# A Recipe for Creating a Web-Based Virtual Community

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**Abstract:** The Internet has fundamentally changed the way people communicate, creating a means to reach vast audiences. Generally, on-line communication can be informational, transactional, and/or communicational. The Internet can also facilitate complex technical information sharing. Transmission of ideas and information in an on-line mode is rapid and available regardless of how geographically dispersed people may be. In other words, unlike physical communities, on-line communities do not require spatial proximity for members. In this article, we break down the general steps required to ideate, create, and launch a successful on-line generic Internet-based community.

The Internet has fundamentally changed the way people communicate, creating a means to reach vast audiences. Generally, on-line communication can be informational, transactional, and/or communicational. The Internet can also facilitate complex technical information sharing (Cothrel & Williams, 1999). Transmission of ideas and information in an on-line mode is rapid and available regardless of how geographically dispersed people may be (Marshall, 2000). In other words, unlike physical communities, on-line communities do not require spatial proximity for members. In this article, we break down the general steps required to ideate, create, and launch a successful on-line Internet-based community. Although our experience is in building Web-based communities for the forest sector, this framework can be applied to any sector.

## Steps in Building a Web Community

Here are the steps that we think are required to build a Web community. We elaborate on the steps in the following sections.

1. **Developing vision for the Web community**: It is very important to have a vision and the ultimate goal of the community to be developed. The vision should be a very *short* and *simple* way of saying what this community plans to achieve.

2. **Researching existing Web communities for the features that are desirable and not desirable**: Existing Web communities in similar and dissimilar areas can be of great help in deciding what capabilities the Web community should have.

3. **Creating a list of requirements**: Based on the research done in step 2, plan what features the Web community will support its vision.

4. **Web design**: A draft layout drawing of the web page should be created to make a visual representation of the Web community features.

5. **Information gathering**: A Web community is primarily a source of information and a medium of communication. Information comes in the form of directory, resources, and knowledgebase useful to its users. This is a continuous process.

6. **Road show—conferences, industry meets, consultants**: The primary audience of this Web community is the industry. The development of the Web community needs their support and participation. The Web community is pitched during these events to garner support and ideas.

7. **Survey to collect directory information**: Step 5 is not complete unless a formal survey of the industry is done to obtain the latest information straight from the most authentic source. The survey (online, email, postal mail, etc.) should generate sufficient response such that Web community could be made available for public use based on the results.

8. **Project pre-planning**: This stage lists broad steps in the project execution. Deadline for completion of the project should be set.

9. **Resource requirement**: There are two main resources required in such projects: 1) Information gathering, assimilation, and analysis team and (2) Web community development team. There are several constraints under which a project of this scale is carried out, including funding, people, capabilities, etc.

10. **IT resources and constraints**: Because it is a Web community, IT is the vital part of the project. Web community features may be influenced by the capabilities and availability of IT resources.

11. **Project planning and tracking**: This is vital in order to stay on time and on budget.

12. **Functional specification**: IT usually operates under different guidelines. Because they do such work day in and out, they require a standardized set of specifications for Web community requirements. This also includes the look and the feel of the Web site.

13. **System design**: This step is designed by IT to adhere to functional specifications. It is more technical in nature and has more exacting definitions of resource and functional requirements.

14. **Project monitoring**: This allows tracking of development process. It is important to make quick adjustments to meet ultimate deadline requirements.

15. **Beta testing**: Every time a new phase of the project is complete, it has to be thoroughly tested both by IT and end-user to ensure that it meets all requirements.

16. **Production**: Once the Web community is ready, it can be made publicly available. It should be done in a way that generates maximum interest.

17. **Feedback**: Feedback from users can be used to make adjustments to the Web site.

18. **Contact/communication channel**: A protocol on how the communications should be responded to has to be developed.

19. **Administrator jobs**: There are several administrative jobs even after the project is complete that include sending email, updating news, monitoring postings, etc.

20. **Documentation**: Continuous documentation is extremely vital in such projects to ensure that future teams upgrading or maintaining the Web site are able to do it with ease.

The following sections elaborate on some of the steps mentioned above.

## Develop a Vision for the Web Community

A powerful vision provides everyone in the organization with a shared mental framework that helps give form to the often-abstract future that lies ahead. Effective visions provide a word picture of what the organization intends ultimately to become—which may be 5, 10, or 15 years in the future. The vision statement should not be abstract. It should contain as concrete a picture of the desired state as possible and also provide the basis for formulating strategies and objectives (Niven, 2007). It is important to have a vision and to be able to articulate the goal of the community. The vision should be a very *short* and *simple* way of saying what this community plans to achieve. Examples of visions are:

• To provide a means to connect members of the forest products sector in order to facilitate economic growth in the sector.

- To be a conduit of relevant and timely information to the forest products sector as a means to foster competitiveness.

- To be the primary comprehensive repository of forest products sector manufacturer information.

In the case of our Forest Products Web Community, the vision was the following.

- Shape the Indiana forest products industry into a **thriving industry**

- Promote **Made in Indiana** products and services

- Facilitate bringing the industry together to prepare them against **foreign competition**

- Help in **removing redundancies** in manufacturing processes and transportation and **encouraging synergies**

- Provide a **level playing field for all companies** (by dispersion of free information to members)

- Facilitate **exhibiting, selling, and buying** of forest products

- **Educate companies** on the advantages of being an active member of the Web community.

## Garnering Buy-In and Support

A Web-based community can affect many stakeholders, including companies engaged in the focus industry. A community can create and strengthen relationships that companies have with business partners. The single most important factor in assuring successful implementation and participation is clearly communicated support from upper management in the industry. In general, most distrust/ambivalence occurs when senior management fails to detect the long-term benefits of participation in a Web-based community and, hence, provides only tepid support for involvement. Benefits need to be communicated to and assimilated by organizational leadership.

In the case of our Forest Products Web Community, we:

- Attended number of conferences and summits involving the industry, government, and academia and presented the idea to them to garner their support,

- Used industry relationships to promote the idea of Web community, and

- Involved a few enthusiastic industry players to evaluate the concept and provide feedback.

# Develop an Organizational Structure

The tasks required to plan and implement a Web-based community are complex and varied, including 1) developing a thorough understanding of requisite/available Web development technologies; 2) specifying appropriate and desired community components; 3) deciding on technology suppliers; 4) developing coordinative relationships with member counterparts and representatives; 5) educating internal development personnel on the scope and mission of the community project; and 6) establishing a structure for coordinating activities.

We recommend that one person be assigned as project coordinator to oversee the project from ideation to launch. Before implementation occurs, this person should become familiar with the technologies to be implemented by attending seminars, retaining consultants, conducting a literature review, and, most important, interfacing with industry and other stakeholder counterparts. Once preliminary education has taken place, the coordinator will be in a better position to understand implementation challenges, educate others, and communicate effectively to internal and external project participants. This person would also have primary responsibility for community maintenance and for keeping the community current and relevant for members.

**Figure 1.**
Project Organizational Hierarchy



We had the organizational structure as shown in Figure 1. In the case of our Forest Products Web Community, we:

- Met regularly with the IT team to understand their capabilities and schedule and

- Met frequently with other team members to educate them about the plan and the tasks each team member would be responsible for.

## Creating a Pre-Implementation Plan

Long before implementation, priorities, specifications, goals, and objectives need to be developed with close coordination and input from potential community members. Rationale and justification for each community component and how they might fit into members' overall business or organizational strategy should be part of pre-implementation discussions. Furthermore, a discussion of benefits that can be accrued to manufacturers and other members should be stressed. Planning and implementation schedules and responsibilities should be clearly stated with reasonable timetables established jointly with allowances for testing and the "learning curve" for members and developers.

In the case of our Forest Products Web Community, the following features were deemed necessary for serving the industry most effectively.

- Comprehensive directory of industry

- Comprehensive search feature

- Member self update profile

- Easy and appealing Web interface

## Researching Existing Web-Based Communities

There are a number of Web-based communities targeting industrial sectors and non-industrial groups with common interests and social connections. There are also Web sites, while not strictly communities, that contain elements of Web-based communities. A thorough review of these sites should be undertaken to identify the potential menu of options available. In addition, the functionality and navigability of these Web sites and communities should be evaluated and critiqued. Existing Web communities in similar and dissimilar areas can be of great help too in trying to decide what capabilities and functionality the Web community should have.

In the case of our Forest Products Web Community, other industry Web sites were researched and analyzed. They included:

- On-line directory resources provided by state government

- On-line industry directories

- Other state forest products Web communities (e.g. Louisiana State Forest Web Community)

- Other industry Web communities and e-commerce sites

## Creating a List of Community Components

After a thorough review of potential options and functions is compiled, they should be prioritized through a formal process involving stakeholders, potential community members, and Web developers. This process should result in a list of top priorities and, concurrently, a list of what activities are feasible within budget and expertise constraints. The strength of the process is having representation from all relevant parties in planning and implementing the community.

In the case of our Forest Products Web Community, after researching several Web communities, we realized that a phased implementation of the Web community would serve the best purpose. Most Web communities out there do not provide the best means searching for a specific company or product. Even if they do, the user interface is counterintuitive and doesn't encourage many industry participants. Also, most Web communities rely on centralized control of membership. The best way to encourage industry participation was to have a centralized control but at the same time give the industry members the freedom of joining the community and controlling the information about themselves.

## Creating Web Design and Functional Specifications

Niederst (1996) expresses the need for Web designers to have an understanding of the human-computer interface issues of Web site design, including navigation, function, and graphics. In addition to meeting the needs of community members, Lazar (2001) is adamant that the process of Web development should be user-centric; that is, the process should meet the functionality and usability needs of the user.

We suggest that mock-ups of each screen be developed using presentation graphics software such as Microsoft© PowerPoint©. Each screen should include links that lead the user to what will eventually be hyperlinked Web pages. In addition, a functional specification document should be generated that clearly states the rationale for each link, function, and content item. These documents then should be reviewed internally by designated Web developers for further refinement through an iterative process.

Only when there is agreement between project leadership and Web developers on what the final product will look like and what the look and feel will be for users should the PowerPoint© be presented to stakeholder/community member representatives for review and critique. The functional specifications document should also be distributed at these sessions.

In the case of our Forest Products Web Community, we provided a very detailed functional specification. It followed the paradigm shown in Figure 2 and Figure 3. This specification mimicked the entire behavior of the portal. In essence, this specification accounted for all user interactions and the results of such interactions. This specification was another way of describing the behavior of the Web community. Figure 4 shows the home page of Indiana Forest Products Web Community.

**Figure 2.**
Process Flow Diagram of Web Page
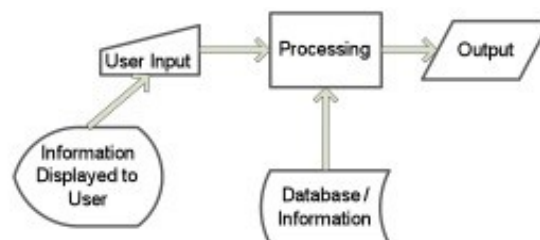
**Figure 3.**
An Example of Functional Specification

| Parent:<br>Homepage | | | | |
|---|---|---|---|---|
| **Child**<br><br>**(the link for most of the children below are always visible on the Web site)** | **Type of Child Link** | **Input** | **Processing** | **Output** |
| *Purdue University logo* | *Image with link* | *Mouse click* | *n/a* | 1. *Open in new window*<br>2. *Link to Purdue University homepage* |
| *Search Text Box* | *Form Field* | *Enter search field, and mouse click "Search" Button* | 1. *Check user privilege. Output should result only in items that the user has privilege to.*<br>2. *match the input text with all the html documents that make up the Web site*<br>3. *Match the title and the text content of the html document with the input search text.*<br>4. *produce a table of results with title of html document, first few lines of the text from the* | 1. *Display in output area in same window*<br>2. *Display sequentially in order of sort as mentioned in point 5 (left cell)* |

| | | | | |
|---|---|---|---|---|
| | | | *html document, date the document was created*<br>5. *sort result by most relevant (based on text match) and then by date of creation* | |
| *"Members"* | *Text with link* | *Mouse click* | *n/a* | 1. *Display in output area in same window*<br>2. *Text with links. Forms with links. Details in the following paragraphs.* |
| *"Directory"* | *Text with link* | *Mouse click* | *Will fetch basic information (company name, specialization, address, phone, fax, email, homepage) about the company from the company database (of all companies) and list it as table* | 1. *Display in output area in same window*<br>2. *Display all companies in alphabetical order in a tabular form*<br>3. *default listing is for company name starting* |

| | | | | | *with letter 'A'* <br> *4. Details in the following paragraphs.* |
|---|---|---|---|---|---|
| | | | | | |

**Figure 4.**
Home Page of Indiana Forest Products Web Community



## Building Content

A Web community is primarily a source of information and a medium of communication. Previous steps identified salient information and functionality priorities for stakeholders and community members. The next step is to build content and gather information. Information can come in many forms such as databases, directories, links, presentations, text documents, etc.

A thorough review of secondary or existing information and data sources should be conducted and catalogued. At the end of this process, the repository should be evaluated by the project team for congruence with priority information needs. After all secondary sources of information are exhausted; primary data collection often becomes necessary if creating a database of community members is deemed a priority. Regardless of whether the database is a directory of companies or a compendium of profiles of non-industry

entities or individuals, a number of methods exist to collect the information. Typically a mail survey is done to obtain current information straight from the most authentic source. The survey (online, email, postal mail, etc.) should generate sufficient response such that Web community could be made available for public use based on the results.

In the case of our Forest Products Web Community, the database information consisted of the fields shown in Figure 5.

**Figure 5.**
Database Fields

| | |
|---|---|
| company name | address of primary contact person (2 lines; option to choose the same as company address) |
| parent company name (if any) | city of primary contact person |
| company address (2 lines) | county of primary contact person |
| city | state of primary contact person |
| county | zip code of primary contact person |
| state | phone number of primary contact person |
| zip code | fax number of primary contact person |
| company phone number | email address of primary contact person |
| company fax number | username |
| company email address | password |
| company Web address | company products and services offered |
| company logo (image) | industry |
| name of primary contact person (first, middle, and last) | NAICS code (integer field; multiple entries allowed) |
| designation of primary contact person | product image uploads (20 images 800x600 pixels RGB jpeg) |

# Beta Testing

In software and Web development, a beta test is the second phase of testing in which a sampling of the intended audience tests the product. Originally, the term "alpha test" meant the first phase of testing in a software development process. The first phase includes unit testing, component testing, and system testing. Beta testing can be considered "pre-release testing." Beta test versions of software are now distributed to a wide audience on the Web, partly to give the program a "real-world" test and partly to provide a preview of the next release. In this process, beta testing is done with both users and community members. Modifications are then made before launch based on comments, suggestions and problems that were encountered.

## Launching

It is important to launch the Web site publicly such that enough Web traffic is directed to the Web site that it gets the attention of search engines. A launch during a conference would be ideal because it can allow users to register during the conference and because it would grab the attention of news media. News media postings of the launch on their Web sites can increase the rank of the Web community in a Web search (e.g., Google). Once the Web community gets the attention of search engines, the link to the Web community is more likely to be posted on other Web sites, thus increasing the visibility of the community.

## Promotion

Marketing the Web community is an ongoing process. Active management of news and events pertinent to the community should be done to maintain site visits by members. Some volunteer champions among the industry (who are community members) should be engaged in the promotional activity. The site should be advertised on other industry-related Web sites, trade journals, company Web sites, university Web sites, faculty and student Web sites, etc.

## Soliciting Feedback

Feedback from users and community members is an important tool to guide making near-term modifications to the Web site. It is important to note that the Web community was developed by a group of people. But the users of the community may be a different group of people. Getting user feedback, actively seeking user feedback, acting on the feedback in a timely manner, and responding to the feedback immediately are important steps in the process.

# Other Issues and Considerations

## Collecting Web Metrics

Information on Web community visits (e.g., what is the profile of members who visit the community, what is the geographical distribution of visits, which links are more popular, which Web sites link to Web community, etc.) is very useful. This information gives pointers to what's working and what's not. This information can be used to market the Web community more effectively.

## Need for One Point of Contact

A protocol on how the communication should be responded to has to be developed. The responses should be in a standard format. The upper time limit to respond to queries and feedback should be set. Surveys on user satisfaction should be done on a regular basis.

## Need to Assign a Webmaster

Selecting the right Webmaster is critical to the success of the site. Webmasters often are chosen for their Internet technical skills—not their ability to package content. That's a serious mistake. If the Webmaster is technically proficient but not marketing- and management-oriented, the site will appeal more to geeks than to potential customers. An effective Webmaster is essentially an editor—someone who understands both the subject matter and the needs of the audience and then can package content to satisfy that audience. He or she should be able to take content from the industry specialists in your organization and translate it in appealing

ways for the Web (Zarowin, 2007).

## Developing a Maintenance Plan with Assigned Responsibilities

There are several administrative jobs even after the project is complete, including sending out email, updating news, monitor postings, etc.

## Developing an Upgrade Plan

If everything is done as above, the Web community is likely to succeed. In such an event the traffic and membership would increase rapidly. Resource requirements may need to be re-assessed. Newer features may need to be incorporated both to satisfy increasing needs and to prevent obsoleteness.

## Do's and Don'ts of Web Development (Charles, 2007)

| |
|---|
| **New content**: Do. Review your site's current positioning on the major search engines and create content for important terms with which your site is not performing. |
| **Search engine optimization**: Do. If it hasn't been, have your site optimized for the keywords that your customers and prospects would use to locate you on search engines. |
| **Link-building program**: Do. This is an important way that search engines measure your site's importance in your industry. |
| **Web site audit**: Do. A comprehensive audit will check to make sure that internal and external links work, contact forms are operational, your site's performing on search engines, etc. |
| **Foreign language pages**: Do. If business is conducted outside the U.S., devote pages to the language of other markets. It'll help position your site in foreign search engines. |
| **Site navigation**: Don't. Develop a site that looks like it has Bandaids® all over with buttons and links that were added after the site was launched. Plan up-front for a user-friendly and attractive Web site. |
| **Flash**: Don't, unless you've already done the do's and have money left over. |
| **More images**: Don't, unless the graphic conveys information better than text. |
| **Videos**: Don't, unless your video shows something that would be difficult to describe or illustrates a significant difference in how your products work or are used compared to competitors. |

# Conclusion

As discussed above, building a Web community requires a lot of planning. The recipe for building a Web community given here is very generic in nature. Although examples were for building a Web community for the forest industry, the process can be used for any industry with only relatively minor changes.

In building a Web community, one has to be always aware of why it is being built and how it will be successful. Once a Web community is successful, the next step might be to introduce a notion of carrying out e-commerce through the Web community. Another area would be inventory management to enhance and make efficient the entire supply chain of the industry. These steps would depend upon the level of success and commitment by the industry members.

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