

**NC STATE UNIVERSITY**

# North Carolina State University

Web Site Strategic Recommendations  
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## INTRODUCTION

Ripple Effects Interactive (REI) would like to thank the staff, faculty, students, alumni and administrators of North Carolina State University (NC State) for the candid thoughts and views shared with the REI team during the recent Discovery Session. Stakeholder input will play an important role in guiding the planning and design phase of the new NC State web site.

The Discovery Sessions were extremely productive in enabling REI to gain a strong understanding of the NC State identity, marketing messages and points of difference, as well as the site content and functionality needs for internal and external audiences. With this information in hand, REI is well-equipped to draw key insights, place them in the context of industry best practices, and further define the strategic goals and opportunities for the project.

Ripple Effects recognizes that there are numerous target audiences for the NC State website including prospective students, current students, parents of students, faculty & staff, alumni, the media, corporate & government partners and the larger academic community. The website will be developed to serve all audiences, with special attention given to prospective students.

Insights and recommendations for the new NC State site design are organized as follows:

### Website Strategy & Analysis

- Branding Overview
- Primary Marketing Goals & Objectives
- Key Marketing Messages
- Site Analysis
- Target Audience Expectations

### Website Development

- Critical Success Factors
- Website Development Best Practices
- Opportunities
- Supplemental, Phase II
- Technical Recommendations

### Appendices

- Audience Personas
- New Website Launch – Marketing Opportunities
- Usability Heuristics
- Content Development Guidelines

Two additional documents will be provided separately, including a competitive analysis of three NC State peers and a university web trends & technologies report. This report provides extensive information on the Millennial Generation (born between 1982 and 2002) and is entitled, “University Web Trends and Technologies: Attracting the Millennial Generation.” At this point in time, the American Generation, also known as Generation X, is moving toward mature adulthood as the next generation, “Millennials,” emerge into young adulthood. Millennials make up most of the prospective student audience mentioned above as a primary target audience.

It is important to note that this document is not a comprehensive synopsis of every requirement/issue identified by every focus group participant. Rather, these recommendations are to act as a blueprint for the

project to ensure a shared vision between REI and NC State that will guide the site planning and design. The needs of every audience, department and stakeholder will be addressed in the site map and content tracker that will be developed during the planning and design phase.

Finally, please keep in mind that this is a strategic document that provides the framework for implementation. It is intended to keep a high-level focus on site development and does not offer specific creative ideas. Creative development will begin with the creative brief document that will be submitted to NC State after the strategic recommendations.

## WEBSITE STRATEGY & ANALYSIS

### BRANDING OVERVIEW

#### NC State Brand Identity

Before creating an effective and meaningful website for NC State, REI would like to explore the university personality or brand on the web. Unless a distinct and shared brand identity is developed, the home website serves only to disseminate information and manage audience traffic. These functions of a site underutilize its ability to assist the university in its larger goals, like building national awareness. A brand identity helps establish a shared understanding across internal and external audiences. This shared understanding builds brand momentum that allows NC State audiences the opportunity to expand both the message and the audience reach.

REI recognizes the Innovation in Action campaign as a branding effort but also understand the university is in the process of re-examining it's branding efforts. REI also understands that Ben Edwards, his company, Art & Science Group, LLC and the NC State marketing committee are currently considering the university brand positioning. We respect that effort and look forward to reviewing the findings when available. However, given the timing of the site development, REI has taken the brand through its internal branding process. This helps ensure that recommendations stem from a strategic understanding of the brand. Clearly, the process is limited to REI's primary (Discovery Sessions) and secondary research (website, promotional materials, etc.) of NC State. We do not assume to know the brand as intimately as NC State's internal groups. However, REI hopes that its external perspective will assist the university along its branding course and can offer solid web recommendations from a fundamental brand understanding.

#### The NC State Difference

In many organizations, the constituents have vastly different ideas about their brand identity. However, at NC State, this is not the case. This is a university community that collectively understands what it has to offer. A unified brand message can serve as a funnel to take these descriptors and focus them into key concepts that can be easily communicated and translated across audiences.

An understood brand has the power to serve as a rallying point for all those affiliated with it. During the Discovery Sessions, REI observed that NC State groups are proud to be a part of the university. They are frustrated at being viewed by some as "Moo U" or as a second-choice school. They do not want to sit in the shadow of other schools, and specifically the University of North Carolina at Chapel Hill. REI hopes to assist the university in harnessing the power of that competitive pride to engage NC State audiences in an emotional connection to the brand that resonates deeply.

NC State should not feel second rate to any institution, but rather consider themselves a leading community of "doers". NC State is a community of action. Its blue-collar roots and first-generation college tradition equate to a powerful understanding of how academics fit into real world applications; be it science, technology, business or the humanities. The people of NC State recognize that to change the world requires more than just thought, but thoughtful action. They embrace the responsibility and will lead by example. The NC State brand will differentiate by "doing".

#### Brand Strengths & Weaknesses

##### Brand Strengths

The positive academic impressions of the university focus primarily on the technology and science fields, specifically engineering and agriculture. Other well-known programs include veterinary medicine, textiles, design and natural resources. The university's athletic program also has a positive national impression. On an NC State student blog, one student says, "Most people I have met outside of the southeast knew about NC State because of the recent football program and because of ACC." Other strengths include the university's affordability, its welcoming, southern hospitality, the large size, the collective strength of its colleges, Centennial Campus, First Year College and the Raleigh location. Once students arrive, they realize there is plenty of opportunity for involvement (ex. intramural athletics program). Students also develop personal relationships with their professors that are often maintained after graduation. The university is also active in the local community and is considered the "go to" place when a community member has a difficult question that needs answered.

### Brand Weaknesses

NC State feels prospective students know it as a "down-south ag school." NC State students also said that some prospectives might see the university as a white male conservative school with little diversity. NC State is also known by some as a second-choice school; the place to go when you can not get into a "better" school, like UNC at Chapel Hill. Outside of North Carolina, the limited national recognition causes confusion and misperceptions. On a blog created by NC State students, one user writes, "Outside the southeast, NC State doesn't exist." Another student says that people regularly confuse NC State with UNC. Another misperception is that attending a school that has less national recognition like NC State will hinder career opportunities.

Internally, faculty and staff feel there is poor communication between groups and that it is difficult to know what is going on in other parts of the university. For students, it's not always easy to get involved in extra-curricular activities. Students have to work at feeling a part of the NC State community. Academically, the humanities, social sciences and other fields not related to science or technology are underrepresented.

In addressing the brand weaknesses heard during the Discovery Sessions, it's important to point out that these are perceptions, not necessarily grounded in fact. However, these issues are incredibly valuable in identifying opportunity. It is the job of a unified brand message and effective tools, like a website, to bridge the gap between perception and reality.

### **REI Branding Process**

This exercise ensures that all aspects of NC State are considered in creating a brand message or promise. It assists in identifying areas of differentiation and considers how NC State will be thought of in the mind of its target audience(s).

#### **Physical Attributes** – *physical or tangible features/attributes of NC State*

- Largest four year institution in NC
- 12 colleges
- Land-grant institution
- 30,000 students
- Located in Raleigh, NC
- Near Research Triangle Park
- Centennial Campus
- Free Expression Tunnel
- Brickyard
- Expanding Campus (new buildings)
- The Friday Institute
- Holds over 500 patents

### **Rational Benefits** – *fact-based benefits of NC State*

- Strong overall academics
- Exceptionally strong in and known for engineering, agriculture, science and technology
- Unique academic programs (textiles, design, veterinary medicine, natural resources)
- Affordable – Princeton Review rated a “Best Value”
- Great location (“manageable urban”)
- Nice weather
- Diverse, talented faculty
- Hands-on learning (ex. Design Camp)
  - Undergraduate research
  - Community service projects (ex. Service Raleigh)
  - Co-op, extension programs
  - Internships opportunities
- Active student life and traditions (ex. intramural program, brickyard, campus parade)
- Diverse student population (ethnically, economically, geographically)
- International/global experiences (ex. study abroad program)
- Job placement after graduation (ex. Centennial Campus)
- Attractive campus, known for its brick buildings and sidewalks
- Focused programs (liberal arts or core classes not required outside of field)
- Athletic programs
- Incorporate technology into “non-technology” areas
- Collaborations across colleges
- Great place for undecided students (First Year College)
- Active alumni association
- Increasing demand for NC State programs overall
- University’s contribution to economic growth
- University’s contribution to research

### **Emotional Benefits** – *Intangible benefits of NC State*

- Inclusive
- Approachable
- Purposeful
- Real
- Community minded (local and global)
- Service learning
- Action-oriented (applied learning)
- Results-driven
- Innovative
- Feel a sense of responsibility
- Competitive spirit
- Proud
- Door to a better life (first generation college students)
- A small school feel with big university options
- Relationships are established and maintained (between faculty and student, alumni assoc., etc.)

### **Brand Differentiators** – *How NC State stands out from the rest*

- Action-oriented, not afraid of a challenge, hands-on education with real life application

- Centennial Campus
- Location – Raleigh, Research Triangle Park, weather
- Student life/engagement – intramurals, Free Expression Tunnel, Brickyard, Service Raleigh
- Incorporate technology into “non-technology” areas, college collaborations
- Welcoming/Inclusive – the people’s university, first-generation college students
- Service minded – Leading through service, community minded, extension efforts
- Field faculty and researchers – in over 100 counties and the Cherokee Reservation and includes research farms, forests and other properties throughout the state

**Prospective Student Motivation** – *What NC State wants them to think/do*

Target Audience: High-Achieving National Students

I’m interested in attending NC State because:

- I’ll be surrounded by people that don’t just think, but want to take action.
- I can feel comfortable and fit in, even though I’m a first generation college student, undecided major, minority, transfer, etc.
- I’ll have lots of opportunities outside of class to apply what I’m learning.
- They care about community and think globally (leading through service).
- Raleigh and the surrounding area is a great place to live.
- NC State has a wide variety of student activities and anyone can be involved.

**The Brand Promise** –one sentence summary of what the NC State brand delivers

North Carolina State University is an inclusive, service-minded, educational community that leads through action, and whose heritage as a land-grant institution and people’s university, provides a powerful understanding of how academics fit into real world applications that will transform and improve our world.

## PRIMARY MARKETING GOALS & OBJECTIVES

Once a strong brand identity is created, it gives the NC State website an opportunity to showcase the brand for a national audience. As the most forward-facing marketing communications tool for NC State, it's important to understand the role of the website as it relates to the overall marketing scheme. Keeping this high-level focus throughout the web development process will help to ensure that the site is best utilized to support the brand promise and marketing strategy.

The brand promise will be supported by primary marketing goals. These goals identify what NC State is trying to accomplish to help prove the brand promise. Then, the primary marketing objectives offer ways to measure the goals. After goals and objectives, REI will identify the key marketing messages. To summarize, the brand promise says, "This is what we are." The goals state, "Here is what we're going to accomplish," and the objectives show, "Here is how we know we've been successful." The key messages articulate the brand promise, goals and objectives.

REI ascertains the **primary marketing goals** to be:

1. Communicate a unified brand promise (leading through action)
2. Increase NC State recognition outside of North Carolina
3. Attract high-achieving students (out-of-state undergrads, transfers, graduate, international)
4. Enhance NC State internal communications
5. Engage (not just inform) target audiences

REI ascertains that some of the **primary marketing objectives** will be:

1. Increase in prospective student inquiries (especially focused on high-achieving and out-of-state students)
2. Increase in competitive rankings
3. Increase in media inquiries and positive PR coverage of university
4. Increase in alumni association membership
5. Increase in campus visits

While a web site alone cannot achieve each of these goals and objectives, the site can and should play a major role in both communicating the brand and serving as the primary communications hub for the university.

REI encourages NC State to consider an integrated marketing communications plan that utilizes other forms of media and outreach (traditional, direct, online, PR, events) to drive awareness of and attract prospects to the site. *REI has provided some considerations for the new site launch marketing in the appendices.* Once this awareness has been generated, the site will play a pivotal role especially with prospective students during the consideration and understanding phase of the traditional purchase cycle. As such, the site will effectively convey the key points of difference about NC State. It will engage potential applicants with these key messages, address perception issues and roadblocks, deliver relevant information and initiate meaningful dialogue. Combined with direct contact from the admissions staff, current students, and other personal interaction (visits), the site should help to build a relationship with prospective/admitted students that will ultimately support the decision to enroll.

## KEY MARKETING MESSAGES

Throughout the Discovery Sessions, REI noted the following key marketing messages. These messages should be emphasized at appropriate touchpoints throughout the new NC State site to engage target audiences in meaningful dialogue and differentiate NC State from other universities. As part of supporting the central brand promise and marketing goals, the key messages also help address misperceptions about NSCU as well.

### **1. NC State has pioneered an academic model that fosters economic development.**

This unique relationship between academics and economics at NC State is best exemplified through Centennial Campus. Centennial Campus is much more than a research park and it is a powerful example of NC State's leadership in action. NC State's pioneering effort in building such a campus should be emphasized. Central points in support of this key message can include:

- Economic/Business Development
  - Corporate partnerships
  - Student Internships
  - Job creation – including career opportunities for alumni
  - Technology Incubator
- Education
  - The Friday Institute
  - Middle School
- Community
  - Residential area
  - Recreational offerings (golf course, fitness center)
  - Environmental sustainability

### **2. NC State provides opportunities for real-life exploration to students in all fields of study.**

This key message can focus on all the research opportunities at NC State but should go beyond traditional notions of research to include those areas of the university that are less known. Therefore, REI suggests using the word “exploration” and include all fields of study. The focus here will be to tell fascinating stories of exploration and action. Central points in support of this key message can include:

- Research – such as the technology innovations and application in non-technology areas
- Extension and engagement programs
- Undergraduates participate in top national research projects
- International programs (ex. Prague Institute and study abroad)

### **3. NC State is an inclusive and service-minded community.**

This key message will help external audiences capture the spirit and essence of the NC State community. It will highlight diversity beyond just ethnicity. It will convey the schools southern hospitality but also its high achieving standards. Central points in support of this key message can include:

- First generation college students
- First Year College
- Service learning to community, nation, world (ex. Service Raleigh)
- Increasing diversity
- A small college feel with the options of a large university
- Faculty establish lasting relationships with students (advisory program)
- Rated by Princeton Review as one of top “Colleges with a Conscience”

### **4. NC State is located in a growing area that offers innovation and opportunity.**

The NC State campus and location are important differentiators for the university that can be highlighted through this key message. This message resonates on multiple levels. In part, it challenges the “old ag school” notion through a growing city and its close proximity to RTP. Plus, it identifies the area as a location full of opportunity. Graduating students would not have to relocate to a new area for satisfying career possibilities or great living conditions.

- Located in Raleigh - a growing and innovative city with a high quality-of-life
- Attractive campus
- Research Triangle Park
- Weather/climate
- Reasonable cost of living
- Recreational opportunities (ex. sports, outdoors, culture)

**5. Students are active participants and have a voice at NC State.**

This message gives NC State the chance to speak directly to prospective students to assure them that they will matter at this university. It will help prospectives identify with current students and give specific examples of what sets NC State apart when it comes to campus life. Several students in the discovery session were surprised that they actually enjoyed campus life once they arrived. The goal of this message is to create that positive expectation among prospective students so that they have one more reason to select NC State.

- Brickyard
- Free Expression Tunnel
- Intramural programs
- Clubs/ organizations
- Student traditions – Service Raleigh, campus parade

In addition to these key messages, the NC State marketing team has identified six specific areas directly related to the university’s new strategic plan that will be a focus in developing site content and messaging they would like to focus on in the future. These areas of emphasis will be incorporated into the site as a way to support the brand and key messages.

1. Graduate and research programs
2. International programs and global experience
3. Economic development
4. Focus on strengthening the broad range of disciplines
5. Student experience
6. K-12 Science and Math Education (STEM disciplines)

## CURRENT SITE ANALYSIS

Through the Research & Discovery sessions and secondary research, REI has an understanding of how the university compares to other institutions as a whole, and also with regard to the NC State website.

### Site Strengths

The NC State site offers a wide array of information. The design is simple and the content organization can be understood by most users. The navigation bars are used consistently in many areas of the site. The site also has some practical functionality such as search, directories and video campus tours. The recent web survey conducted by the university showed that many people like the current site and found it effective. Survey respondents were primarily faculty/staff, with some student feedback. The site is significantly stronger in all areas when compared to the UNC - Chapel Hill site. A new NC State site will provide even more distinction and contrast to ensure the NC State message is clearly heard.

### Site Weaknesses

The current site has a practical/functional approach. While this is very important, the site could do a better job of speaking to prospective students and building national awareness through a stronger brand promise. The site has a wide range of inconsistencies in design, content, navigation. Important content is difficult to find and users must choose between long lists of links. It is difficult during the evolution of any large site to maintain a consistent look and feel as individual areas add content. When compared to similar university sites, NC State does not offer a branding message to help users understand what sets the university apart. Virginia Tech greets users on the homepage with a branding banner that incorporates words and images and invites prospective students to “invent the future.” Ohio State University offers engaging content on the homepage like student feature stories with large images. The site invites readers to explore with welcoming copy that tells a user where she/he is going next and doesn't overwhelm with options.

## TARGET AUDIENCE EXPECTATIONS

As discussed and agreed upon by various stakeholder groups during Discovery sessions, the new NC State site should be most geared to the primary audience – prospective students. However, the site should address the needs of all audiences and deliver a positive overall experience for these visitor groups. Below is a list of the key site audiences along with brief descriptions of their respective needs, mind-sets and expectations.

Five audience personas are provided in the appendix. The personas are created to bring various target audiences to life. Looking at the site through the perspective of one person vs. a group, provides a better understanding of how a user might use and move through the site. These individual scenarios are considered as REI develops the site structure and design.

### Primary Audiences

#### Prospective Students

Prospective students are an extremely savvy group of web users. The website represents the university in their minds. Most in this group fall within the Millennial Generation (born between 1982 and 2002). More detail on Millennials and their web use is provided in a separate document entitled, “University Web Trends and Technologies: Attracting the Millennial Generation.”

Given the tremendous variety of degrees and programs available at NC State, the university needs to communicate with a diverse group of prospective students. Prospective students will also be looking for important information that qualifies the school and factors heavily into their interest to apply/attend. A 2003 NC State admissions survey of admitted students indicated that the most influential factors in their decision to attend included availability of academic programs, academic reputation of the university and location. These results are consistent with REI’s findings with other universities, in addition to rankings and costs. NC State’s Raleigh location, the diversity of its college offerings and the *Princeton Review* ranking as one of America’s Best Value College are possible aspects to highlight. Students are also interested in results. They want to know what an investment in further education, and specifically a degree from NC State, can do for their career prospects and earning potential. The critical question is “What will I get out of it?” followed by questions about job placement success and about the typical experience current students and alumni have had.

The largest segment of this audience includes 16-to 18-year-old high school students. Each student is looking for precise programs, admissions and financial aid information, as well as information pertaining to the campus and overall quality of life. “Coolness” is a factor among this segment. For many, choice of college is analogous to clothing style as a reflection of their individuality. Peer group approval is also key. The critical questions for prospective undergraduate students are “Can I get in, will I fit in, do I want to spend four years here?”

Another prospective segment is the graduate, executive, distance and continuing education students. These groups are typically adults. Many have undergraduate degrees and are looking for an advanced degree. Some are graduates looking for specialized career-related training. Others are not graduates and are looking to complete their education. The common denominator for most of this segment is improving career and compensation prospects. Key questions include “Will this fit into my life and the time I have available between work, family, etc., is the location convenient, will my employer pay for this or can I afford this?”

Another important segment for NC State is transfer students. In Discovery, REI learned that approximately 25% of incoming students are transfers. This group is typically the 19- to 22-year-olds looking to improve the

quality of their education and/or looking to pursue a specific degree program. The critical questions for transfers are, “Will all my credits transfer, will I fit into a new school?”

The final prospective group to consider is international students. This group is typically adult and is interested in three major factors when searching university sites: location, accreditation and cost.

For prospective students, the website can act as a converter tool for applications. Some aspects to focus on; quality of curriculum, opportunities for placement and future career, learning and living environment (campus and Raleigh), reputation and rankings, alumni success, etc.

Finally, supporting NC State’s experience that prospective students who visit the campus and attend information sessions choose the school in greater proportions than those who do not, the site should go to great lengths to drive members of this audience to take those actions. As such, visiting events and opportunities, like Make a Date at State, should be promoted when appropriate, and visiting information should be clear and present in relevant sections of the site. Effective use of imagery depicting the attractive campus and the cultural/recreational opportunities around Raleigh will also entice prospective students to visit the campus and experience NC State first-hand.

### Current Students

Current students are interested in different information than prospective students, including program completion requirements, course offerings, academic advising, student handbooks, health services, and registration. Students, particularly those past their second year, are also concerned with finding employment post graduation and stories about successful career placements can help build a lasting relationship before they leave the university. The website should play a role in building identity and relationships during the students’ time at NC State to establish an effective foundation for future alumni career support and development goals. This will also help the student build a stronger identity with the university, versus only his/her chosen college.

As REI heard in the discovery session, current students also take pride in (or critical debate with) the appearance and functionality of their school’s web site. They want it to compare favorably to other schools and other sites they frequent on the web. Student organizations/club sites are perhaps the most popular destinations (on the main NC State site) for current students. Other information that should be readily available and easy for current students to find include program info, the registrar, contact info for staff and faculty, and current news and events.

### Faculty and Staff

Staff and faculty have many of the same online needs that employees of any organization have, including compensation, benefits, health insurance and other human resource information. Faculty also have reference and research needs, and are heavy users of the library and academic program information in their roles as advisors. Many of these needs will be addressed with the future rollout of the NC State internal portal. The main site can be used as a place to encourage and motivate staff and faculty by recognizing their achievements and providing them something that other employers have more difficulty in providing – a community. In addition, faculty and staff can be expected to be heavy users of functionality, and primary contributors to and maintainers of the content contained in the CMS.

Like current students and alumni, faculty and staff should gain a sense of pride and belonging through the overall brand messaging, imagery and personality of the site. Faculty in particular are a critical component to the university’s external image and rankings. The web site should not only promote their achievements, it should also help to streamline their day-to-day tasks and enhance their overall experience as a member of the staff.

### Influencers (Parents/Guardians/Guidance Counselors)

This is an advisory group for prospective students. They are primarily interested in the detail; things their kids may have missed or may not want to consider when choosing a university. Parents and guardians have more detailed questions about campus safety and student employment placement statistics. They primarily see higher education as preparation for life. They want to think of the “big picture,” as opposed to their kids thinking about the “cool” factor.

Once their children are matriculated, this audience uses university websites for two purposes: to find community information in preparation for visits to school, such as nearby hotels, restaurants, attractions and events. They also want to keep up on campus news and are interested in validating their and their kid’s choice of university. The latest honors for faculty, major research grant awards, newspaper or magazine articles with praise for the school and the like are important to them.

Another related Influencer audience is the high school guidance counselor. Though not a primary audience, communicating with this group can be important in reaching the traditional prospective undergraduate.

### Alumni

NC State alumni are recruiters, job seekers, mentors, givers, and more. Many come to the website looking for opportunities to remain a part of the Wolfpack family. NC State has an active and developed alumni association, including an outstanding print publication, *NC State*. The site should reflect the robust aspects of the alumni association and highlight the university’s various opportunities for alumni to get involved. The site should also encourage them to give back to the university in one of the many possible ways (donations, networking, recruiting, etc.). At the same time, the university needs to continue to support alumni who may feel displaced or “out of the loop.” Alumni have a for-life relationship with NC State, and the site should communicate the many facets of that relationship. For example, career/networking resources should be cross-linked from the career services section. It is also worth noting that content concerning alumni success may be as important for alumni to view as it is for prospective students.

## **Secondary Audiences**

### Corporate & Government Partners

This audience comes to the site for two reasons: 1) to find out what is happening at NC State and 2) to learn about investment and donor opportunities within the university. The site needs to prominently show the research and innovations that are being performed at NC State, like Centennial Campus. The more these visitors see the leading actions being created at the university and the impact the university is making on the future of the world today, the more reasons they will find to donate. These visitors typically are time-constrained and expect information to be easy to find. Bringing up news on research and innovations, as well as quickly leading this audience through navigation on the homepage to the development sites, will help turn interested parties into inquirers and, hopefully, partners and donors.

### National Academic Leaders

Universities and their deans frequently turn to competitor web sites to review functionality and content to ensure that their own site is being fully and effectively utilized. Faculty members from other institutions also use the web site to find information about peers and their research. The NC State web site should project a clear, confident, and professional overall image to encourage inclusion of the university faculty in research, speaking engagements, and conference opportunities; as well as to support NC State’s position in the various rankings that are released each year (and are heavily based upon peer reviews).

## Media

Journalists typically visit higher education websites to find sources for stories. A directory of faculty and their areas of expertise should be a primary tool for communicating with the media, while current news areas (with releases) are also important to give journalists ideas for stories. Media will also want practical background information about the university. NC State already does an outstanding job of offering current news through their News Services team. The News Service redesigned site will offer an important service to all target audiences seeking news, including the media.

## The Global Community and the University's Friends and Neighbors

The NC State website is the most forward-facing marketing piece the university has for the larger and more global community. The people within this audience have generally heard of NC State, either within their social circle or via other networks. Typically, these visitors are already intrigued by the university when they visit the site. What the website needs to do for this audience is to give them a sense of the NC State brand and community. The homepage needs to encourage this audience to delve further into the site and learn more about NC State.

While NC State may be a large university with global reach, it is also very committed to its local, regional and state communities. These audiences remain important groups to consider in site development as well. NC State's sense of responsibility to its surrounding communities is an aspect of the brand that sets it apart.

## WEBSITE DEVELOPMENT

The sections that follow outline REI's recommendations on how the site can best be utilized to support the branding, goals and messages above. Thinking long term, the newly designed web site will become the foundation for an ongoing interactive marketing framework. As such, the Critical Success Factors, Site Development Best Practices and Opportunities to support the marketing strategy are presented here, with Phase II Recommendations noted for future consideration.

### CRITICAL SUCCESS FACTORS

The following items have been identified as critical success factors for the NC State site rebuild. These are areas that will be necessary considerations to ensure the site is effective in the long-term, not only as a marketing vehicle, but also as a business tool. Critical success factors for NC State focus on brand, site structure, design, content/collaboration and staffing.

#### ***Brand: Embody the NC State Brand and Convey the Central Marketing Messages***

NC State recognizes that the website has the potential to be one of the university's most front-facing and influential marketing tools. Therefore, it is imperative that the new site design communicate the university's central brand messages in a captivating and memorable way. Various site audiences should come away from the site with an elevated perception of NC State and a palpable sense of what makes the university such a distinctive and valuable educational experience.

Through the combined use of graphics, imagery, creative copy, content and technology (where applicable), the new site design should create a personalized experience that delivers the desired takeaways for each of the primary site audiences. Conveying the central messages and overall tone and personality of the NC State brand will competitively position university by emphasizing economic development, research/exploration, community, location and student life. Imagery should be utilized to capture the positive campus attributes, spotlight real activities, faculty, students and alumni, to give a human face to the university's commitment to leading through action. This brand visualization should apply across the level pages throughout the site, giving a consistent brand feel to each of the university's departments and programs.

#### ***Site Structure: Create a Site Structure and User-centric Navigation that Highlights Simplified Choice***

The challenge for NC State is to present the myriad of opportunities and content without intimidating or confusing the user. This can be addressed by site structure. REI recommends the continued use of the audience-based and topical navigation schemes. However, the first level of content within those audience groups must highlight engaging content/copy and simplified choice. This approach eases the user into the site with a welcoming tone and provides a better understanding of site structure, encouraging continued navigation of the site. Benefit-oriented calls-to-action will guide user paths for audiences, providing direct and intuitive access to the most applicable and frequently sought after information. Currently, these audience-specific landing pages offer only groups of links that can overwhelm and frustrate the user.

To enhance the user-centric navigation, information that is currently in disparate locations will be centralized and accessible from multiple paths to eliminate redundancy. Overlapping services/programs will be presented to different audiences from their respective vantage points. Users will be able to take appropriate actions when desired. Effective cross-linking between sections will provide the opportunity for respective audiences to gain a better sense of the big picture and how specific programs relate to the university at large.

### ***Design: Enhance the Visual Design to Engage Site Visitors***

An attractive and compelling site aesthetic is critical to making an emotional and rational connection with the various NC State audiences, especially prospective students. The visual design is the site's first impression. It is one of the most influential branding aspects of the site and often one of the primary opinion-forming qualities in the mind of the user. (A complete report of creative design considerations and factors are outlined in the Creative Brief.)

As suggested throughout Discovery Sessions, the current NC State site design is in need of an update. The site has been in place for several years and the visual aesthetic appears to be somewhat dated. A positive aspect of the home page is that it's been kept clean and simple. However, the home and upper landing pages should be focused on engaging the user through the use of more imagery, simple and direct calls to action, and creative communication of the university's key marketing messages. It's important that the new site appeals to each of the respective audiences through a dynamic, yet elegant design that will ultimately draw audiences deeper into the site, guiding the desired actions and responses.

The home page design will set the style and tone of the site as a whole and should capture the personality of the university at a glance. Distinct level page templates will be derived from the home page, borrowing from various visual elements, retaining global navigation items, and adapting column structure to accommodate different types of content. REI recommends selective and intelligent use of Flash elements on the home page to enhance impact and enable NC State to convey several rotating branding messages on a single page. A changing home page with balanced multimedia elements also ensures a "new" site experience with each visit. A revolving publishing section on the home page, with compelling supporting imagery, will provide an active and interesting medium for communicating the university's points of difference and ensure the messages resonate in the minds of each target audience. Sophistication and complexity of the home page Flash element may vary in keeping with the project scope. Complete details regarding the Flash component will be outlined during the planning and design phase.

Finally, the new site design must establish and maintain a consistent visual style and navigation scheme throughout the various levels of the site. The design template must be able to accommodate different contents needs (i.e., supporting imagery, heavy content, course descriptions, forms), while maintaining a consistent overall look and feel. Navigation should be intuitive and consistent in order to quickly acquaint the user and guide the site experience. Various audience groups should be able to recognize their place from anywhere within the site, and be able to easily navigate to other content areas. In short, the design must work in harmony with the site architecture and effectively support the hierarchy of content.

### ***Content & Collaboration: Empowering Ownership of Content and Building Collaboration***

Empowering various groups/individuals within NC State to provide and manage content in a decentralized information acquisition model is one of the great benefits of the Internet. Organizations typically find that distributing responsibility for providing information and enabling active communication among stakeholders often results in a more creative and productive environment. It also nurtures a greater sense of a stake in the success of the web presence and institution.

Distributing content authoring through a CMS is only the beginning of the empowerment process. To truly establish a sense of ownership among various content owners, NC State should consider training stakeholders in the content management systems but also in writing for the Web, and creating a pleasant user experience through logical content organization. The training may also provide an opportunity for NC State to strongly encourage content authors to use the templates supplied by the university. Training could also assist in the understanding and embracing of the overall marketing messages when writing specific copy, selecting pictures for posting, or cross-linking to other internal and external Web pages.

REI will manage the bulk of the content migration responsibilities (or as much as possible within the allotted scope). REI will provide a detailed content migration plan and train NC State staff on all aspects of Content Management prior to final launch. Additional CMS considerations will be outlined in the Technology Recommendations section of this document.

REI also recommends the embodiment of college websites within one comprehensive site structure with consistent global navigation elements. Maintaining this consistency will benefit all site stakeholders by ensuring users are able to easily enter and exit college sites without losing their sense of location within the site and in relation to the university site. REI recommends that the NC State web committee use the redesign project as an opportunity to create a more detailed web policy section that includes a web style guide. These policies and guide will assist in coordinating all sites that represent NC State and will also facilitate content ownership with the CMS. REI recognizes that NC State does have two design templates planned in the scope of work that could be used for college site web templates. An example of a comprehensive web policy and style guide can be found at: <http://www.cmich.edu/styleguide/> and <http://www.cmich.edu/web-policy/default.htm>.

### ***Staffing: Internal Staffing to Support the University Site***

#### **Background**

Higher education communication strategies have shifted considerably over the past five years. First generation websites were often managed by individuals on a temporary basis and were thus largely created and then 'left to drift'. Little attention was paid to the marketing potential of the medium and over time, these sites have become increasingly inaccurate and dysfunctional.

Higher education audiences are now far more web savvy and come with higher expectations. Prospective students in particular now rely on an institution's website as their first and highly influential source of information. A 2005 study by the Graduate Management Admission Council found that MBA students ranked an institution's website the second greatest decision influencer, behind rankings. A different study (NAGAP The Admissions Process: What Works, What Doesn't, 2001) ranks the website as the most effective marketing and recruitment tool.

Many institutions are reacting by updating their website designs, restructuring navigation, implementing content management systems and empowering content contributors to ensure information remains timely and correct. The result is a chasm between those who have evolved their sites and those who haven't, creating a distinct advantage for those who are responding.

This new generation of websites comes paired with a greater demand for resources. A website with over one hundred pages of evolving content, driven from a technology platform is a complex, evolving communication vehicle that simply cannot be left unattended. Add the increasing use of search engine marketing, online banners, e-newsletters and email, and there is no doubt that there is a pronounced need for a dedicated team to maintain and drive an organization's interactive communication portfolio.

#### **Benchmarking**

REI has experience assisting dozens of colleges and universities through their web development projects. The creation of dedicated web teams is a fast moving trend. Within the next year, Carnegie Mellon University, Vanderbilt University, Wake Forest University and the University of Notre Dame will all have staffing designated specifically for website management. While staffing requirements vary based on the size of the institution and the complexity of the website, the team size is normalizing around 4 to 6 individuals.

For example, The Ohio State University has a New Media team within the Marketing Communications department. According to information provided on <http://relations.osu.edu/newmedia.php>, this team creates

websites and video productions for academic and administrative units across campus. Areas of expertise include site architecture and design, site review and analysis, database creation, general consultation, as well as digital video shooting and editing. This team is responsible for the maintenance of Ohio State's "front door" and key top-level sites.

The Ohio State New Media staff positions include:

- 1 Director of New Media
- 2 Senior Graphic Designers
- 1 Web Editor
- 1 Videographer

An example of a larger team is the University of Notre Dame web group. This team is set up to manage online marketing, web development, and ongoing site maintenance. The Notre Dame Web Group supports all internet-based initiatives at the university. Their primary mission is to communicate the messages of the university in conjunction with those of their internal clients in all the sites they build. The web group has a chargeback rate of \$50 per hour for all the services that they provide and their goal is to be at least 50% billable by the end of 2006. The organization is comprised of six individuals in the "main shop" with two experts set up to handle a primary division within the university (the College of Arts and Letters). The staff breakdown is as follows:

#### **Main Shop**

- 1 Web Marketing Director
- 1 Project Manager
- 3 Developers (Programmers)
- 1 Creative Designer

#### **Within the College of Arts and Letters**

- 1 Content Writer/Editor
- 1 Developer

For more information, see <http://webgroup.nd.edu/>

#### **NC State Web Team**

REI recommends that NC State build a core team within Public Affairs that is responsible for the ongoing quality and effectiveness of university web-based projects. The team would own the university website and work with both internal and external groups to ensure that design, content and functionality are updated and maintained. REI recognizes that the addition of staffing is costly. However, this resource will provide NC State with a management structure and core team to service all web marketing needs in the future, versus devoting expense to web project managers within individual departments or colleges. The recommendations provided here outline a small, start-up team. REI understands that there are currently two internal web designers within Public Affairs who work on charge-back and who develop some of the internal websites.

The university web marketing team positions are outline below and include an Information Technology (IT) position.

- **Interactive Communications Manager** – The manager is responsible for the overall quality and direction of the university site. She/he should be marketing savvy and have experience in managing dynamic websites, as well as online marketing (search engine optimization, online relations, email/awareness campaigns, etc.) The manager will develop and grow relationships with the external and internal university web customers. She/he will establish and guide the strategy and direction of the university site and online marketing efforts, including budget management. This person will serve as an online editor, ensuring the effectiveness of communication concepts, content, design and multimedia features of the university site. The manager should also be a

liaison between the university and internal sites to help ensure a consistency of branding message and a broader understanding of interactive possibilities throughout the NC State Web community.

- Web Developer – This position would ideally combine technical and creative talent. However, REI has found that finding these individuals is extremely difficult and, as a result, a primarily technical position is defined here. The developer will understand how to convey specific marketing messages as identified by the team manager and/or the internal web customers. She/he should have competency in photo/video editing, developing design compositions for Flash based web sites, HTML and online marketing pieces. Also, the developer would be responsible for programming scalable web and online applications using Action script and XML flash integration as/if needed. An ideal candidate would have experience in XHTML, XML, CSS and XSLT as well.
- Project Manager/Copywriter - The project manager would work with university internal customers to identify needs, establish projects and ensure work is on schedule for the university site. She/he would also assist the team leader in consistency of brand message across sites and help internal customers identify future website and online marketing opportunities. This person would also serve as a copywriter/content developer. She/he will ensure that content is “web ready” and drive the message/story behind site content in support of the university goals. This position is also responsible for proofreading all digital content.

REI proposes that a position be added in IT to support the university site. This position would report to IT with dotted line responsibility to the web marketing team.

- Programmer – This position would serve as the site’s backend programmer and systems administrator. She/he would maintain the overall site functionality and ensure operational integrity. This person would manage the CMS and serve as a liaison between the web marketing team, other internal sites webmasters, the university’s IT team and outside web technology vendors. The programmer will also be responsible for application architecture and design, as well as production coding of the interactive and web-based applications and sites. Ideal candidate would have experience in CGI, PHP, JSP, Oracle and MySQL.

If budget does not allow for all four positions, it is recommended that the university web team consist of an interactive communications manager (also responsible for project management and content development), a web developer and the programmer.

## WEBSITE DEVELOPMENT BEST PRACTICES

Although the factors and recommendations above embody critical components of the web strategy, there are several other important principles, commonly known as best practices, which need to be clearly articulated and appropriately taken into account when defining the site's framework. Please note that an appendix is also provided with additional information and sources, as well as helpful tips for writing for the web.

### **Audience-specific Content**

The NC State site should leave each visitor with the impression that the university is doing something special and unique for him or her. Benefit-oriented calls to action and improved navigation on the home page and throughout the site will enable user paths for specific audiences, providing direct access to the information most applicable to them.

### **Audience-centric Content**

Broadly speaking, the primary objective of the NC State website is to communicate effectively and efficiently with the university's target audiences. Since the website will serve as a primary information source for the university, the tone must remain consistent throughout. Yet, it should be adjusted as needed to reflect that of the audience – more casual for prospective students, more factual for faculty – but always within the range of the NC State voice.

It is also important that the university avoid falling into the “propaganda trap,” which involves the withholding of key elements – such as financial information – that might spur initially negative reactions. Prospective students in particular can grow frustrated and even suspicious when such information is not readily available. The NC State Web site should be forthright while providing facts, making them seem as positive as possible without obscuring them with copy or burying them in the navigation. Today's prospective students are especially cynical about marketing. Content should be friendly and professional, yet not seem over polished or too good to be true.

### **Coordinate Web and Print Publishing**

Strict adherence to a single, identified brand across media campaigns (such as print ads, direct mail and e-mail campaigns, online advertising, and/or promotional materials) is at NC State's discretion. However, it is REI's sense based on the Discovery Sessions that the launch of a redesigned Web site will assist with future brand development and unification. As such, designs for the website should be reviewed with an eye towards portability across media.

In addition, whenever possible, positioning the website as the central source for comprehensive information enables the university to save on publishing and shipping costs. As such, the Web should be used as a publishing channel as often as possible, when this can be done without loss of impact or quality of messaging. When other media campaigns are developed at the university or college level, they should include the URL of the main website to engage additional users with the university site and increase brand recognition.

### **Smart Naming & Publishing Conventions**

Navigation elements across the site should contain nomenclature that matches standard university naming conventions. In the course of the recommendations process, REI will help NC State establish clear and concise naming conventions and intuitive content organization in order to enhance usability and ensure navigational consistency. In addition, as needed, URL redirects should be employed to give pages or sections of the site contained within the CMS an elegant, distributable, and memorable face.

### **ADA compliance**

Individuals with disabilities typically view Internet content with user agents that access information differently than standard browsers. Web site developers must take into account the manner in which these user agents access information and provide all of the necessary alternate content and programming required to accommodate these devices. In accordance with NC State requirements, the site will meet Section 508 compliance.

## Design

The following design guidelines will be taken into consideration when developing the NC State website:

- The site's visual appearance and branding need to elicit emotional responses from visitors on first viewing. Research demonstrates that visitors to an organization's website directly equate the quality of the institution to the quality of the website. The visual aspects of the site will reach across all the target audiences – conveying similar brand characteristics to prospective students, current students, alumni, faculty, staff and parents alike.
- Beyond the home page and the first layer of each section's top pages, the majority of page space needs to be given to content. Since site visitors are most concerned with the information they are seeking, publishing space for content should be at least 50 percent of page's area. Still, space for photography and other visual elements must be provided.
- Readability is a prime consideration in design. Font size and page layouts need to be designed with maximum usability in mind.
- Visual elements will be used to convey NC State's environment and personality. Logos, photographs, background colors and textures should be selected and employed in a way that accentuates desirable features of the university
- Pictures should demonstrate ethnic, socioeconomic, and gender diversity.

## Usability

Website users come in two main categories: "searchers" and "surfers." Searchers come to the site knowing exactly what they are looking for – they will use tools such as keyword searches and "Quick Find" pull-down menus to find very specific information quickly. Surfers, on the other hand, click through the site using navigation elements in pursuit of information. This group will do this until they locate the information they seek, or information that captures their interests. The site will need to address both types of users by adhering to the following guidelines:

- The site's main navigation must be logical and prominent, focusing on the various topics that should be addressed, as well as the various audience groups that have been identified as key targets for the site. The primary divisions of the site's navigational structure should always be chosen based on a logical organization of the content they contain, and should in no circumstances be a simple reflection of an institution's organizational structure. In addition, they should be easily accessible from every page on the site.
- Sub-grouping under the main navigation needs to be logical, consistent, and geared towards efficient delivery of content.
- Placement and function of navigational elements needs to be consistent throughout the website. A dynamic navigation will appear on every page, and will be clearly demarcated as separate from content.
- The site will also feature relative navigation (sometimes referred to as "breadcrumb navigation"). Breadcrumbs allow the user to maintain awareness of her/his position within the site hierarchy without much effort in terms of short-term memory. Breadcrumbs provide a clear path up and out of a section, as well as choices to go deeper within the section.

- A keyword search that searches page information and will be prominent and available on every page.
- As much as possible, use of pop-ups and frames will be avoided. New windows will spring open when users leave the NC State site.

## **Content**

The following guidelines will be taken into consideration when developing the NC State website:

- All aspects of the university's operations and offerings relevant to the external audiences will be covered.
- Content will be grouped so that users are not overwhelmed by too many choices.
- Content must be kept current and up to date. If even one piece of information is outdated, users question the reliability of the rest of the site. Implementation of the CMS and concurrent encouragement of content ownership will improve the site in this respect.
- Copy should be concise and easy to read. Paragraphs should be kept short, readable and relevant. Bullet points should be used wherever possible. Web site visitors scan pages before reading in depth, and thick paragraphs are hardly ever digested. The amount of copy on each page should be kept to a reasonable minimum. There are exceptions to these rules, insofar as pages that are deep on the site and focused on one unified and specific set of information will be expected by visitors to be longer. Examples include frequently asked questions pages, course descriptions and press releases.

## **Functionality**

REI will develop the redesigned NC State site with consideration to the functionality guidelines below.

- All functionality needs to be designed and tested for maximum usability. Interactive applications should be geared towards providing site visitors with the best experience possible.
- Contact forms (in situations where "mailto" links cannot be used) should use relevant fields and provide adequate space for writing in text boxes. Required fields should be kept to a minimum to reduce the chances of users deciding not to use the form.
- It is also recommended that a keyword search return results in a logical format based on page title, content and relevant topics. The results page would return at least a page name and short description.
- All functionality's look and feel should be adapted to the site as a whole in design and branding, to the extent the applications support design adjustments, so as to provide visitors with as unified an experience as possible.

## **OPPORTUNITIES / ITEMS TO EVALUATE**

The primary focus of REI's initial work for NC State will be to design and build a new site that offers all the elements described in the recommendations presented to this point. The ideas presented in this opportunities section are creative considerations for content. This content would focus primarily on copy and images. Though out of the scope of this project, most of these ideas could be developed significantly with the addition of multimedia and interactive elements. Further discussion will be required to define execution, priority level and other details that ultimately dictate the viability and possible implementation of these items.

### **Student Generated Content**

Given that the NC State site should give a high level of priority to the prospective student audience, content generated by current students can be especially effective. Peer to peer communication that highlights the student experience is critical in selling the school. REI heard during the Discovery Sessions that the site seems too official and impersonal. Student generated content would assist in adding the warm, personal touch that is so consistent with the NC State brand. In addition to copy and images created by students, the site could use interactive writing journals, student-generated videos about NC State, and a digital images bank where students could share their favorite NC State pictures with current and prospective students.

### **Faculty Spotlights**

Creating faculty spotlights will showcase faculty talent/research, personalize the school, and create an insightful vehicle for communicating how the university applies academics to the real world. Spotlights would include photography, compelling and insightful pull quotes, and titles and departments. Additional links could be provided to full faculty pages (CV's) with bios, published research and classes taught.

### **Alumni Profiles**

Showcasing NC State alumni can be one of the most effective ways to illustrate to prospective students and parents that graduates have successful and satisfying careers across the country. This would showcase the national reach of the brand and show that NC State alumni have excellent career opportunities. Done effectively, alumni profiles will display diversity of program strength, convey first-hand the return on investment, and further support the personal look and feel of the site.

### **"Who Knew?" Local Community Feature**

This small feature could be placed on any webpage and would be a fun way to highlight NC State's interaction and commitment to community. During the Discovery Sessions, REI heard that the community often looks to the university for help on just about anything including, "How do I get rid of the cracks in my cement?" to "I have snakes in my backyard. What should I do?" Those types of questions could be answered in this feature and would reinforce the brand message that NC State is welcoming, inclusive and actively cares about community.

### **"Why NC State?" Feature**

This feature could tell prospective students why they should come to NC State or share with other target audiences real life anecdotes that illustrates why NC State is different. Alumni, faculty, staff, business partners and current students could all participate in generating content for this feature.

### **NC State Quick View**

Beyond the "About NC State" section, the university site needs a prominent section that offers practical and interesting bits of information on all things NC State. The quick view section would be highly user-focused, featuring fast facts on various topics but also links to categories of interest. Categories might include Campus, Raleigh, Student Life, NC State tradition (history, school colors, etc.) and Colleges (arrange this section by interest so a user/prospective student can find the right major and/or college that matches their

area of interest). One example, <http://www.cuinfo.cornell.edu/> gives the idea, but could be developed even more.

### **Getting around NC State**

In review of the NC State website survey, REI noted that respondents repeatedly asked for information about the bus line and information on parking. This section could offer practical tips, guides and maps for NC State faculty, staff and students but also for visiting alumni, prospective students, parents, etc. Given all the growth and development at the university, this section could also give updates on construction, current building projects, etc.

### **The Real Raleigh**

The section could provide information and images on the City of Raleigh. It would highlight the growth/development, cultural areas and festivities, interesting or even odd historical facts, information on Research Triangle Park and the weather. NC State students, faculty and staff could create lists of their favorite restaurants, entertainment, local hotels and shopping.

This area of the site could also offer real life tips for anyone relocating to the area. It would provide information on neighborhoods, housing off-campus, where to get groceries or take-out and the closest post office, banks, car wash, video stores, etc.

### **Enhanced Search and Directories**

The recent NC State website survey had a significant amount of feedback requesting improved search and directory functionality. Effective search and directories can keep users on a site longer and help ensure a positive site experience. These functionalities can be developed and enhanced within a CMS solution and could be created internally at NC State. A good example of a faculty directory can be found at [http://business.tepper.cmu.edu/faculty\\_directory.aspx](http://business.tepper.cmu.edu/faculty_directory.aspx)

## SUPPLEMENTAL / PHASE II INITIATIVES

The following items represent currently out-of-scope items that represent potential value to enhance the effectiveness of the new NC State web presence. Following the completion of a marketing hub through the website, awareness becomes the priority. REI is always available to further consult on these items and provide proposals or cost estimates upon request.

### **Personalized Email Development**

NC State currently has an Innovation in Action section that offers an e-newsletter option. REI encourages the university to consider how they could effectively use this email communication in light of a new site. Email communications can be developed to better personalize communications and experiences with the NC State web site. The desired result is more meaningful, targeted dialogue. Personalized email would be an appropriate web initiative to reinforce the NC State brand across audiences and provide the ability to customize content for each audience.

### **Innovation Multimedia Timeline**

The innovation timeline would feature how NC State has altered the world through real-life application. It would properly display how the university and its alumni have transformed the world. The timeline could feature brief vignettes on some of the university's most important, cool and/or odd patents. It could highlight projects and initiatives from Centennial Campus and include future initiatives that are in the works.

### **Visitors Micro-site**

Prospective students that visit NC State are much more likely to attend. One way to increase the number of visits would be to partner the Make a Date with State visitor's day with its own dynamic web presence to generate buzz about the event and ultimately drive attendance. REI would also recommend sending an HTML email to create excitement about the event and stimulate interest. Again, the ultimate goal is to improve conversion. Potential site features might include a flash element, schedule of events, interesting NC State facts, and a visitor's day photo gallery (to encourage repeat visits) and a personal welcome message from the admissions office. NC State could also partner with local hotels and restaurants as a part of this effort.

### **Online Marketing, Search, and Online Relations**

Once the new NC State website is designed and fully implemented, REI could provide strategic guidance on how to best leverage the web to support the overall recruiting and marketing goals. In addition to a new site, other online channels can be extremely effective in increasing awareness about the university and driving qualified traffic (prospects) to the site. Search Engine Optimization (improving visibility on search engines) Online Relations (PR adapted to the web that targets online communities) and Online Marketing (increasing awareness through paid online advertising) are the primary methods used to extend a university's reach and brand awareness beyond its own website.

## HIGH-LEVEL TECHNICAL RECOMMENDATIONS

Ripple Effects Interactive has been commissioned by NC State to provide CMS recommendations for the redesign of the school's main website. The recommendations provided take into consideration NC State's network environment and the base requirements that should be considered when choosing a content management system.

*Note: This documentation on its own is not intended, nor sufficient for making a final decision on a CMS solution. Its intention is to provide a mechanism for explaining high-level CMS overviews, various functional capabilities and which CMS solutions could potentially be a good fit for NC State's internal requirements.*

### **CMS Requirements**

#### **What to consider when selecting a CMS system to meet your needs**

As the Web has grown, the requirements of developing, managing and maintaining a robust, user centric website have drastically changed. Users have grown from simply surfing websites for high level information and recreation to users who demand highly customizable, relevant content along with robust user experiences. At their core, these users require timely, fresh and pertinent content on a consistent basis. As the expectation of the end user has evolved, so has the need to more efficiently manage and maintain these intricate websites from end to end.

Due to these shifts in end user, management of websites has grown from manual HTML development to specialized applications that allow for rapid development, management and deployment of highly customizable websites. These custom web centric applications are know to us as content management systems (CMSs).

While there are more than 1,000 software products in the marketplace today that provide CMS functionality, each CMS should provide base functionality to the web management team. This base functionality should include:

#### ***User management***

A CMS should provide a venue for collaboration among multiple levels of site managers. This collaboration allows for the streamlining of content administration across multiple groups and users by role implementation. These roles include (but are not limited to) administrators, content publishers and content authors, each of which can be tied into various levels of workflow and user management. Users should also have the flexibility to be consolidated into groups allowing for multiple individuals assigned to a single user role.

#### **Workflow management**

A CMS should provide the ability to have multiple levels of workflow built into a given approval process. Workflow management should not only address the need for creation, review and approval processes but should also have automated notifications within the process to notify key team members when they need to engage the system/process. Built into this workflow can also be the ability to have scheduled content, which allows users to drive content/workflow by critical date(s).

#### ***Security***

Each CMS should provide various levels of security implementation from both the management application and public side display of content. Security should provide the functionality that ranges from logging into the CMS to accessing secure public side web content. This can include:

- CMS based user authorization
- Integration into system based authentication (LDAP /Active Directory)

Various levels of security can be implemented down to the object level based on different types of user roles.

### ***Separation of content from layout; brand management***

The separation of content from design allows users of the CMS to leverage the application's interface to create and manage web elements (pages, graphics, content) for a website without prior knowledge of web languages (HTML, XHTML, XML, XSLT). This not only allows for ease of content development but also allows for brand consistency across the website by ensuring that the integrity of the brand is not touched during the content development process.

Content can include physical text, graphics and rich media components. Content objects should also have the flexibility to be shared across multiple pages if desired by the content managers and publishers.

Most CMSs have built in WYSIWYG editors (what you see is what you get) that allow for formatting of content. WYSIWYG editors are similar to most word processing style editors with Word being a prime example.

Some CMSs also provide the flexibility to integrate with 3<sup>rd</sup> party web authoring tools (Dreamweaver, Contribute, GoLive, etc.). While this is not a key component, some do provide this functionality.

### ***Versioning and archiving***

A good CMS should provide the ability for archiving of content and versioning of content. Versioning of content would allow the user the flexibility to revert back to a previous version of a page. Some CMSs may also provide the ability to view a side by side comparison of content differences based on the version of the page.

### ***Search***

Most CMSs today provide built in search capabilities allowing your site to index applicable keyword searches within the confines of the system. This functionality can also be used to search against tagged or indexed content within the CMS system, further extending the search capabilities within the site.

### ***Scalability***

A CMS should provide scalability at various levels including the following:

- Application scalability  
The ability to program against the CMS' API (application program interface) to extend functionality within the system.
- The CMS should be able to grow to meet the demands of internal and external users. This should include not only internal access roles, but also the ability to grow within a CMS system's network infrastructure (load balancing, clustering, etc.) to address the needs of a growing end user base over time.

- Another consideration for CMS systems is the ability for caching of pages and content. This allows for quicker load times for pages and less stress on web based resources.

### **Types of Content Management Systems**

There are varying levels of content management systems, each of which can be categorized into various levels. These levels include the following categories:

#### **Open source**

Given the high quality and popularity of open source products such as the Linux operating system and the Apache Web Server, it's no surprise that there are a number of open source CMS projects. These should not be considered finished products, however. They are mostly programming "frameworks" that should be used by organizations that want to develop their own CMS while benefiting from the advantages that an open source solution brings, i.e. free source code.

#### *Examples*

Zope, OpenCms

#### **Hosted services**

As the web has extended its capabilities, hosted web based CMS solutions have also come about. While hosted services usually provide a better price point without the need for an internally installed/deployed product, this can be limiting in the extensibility and management of a CMS.

#### *Price Ranges*

Variable based on solution and services required by each vendor.

#### *Examples*

Clickability, CrownPeak

#### **Single-client Software**

While this type of product often provides a very rich authoring environment, it is a stand-alone product that must be installed on every machine that will be used in the site management process. If multi-platform support is a requirement, i.e. Windows and Macintosh users, it is important to determine if the product is available on the required platforms. Although it may contain many features found in far more expensive products, e.g. spell check, link validation, etc. it is merely the client-side of the CMS equation. It cannot be thought of as a true CMS solution.

#### *Price Range*

Prices for each single license generally fall in the \$100 - \$250 range.

#### *Examples*

Macromedia Contribute, Microsoft FrontPage

#### **Low-tier/mid-tier challengers**

Products in this range generally meet most of the aforementioned CMS requirements. Some of the features may be less robust than mid-tier and enterprise level solutions. These are usually base-level systems which address core CMS functionality, which in turn provide an extremely competitive price point.

While low-tier CMS solutions can be attractive from a price point, they almost always have functionality that may be limited compared to mid-tier and high-tier CMS systems.

*Price Ranges*

\$10,000 - \$25,000

*Examples*

Ripple Effects CMS, Ektron

**Mid-tier**

This range is generally considered to be the sweet spot for Content Management Systems. These products are extremely flexible in their user management, provide sophisticated workflow solutions, employ easy and intuitive content editing features, and provide extremely powerful versioning and archiving capabilities. This tier is also the most competitive, so it is possible to negotiate with the vendors on price. Most products start at around \$40,000 and increase with the number of user licenses required.

REI feels that the mid-tier is the best positioning for NC State's needs. They provide robust functionality to serve a large institution with multiple dependencies (end user, server architecture, workflow and process management, etc.) while still maintaining a very competitive price point. The focus of this document will be strictly in the mid-tier area.

*Price Ranges*

\$15,000 - \$100,000

*Examples*

CommonSpot, Serena

**Enterprise level**

These products rival ERP systems in their capabilities and complexity. They are designed to operate in enterprise environments that typically span multiple locations, web sites, languages, and hosting environments. These systems generally include documentation and knowledge management tools, published APIs, and sophisticated back-end integration tools. This family of CMS products is the most expensive to purchase, deploy, and maintain.

*Price Range*

\$125,000+

*Examples*

Documentum, Interwoven, Vignette

**Recommendations for NC State**

REI is providing the following CMS recommendations based on criteria provided by NC State. Pricing for each solution can be provided based on business processes, functional interest and final system requirements by the NC State team. Technical considerations by the IT department have been considered but should not necessarily be the end driver for the selection of the best solution to meet the needs of the organization. Criteria considered for the recommendations are:

- Unix based server environment
- Flexibility in page output with the ability for static HTML publishing into AFS file system
- Consolidation of search capabilities
- Application scalability and extensibility

## Paperthin CommonSpot

**Level:** mid-tier CMS

CommonSpot is a full-featured, enterprise ready CMS that is web browser driven for end user access. This eliminates the need for client-based installs (such as Macromedia Contribute) as users can access the system via a web browser. It does require a server based install and it covers cross-browser, cross-platform considerations. CommonSpot's architecture also provides a wide range of administration, workflow management and is very scalable. Additionally, the product provides extremely granular security and permission levels that are capable of controlling content to the element level.

CommonSpot also allows for static site generation through their "static site generation module." This allows for separation of dynamic pages (search results) and pages that do not require dynamic functionality. While this allows for enhanced performance, it does require 2 domain name implementations (ie: <http://www.NC State.edu> for static content and <http://search.NC State.edu> for dynamic content pages). This also allows for static content and dynamic content to be separated onto a HTTP server (static pages) and a dynamic CommonSpot server (for dynamic pages).

### Various features

#### Content Management Framework

100% browser-based  
Template driven Web pages  
Full text search  
Cascading style sheet support  
Multi-language

#### Authoring and Publishing Content

Rich text WYSIWYG editing  
Microsoft Office integration  
Non-HTML Content (Word, Video, Audio)  
Native support for Flash MX  
Dynamic self-updating indexes & navigation  
Register and index external  
Preview mode

#### Managing Content

Content freshness reminders  
Content expiration  
Content scheduling  
Version history and rollback  
Link and image management tools  
Fully addressable URLs

#### Security & Approval

Granular security  
Flexible multi-level approval workflow  
Approval bypass

#### Administration

Distributed site and subsite administration  
Enforced or default keywords and metadata  
E-mail notifications  
Task management  
Administrative reports

#### Standards Support

508 accessibility  
Cross platform (WinNT/2000, Linux, Solaris)  
XML  
Web Services  
XHTML  
SSL  
Macromedia ColdFusion, Java, .NET/COM

#### Scalability

Development, authoring, staging and production servers  
Intelligent, high performance caching  
Multi-server shared database & shared file system support  
Content replication  
Static site generation  
Image/multi-media server support

#### Integration & Customization

Custom rendering of content objects  
HTML/CFML base templates  
Custom authentication  
Extensibility through custom ColdFusion  
Extensibility through published APIs

#### Pros

Full-featured, out-of-the box functionality at a very reasonable price.

- Static site generation
- Cross-platform, i.e. Unix and Windows server solutions are available
- Flexible database implementation (MS Access, SQL Server, MySQL, Oracle)

- Requires relatively little set up and configuration time
- Robust template architecture
- Granular security and content controls
- Extensible
- Flexibility in pricing model
- Flexibility in solution (hosted vs. licensed)

*Cons*

CommonSpot's Cold Fusion lineage favors organizations with Cold Fusion programming experience and does require a Cold Fusion Server implementation for licensing. While the current NC State infrastructure does support Cold Fusion, the IT team is looking to migrate away from Cold Fusion in the near future.

**Hannon Hill Cascade Server**

**Level: mid-tier CMS**

Cascade Server is an enterprise level CMS that is built on open XML architecture. Because it is built on this framework, it allows for flexibility in content delivery and allows content to be transformed into various file formats including HTML, XML Word and PDF. This not only allows for transformation of data, but also allows for flexibility of data transfer between systems. Content publishing can be distributed to multiple servers simultaneously for load-balanced environments as well. While Cascade server allows flexibility in file output, it also allows for robust indexing of content for search and has an excellent array of extended toolkits that come with the system.

The client interface, like most CMSs, is web based, does not require a client install and supports cross-browser, cross-platforms instances. The application itself can either be served as an installed solution or as a hosted solution based on business need.

Cascade Server also allows for pre-existing site integration giving users the flexibility to implement pre-existing HTML and content into the system.

**Content Management Framework**

Browser-Based  
Supported Browsers  
Support for Windows, Mac, and Linux

**Managing Content**

Browser-Based Word Processor  
Spell Checker  
Link Checker  
Disability Checker  
Separate Content and Presentation Metadata  
Microsoft Word Integration  
Ability to copy-and-paste HTML from third-party programs (Dreamweaver and FrontPage)  
Support creation of custom forms in the CMS with content validated via JavaScript  
Content audit  
Schedule content

**Security & Approval**

Ability to check-out and check-in content  
Version Control  
Track changes between content updates with highlights of content differences

**Administration**

Encrypted client/server interaction  
Encrypted user passwords in database  
User authentication with Sessions/cookies  
User & group management  
Roles for permissions  
User reporting  
LDAP/Active Directory integration

**Authoring and Publishing Content**

Publish reports

**Scalability**

Multiple domain names

**Integration & Customization**

ASP, PHP, ColdFusion, JSP, Perl, SSI, and Python  
SQL compliant databases with an ODBC interface including MySQL, Microsoft SQL Server, and MSDE  
Windows, Mac, and Linux CMS/CMS Server support  
Apache, Microsoft IIS, iPlanet, and Lotus Domino for published content

**Standards Support**

XML data  
XSL transformations

Content expiration notice  
Flexible templates with the ability to separate content from template  
Sitemap

Ability to publish content through FTP, SFTP, VPN, mapped network drive, local file system, and an aggregate ZIP file  
Multi-server publishing  
Email triggers  
Step Publishing  
Extensible triggers

Unicode storage  
XHTML output

### Pros

Hannon Hill provides excellent functionality and scalability out of the box. It has a very good extended toolset at no extra charge, and due to the XML nature of the CMS, content sharing between systems is made easier.

- Ability to transform content to multiple file types due to XML based architecture
- Cross-platform, i.e. Unix and Windows server solutions are available
- Excellent extended toolset
- Ability to import pre-existing sites
- Scalable and extensible
- Flexibility in solution (hosted vs. licensed)
- Flexible database implementation (MS Access, SQL Server, MySQL, Oracle)
- Flexible Templates
- Requires relatively little set up and configuration time

### Cons

The user interface is may be a bit confusing to some end users as it does mirror the Windows file system structure. Also, pricing structure is based on a per user/per CPU model which may increase cost based on need.

## Serena Collage

### Level: mid-tier CMS

Serena Collage (as CommonSpot) is a mid-tier, very functional CMS that is browser driven for end users. This eliminates the need of client installs, as it only requires a server based install.

Serena Collage provides good integration with 3<sup>rd</sup> party web tools and has comparable workflow and management to many mid tier CMS systems. Serena Collage also offers competitive pricing based on product offering and need (Enterprise vs. Single Site).

### Various features

#### Content Management Framework

Desktop application integration (Office, Photoshop, Etc.)  
Drag 'n drop document upload  
Branding enforcement  
Macromedia Contribute support  
Macromedia Dreamweaver support  
Structured and unstructured content support  
Multi-lingual content support

#### Authoring and Publishing Content

#### Security & Approval

Security and access control  
Content versioning (unlimited revisions)  
Flexible workflow  
Change tracking and auditing

#### Administration

Scheduled backup of all site content (Including documents and images)

#### Standards Support

#### Scalability

Server runs on Microsoft Windows platforms  
Server runs on Unix platforms (Solaris, Linux) → Enterprise only  
Supports Windows and Mac OS X browser clients  
LDAP / Active Directory Support  
Includes embedded

Browser-based WYSIWYG Editor  
Edit and manage HTML, XML, documents,  
images and other rich media  
Content search

### **Managing Content**

Content check-in / check-out  
Content versioning for all content types  
Rollback of all content  
Task management  
Link management and automatic validation  
Site-wide dependency management  
Intelligent content publishing (changes only)  
Scheduled and manual publishing  
Support for staging and production  
Destinations at no additional license cost  
Multi-site publishing  
Publish to external database schema  
Rich publish history

Support for common scripting  
languages (ASP, JSP, PHP, CFM)  
Server runs cross platform (Win/Solaris,  
Linux)  
Supports Windows and Mac OS X  
browser clients  
LDAP / Active Directory support  
Documented API  
Web services support (WSDL, SOAP  
Support)  
Supports common web and application  
servers for content delivery  
Includes embedded database optional  
Supports Oracle and Microsoft SQL  
Server databases

database (optional )  
Supports Oracle and  
Microsoft SQL Server  
databases → Enterprise  
only

### **Integration & Customization**

Support for common  
scripting languages (ASP,  
JSP, PHP, CFM)  
Documented API  
Web services support  
(WSDL, SOAP Support)  
Supports common web and  
application servers for  
content delivery

### *Pros*

Good out of the box features that mirror that of much larger scale applications at a competitive price.

- Cross-platform, i.e. Unix and Windows server solutions are available
- Excellent 3<sup>rd</sup> party web tool integration
- Good feature set for a mid-tier CMS at a competitive price
- Ability to import pre-existing sites

### *Cons*

Antiquated user interface. The Single Site implementation is not overly scalable. Also, Single Site implementation does not support multiple database configurations, Unix platforms (Enterprise does), web services and does not have API documentation for extensibility.

### **Recommendations**

Based on the initial requirements specified by both the IT team and the marketing groups, REI feels that both CommonSpot and Cascade Server are two viable solutions that will meet the needs of NC State's website. Both content management systems address the needs from a technical, business, administration and end user standpoint and allow for scalable growth as the needs of the site expand. The only caveat with the CommonSpot solution is its dependency on the Cold Fusion architecture.

REI has worked with both systems in the past, most recently with Carnegie Mellon's implementation of Cascade Server from a template integration perspective. Due to this experience, REI can assist in CMS support at various levels and can also provide CMS implementer contacts if the NC State team has questions (ROI positioning, business process implementation, CMS implementation, etc.).

Based on NC State extending the web team, there may be other CMS considerations that REI can provide. This would be dependant upon IT being able to leverage another resource within their group and the ability for the IT team to extend their server capabilities into the Windows environment. The new team member would be responsible for maintenance and support of the CMS and server/database

environment which itself would be a full time position. Some CMS solutions that were not provided due to Windows dependencies include:

- Microsoft Content Management System
- Ingeniux
- Ektron
- REIgnition (Ripple Effects' content management system)

From the aforementioned recommendations, REI would like to suggest a more thorough demonstration with each vendor so the NC State team can better understand the functionality around each system, how it fits into the needs of the university, and pricing that will be involved. REI can help lead a scripted demonstration as an added solution if needed, or NC State can work with each vendor independently to assess each solution.

### **Accessibility Principles**

The following is a base level list of accessibility principles Ripple Effects tests against by default. If the client does not provide requirements for accessibility, Ripple Effects will use the following as a base level for development. Ripple Effects does work with each client to help define the needs and requirements for accessibility and can formulate a customized requirements document if desired.

1. Provide a clearly labeled link to the site home page. Use the ALT and TITLE attributes to clearly communicate that the link points to the site's home page, if required.
2. Provide ALT TEXT for all images. Use alt="" for images used for design and layout purposes.
3. Make sure that all links are understandable out of context:
  1. Do not use the phrase "Click here" for textlinks or in text within image links
  2. For textlinks such as "more..." and "Find more..." use the TITLE attribute to communicate additional information about the link
  3. Images that are links, but do not include text, should have meaningful ALT TEXT that communicates the purpose of the link
4. Always spell out abbreviations at least once per page and avoid, when possible, using abbreviations that could cause problems when voiced (example: use "Pennsylvania" instead of "PA" within content)
5. Page content should linearize logically when accessed by assistive technology.
6. Provide a NOSCRIP T alternative for all content that requires scripting in order to be accessed. If a NOSCRIP T alternative is not possible, then a message to the user communicating this should be present. Ensure that pages are usable when scripts, applets, or other programmatic objects are turned off or not supported. If this is not possible, provide equivalent information on an alternative accessible page.
7. Do not rely on only color to communicate information and the colors used for the site should have sufficient contrast.

8. For data tables, when possible use the TH tag to specify row and column headers and use the SUMMARY attribute of the TABLE tag to provide a brief summary of the data in the table.
9. Communicate to the user when a link opens a new browser window. Suggestions:
  1. For image links, append “(This link will open a new browser window)” to the end of the ALT or TITLE text
  2. For textlinks, use a 1x1 pixel invisible image immediately following the textlink.
10. Ensure that the site is still usable when stylesheets and images are disabled.
11. For forms:
  1. Ensure that it is possible to TAB through the form elements in the correct order.
  2. Ensure that labels are present for form elements and that they are accurate.
  3. Ensure that all required form fields are labeled and that there is a message explaining what is used to denote a required field.
  4. Ensure that the FOR attribute is used within the LABEL tag to associate the form labels with the form controls when these are used.
  5. Ensure that an error message is associated with each required form element and that the error message is clear.
  6. Ensure that the form can be successfully completed and submitted using only a keyboard.
  7. Ensure that the form can be successfully completed and submitted if JavaScript is disabled.
  8. If it is not possible to complete or submit the form without JavaScript, then a message to the user communicating this should be present and when possible, provide an alternate method to submit data.
  9. Ensure that there is a confirmation message for successful and unsuccessful form submissions.
12. Identify links to PDF, Word, and other documents and include a link to download the plug-in when applicable.
13. Use tags for their intended purpose. For example, do not use BLOCKQUOTE to center text for visual purposes or H1 to increase text size.
14. Provide alternate content (when applicable) for multimedia features that cannot be accessed by assistive technology: Flash, QuickTime, Java applets, etc.
15. When applicable, provide a hidden “skip content” link that permits a user using a screen reader to skip over navigation links.
16. When applicable, provide an accessibility page. Examples:  
<http://www.ccac.edu/default.aspx?id=144995>  
<http://www.moneysbestfriend.com/default.aspx?id=150>

## **Browsing Testing Standards**

## Browsers/Operating Systems

### Windows XP (with Service Pack 2)

Internet Explorer	Firefox	Mozilla	Netscape	AOL	Opera
7.0 (BETA)	Latest build	Latest build	8	9	9.0
6	1.0.7		7.2	8	8.5

### Windows 2000

Internet Explorer	Firefox	Mozilla	Netscape	AOL	Opera
6	Latest build	Latest build	8	9	9.0
5.5	1.0.7		7.2	8	8.5
5				7	

### Windows 98

Internet Explorer	Netscape	AOL
5.5	7.2	8
5		7

### Mac OSX 10.4

Internet Explorer	Firefox	Mozilla	Netscape	AOL	Opera	Safari
5.2	Latest build	1.7.5	7.2	10	8.5	2.0.3
	1.0.7					

### Mac OSX 10.3

Internet Explorer	Firefox	Mozilla	Netscape	AOL	Opera	Safari
5.2	Latest build	1.7.12	7.2	10	8.5	1.3
	1.0.7					1.2

### Linux

Firefox	Mozilla	Konqueror
1.5	1.7.12	3.4.0-5
1.07		

## Screen Resolutions:

- 800x600 target
- 1024x768 target
- Higher screen resolutions up to 1600x1200 are tested if the design needs to extend the full height or width of the browser window. Higher resolutions are also tested for design scalability.
- When 800x600 is the target resolution, the site design cannot cause the browser's horizontal scrollbar to be visible at 800x600 resolution. Site design must fit within this resolution.
- Sites are tested with display area at the maximum width (browser searchbars and toolbars collapsed).

## Plug-ins

- Flash 8 is the primary target version, will develop for Flash 7 or Flash 6 based upon specific functionality requirements
- Windows Media Player 9 and higher
- QuickTime 7.0.3 and higher

## Browser Settings:

Sites are tested with browser settings at default for: font size, font color, page background color, hyperlink color and hyperlink behavior.

Additionally, sites are tested with:

- Default background color for webpages set to a color other than white to ensure that all background colors are specified and not relying on the browser's default
- CSS enabled
- CSS disabled
- JavaScript enabled
- JavaScript disabled – Javascript-delivered content must have NOSCRIPT alternate
- Image loading enabled
- Image loading disabled – All images must have ALT TEXT, with the exception of spacer and layout images. These images must have ALT TEXT of alt=""
- Image links should use both ALT and TITLE attribute

## Hyperlinks:

- All internal and external links are tested manually to verify that links point to the correct page/site/file
- All internal and external links are validated using an automated link validation tool WebLink Validator

## Code Validation

- HTML/XHTML source code is validated using the W3C validator: <http://validator.w3.org>
- CSS validated using the W3C validator: <http://jigsaw.w3.org/css-validator/>

## META Tags

The following META tags need to be included on all pages/templates:

- `<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />`
- `<meta http-equiv="Content-Language" content="en-us" />`
- `<meta name="description" content="TBD Based ON SIte" />`
- `<meta name="robots" content="index,follow" />`
- `<meta name="revisit-after" content="31 days" />`

## Additional Coding Considerations

1. All images must have their height and width specified using the height and width attributes of the <img> tag.
2. Use external stylesheets.
3. Use external JavaScript files.
4. All spacer images and images used for design purposes should use empty ALT TEXT: alt=""
5. Avoid using excessive css classes. Specify formatting for elements <p>, <div>, <td>, etc. and cascade styles.
6. All images that link should use ALT and TITLE attributes.
7. Code in XHTML 1.0/1.1 Specification
8. Code should validate. Test using: <http://validator.w3.org>
9. All XHTML documents must include a valid !DOCTYPE
10. ALT TEXT for images should match text in the image and ALT TEXT for images without text should be a brief description of the image's content.

## APPENDICES

1. **Target Audience Personas**
2. **New Website Launch – Marketing Opportunities**
3. **Usability Heuristics**
4. **Content Development Guidelines**

## Appendix 1 – Audience Personas

### Undergraduate Prospective Student Persona

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**Karen Spencer, High School Senior**

#### Background

If people's life is complex, it's their fault. For Karen everything is clear because she knows exactly what she wants: she will graduate soon, with honors at that; she will leave the small town of Hickory, NC behind; she will tame and delight the big wide world, and yes, in the meantime, she will become one of the world's best vets ever. Easy as that, easy as achieving a 4.0 GPA, or becoming the captain of the school volleyball team. But before the big wide world, she knows, she will have to listen to her parents because she loves them and doesn't want to be too far away from them either.

**Mindset:** Impatient, skeptical, savvy, active, connected, confident

#### Web Usage

Online, offline, Karen always stays connected. If not in front of her computer, she is on the phone. She even has web and text messaging on her cell. It might be for this reason, but her parents remain unmoved by her pleas for a faster DSL connection. That annoys her: with dial-up it's such a pain to shop at [www.gap.com](http://www.gap.com), or watch the videos on YouTube, or even email with friends! May be, if she points out to her parents that she needs to do some serious research on schools, they will finally agree?

#### Information Needs

If you are to become the world's best vet ever, you can't afford to waste time. When Karen visits the website of a school she is interested in, she looks for answers to specific questions. She knows she is going to vet school after she gets her undergrad degree, but before that, what would be the best courses that will prepare her for vet school? Karen doesn't want to mess around with a bunch of classes that don't apply. Whenever she can find course descriptions on the web site, she always scans them.

Assured of her dreams, Karen sometimes is wary of questions such as: Can I get in? Can I afford it? One of the first things she looks for is the cost of education, and statistics about accepted students. But there's more to school than statistics. In high school she has enjoyed all aspects of her education, the academics, the extracurricular activities even more so. When she considers a school she wonders about whether she will fit in. Or at least, whether they have a volleyball team?

**Scenario 1:** It's 9:00 on a Tuesday night. Karen has finished her homework and has a little time to surf the web. She decides to do a little research on engineering programs so hits Google and searches on 'North Carolina Engineering'.

**Scenario 2:** Karen learns that one of her volleyball friends, Ann, has applied to NC State. She's surprised because Ann could easily get into Duke or USC. She decides to visit state's website to see what the attraction is.

---

#### Computer savvy:

1. Beginner
  2. Advanced Beginner
  3. Intermediate
  4. Expert
- 

#### Quotes:

"Why would I apply to Moo U? I can get in to a better school."

"I need to get as far away from this town as my parents will let me. But at the same time, I don't want to feel like a number."

## Staff Persona

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### Dana Simpson, Financial Aid Coordinator

#### Background

Some 20 years ago, Dana received her degree in education namely from NC State. Working for the university was a welcome opportunity after she moved back here with her family from West Virginia. She had been aware of how crucial financial aid has become for the decisions families have to make about education. But it was at the Office of Financial Aid that she realized what a difference her help could make to the future of many young people.

Dana has been married for 21 years, with her two children, Peter, 18, and Jessica, 16, themselves preparing for college. In her spare time she loves making cards with rubber stamps. She entertains herself with the idea that may be she will start her own card business one day.

**Mindset:** busy, helpful, courteous, dedicated

#### Web Usage

At work Dana uses the Web mostly for emailing students and colleagues. At home, she rarely has the time to do anything else online but pay bills. Whenever she can spare a minute, she goes online to look at the work of other stamp artists. Dana uses high speed Internet at work, and a DSL connection at home.

#### Information Needs

While Dana's primary job is assisting with financial aid, she finds herself fielding questions about all sorts of things: campus happenings, bus passes, transcripts. Even though many of these questions fall outside her area of responsibility, she wants to help. Sometimes she uses the website to answer these questions.

Another part of Dana's responsibilities is organizing several financial aid workshops throughout the year. Some of the information for the workshops she cross-references with other administrative or academic departments at the university. For simpler questions she uses the NC State website. She also needs to be proactive in finding new information about financial aid resources, or keep up with university or federal policies that often change.

#### Scenario 1:

A prospective graduate student, who is a US resident but not a citizen, requested information on the types of assistance, both university and federal, available to him. Dana needs to do some research before she can answer his question in detail.

#### Scenario 2:

The different scholarship programs that NC State offers all have different deadlines. A question by a colleague prompts Dana to search for the deadline for the Park Scholarship Program.

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#### Computer savvy:

1. Beginner
  1. Advanced Beginner
  3. Intermediate
  4. Expert
- 

#### Quotes:

"Unfortunately, finances play such a big role in education these days. I try to stay informed about all financial aid opportunities so I can help every student."



**Vivian King**, Division Manager, Crop Science

### Background

For the last five years, Vivian has lead Bayer CropScience, one of the world's leading companies in plant biotechnology. Although her degree from Emory is in business, she has developed a keen understanding of crop science, and the research and development in the field.

Vivian also volunteers as a youth mentor and participates in the Women in Business Council. She doesn't have much spare time, but she does enjoy gardening, trying new restaurants, and collecting African art.

**Mindset:** concerned, aware, involved, politically active, forward-thinking

### Web Usage

Vivian spends most of her day online. She uses a T-1 line at work and DSL at home because she requires immediate answers in her fast-paced life. She researches the competition at work, keeps up with industry trends, and follows up on leads. At home, she manages her portfolio and does her banking online. She also checks out restaurants, finds maps and directions, and emails her friends and family. Her favorite search engine is Google, though she does sometimes cross-reference with Yahoo.

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### Computer savvy:

1. Beginner
  2. Advanced Beginner
  3. Intermediate
  4. Expert
- 

### Quotes:

"This industry moves fast – if you don't stay ahead of the wave, you're going to sink."

"The rules have changed, these days we use connections to advance our products."

### Information Needs

Everyday Vivian spends some time scanning the headlines of online publications. Not only does she need to follow the latest news in the industry, innovations and scientific breakthroughs, but she also has to keep up with the major developments in the business world.

To keep Bayer CropScience in the leading position, she proactively seeks information about scientific research that may prove to be the basis of a future product. For leads, she looks at different scientific publications, and whenever possible, tries to work directly with major research universities. Browsing their web sites has been always the fastest way for her to learn about faculty's work.

### Scenario 1

Vivian would like to find a university partner for research purposes. The company is struggling with original product ideas and they'll need some innovative, fresh perspectives.

### Scenario 2

Vivian knows one of the best ways to make a positive impact on her division is to recruit talented employees. She wants bright, young minds that have fresh ideas, but who can come onboard ready to make a contribution. She plans to establish a partnership with a top university, and have early access to the best graduates.

## Current Undergraduate Student Persona

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**Matt Evans**, Junior, Communications and Public Relations

### Background

With two engineers in the family—his mother and older brother—it seemed only logical for Matt to apply to an engineering program. For better or worse, NC State was the only school he got into. It turned out for the better. How otherwise would he have discovered the communications program at state? For him, Matt found out, communications is the way “to engineer a better world.” Apart from the great communications program, NC State offers so much more: the good student media, the awesome Wolfpack. Yes, the Wolfpack! Now you can’t find a more devout fan than Matt on campus.

**Mindset:** Outgoing, persistent, opinionated, works hard and plays hard

### Web Usage

As befits the biggest Wolfpack fan, Matt blogs daily on Wolfweb.com. Many times a day he visits NC State’s web site—to access his email, Blackboard, or just check out newsworthy, and partyworthy, events happening on campus. If he finds anything interesting, he uses IM to spread the word to his friends. As a would-be journalist, he checks daily a number of news websites or just goes directly to Google News to scan the headlines.

### Information Needs

With five courses, three of which writing-intensive, and a work-study position, Matt needs quick access to information to survive. Typically, he uses the university website to check his grades, find and register for classes, access course syllabi. For the stories and papers he writes, he gathers information mostly through interviews, but he relies on the Web and the library databases as well. And now, since he is just a year away from graduation, he often goes online to check the requirements for his major and any other relevant details that he might have missed.

Busy as he is, he always finds time to hang out with his friends. For party inspiration he scours the university site several times a week. You never know, there might be something really cool going on; just a month ago they had Anoushka Shankar on campus.

### Scenario 1:

Matt has a paper due in an hour but he knows he doesn’t have enough research to back up his points. His professor keeps telling the class that they need to use journals and publications, not just the web for research. Better log into the library’s online research materials, and fast.

### Scenario 2:

Matt writes for the *Technician* but he hasn’t heard anything about those grants the *Technician* will award to students. He goes online to learn more about the grants and see if he qualifies.

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### Computer savvy:

1. Beginner
  2. Advanced Beginner
  3. Intermediate
  4. Expert
- 

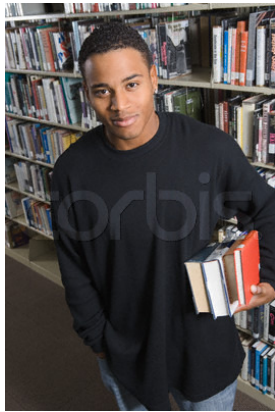
### Quotes:

“I wish we had a place to go to find out everything that is going on, on campus.”

“I live and die by deadlines. I have to be able to check my deadlines any time of the day.”

## Graduate Prospective Student

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### **Will Dougherty**

Senior, Biology

#### **Background**

Currently Will is in his last year at Rutgers working towards a BA degree in biology. Two summers in a row he interned as a clinical research associate (CRA) with Kendle, a biotech research company. At his summer job he got exposed to bioinformatics and decided that this is the field in which he wants to do research. Will firmly believes that bioinformatics has an endless potential to improve human life.

Will plays basketball for the Rutgers' Scarlet Raptors. And this is in fact how he heard first of NC State. Wolfpack are a tough team, he admits.

**Mindset:** Clever, friendly, driven, curious

#### **Web Usage**

Every day Will uses the Web at school, and even more at home, where he has a DSL connection. He and his wife often explore together possible itineraries for their vacations or for short weekend getaways. Then they make most, if not all, of their travel arrangements online. They also do most of their banking, and sometimes shopping, online. Recently Will discovered Google Earth and finds it amazing that you can visit exotic locales such as Paris and Maui from your desktop.

#### **Information Needs**

Researching grad programs, Will says, is a completely different story from researching undergrad schools. He is less interested in the overall ranking of the school as he is in the strengths of the bioinformatics program at NC State. What else he looks for are the opportunities for research. He also needs to quickly review general acceptance requirements for the program—standardized tests, recommendations, transcripts.

As a family person, Matt wants to make sure that his family will feel comfortable at NC State. Before making a decision, he needs more detailed information about the environment, the campus and the area. Healthcare is another important consideration for him.

#### **Scenario 1:**

Several months ago, he read an intriguing article on evolutionary genetics by Prof. Awadalla, currently a faculty member at NC State. He wants to learn more about the opportunities for collaboration between faculty and grad students.

#### **Scenario 2:**

He's interested in Virginia Tech but his dad's encouraging him to check out NC State because of their science and engineering reputation. Will's open to the idea and his wife says she's heard good things about the Raleigh, NC area.

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#### **Computer savvy:**

1. Beginner
  2. Advanced Beginner
  3. Intermediate
  4. Expert
- 

#### **Quotes:**

“There are so many good programs out there. What I am looking for is the opportunity to do research that will have real impact on people's lives.”

“I wouldn't mind establishing roots in an area that has lots of opportunity.”

## Appendix 2 – New Website Launch Marketing Opportunities

While REI's focus will be to create the new site, it is recommended that NC State take an integrated marketing communications approach in generating awareness about the new site if resources permit. Other marketing methods that could be used to help promote the new site may include:

### Site Launch Event

This event could be held in the new Visitors Center and make use of the Centers multimedia capabilities. The event would unveil the first look at the fully functioning site to a select group (alumni, faculty/staff, current students, prospective students, government, corporate partners, donors, etc.)

### College PR Managers Tool Kit

The university marketing team would provide a new website marketing kit to all college PR managers. It could include high-resolution images of the new home page and a few level page designs, a news release that explains the site's new features, and a list of media talking points. Information kits could also be customized by the College PR managers to promote site enhancements that are relevant to their colleges.

### Internal Site Banner Ads

Ads created by the university web designers could be placed on high traffic internal sites such as [www.gopack.com](http://www.gopack.com) announcing and linking to the new website. These ads may grab the attention of users who would not typically visit the main site, but would have no cost for placement since it is an internal site.

### Visitors Tour

Since future tours will start at the new Visitors Center, the website could be included as a "stop." Guides could show various aspects of the site depending upon the tour audience (ex. show prospective students and their parents where financial aid information is located on the site).

### Speaker Series

Utilize the web committee to visit departments all across campus to talk about the new site and how it will benefit that department. Committee members could answer questions about how to use the site.

### Feature Stories

The News Services team and the Alumni magazine could write feature stories about the new site. Stories could focus on interesting site additions, why that particular site design was selected and how the new site supports the larger branding messages and goals of the university.

### Student Involvement

Get students talking about the new site on [www.wolfweb.com](http://www.wolfweb.com) or consider inviting a marketing class to create and execute a new site awareness campaign targeted at students.

### Redesign Blog

Continue to use the NC State redesign blog to engage site users about the new site. REI is also willing to participate in the blog discussions during and after the launch.

### Online Marketing

While out of the scope of the current project, REI could create a comprehensive online marketing campaign to generate larger awareness of the new site. Elements could include rich media banner advertising, an email campaign and online relations.

## Appendix 3 - Usability Heuristics

From - Nielsen, Jakob (1994) *Usability Engineering*, Morgan Kaufman Publishers

### 1. Visibility of system status

The system should always keep users informed about what is going on, through appropriate feedback and within reasonable time.

Embedded files, like flash and QuickTime movies, should indicate a file is "loading." Applications, like forms and searches, should provide appropriate feedback as to whether the action was successful/unsuccessful – this feedback needs to be nearly instant.

### 2. Match between system and the real world

The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a logical order.

A Web site does not need to communicate an internal organization's structure. An application does not need to communicate the architecture of the database that drives it.

### 3. User control and freedom

Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. The Web is interactive and non-linear. A site should support exploration but always provide way to quickly return to familiar territory.

### 4. Consistency and standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

Sites should respect Web standards in addition to creating a consistent visual language. For example, if links are blue and underlined do not use that style for any other text. The labeling system should also be consistent – a link named "Admissions" should lead to a page titled "Admissions," not "Enrollment."

### 5. Error prevention

Even better than good error messages is a careful design, which prevents a problem from occurring in the first place.

Try to set up forms and searches so the user cannot make a mistake. Perhaps the search has logical defaults so it does not require a user to select search criteria. Provide structure in forms to steer users into providing the desired information in the correct format. For example, avoid using a text field for form data that requires a specific format.

### 6. Recognition rather than recall

Make objects, actions and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

For example, if a data table requires a key, make sure the key is always visible. Also, actionable items should look actionable.

## 7. Flexibility and efficiency of use

Accelerators – unseen by the novice user – may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Features that encourage users to return to a site (like a search) should be quick and easy to get to but not hidden from novice users.

Novice users need sites that require minimal “work” (thinking) while expert users need quick access to information/features – the difference is cognitive load vs. number of clicks. Sites can accommodate both groups by offering multiple paths to information and features.

## 8. Aesthetic and minimalist design

Dialogues should not contain information that is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility. This is true for copy and design. As visual distraction increases, a person’s ability to pick out pertinent information decreases.

## 9. Help users recognize, diagnose, and recover from errors

Error messages should be expressed in plain language (no codes), precisely indicate the problem and constructively suggest a solution.

Instead of:

“Java lang error: NULL POINTER”

Use:

“I’m sorry, the page you requested is not available. You can report the problem to the [administrator](#) or return to the [home page](#).”

## 10. Help and documentation

Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

A Web site should never require a manual but some applications, like a content management system, will. These interfaces can incorporate features, like anchor links to the users guide, that will support novice users.

## Appendix 4 – Content Development Guidelines

### I) How We Read Web Sites

Web pages are a multimedia experience. Images, sounds and animation work together with the text to provide users with the information they are looking for. Content written for the Web requires concision and scannability. Studies show that when it comes to Web content, users do not read text, but rather they scan it instead. The following excerpt comes from a manual on the style of content written for the Web:

- We're usually in a hurry. Much of our Web use is motivated by the desire to save time. As a result, Web users tend to act like sharks: they have to keep moving, or they'll die. We just don't have the time to read any more than necessary.
- Most users scan the content quickly, read the headlines or titles, and only then decide whether to read the actual content or click the link that catches their interest.
- If we stay on the page, we know we don't need to read everything. On most pages, we're really only interested in a fraction of what's on the page. We're just looking for the bits that match our interests or the task at hand, and the rest of it is irrelevant. Scanning is how we find the relevant bits.

In reality, though, most of the time we *don't* choose the best option—we choose the *first reasonable option*, a strategy known as satisficing. As soon as we find a link that seems like it might lead to what we're looking for, there's a very good chance that we'll click it.<sup>i</sup>

It is therefore important to make all readable material on a Web site relevant and organized so that the user can get what he's after with a minimum of hassles. This ensures a user-friendly experience that increases the reliability of the site and encourages return visits.

### II) Web vs. Print – Writing in Style

Traditionally, printed material varies greatly in length. This means that the distribution of information can be slow or irregular. In Web writing, this is the ultimate sin. By eliminating excessive verbiage in Web sites, you can keep boredom and wasted user time down to a minimum.

#### 1. Stand and Deliver

Users tend to move through a Web site in a non-linear, non-predictable manner, making Web pages more like newspapers than books. Topics and sections in Web sites are not necessarily intended to be sequential. As such, it's best to create content for each page that is not dependent on other sections. Users can enter a site from any page, and move between pages as they choose. Related links can help to guide the reader to background or explanatory information.

- Don't assume that the reader has already scanned information on the prior page, or even the home page.
- Create headings and copy that stand on their own.

#### 2. Be Brief

Readability is the main issue when dealing with Web content. Ideally, documents on the Web should be about half the length of a similar print document. Six hundred to 700 words is a reasonable average length

for any online document. Since online readers tend to be impatient, economy should be the name of the game.

- Edit, shorten or just plain throw out any vague or needless words and sentences. By keeping your writing concise, you can at least ensure that your readers will make it to the end of the document (unless they're REALLY impatient).
- Stay focused on the page's topic, and provide the relevant information as quickly as possible.
- If the content can't be reduced further, consider creating hypertext links to other pages and/or windows. This is known as "chunking" information (also see the "Links" section under "Web Standards").

### 3. Heads Up

Headings and subheadings are convenient features on Web pages because they assist online readers in looking for specific content. The Web writer knows how to take advantage of Web page architecture by keeping page headings and subheadings clear and engaging. Keywords make good headings since they can save time for the user looking for a specific topic and can double as links. That way, the reader can simply skip to the section that catches his or her attention.

- Use keywords to indicate headings and topics.
- The headings you use should act as road signs for the reader, letting them know where they are on the site and what they can expect from the content.
- Match all content headers with their respective links.

### 4. Be Direct

Much in the way that all good journalism never exceeds an eighth-grade reading level, all good Web writing is direct and accessible. This doesn't mean a Web author should "dumb down" important content, but confusing or extraneous verbiage should be avoided; keep Web language short and sweet. Save verbosity for your novel.

- Use one main idea per paragraph.
- If the hierarchy of information is overwhelming in paragraph form, use bullets or numbered lists. As far as online content is concerned, words are there to efficiently provide information.

### 5. Tune In To the Tone

The attitude of a Web site is an important consideration when creating online content. You wouldn't talk to your boss the same way you'd talk to your best friend. The same concept applies to drafting online copy. The quality of the "conversation" between your copy and the reader can imply volumes about what to expect from the site. Know when to be serious, and when to be light-hearted. On the other hand, sometimes the content is less than exciting, and the only remedy is to keep the copy lively and engaging.

- Match the tone of the site and/or page with its content.
- Be flexible enough to present good copy in many different "moods."

### 6. Go With The Flow

Remember that Web sites are a multimedia experience, of which written content is only a part. All good sites will also feature pictures, illustrations, sounds, and sometimes animation. The job of a Web writer is to work *with* these elements, not *against* them. There is a good deal of information awaiting the user in a Web site. Good Web copy should assist in providing direction and understanding, not make the site more difficult to get through.

All good writers know how to create copy with a particular audience in mind. There are many factors for the writer to consider; tone, relevancy of information, length, and currency are among the most important. The content contained in a children's book, for example, would be of little help in a business meeting, for a number of reasons. It is similarly valuable to consider the audience browsing a Web site. In relation to audiences, there are two main types of sites – External Sites and Intranets – each of which serve different functions on the Web.

### III) The Audience – Understand Your Users

#### 1. External Sites

External sites are designed to make an impression on users with little or no prior knowledge of an organization or its affiliated institutions or corporations. Making a first impression is important; an external site is an excellent online marketing tool that allows the user to get comfortable with the organization at his or her leisure. Web designers and authors need to provide an engaging and trustworthy concept of the site that promotes continued exploration on the user's behalf, and presents the relevant information honestly and accurately so as to inspire return visits.

- Catch the user's attention to promote further site exploration. An external site is a great marketing vehicle. Make use of it, whether through images, sounds, words or animation.
- Provide adequate introductory material where needed. Keep the content interesting at every turn.
- Create direct and accurate explanatory content that provides organization branding and information for the first-time visitor—let them know they can expect the same quality when browsing the site every time.

#### 2. Intranet – Faculty, Staff, Students

Intranets are networks designed to be accessible only to members of an organization, including corporations, schools, and government facilities. Like external sites, Intranets are used to share information. One big difference between Intranet sites and external sites, however, is that Intranet usage is intended for internal access. This difference should be reflected in the content.

- Keep information current and accessible. Remember that this content is for people with pre-existing ties to and experiences with the organization. Don't be afraid to present the material in a slightly more technical manner.

As Web page protocol continues to evolve, so does Web content and text. Since Web writing, by comparison to virtually all other forms of written media, is without a long history of general standards and best practices, it is important to remember that in order to keep the attention of users, Web content must be concise, informative and engaging. This document provides some standards for high-quality Web-based writing.

#### 3. Creating Appropriate Expectations

The Web author is responsible for keeping the content in line with the intention of the site. It is reasonable for the user to expect that he or she can easily and quickly retrieve useful and related information from a Web site. A visitor to The Babcock Graduate School of Management, for example, should expect to get information about the Institution, its department, details about coursework, etc. Misleading, non-uniform or uninformative data, headlines or topics are poor practice in the realm of Web content.

#### 4. Fitting In/Sharing Content/Avoiding Redundancy

No Web site is an island. When creating Web content, it is important to consider the pages place within the larger Web site. Each area of the Babcock site will be most effective if it can play its part in the greater scheme of the Babcock Web experience.

To this end, the content included in any area should avoid overlap with other pages, thereby reducing redundancy. A good way to do this is reference other pages and URLs by cross-linking, which directs the users to locations containing shared content. By taking advantage of the ability to cross-link and share content, Web authors can streamline their workload and avoid “re-inventing the wheel” when it comes to site content.

- Create content which fits the role of the site or page.
- Avoid content overlap by cross-linking. Don't reiterate shared content.

### 5. *Staying Current*

The quantity and quality of information available to the Web author is ever changing. Make sure to keep the content on a site fresh and up to date. Set an expiration date on copy and make update reminders. Additionally, content owners can also configure the automatic expiration of content and choose what action will be taken – warning, access denial, or redirect.

- Check the accuracy of links and content.
- Set an expiration date on copy. Create update reminders to avoid letting information or links lapse into obscurity.

### 6. *Links*

Links play a huge part in Web site navigation, and one handy and stylish way to put links to good use in the content is by “chunking” information. This involves separating the content into logical and comprehensive segments, each of which might then feature categorical links designed to navigate the user to other related pages, windows or sites.

- Use language that is clear and direct, with links being added to keywords throughout the text.
- Links should only be used to enhance existing copy, not to create content.
- Check links to other sites regularly, as many sites expire, change, or become otherwise irrelevant.

### 5. *Lists and Images*

Lists and images are an important component of content. They can provide a visual explanation of the content much more quickly than a paragraph of text. They can also sum up or compliment text so that the user can get information even faster than with sentences or paragraphs alone.

- Break up bulleted text into direct, economical content. Whenever possible, keep each bullet point under two or three sentences.
- Use images that are relevant and of a high quality, resolution, etc. Use captions under images whenever possible.

### 6. *Meta data*

Meta data is used by search engines as a way of indexing and locating Web sites related to a user's search terms. Meta information does not appear in the body of the page; they are part of the “head” area of the HTML code. Most CMS tools will allow you to enter meta keywords and descriptions for each Web page you create. These items aid search engines and directories in classifying and ranking your site according to user's keyword searches.

Meta keywords provide a list of terms that describe the content that can be found on the Website. Meta keywords should be as specific as possible to the actual page content. For Babcock, good generic meta keywords would be:

```
<META NAME="keywords" CONTENT="music, Babcock, Westminster Choir School ">
```

Meta description is just what it sounds like; it's a brief description of the Web page that some search engines use when categorizing your site.

For example:

```
<META NAME="description" CONTENT="The Westminster Choir College offers majors in Sacred Music, Music Education, Music Theater, Organ Performance, Piano, Voice Performance, and Theory/Composition.">
```

### 7. Assistive Technology

It is important to make Web content accessible to disabled individuals. Products and software exist to make this possible. For example, IBM's Home Page Reader is a talking browser that understands HTML and can speak out the contents of a Web page. Technologies change much too rapidly to list here; a reliable and up to date source of information on assistive technology is the Trace Center, online at <http://trace.wisc.edu>.

### 8. ADA Compliance/Accessibility Principles

The Americans with Disabilities Act (ADA) of 1990 requires that U.S. programs and services be accessible to individuals with disabilities. A 1996 Department of Justice ruling (<http://www.usdoj.gov/crt/foia/cltr204.txt>) makes it clear that ADA accessibility requirements apply to Internet resources.

As a Web author, you should strive to create content that grants near-experiential parity for those individuals using technologies such as screen readers, screen magnifiers, and others.

Below is a gallery of technical quality assurance items that helps standardize your site for those with disabilities. Unfortunately, ADA compliance does not translate directly into usability. We routinely use tricks and workarounds to make a site compliant without negatively impacting design or relevancy.

- Provide a clearly labeled link to the site's home page. Use the ALT and TITLE attributes to clearly communicate that the link points to the site's home page, if required.
- Provide ALT TEXT for all images. Use alt="" for images used for design and layout purposes.
- Make sure that all links are understandable out of context:
  - Do not use the phrase "Click here" for textlinks or in text within image links
  - For textlinks such as "more..." and "Find more..." use the TITLE attribute to communicate additional information about the link
  - Images that are links, but do not include text, should have meaningful ALT TEXT that communicates the purpose of the link
- Always spell out abbreviations at least once per page and avoid, when possible, using abbreviations that could cause problems when voiced (example: use "New Jersey" instead of "NJ" within content)
- Page content should linearize logically when accessed by assistive technology.
- Provide a NOSCRIPT alternative for all content that requires scripting in order to be accessed. If a NOSCRIPT alternative is not possible, then a message to the user communicating this should be present. Ensure that pages are usable when scripts, applets, or other programmatic objects are turned off or not supported. If this is not possible, provide equivalent information on an alternative accessible page.
- Do not rely on only color to communicate information and the colors used for the site should have sufficient contrast.

- For data tables, use the TH tag to specify row and column headers and use the SUMMARY attribute of the TABLE tag to provide a brief summary of the data in the table.
- Communicate to the user when a link opens a new browser window.
  - For image links, append “(This link will open a new browser window)” to the end of the ALT or TITLE text
  - For textlinks, use a 1x1 pixel invisible image immediately following the textlink.
- Ensure that the site is still usable when stylesheets and images are disabled.
- For forms:
  - Ensure that it is possible to TAB through the form elements in the correct order.
  - Ensure that labels are present for all form elements and that they are accurate.
  - Ensure that all required form fields are labeled and that there is a message explaining what is used to denote a required field.
  - Ensure that the “for” attribute is used within the LABEL tag to associate the form labels with the form controls.
  - Ensure that an error message is associated with each required form element and that the error message is clear.
  - Ensure that the form can be successfully completed and submitted using only a keyboard.
  - Ensure that the form can be successfully completed and submitted if JavaScript is disabled.
  - If it is not possible to complete or submit the form, then a message to the user communicating this should be present.
  - Ensure that there is a confirmation message for successful and unsuccessful form submissions.
- Identify links to PDF, Word, and other documents and include a link to download the plug-in when applicable.
- Use tags for their intended purpose. For example, do not use BLOCKQUOTE to center text for visual purposes or H1 to increase text size.

Visit the World Wide Web Consortium (W3C <http://www.w3c.org/WAI/>) for a full list of ADA compliance protocols.

## Resources

- Krug, Steve (2000). *Don't Make Me Think! A Common Sense Approach to Web Usability*. New Babcocks Publishing.
- Nielsen, Jakob (1999). *Designing Web Usability*, New Babcocks Publishing.
- Nielsen, Jakob (1994). *Usability Engineering*, Morgan Kaufman Publishers.
- <http://www.Webreference.com/content/writing>: well-organized site with some stylistic pointers for the novice Web author, includes examples and other online resource links
- <http://www.w3c.org/WAI/>: listing of ADA Compliance guidelines, with updated Web accessibility reports and stories
- <http://trace.wisc.edu>: sponsored by the University of Wisconsin, a resource for disability compliance and user accessibility

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<sup>1</sup> Excerpted from *Don't Make Me Think! A Common Sense Approach to Web Usability*  
A Circle.com Library 'book, published by New Babcocks  
© 2000 Steve Krug