediate introduction to Mike Wenke as his home page defaults directly to his biographical information. This allows the user immediate access to the person behind the art they are about to browse.

2.2.3.4 Mike Wenke Biography

This page provides biographical information about Mike Wenke including a picture and personal and professional information.

2.2.3.5 Mike Wenke Images

In addition to the biographical information page, Mike provides three categories of images for viewing. These hand picked images provide the potential client with an immediate understanding of Mike's fun, creative style of work. Each page consists of a horizontal navigation bar, a title, the current image category, and all three available image categories. The illustrations are displayed in two columns with each image's corresponding identification number following the image it represents.

2.2.3.6 Mike Wenke's Products

This page contains a product and client list of selected industry implementations of Mike's illustrations.

2.2.3.7 Wenke Design

This part of the application provides an immediate introduction to Wenke Design as the home page defaults directly to its biographical information. This allows the user immediate access to the people behind the art they are about to browse.

2.2.3.8 Wenke Design Biography

This page provides biographical information about Mike and Tina Wenke including a picture and personal and professional information.

2.2.3.9 Wenke Design Images

In addition to the biographical information page, Wenke Design provides three categories of images for viewing. These hand picked images provide the potential client with an immediate understanding of Mike and Tina's complementing strengths, ideas, and styles of work. Each page consists of a horizontal navigation bar, a title, the current image category, and all three available image categories. The illustrations are displayed in two columns with each image's corresponding identification number following the image it represents.

2.2.3.10 Wenke Design Products

This page contains a product and client list of industry implementations of Wenke Design's illustrations.

2.2.3.11 Tina Wenke

This part of the application provides an immediate introduction to Tina Wenke as her home page defaults directly to her biographical information. This allows the user immediate access to the person behind the art they are about to browse.

2.2.3.12 Tina Wenke Biography

This page provides biographical information about Tina Wenke including a picture and personal and professional information.

2.2.3.13 Tina Wenke Images

In addition to the biographical information page, Tina provides three categories of images for viewing. These hand picked images provide the potential client with an immediate understanding of Tina's strengths and the timeless, whimsical style of her work. Each page consists of a horizontal navigation bar, a title, the current image category, and all three available image categories. The illustrations are displayed in two columns with each image's corresponding identification number following the image it represents.

2.2.3.14 Tina Wenke Products

This page contains a product and client list of industry implementations of Tina's illustrations.

2.2.3.15 Contact the Studio

This form gives potential clients visiting the site the ability to leave their contact information.

2.2.3.16 Management Section

This section of the application provides a means for updating site content efficiently.

2.2.3.16.1 Customer Database Section

This section allows Wenke Design to view customer data in real time, add new clients, and to make changes to existing client information. Administrators have the capabilities of searching by text or through an index accompanied by a multitude of possible views.

2.2.3.16.2 Image Management Section

This section is used to modify data in the images database and actual image files in the application directories allowing administrators to change site images. Acting as a simple content management system, administrators can upload and delete images through simple Web-based forms.

2.2.3.16.3 Administrator Authentication

Administrators of the site have to authenticate into the management console of the application to make changes. This collection of site maintenance pages is not available to potential clients and is protected through sub-Web authentication.

2.2.3.17 Navigation

Site navigation takes place thru a consistent, horizontal collection of customized images and simple text at the top of each page.

2.2.3.18 Database Design

The application database contains the following tables:

Field	Type	Attributes	Null	Default	Extra
id	int(9)	UNSIGNED	No		auto_increment
firstname	varchar(255)		No		
lastname	varchar(255)		No		
home	text		No		
mobile	text		Yes	NULL	
work	text		No		
email	text		No		
email2	text		Yes	NULL	
street_address	varchar(100)		Yes	NULL	
city	varchar(20)		Yes	NULL	
state	char(2)		Yes	NULL	
zip	varchar(10)		Yes	NULL	
client_comments	text		Yes	NULL	
notes_about_client	text		Yes	NULL	
company	varchar(255)		Yes	NULL	

Figure 3. Images Table

Field	Type	Attributes	Null	Default	Extra
image_ID	varchar(11)		No		
artist	char(2)		No		
category	char(2)		No		
path	varchar(80)		No		
client	varchar(50)		No		

Figure 4. Client Data Table

3. Deliverables

1. Multi-tier Web application:
 - A back-end RDBMS facilitates the development of the dynamic front-end interface. This RDBMS was developed using MySQL 3.23.52.
 - A dynamic front-end interface developed using HTML and PHP.
2. Administrators must authenticate to make application changes in the management console.
3. Users have the ability to:
 - Learn about Wenke Design
 - Learn about Mike Wenke
 - Learn about Tina Wenke
 - View a sampling of illustrations
 - View industry implementations of each artist's illustrations
4. A simple client interface is used to capture client data.
5. Simple navigation hyperlinks are located on every page for consistent navigation.
6. Administrators use a Web-based management console to:
 - Insert site images
 - Delete site images
 - View client data
 - Modify client data
 - Search through client data

4. Design and Development

This section details the projects timeline and budgeted costs.

4.1 Timeline

The following sections detail my work breakdown as I evolved a problem into a well rounded, viable solution.

4.1.1 Senior Design I

The initial conception of WDALI provided for both an intense learning environment for me and solid solution to a collection of problems and needs. Throughout this initial phase, I researched what art licensing was and also how the industry collectively operates. After fully understanding the industry and my clients place within it, I started asking questions about how their business was operating. Through a series of brain storming sessions I came up with several problematic areas of their business that possessed the potential to be solved through technology. After fully understanding these problems, I started the process of evolving their problems into a solution that would eventually be solved with technology. As I look back over this first phase of development, fully understanding the clients needs and how these relate to their industry and business helped me to conceptualize a Web-based project that fits within the scope of their business.

After this project was conceptualized I explored many development options. I chose PHP and MySQL to develop this project after fully understanding the field of Web development and the many languages associated within it.

4.1.2 Senior Design II

Collectively, this quarter provided for creating order out of chaos through brainstorming, focusing, planning, and initially developing WDALI. Senior Design II was critical in establishing a framework for the vision of an application I proposed in Senior Design I. I created a rough prototype on poster board for my client and we moved small pieces of paper around to get the look, layout, and feel of the user and administrative ends of the site. After I conceptualized what their problems looked like within the context of Web pages, we had many brainstorming sessions. We worked through problems of picking the art they were to initially use within the application. We then scanned all the art to file. After this I went to work designing the database to meet Wenke Design's needs of wanting to maintain the site images through an administrative console. I established a list of criteria that would allow me to select images I needed for each page. I also designed the client database and put together a digital site map.

4.1.3 Senior Design III

This phase is best described as one of execution. I researched the company's problems in Senior Design I, planned and developed a solid solution to meet their problems in Senior Design II, and in Senior Design III I finalized the development of the specific solution outlined in my design freeze. Throughout the final quarter of this capstone experience I:

- Moved my development site into a live production site
- Developed the insert image page
- Developed the delete image page
- Developed the client database interface
- Tested the application

4.2 Budget

This section breaks down the project budget into software, hardware, and hosting costs. This budget reflects all costs incurred while prototyping, developing, testing, and deploying this solution.

Software	Company	Quantity	Cost
MySQL 3.23.52	MySQL	1	Free with hosting solution
Apache 1.3.27	Apache Group	1	Free
Samba 2.2.6.p2_1	UNIX community	1	Free
PHP4-4.2.3	PHP	1	Free
FreeBSD 4.7	Linux	1	Free
Internet Explorer 6	Microsoft	1	Free
Nero 5.5.2.8	Ahead Software	1	Free
Netscape Navigator 6.2	AOL	1	Free
DreamWeaver MX	Macromedia	1	\$399.00
Secure File Transfer Client	SSH Corporation	1	UC-Free
Secure Shell Client	SSH Corporation	1	UC-Free
Windows 2000	Microsoft	1	UC-ELA
Total			\$399.00

Figure 5. Software Budget

Hardware	Company	Quantity	Cost
Deskpro 1.33	Compaq	1	\$200.00
Optiplex GX100 566	Dell	1	\$500.00
20x10x40 CD Burner	Yamaha	1	\$100.00
Hub/Cable Modem	Linksys	1	\$80.00
Category 5 patch cables	Generic	2	\$10.00
Total			\$800.90

Figure 6. Hardware Budget

Total Hosting Solution	Cost
Setup fee	\$25.00
Monthly fee over one fiscal year	\$12.95
Total	\$37.95
Overall Project Total	\$1,237.85

Figure 7. Hosting Budget

5. Proof of Design

The following sections specify how the project's deliverables were fulfilled.

5.1 Multi-tier Web Application

The combination of a dynamic interface and a back-end database provide Wenke Design with a scalable foundation for marketing and business processes. The multi-tier infrastructure allows the server side scripting, the client, and the back-end database to share slices of the processing for faster reads and for faster writes to the database and to specific directories on the server.

5.2 Back-end RDBMS

MySQL provides for an outstanding back-end for Web-based applications that require fast read times and process minimal writes to the database.

5.3 Dynamic Front-end

Using PHP as an Apache module allowed me to add PHP code where necessary to provide dynamic feedback to potential clients and administrative users while establishing queries to the database for display of content.

5.4 Authentication

WDALI is designed with a collection of powerful management tools that reside in the management console. This section of the application is protected currently through sub-Web authentication. The content of this section is in a folder that allows no anonymous access. This authentication interface prompts the potential administrator for a username and password.

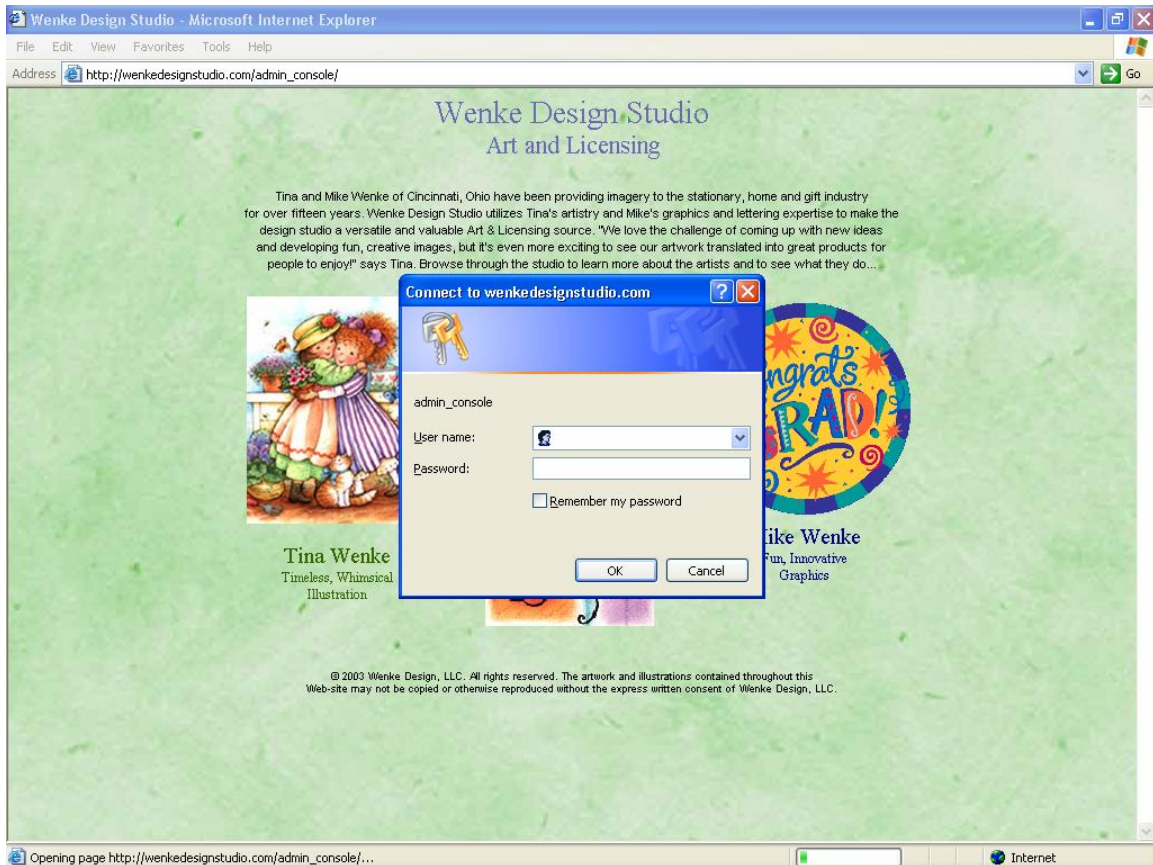


Figure 8. Authentication

5.5 Wenke Design Studio

WDALI's home main page acts as the first point of contact for potential clients. The page as represented in Figure 9. provides users with the ability to understand Wenke Design and the individual slices of its business. The page contains what my client felt was the minimal amount of information a potential client needs to effectively browse through the application. Each section of their business is successfully represented by an image that defines the style of that area.

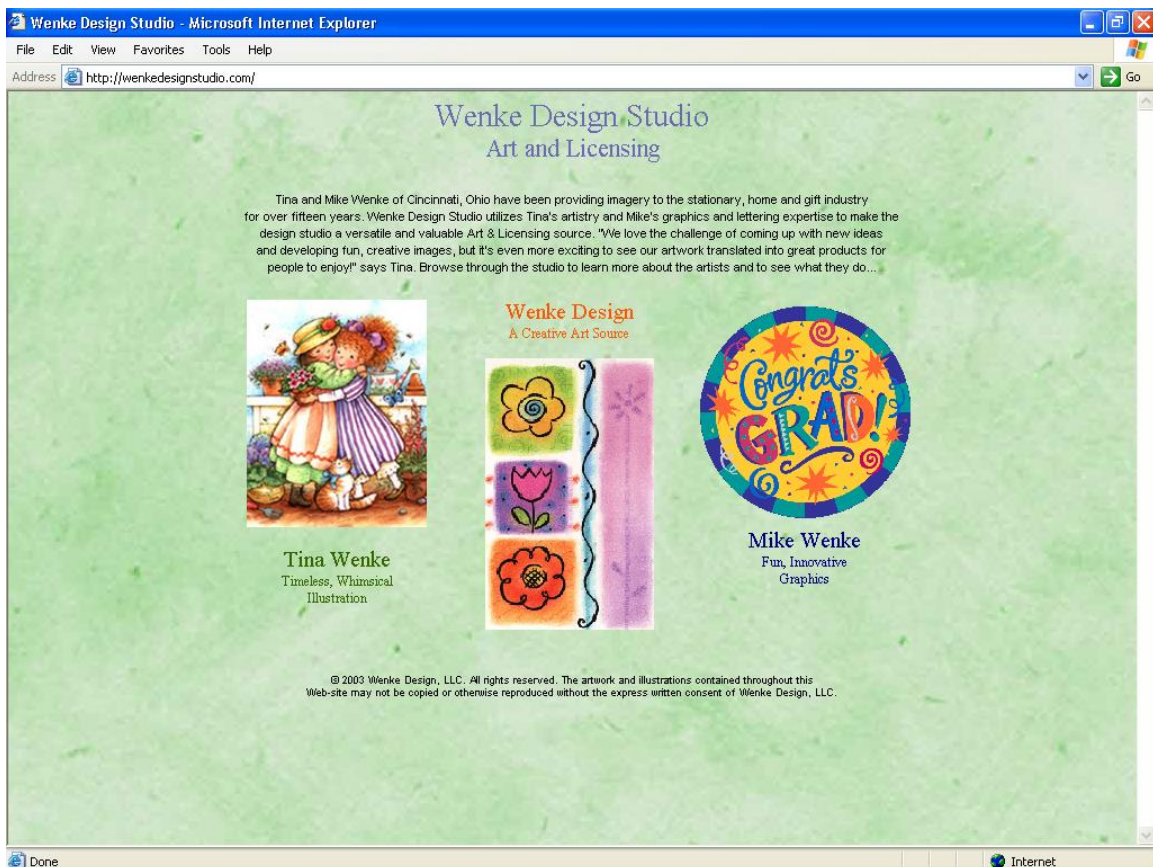


Figure 9. Wenke Design Studio Home

5.6 Mike Wenke

Figure 10. introduces the potential client to Mike Wenke. This page provides biographical information about Mike Wenke including a picture and personal and professional information. This initial page in his section starts the learning process of who he is and what he has to offer.



Figure 10. Mike Wenke Bio

After reading his biographical information, the potential client can then choose from three areas of artwork as depicted in Figure 11. The page is designed so that the user notices the artwork as the predominant, driving force behind the site.

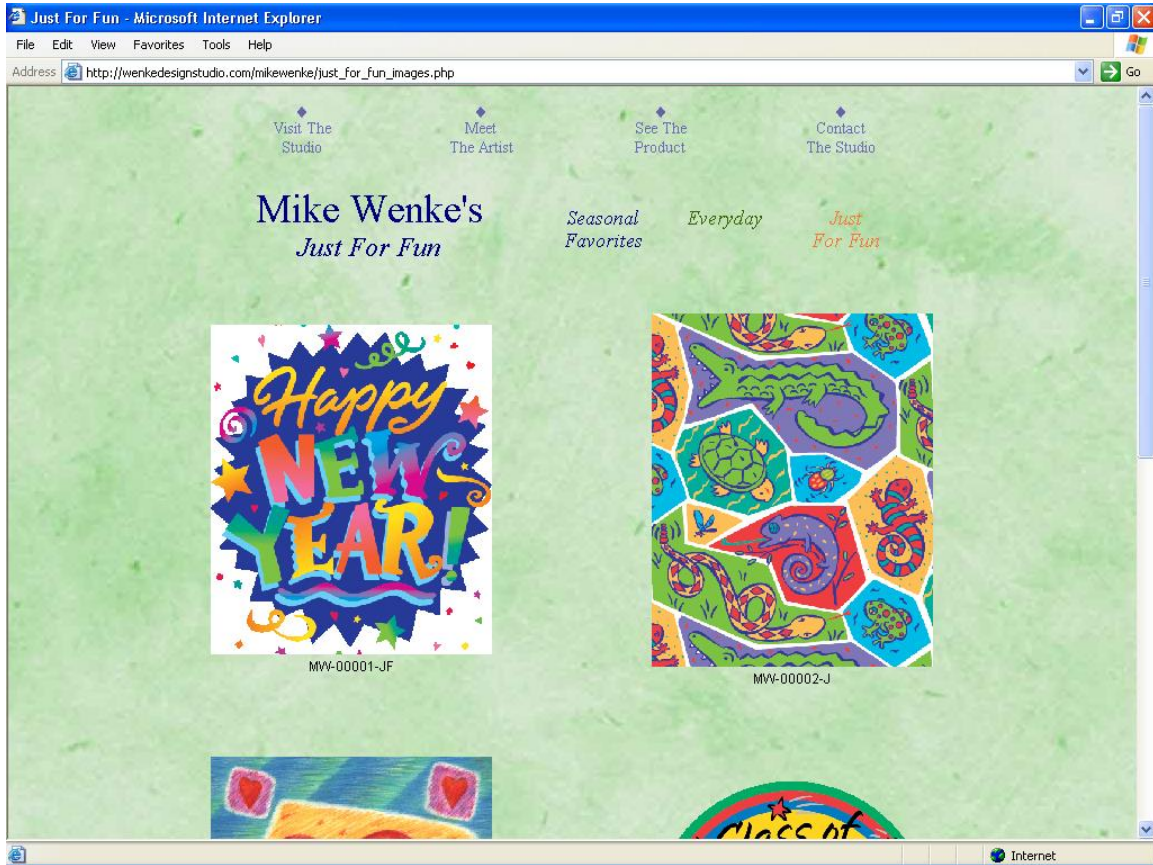


Figure 11. Mike Wenke Illustrations

After browsing through Mike's illustrations, the potential client can then browse through product implementations of these illustrations. This gives Mike credibility as these successful, established companies used his illustrations on their products as shown in Figure 12.

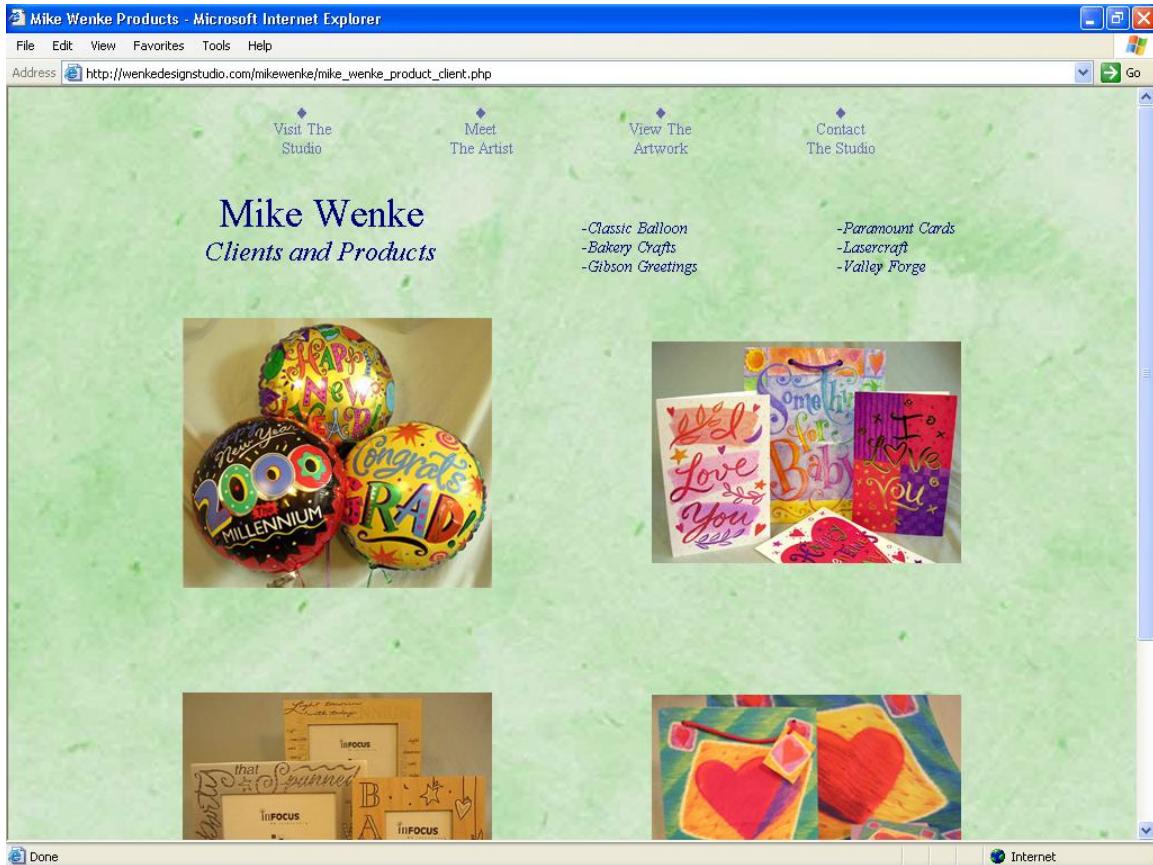


Figure 12. Mike Wenke Products

5.7 Tina Wenke

Figure 13. introduces the potential client to Tina Wenke. This page provides biographical information about her including a picture and personal and professional information.

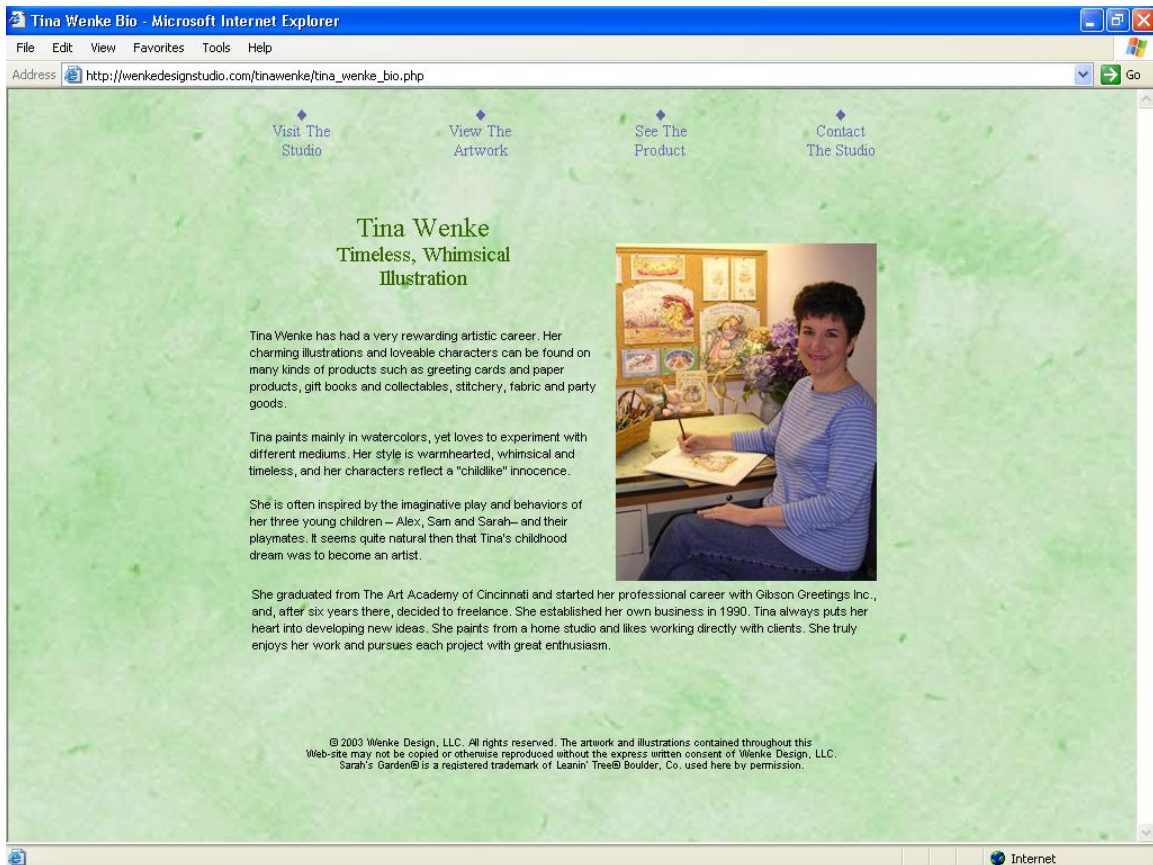


Figure 13. Tina Wenke Bio

After reading her biographical information, the potential client can then choose from three areas of artwork as depicted in Figure 14. The page is designed so that the user notices the artwork as the predominant, driving force behind the site.

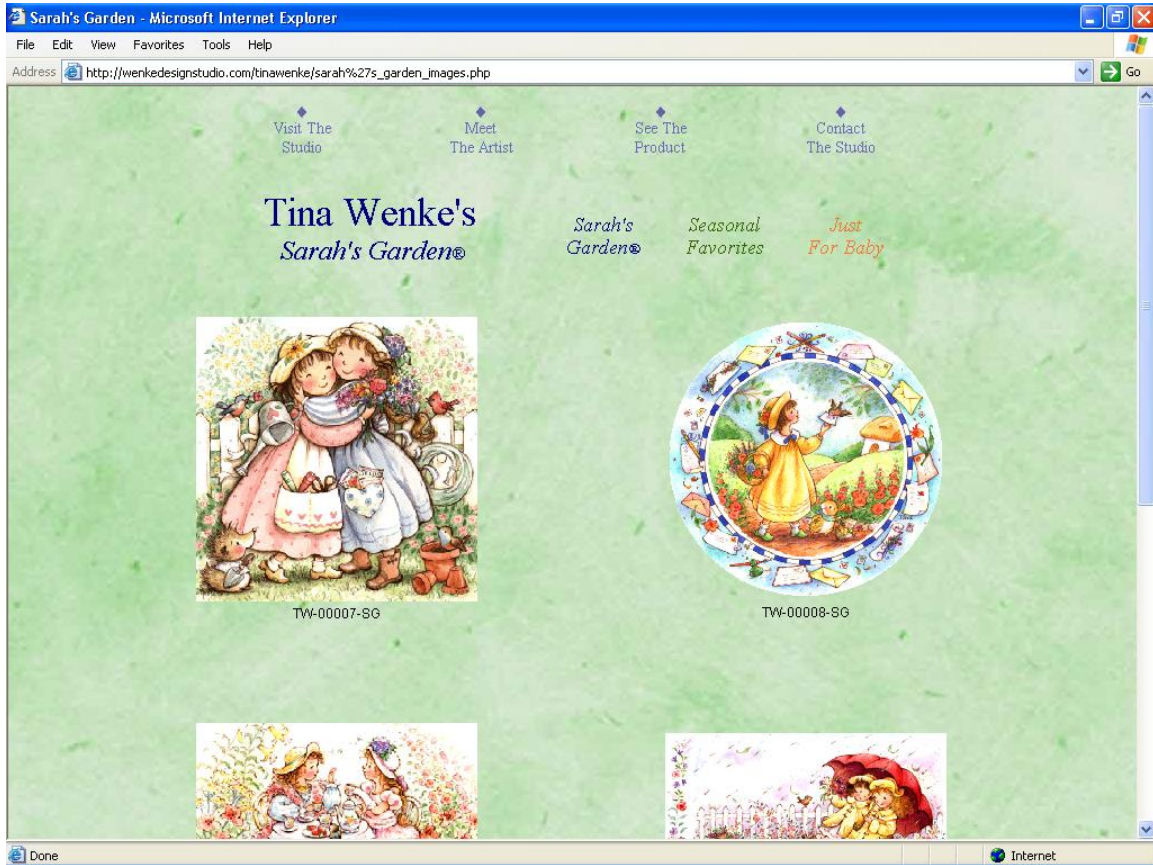


Figure 14. Tina Wenke Illustrations

After browsing through Tina's illustrations, the potential client can then browse through product implementations of these illustrations. This gives Tina credibility as these successful, established companies used her illustrations on their products as shown in Figure 15.

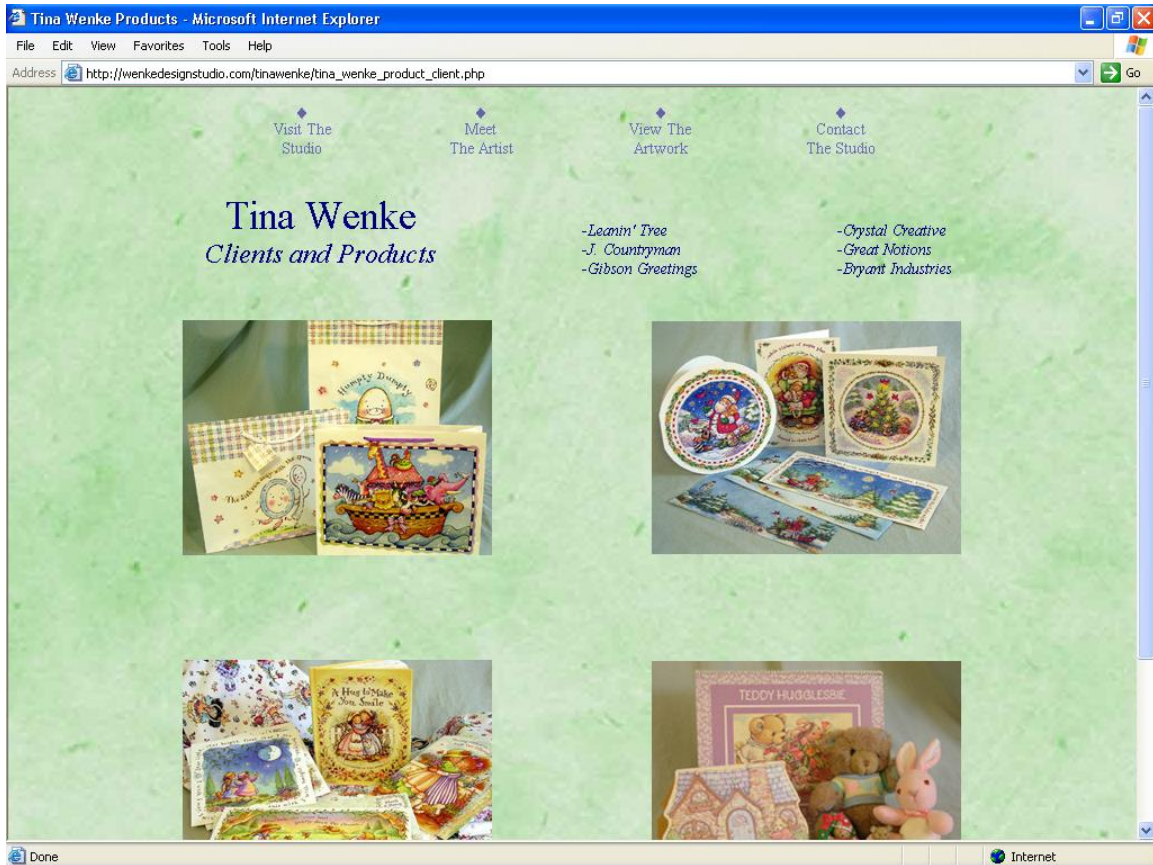


Figure 15. Tina Wenke Products

5.8 Wenke Design

Figure 16. introduces the potential client to Wenke Design. This page provides biographical information about Mike and Tina while also including a picture and personal and professional information.

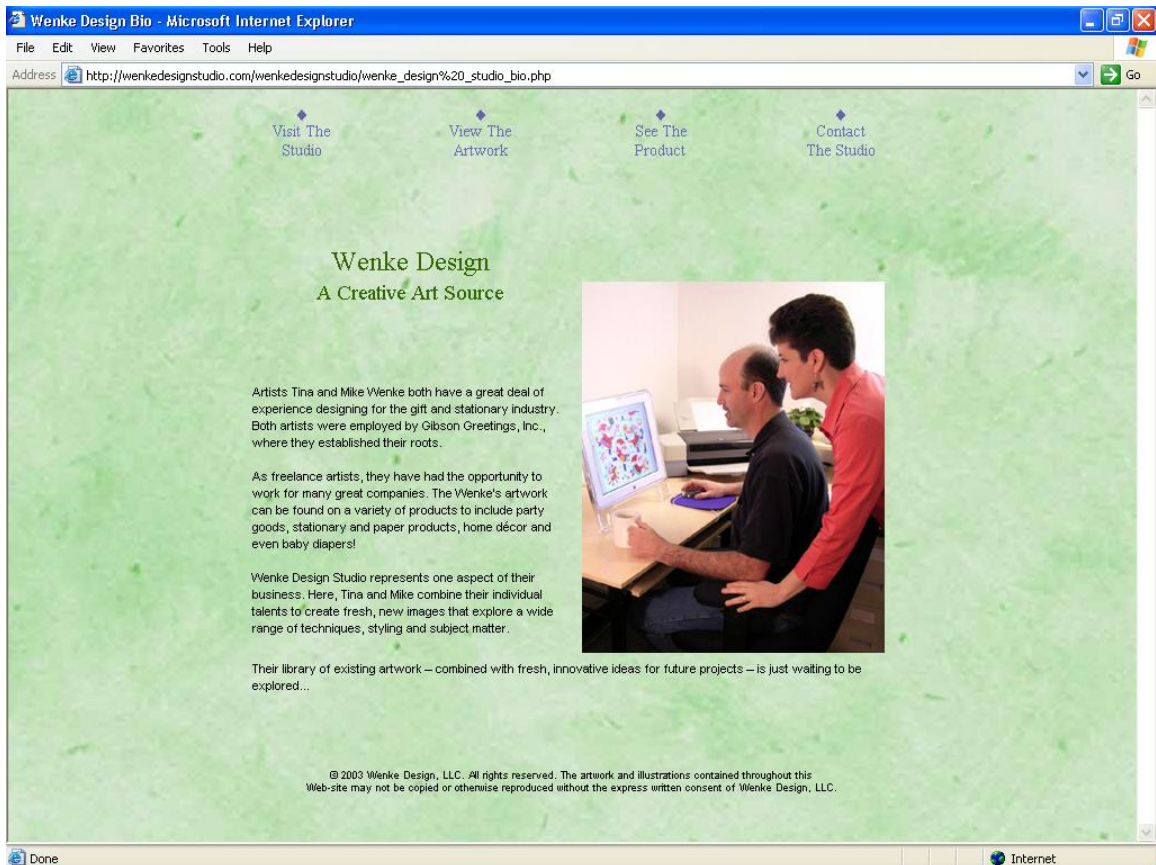


Figure 16. Wenke Design Bio

After reading their biographical information, the potential client can then choose from three areas of artwork as depicted in Figure 17. The page is designed so that the user notices the artwork as the predominant, driving force behind the site.

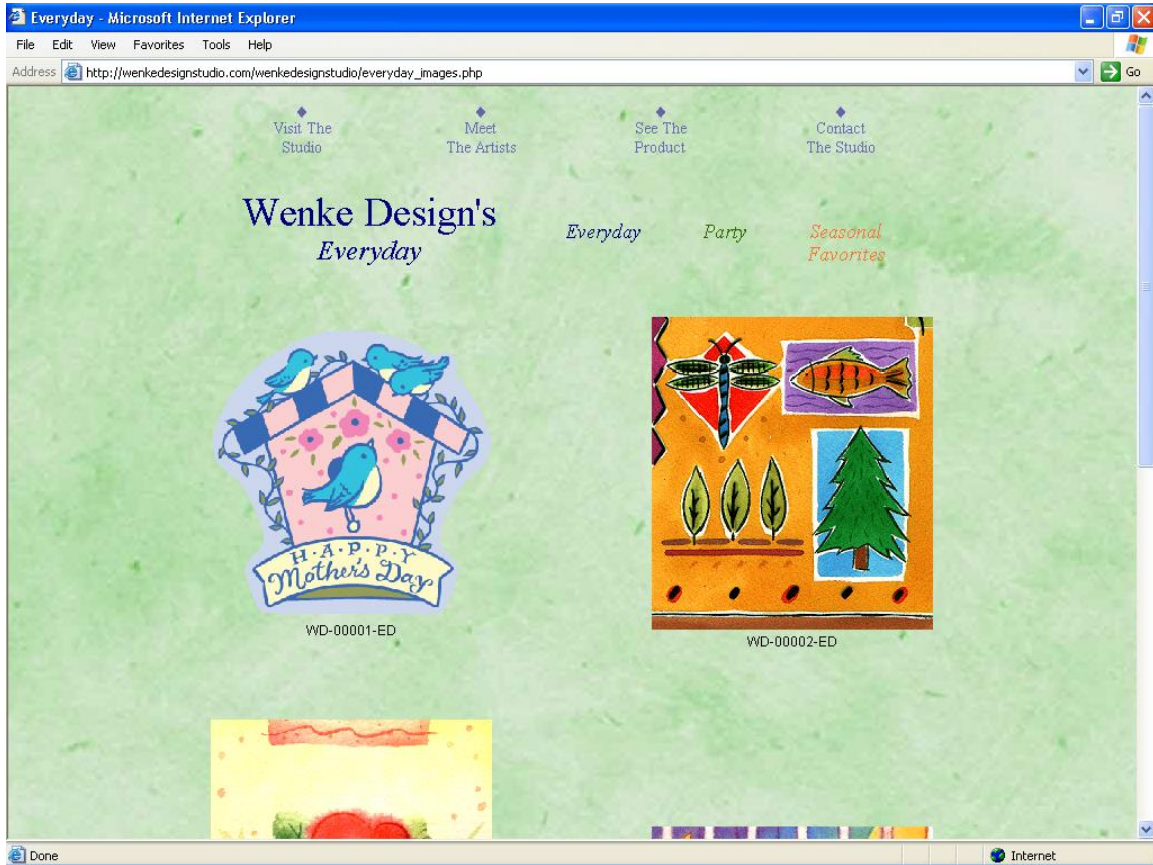


Figure 17. Wenke Design Illustrations

After browsing through Wenke Design’s illustrations, the potential client can then browse through product implementations of these illustrations. This gives Mike and Tina credibility as these successful, established companies used Mike and Tina’s illustrations on their products as shown in Figure 18.

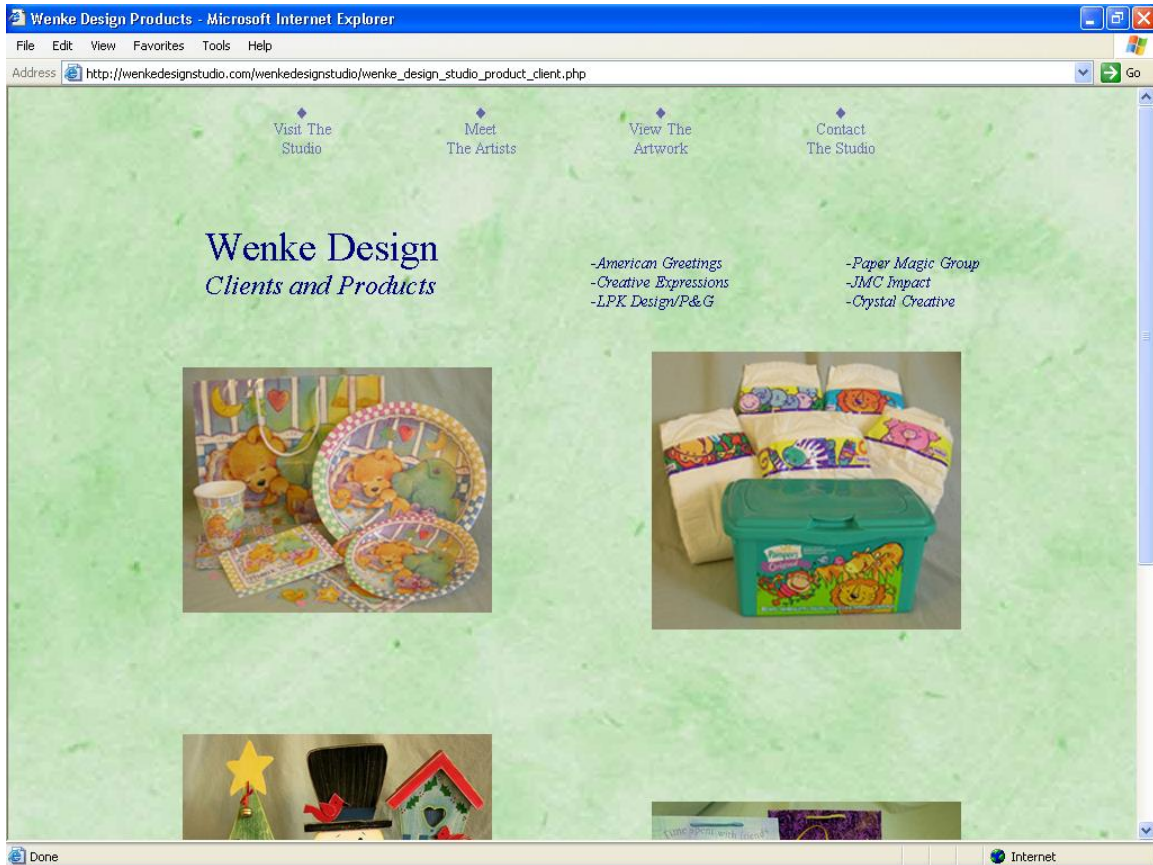
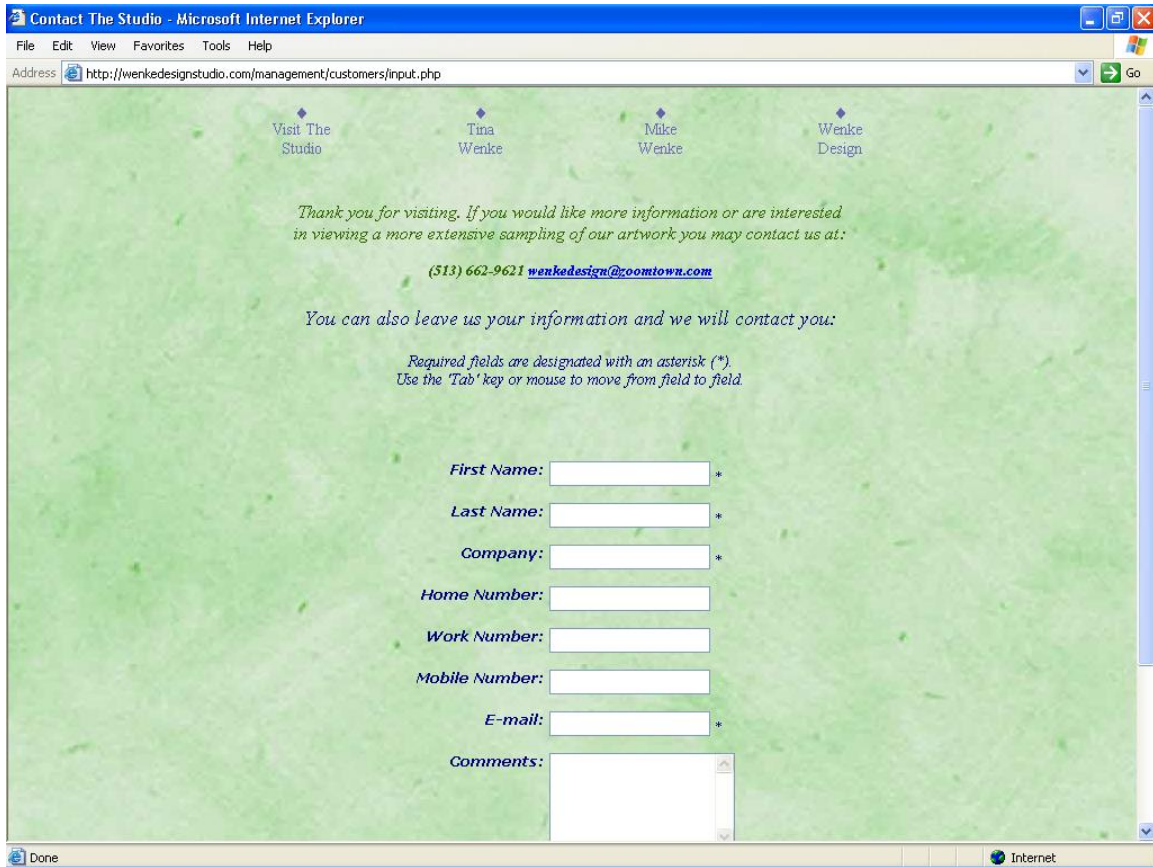


Figure 18. Wenke Design Products

5.9 Contact the Studio

The contact the studio page is simple and captures the minimal amount of data Wenke Design needs to contact a potential client about their company. Wenke Design wants to build a relationship with their clients and doesn't want them to fill out a form with a lot of fields.



The screenshot shows a Microsoft Internet Explorer browser window titled "Contact The Studio - Microsoft Internet Explorer". The address bar displays "http://wenkedesignstudio.com/management/customers/input.php". The page content is on a light green background and includes the following elements:

- Navigation links: "Visit The Studio", "Tina Wenke", "Mike Wenke", and "Wenke Design".
- Text: "Thank you for visiting. If you would like more information or are interested in viewing a more extensive sampling of our artwork you may contact us at:"
- Contact information: "(513) 662-9621 wenkedesign@zoomtown.com"
- Text: "You can also leave us your information and we will contact you:"
- Instructions: "Required fields are designated with an asterisk (*). Use the Tab' key or mouse to move from field to field."
- Form fields:
 - First Name: *
 - Last Name: *
 - Company: *
 - Home Number:
 - Work Number:
 - Mobile Number:
 - E-mail: *
 - Comments:

Figure 19. Contact the Studio

5.10 General Navigation Hyperlinks

Using hyperlinked text with a simple diamond image allows for the focus to be on the content of the application and not on the navigation structure. I also recommended to my client to change visit the studio, which is the home link, to actually say home. Because of the cultural definition of a “studio” within Wenke Design, they felt it appropriate to keep the links name as “Visit The Studio”. They also argued that using the single word home would create an imbalance within the whole structure because each link has at least two words.



Figure 20. Navigation Bar

5.11 Web-based Administrative Console

This simple content management system allows application administrators to easily insert and delete application images. Administrators also have the ability to view, modify, and search through client data.

5.11.1 Insert Image

This management page allows administrators to add new art to the application. Once authenticated, administrators fill out the form based on where they want the image to appear within the site. If the file being uploaded is an image, doesn't exist, and is the correct size it is uploaded to the server and its file path is entered into the database. If the image fails to meet the established criteria a dynamic PHP message is returned to the user.

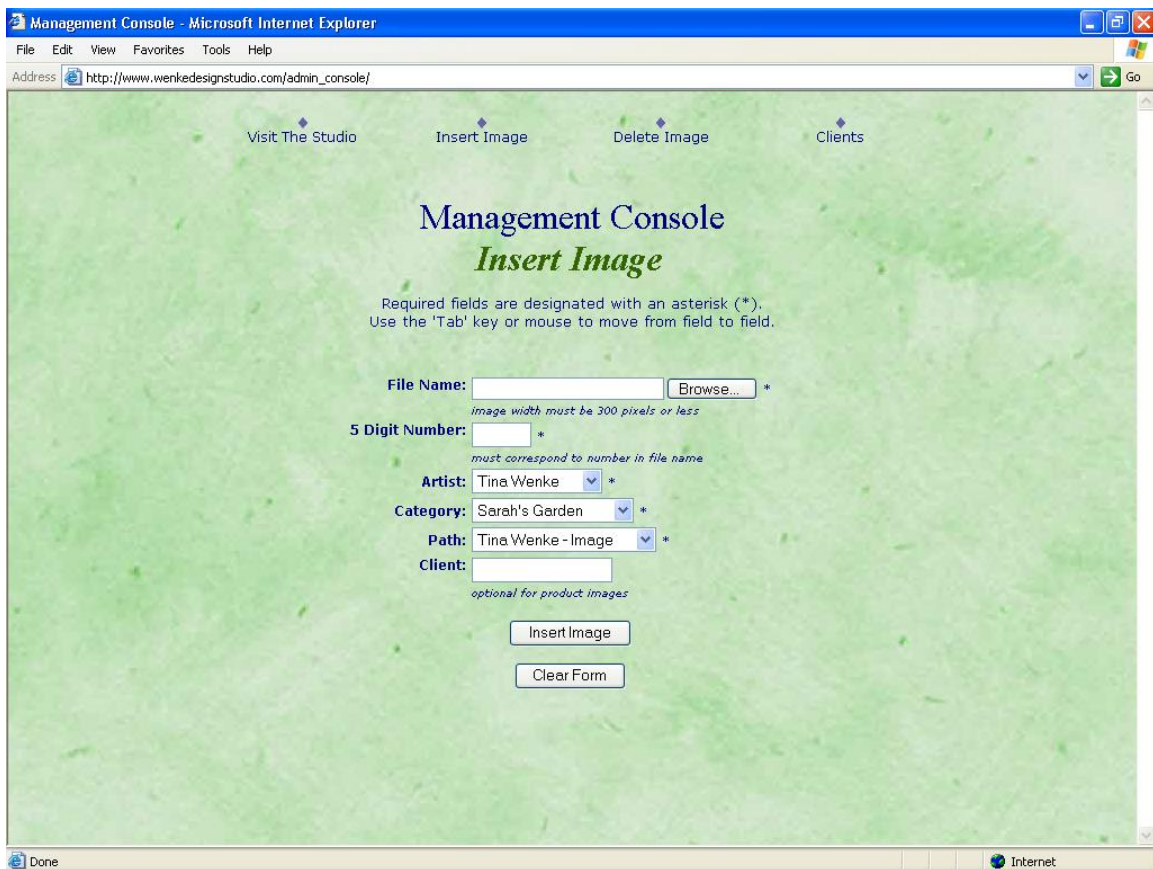


Figure 21. Insert Image

5.11.2 Delete Image

This management page allows administrators to remove old images from the application. If the image exists it will be deleted and the administrator will be notified. If the image doesn't exist a message is returned to the user.

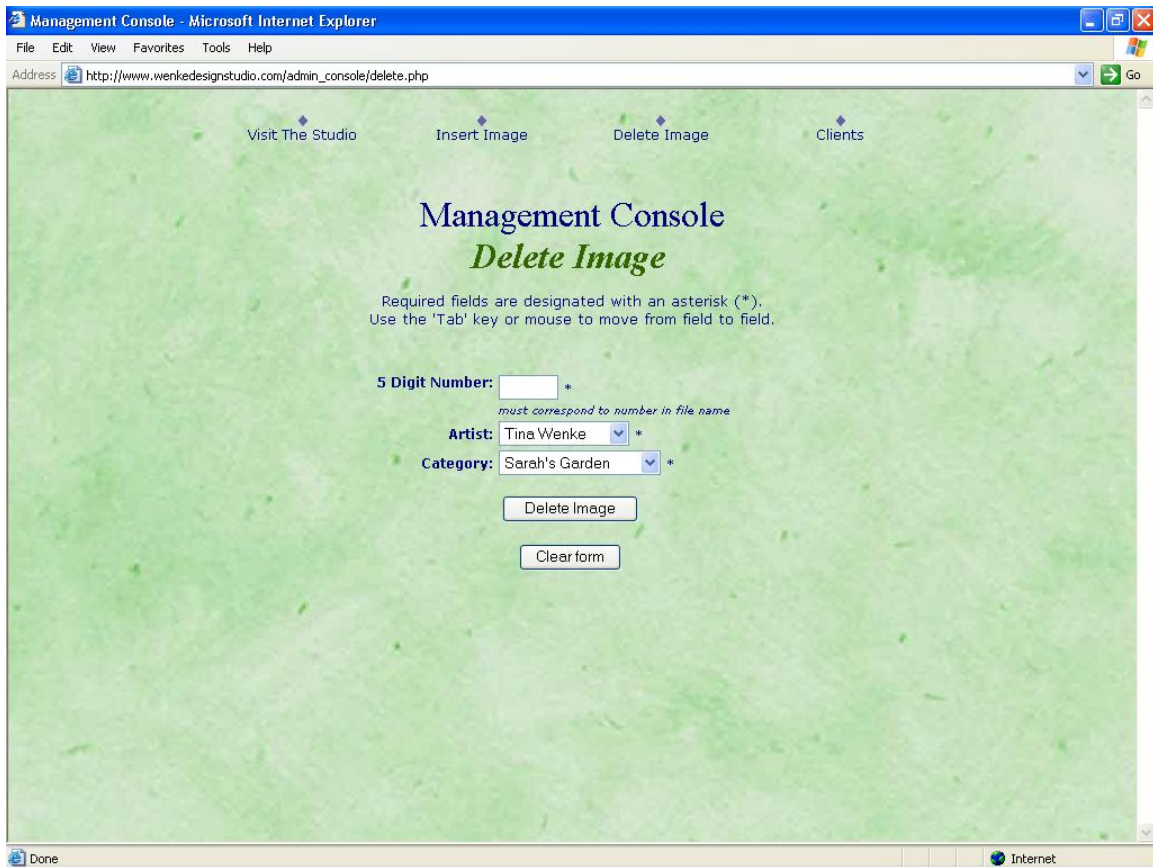


Figure 22. Delete Image

5.11.3 Client Data

Viewing customer data is accomplished in a number of ways. Administrators have the ability to search for clients by last name, first name, and company. They also can find users through an a-z index and by viewing all client entries sorted by last name. Each client data view is combined with the options of viewing a full description of the client, updating the entry, or deleting the entry.

5.11.4 Client Search

Administrators have the ability to search for clients by last name, first name, address, email, and company.

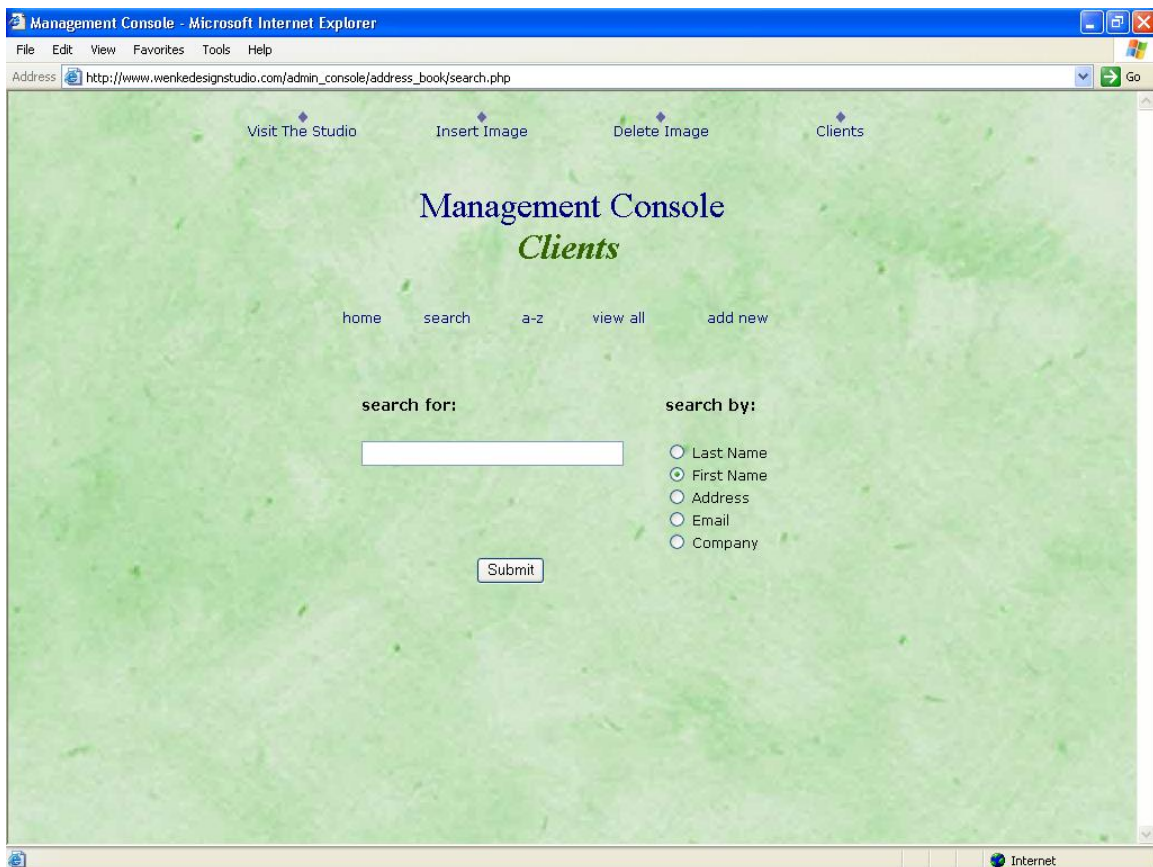


Figure 23. Client Search

5.11.5 Client Index

Administrators have the ability to use an index to find clients based on their last name.

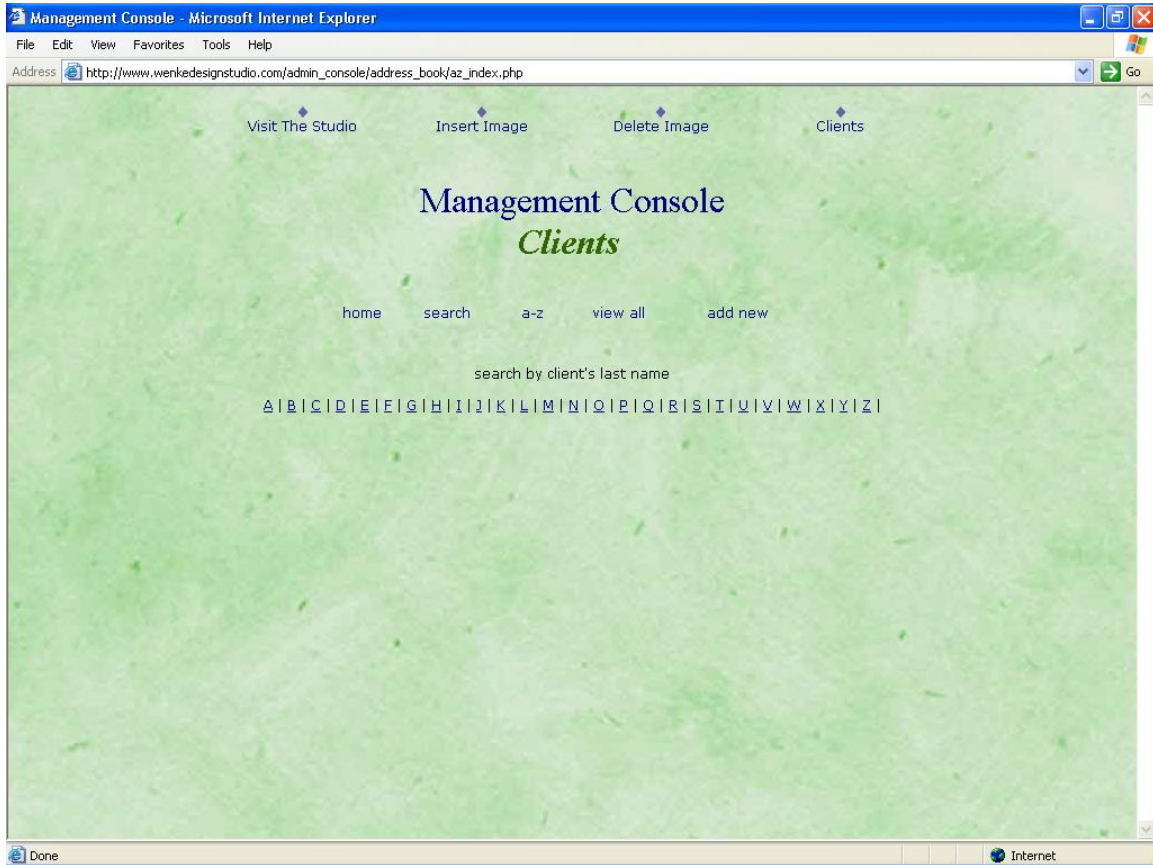


Figure 24. Client A - Z Index

5.11.6 Client View All

This view provides clients with the ability to view all clients in the database.

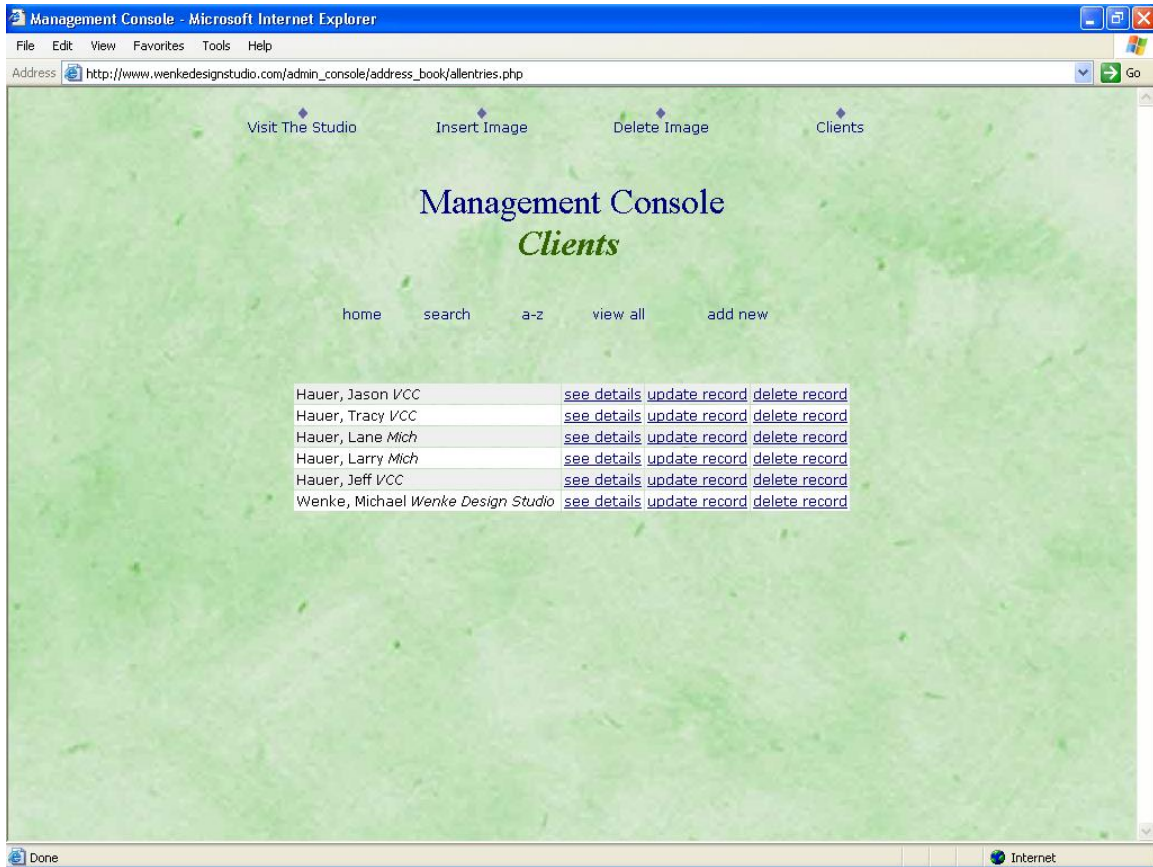


Figure 25. Client View All

5.11.7 Client Details

The client details section provides an interface for administrators to view all data pertaining to a client.



Figure 26. Client Details

5.11.8 Update Customer Data

Modifying customer data is accomplished by selecting the update link next to the client entry you want to update. The update client information form is populated with existing client data. The update button then reposts this updated information to the database.

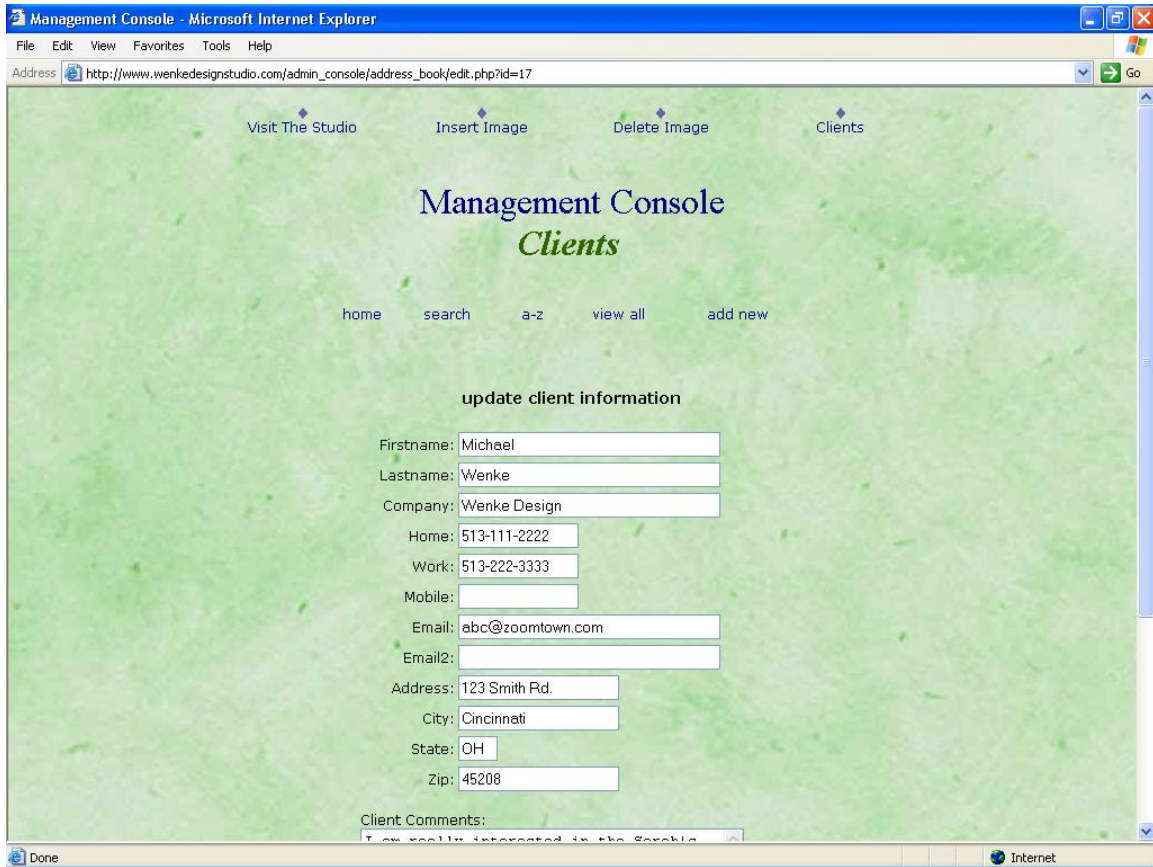


Figure 27. Update Customer Data

5.11.9 Add New Client

This page allows administrators the ability to add new clients to the database. The required fields are marked with asterisks and if these fields are not completed a message is returned to the user.

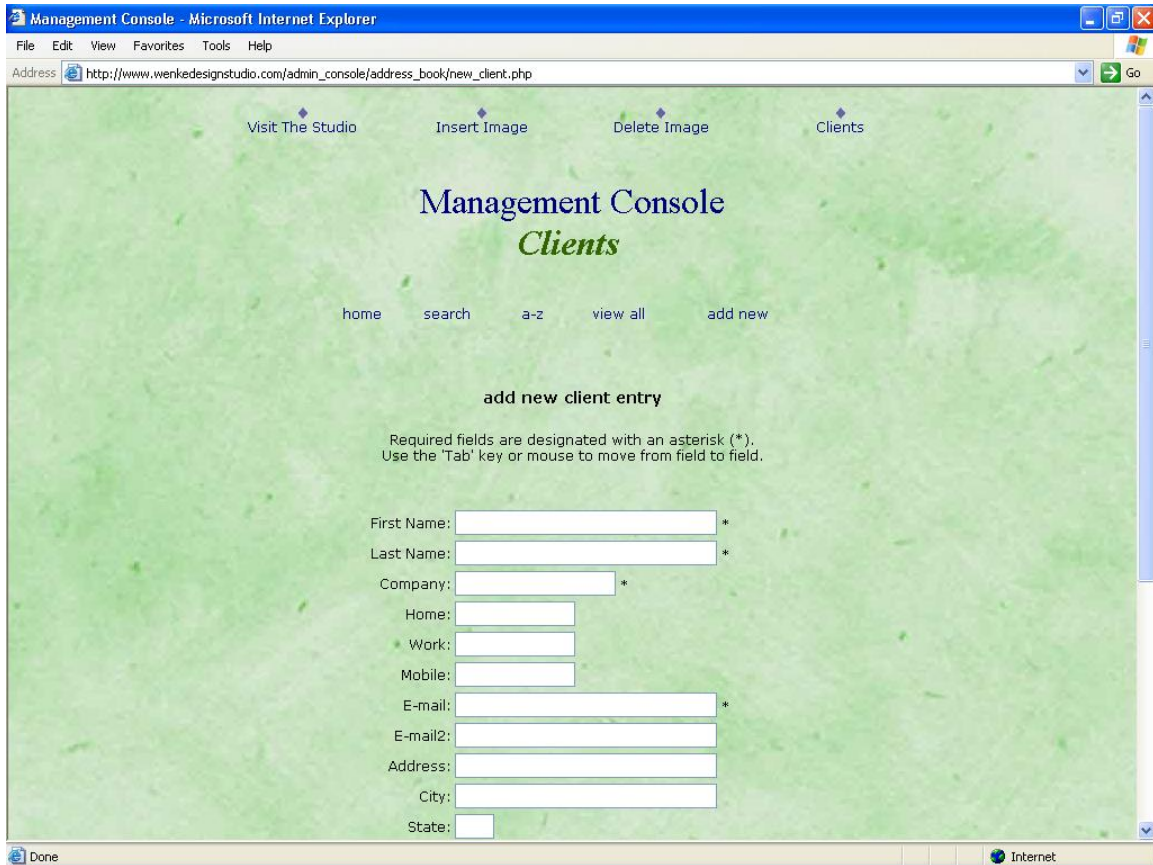


Figure 28. Add New Client

6. Testing Procedure

Testing was conducted to verify that WDALI meets established Information Engineering Technology capstone project requirements. After assembling a group of test users, test cycles ran in three iterations. The group of beta testers used an established test report to identify and detail application bugs. This analysis allowed me to fix identified errors in an organized and timely manner.

7. Conclusions and Recommendations

This section reflects my conclusions about this project and my recommendations to someone who is interested in developing a project similar to this or a technology-based solution in general.

7.1 Conclusions

This project was created in response to Wenke Design's evolution into an art licensing company. I developed a dynamic, Web-based application that is a reflection of their business including various illustrations and biographical information. The administrative console of the application is based on the ability to insert and delete images from the site built within a MySQL database. The customer database allows administrators to maintain and view client information from any browser in the world.

The project fulfilled all established design freeze deliverables. Testing was conducted to ensure the highest level of quality as this application is a reflection of me as well as the University of Cincinnati's College of Applied Science.

Using open source technologies PHP and MySQL required a high level of thought process as I figured out most of the problems I encountered along the way on my own. This helped me evolve my programming skills by forcing me to think through the code. I

was forced to replicate what the code was doing visually and on paper to fully understand and think through my problems.

This overall experience has provided me with a tremendous foundation of applied technology. I now know what it means to solve a problem with technology and this is a critical skill that I will carry with me for the rest of my life.

7.2 Recommendations

I developed the foundation for what ultimately could be converted into a full scale content management system. My category break down of image entries in the images database provides an example of how one might implement such a solution.

This project is a solid foundation and meets the deliverables I set in Senior Design II. However, this project has several areas that can be implemented for improvement:

- The image insert page states that the image size must be at 300 pixels wide or less. This is because I couldn't get the image sizing function to work without distorting the image. The image proportion was calculated correctly, but the image was not as crisp as is needed in a Web-application specifically designed to showcase illustrations. Perfecting this process will allow administrators to insert images without resizing them first.
- Adding the ability to update text content throughout the site would be a tremendous advantage to application administrators. This could be accomplished through normalizing and categorizing all aspects of the application.

Fully understanding the client's needs and how these needs relate to their industry and business helped me to conceptualize a Web-based project that fits within the scope of

their problems/needs. Taking the time to talk with a company and understanding how its business operates will allow you to visualize how technology can be effectively applied as a systematic solution or implementation to a problem or a need. In addition, applying a solution so that it fits culturally is just as important as solving the problem or need. Knowing a business will also enable you to fulfill this obligation to the best of your ability.

Act like a professional and accept responsibility for everything that happens to you. Do your homework on the technologies you are going to use and understand the role they play in the Information Technology field. Seek constant feedback and be vulnerable to criticism; you are paying the IET staff to mold you into an IT professional. Let them teach you because they are investing in you in, and in your future. Finally, be prepared for anything because you never know what could happen.

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