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# The I_CARRE Methodology: An Organized Approach to Selecting Web Design Software for Nonprofits

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## ABSTRACT

*Choosing Web content management software from the myriad of choices available can be a critical decision any organization. However, this decision becomes an even greater concern for nonprofit organizations with limited IT resources, technical skills, and financial resources. In this paper, a methodology is introduced that describes a step-by-step approach to selecting Web design software for organizations with extremely limited resources. The proposed I_CARRE methodology was developed using an action research approach and introduces several fundamental project management concepts, as well as some widely available tools. The objective of the I_CARRE methodology is to provide a non-technical, common sense approach that requires only a basic understanding of the Internet and familiarity with personal computing terminology in order to be applied successfully. Moreover, a case study of a nonprofit organization provides an in-depth look at how the methodology was used to provide organizational value.*

## INTRODUCTION

Underestimating the importance of software tool selection can have serious repercussions for organizations. According to a study conducted by the Standish Group, for example, incomplete requirements are a critical reason why IT projects fail (Marchewka, 2006). Purchasing or building an information technology (IT) solution that it does not meet project user or organizational requirements as well as budget and schedule objectives can result in project failure. However, it appears that over the past decade the philosophy for managing IT projects has changed dramatically. The traditional project management (PM) approach tended to focus on a top-down view that emphasized "management" and "control." However, this style of PM tends to work best in repeat product and process environments. Unfortunately, this is not always the case for many IT projects today because of Web-base technologies and increasing project complexity (Chen, Romano & Nunamaker, 2006). Moreover, many tools, technologies, and management methods such as case tools and rapid application development (RAD), have been adopted to guide the management of the software project development process. This may become imperative when a project team attempts to implement a new and fundamental change in an organization (Wu, Hwang, Chen & Jiang, 2002).

Organizations with ample human and financial resources often struggle with selecting an appropriate Web content management vendor. However, current system development trends suggest that the choice of tools is moving towards the Internet as demands for new platforms change (Post & Kagan, 2005). The question then becomes: How then, does an organization with limited human resources and budget succeed in selecting an appropriate Web content management solution as part of an IT project? This is often the case with nonprofit organizations. Therefore, this paper proposes a methodology that can assist nonprofit organizations in making an informed decision about which solutions best meet the organization's strategic goals while remaining within the organization's financial and technical constraints.

The proposed I_CARRE methodology can be applied to an in-house Web design project or to a Web project that will be outsourced to a third party. In either case, it is important to understand the technology that will be used to construct a site. For example, if a contracted vendor or volunteer uses a technology that is not widely

known, it may be difficult finding someone who can support the site if the original developer or volunteer is no longer available or if the organization wishes to discontinue its relationship with this particular contractor or volunteer. Therefore, it is important to research and narrow the field to several technologies that fit the organization's needs regardless of whether the project will in-sourced or outsourced.

The core processes of the I_CARRE methodology were developed using action research approach by a nonprofit organization called Lord of Life Community Church. The lessons learned from this action research project should be of interest to both practitioners and to the information systems (IS) research community. For practitioners, the lessons learned may provide some insight into the development of systems for nonprofit organizations with limited resources and technical skills. For the IS research community, this study provides a contribution to the growth of action research in the IS literature.

The paper begins with an in-depth look at the I_CARRE methodology and then these concepts are supported with a case study. Lord of Life Community Church ([www.lordoflife.com](www.lordoflife.com)) applied the concepts introduced in the I_CARRE methodology to a current Web design project and the findings and conclusions are presented.

## I_CARRE Methodology

Developed by the authors, the methodology introduced in this paper is intended to be a step-by-step set of instructions for selecting Web design and content management software for non-profit organizations. The proposed I_CARRE methodology introduces several fundamental project management concepts and is supported by tools and resources widely available to all organizations. The I_CARRE methodology is intended to follow a non-technical, common sense approach and therefore requires only a basic understanding of the Internet and familiarity with personal computing terminology. The "I_CARRE Methodology" is appropriately named by its six-phase approach to software selection:

1. *Initialize* – Identify the driving force behind the purchase of Web content management software and determine the value the project will bring to the organization.

2. *Champion*– Assign a champion to work closely with and support the project team selected to work on the project.

3. *Assess*– Define the organization's software requirements that align with its strategy and goals defined in the Initialize phase.

4. *Research* – Develop a list of resources to be used for researching candidate Web design software packages. In addition, this phase includes organizing and developing a knowledge base of information for each of the candidate software packages.

5. *Rank* – Identify a tool or set of tools and criteria for ranking candidate software solutions to help reveal one or two "best fit" solutions.

6. *E*valuate – Define specific options for evaluating software a package before making a financial commitment.

In the next section, each phase is described in more detail. The key to utilizing any methodology successfully is to document and develop a knowledge base to aid in decision-making. Resources listed in one phase may be applicable to more than one phase of the methodology.

## Initialize

Grunwald (2001) states, "As the capability of the World Wide Web grows, so does the confusion for many nonprofits that are anxious to have a Web presence but are uncertain how to proceed…. Where to start? The first step in all cases lies in understanding *why the Web*." The following summarizes several points to consider before selecting a Web content management software package (Grunwald, 2001, Tenby, 2000).

1. Is it economically feasible for our organization to have a Website?
2. How can we get funding for our site?
3. Can we do it in-house?
4. What will it bring us that we don't already have?
5. Who will the champion be?
6. How will we reassign staff duties to provide for ongoing maintenance and updating?

In addition, Marchewka (2006) suggests that an IT project should focus on the value an IT solution will bring to an organization. This value should be summarized in a clearly defined statement called "Measurable Organizational Value" or the MOV. In the context of purchasing new Web design software the MOV should drive the need to purchase or acquire a specific software package. Some example MOV statements include

1. *Public awareness of our organization will increase by 15% by 2006.*

2. *Developing an Internet fundraising campaign as part of our Website will yield an additional $10,000 per year.*

3. *Administrative staff expenses will decrease by 40% within six months as a result of automating member record updates online.*

The MOV statement is the backbone of a project. Therefore, it is important to choose a package that will help the organization achieve the desired measurable organizational value.

## Champion

Undertaking any project without a leader or champion is much like a car traveling down the road without a driver. Cohen and Perreault (1991) contend that a common pitfall for nonprofit organizations is not having a project champion. An ideal project champion should be someone who has excellent communication skills, some project management experience, comfortable with a personal computer (PC), and should have a stake in the final outcome of the Web project. A person with a background in Web design or computer technology would be ideal, but not necessarily critical to the success of the project.

A champion is critical to the success of any project, but Grunwald (2001) warns organizations to avoid becoming dependent on any one individual. Turnover is common in all organizations; therefore, organizations must ensure that the project continue should the champion or leader become unavailable. The impact of a project champion leaving the project can be mitigated by involving a number of key stakeholders. In addition, this will have an added bonus of reducing bias and the risks associated with turnover.

## Assessment

Organizations should allocate sufficient time and resources to identify the requirements the system must meet. Though this may be quite time-consuming, this step is critical and will help avoid common pitfalls such as selecting software that doesn't contain the functionality needed to support an organization's long-term goals and strategy (Cohen & Perreault, 1991).

There are standard types of requirements that need to be identified include: system requirements, functionality requirements, user requirements, and cost requirements. In addition, there may be other categories specific to a particular organization such as legal requirements or accessibility requirements. For example,

organizations that receive funding from the federal government are required to adhere to Section 508 of the Americans with Disabilities Act (Musthaler, 2004).

Moreover, caution should be exercised if a fixed dollar amount is set as a cost requirement before the research phase is complete. Doing so could eliminate viable Web design software packages prematurely from being considered by the organization. For example, eliminating software packages with a retail cost exceeding $1,000 could be a costly mistake if the organization is unaware of available discounts. Similarly, a nationwide survey conducted by Master Software Corporation reveals shocking results when first time software buyers and repeat software buyers were asked to rank factors to consider when purchasing software. The survey revealed interesting differences between first-time and second-time software buyers. First-time buyers ranked price as the most important item when selecting a new software package, while second-time buyers ranked price last and vendor support first (Grenier, 1997, p. 37).

Once the organization's Web design software requirements are defined, they can be organized using a scoring tool. Table 1 provides an example of a set of requirements and subjective weights assigned to each requirement. The total of the weight column should be exactly 100%.

**Table 1. Sample I_CARRE Scoring Table – Requirements.**

| Category | Requirement | Weight |
|---|---|---|
| *System* | Requires less than 50Kb of hard drive space | 5% |
| *User* | No previous programming experience required | 20% |
| *User* | Strong Technical Support | 20% |
| *User* | Uses familiar icons | 10% |
| *Functionality* | Includes 100 or more design templates | 10% |
| *Functionality* | Available as a suite of products | 10% |
| *Functionality* | Can be database driven | 10% |
| *Cost* | Upgrade or nonprofit discounts are available | 10% |
| *Cost* | Price after discounts | 5% |
| | | **100%** |

The scoring model, while simple and straightforward, is subjective (Marchewka, 2006). However, group collaboration to assign scores and weights can help minimize individual bias. In addition, a risk analysis should be conducted in a similar fashion to not only identify various project risks but plans for dealing with these risks as well.

## Research

When researching Web design software packages, one can easily become lost in technical jargon. Therefore, it is important to look at the basic features of the software without getting too involved in the detail at this point. The project team can utilize resources available within the organizational framework by identifying contact information of candidate Web design software vendors and packages.

Utilizing available resources can help reduce the amount of time it takes to complete the Research Phase of the I_CARRE methodology. The project team should document what they learn and note how closely each candidate software packages matches the organization's requirements as defined in the Assessment Phase. Several potential resources for conducting research include:

1. www.techsoup.com - This Website offers technical support for nonprofit organizations. It offers articles and advice on many technical aspects. In addition, member organizations (nonprofits only) may be eligible for discounted or free hardware and software applications from vendors like Microsoft, Macromedia, and Cisco.
2. http://www.snpo.org/index.php The Society for Non-Profit Organizations publishes several magazines that provide advice and reviews regarding Web strategies and software.
3. Service learning, as described by Robin Alexander (2001, p. 27), is a "growing trend in which students, under faculty supervision, undertake information-technology projects for nonprofits." Organizations should contact local colleges and universities to see if these programs are available.
4. Existing licenses with vendors of software applications can provide a valuable resource as well since a vendor may offer Web content management software that integrates with software an organization may already have. Selecting a software package from one of these vendors could also lower the learning curve for the project team. In addition, some vendors may offer cost savings when an organization upgrades to newer versions.  In addition, Grenier (1997) suggests gathering information from trade conference exhibitors, trade publications, and promotional materials
5. A skills inventory of the project team or others within the organization's network may provide a valuable asset when researching software.  For example, someone associated with the organization as an employee or member may have a familiarity with one or more packages being considered. Again, this could reduce the learning curve as well as reduce the time to implement and maintain the site.

After investigating Web design software packages, a knowledge base should include such things as contact information and notes for all of the candidate software packages. Information contained from a candidate vendor's Web site can be linked or printed Website information Software packages that meet few or no requirements defined in the Assessment phase can be eliminated from the candidate list.

**Rank**

The next phase of the I_CARRE methodology focuses on organizing and analyzing the information acquired in the previous phase. The scoring model introduced in the Assessment phase (Table 1) can be used to identify which candidate software packages most closely match the organization's requirements. A weighted score for each candidate package can be calculated using the following process:

1. Using the I_CARRE scoring table created in the Assessment phase, add a column for each candidate software package identified in the Research phase.  Table 2 provides an example that compares three packages.

2. Assign a score to each solution for each requirement between 1 and 10 with 10 representing the best or highest score.

3. Multiply each weight by a package's score and sum each column to calculate a total score.  As can be seen in Table 3, Package B would be the best choice since it has the highest total score.

**Table 2.  I_CARRE Scoring Table – Score.**

| Category | Requirement | Weight | Package A Score | Package B Score | Package C Score |
|----------|-------------|--------|-----------------|-----------------|-----------------|
| *System* | Requires less than 50Kb of hard drive space | 5% | 6 | 10 | 10 |
| *User* | No previous programming experience required | 20% | 8 | 8 | 9 |
| *User* | Strong Technical Support | 20% | 4 | 10 | 6 |
| *User* | Uses familiar icons | 10% | 5 | 5 | 5 |
| *Functionality* | Includes 100 or more design templates | 10% | 6 | 10 | 10 |

| | | | | | |
|---|---|---|---|---|---|
| *Functionality* | Available as a suite of products | 10% | 1 | 10 | 1 |
| *Functionality* | Can be database driven | 10% | 9 | 9 | 9 |
| *Cost* | Discounts are available | 10% | 1 | 7 | 9 |
| *Cost* | Price after discounts | 5% | 6 | 9 | 7 |

**Table 3.  I _CARRE Completed Scoring Table – Weighted Score.**

| Category | Requirement | Weight | Package A Weighted Score | Package B Weighted Score | Package C Weighted Score |
|---|---|---|---|---|---|
| *System* | Requires less than 50Kb of hard drive space | 5% | (.30) | (.50) | (.50) |
| *User* | No previous programming experience required | 20% | (1.60) | (1.6) | (1.0) |
| *User* | Strong Technical Support | 20% | (.80) | (2.0) | (1.2) |
| *User* | Uses familiar icons | 10% | (.50) | (.50) | (.50) |
| *Functionality* | Includes 100 or more design templates | 10% | (.60) | (1.0) | (1.0) |
| *Functionality* | Available as a suite of products | 10% | (.10) | (1.0) | (.10) |
| *Functionality* | Can be database driven | 10% | (.90) | (.90) | (.90) |
| *Cost* | Discounts are available | 10% | (.10) | (.70) | (.90) |
| *Cost* | Price after discounts | 5% | (.30) | (.45) | (.35) |
| *Total Score* | | | **5.2** | **8.7** | **7.3** |

Ideally, one or two software packages will receive high scores. The closer the score is to ten the better it meets the organization's requirements. The project team should allocate sufficient time for evaluating possible alternatives.

## Evaluate

The project team should begin the Evaluate Phase by requesting materials and examples from the software vendors of the packages that most closely meet the organization's needs in the *Rank* phase (Grenier, 1997). The project team may consider emailing or calling the vendors and requesting additional information and trial versions of software. Grenier (1997) suggests asking each vendor to estimate pricing and to provide a demonstration.

With the myriad of Web content management applications available, many vendors now offer free downloadable trial versions of their software for evaluation purposes. This is a tremendous opportunity for organizations as they should take advantage of the "try-before-you –buy" offer from the top candidate software packages. This should help validate choices and perhaps identify a clear winner for the project.

## ACTION RESEARCH

Action research provides an important and interesting approach to solving real-world problems and is based on the work of Kurt Lewin (1973).  At a basic level, action research can be described as creating a change while simultaneously studying the change (Dick, 1999).  It provides an alternative approach to research when the objectives are to take action and create knowledge and theory about that action (Coglan & Brannick, 2001).

Under the action research method, the research question begins with: "How can we improve…?"  This allows for the simultaneous study of organizational change and the processes leading to the creation of the new

knowledge gained from the experience (Baburoglu & Ravn, 1992). Therefore, the goal of action research is to not only describe, understand, and explain a specific phenomenon of interest but also to create a positive change (McNiff, Lomax, & Whitehead, 1996).

Action research has become an established method of research in the social and medical sciences since the middle of the twentieth century. Since the 1990s, action research has become an increasingly important research methodology in the field of information systems. More and more IS researchers are arguing that action research is a relevant form of research because it is grounded in practical action and focuses on solving an important problem while still adding to theory (Baskerville, 1999).

## I_CARRE Case Study: Lord of Life Community Church

### Background

The subject of this I_CARRE Case Study, Lord of Life Community Church (LOL) in Oswego, IL is a small organization with limited resources and therefore must make efficient use of any budget and resources it has. Some of its characteristics include:

- 300 active members and growing steadily
- A staff of less than 5 employees and no IT staff, though there is a congregation member who supports the organization with assistance on technology related issues
- Members who are willing to donate time and skills such as graphics and copywriting
- Limited budget, since much of the current budget goes toward a building fund
- Current Website
  - Contracted through www.citymax.com
  - Information only
  - URL is www.lordoflife.com (the .org extension was taken)

### Problem

Since LOL can't afford a Webmaster, and the skills to program and develop a site have not been readily available, the church leadership contracted with a commercial hosting site. LOL uses the wizards provided through the hosting site to update the site as needed. However, the following concerns and limitations have been expressed by LOL management team regarding the current Website hosting and development vendor:

1. What happens to the Website if the hosting site goes out of business?
2. What flexibility do they have with graphic options, buttons, etc
3. The hosting site is perceived to be developed more for business and retail than for non-profit organizations
4. There also appears to be little guidance in terms of proper Web content management rules and techniques.
5. Does LOL really want to have a canned, one-size fits all approach to Web ministry.
6. Technical support is perceived to be poor.
7. LOL would like to have a database-driven Website with security features and functionality for members only

The hosting Website currently contains a great deal of text. There are some photos, but the LOL staff has experienced difficulty posting pictures. Though hosting site is cost-effective at $17.95 per month, the LOL management team has decided to build a new Website using licensed software and host it with a competitive vendor.

### Initialize (LOL)

As part of the Initialize Phase of the I_CARRE Methodology, the LOL project team developed the following MOV*: Build a scalable Website that portrays who we are and what we need to accomplish. The initial site will be built in six months, with online member updates within one year with the goal of reducing administrative functions by 25%.*

### Champion (LOL)

The Communications Director at LOL was assigned as the project's champion. The team consisted of several congregation members with technical expertise as well as the Pastor, who assisted with the vision of Web site. At least three people learned how to perform updates to the Web site to lessen the risks associated with turnover.

### Assessment (LOL)

Based on the description of Lord of Life Community Church's organizational characteristics listed earlier, the chosen solution should, at a minimum, meet the following requirements:

**Table 4.  LOL Requirements.**

| Category | Requirement | Weight |
|----------|-------------|--------|
| *System* | Browser Independent | 5% |
| *User* | No previous programming experience required | 15% |
| *User* | Strong Vendor technical support | 15% |
| *User* | LOL congregation member or staff member has used the tool before | 10% |
| *User* | Easy to maintain text and update | 15% |
| *Functionality* | Includes sample Web pages and design templates | 15% |
| *Functionality* | Offers tools for 508 adherence and accessibility | 5% |
| *Functionality* | Available as a suite of products including graphics software and publishing software | 5% |
| *Functionality* | Supports database driven Websites | 10% |
| *Cost* | Affordable price after nonprofit and vendor discounts | 5% |
|  |  | **100%** |

### Research (LOL)

LOL research notes are described below:

1. www.techsoup.com -

    a. Several articles about Adobe GoLive, Macromedia Dreamweaver, Macromedia Contribute. Authors favored Dreamweaver.

    b. Dreamweaver MX was priced at $35 with Studio MX including Dreamweaver, print, and graphics applications for $75 to nonprofits.

    c.    Mentioned a product by Macromedia called Contribute, which is used by novices to update Web copy while the code and design remain transparent to the user. Can be purchased for $20.00 from www.techsoup.com.

    d.    Microsoft Visual Studio.net is offered as a development tool, but specifically states that it is for experienced developers.

2.    http://www.snpo.org/index.php

    a.    LOL is not a member but have decided to subscribe so this resource may be of use in future projects.

3.    Need to investigate Service Learning for major technology related projects.

4.    Consult with Peers

    a.    A technology volunteer for LOL preferred Macromedia Dreamweaver. He felt it is easier to use then other applications and individuals familiar with the tool are in abundance. He suggested LOL not consider ColdFusion due to the significant hardware investment required. He also felt this tool was much too sophisticated for LOL.

    b.    Several peer churches were approached but did not know what kind of technology their sites used.

5.    LOL Skills Inventory:

    a.    Some users were familiar with Microsoft FrontPage, but many users were familiar with other Microsoft applications such as Publisher.

    b.    Two congregation members were experienced with Macromedia Dreamweaver and are very fond of this tool.
    c.    Several members were familiar with Adobe products, but not the Web design product Adobe GoLive

Based on the information learned during the research phase, LOL ruled out Macromedia ColdFusion and Microsoft Visual Stuido.net as they are intended for experienced developers and require a significant software and hardware investment. Macromedia Contribute, while it appeared to be an exceptional tool for novice users to edit Web content, was perceived to be more of a publishing tool than a design tool and was therefore eliminated from the list of candidate software packages LOL should consider.

Based on the initial research, Macromedia Dreamweaver MX, Microsoft FrontPage 2003, and Adobe GoLive CS were the most likely packages for LOL to consider. LOL obtained the following research notes from vendor Websites and articles retrieved from Google and www.techsoup.com.

**Rank (LOL)**

**Table 5.  LOL I_CARRE Scoring Table.**

| Category | Requirement | Weight | MS FrontPage | Macromedia Dreamweaver | Adobe Golive |
|---|---|---|---|---|---|
| *System* | Browser Independent | 5% | 9 | 9 | 9 |
| *User* | No previous programming experience required | 15% | 8 | 7 | 7 |
| *User* | Strong Vendor technical | 15% | 6 | 8 | 6 |

| | support | | | | |
|---|---|---|---|---|---|
| *User* | LOL congregation member or staff member has used the tool before | 10% | 5 | 9 | 7 |
| *User* | Easy to maintain text and update | 15% | 7 | 7 | 7 |
| *Functionality* | Includes sample Web pages and design templates | 15% | 9 | 9 | 9 |
| *Functionality* | Offers tools for 508 adherence and accessibility | 5% | 7 | 8 | 10 |
| *Functionality* | Available as a suite of products including graphics software and publishing software | 5% | 5 | 8 | 10 |
| *Functionality* | Supports database driven Websites | 10% | 7 | 9 | 9 |
| *Cost* | Affordable price after nonprofit and vendor discounts | 5% | 5 | 10 | 3 |
| | | **100%** | | | |

After the scoring tool calculations were performed, the software ranks were as follows:

1)   Macromedia Dreamweaver (8.2)

2)   Adobe GoLive (7.55)

3)   Microsoft FrontPage (7.0)

## Evaluate (LOL)

A congregation member assisted LOL in evaluating the top two software packages after the Rank Phase of the I_CARRE methodology was completed. The member downloaded and evaluated free trials of Adobe GoLive CS and Macromedia Dreamweaver MX. While both software packages appeared to meet the organization's needs, LOL selected Macromedia Dreamweaver MX as their Web development tool. LOL arrived at this decision based on the following factors:

1.   Several congregation members have experience using the tool; therefore, the time to implement may be reduced.

2.   LOL can purchase Macromedia Studio MX for $75 and use Dreamweaver MX, as well as several other applications that support Web development such Fireworks graphics designer.

### CONCLUSIONS

The I_CARRE methodology was developed by the authors as a tool for assisting nonprofit organizations gather, organize, and analyze information during a Web design project. The methodology stresses the importance of research techniques and uses a case study to demonstrate that it is possible to acquire fully featured software for minimal cost as a result of thorough research. Subsequently, this may mitigate the need for an organization to use donated Web design software that does not meet the organization's requirements, strategy, and goals.

In addition, this paper promotes awareness and the use of resources freely available to nonprofit organizations such as www.techsoup.com, service learning, and peer group information sharing. These resources are

invaluable to nonprofit organizations that are generally characterized by low IT budgets and lack of technical expertise. Furthermore, the paper introduces the importance of Website accessibility under Section 508 of the Americans with Disabilities Act.  Although this legislation is particularly important to government funded organizations, it should also be considered important by all organizations.

Finally, the I_CARRE methodology introduces a fundamental project management set of processes for individuals employed or volunteering for nonprofit organizations who may not have project management or software engineering knowledge and experience.  Efficient project management skills can assist organizations in maximizing resources on a minimum budget. Although the concepts presented in this paper focus on IT projects for nonprofit organizations, it is believed that the benefits of following the I_CARRE methodology can be valuable to other types of software selection projects in many organizations.

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