

Building and operating an FRC team website

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Should an FRC team have a website?

On a scale of one to ten, how important is a website for an FRC team? One? Two? Maybe three?

The purpose of an FRC team is to build robots and compete; a website may be desirable, but it's not at the heart of the enterprise -- putting up a website doesn't get the love that building robots does, and for good reason. A website is like gasoline for a car: you drive a car to get somewhere. Buying gasoline is a necessary evil, it's not the reason you drive a car. You joined a robotics team to build robots. Running a website may be necessary, but it's not the reason you joined the team.

On a large and well-organized team, there will be people who like to do web stuff, and that's great. They can take care of the website and let the robot builders get on with it.



That's all wrong. START OVER!

On a scale of one to ten, how important is a website? Actually, you can't put a number on it. Your website is part of your team's identity. It's your face to the world. It expresses your pride in what you do. It draws in the new members and mentors you need. Having a good website is integral to running a team which can build good robots and win competitions.

Is the purpose of an FRC team to build robots and compete? Building robots is not mentioned in the FIRST vision and mission statements. The *vision statement* talks about transforming culture, celebrating science and technology, becoming leaders. The *mission statement* talks about building science, engineering and technology skills -- fostering self-confidence, communication, and leadership capabilities. Your FRC team is an enterprise organized according to the FIRST vision and mission. Building robots and competing is fun, and it's the way FIRST pursues its mission. Other activities, such as animation, public speaking, and publishing a website have equal importance (and status) in the FIRST mission. They all are interesting and fun parts of your enterprise.

On a large and well-organized team, should development and management of the website be delegated to a few team members, so that the rest of the team can get on with the business of building a robot and competing? Yes and no, mostly no. Putting up a website is like publishing a magazine. It's all about content: articles, photographs, videos, activities, events, social media. You should think in terms of a magazine with a managing editor, a photo editor, a rewrite editor, and so on. You should regard every member of your team as a contributor to the magazine, and you will need one or two team members to edit the magazine. Having someone with the technical ability to operate the website is important, but start with the editors.

Should your team have a website? Here's what a website can do for you:

- Showcase your team's work to the public.
- Communicate with team members.
- Attract new team members.
- Attract mentors to your team.
- Promote your program to sponsors.
- Recognize supporters (sponsors and mentors).
- Promote team events (fundraisers, for example).
- Compete for awards.

What are the basics of starting a website?

A good way to start is to look at other websites, particularly FRC team websites. Think about and analyze the sites you visit: do they have a pleasing arrangement, is it easy to find your way around the site, is the content interesting and useful? Make a list of the features you would like to see on your website.

There may be ideas for more complex features. For example, someone might suggest integrating a Facebook page or a Twitter feed into your site. Fine. Add it to the list. But remember, you don't have to do it all at once. It's better to go live with a basic site where the content is simple but substantial, rather than a more complex site where things don't work so well and the content is lacking. A website is a magazine, not a brochure. It requires constant updates. Start with a small amount of content, and learn to keep it fresh. Then expand with new features.

Here are some of the basic features most websites should have:

- ✓ A page describing your club.
- ✓ A page listing upcoming events.
- ✓ Articles about the current season, the game, how you're building your robot.
- ✓ A page describing FIRST and how your team participates in FIRST activities.
- ✓ Articles about past seasons (your club history).
- ✓ Articles about your outreach activities.
- ✓ Photographs.
- ✓ Videos.
- ✓ A page recognizing supporters (mentors, sponsors, etc.).
- ✓ How to contact you.

Once you know what content you want, you should figure out how you want to organize it. Usually, this means identifying categories into which the content naturally falls. For example, *activities*, *resources*, and *supporters* are common categories. Think this through carefully. Doing this right will make it much easier for visitors to find their way around your site.

A common mistake is to start your website project by worrying about the "design", that is, the overall look of the site. This would include the colors, the arrangement of articles and graphics, and so on. Design is important, but it comes after the content and the basic organization. Without good content, there is no point to design. If you start with design, there is a serious risk you won't give the attention to content that you should.

When you do get around to design, remember that designing the team's website is not like designing the team's t-shirt. Maybe the team's colors look great on a t-shirt, but chances are you will want to use them sparingly on your web pages. Maybe the team's logo, full-size on the back of the t-shirt, is awesome. You should rethink that when it comes to your website design. Your design should express what your team is about: professionalism, enthusiasm, team spirit, etc.

Be sure to use graphics and photographs to enliven your pages. Don't restrict use of photographs to a "photo gallery" page. Every page needs one or more photographs or other graphics.

An excellent resource to guide you in developing your website is the "FIRST Robotics Competition Website Award Criteria." This is a PDF document available on the FIRST website from the "FIRST Robotics Competition Awards" page.

What do we need to know about accessibility?

An important aspect of design is making your website accessible to people of varying physical abilities. For example, a common problem is to use fancy visual elements, such as menu items with rounded corners and colorful backgrounds, which are unusable if the user changes the font size. Test your design by setting the minimum font size on your browser to 18 points and see what happens. Does the text for each menu item still fit within the menu item? Do some visual elements now overlap others, so that they aren't readable or usable? Sadly, a majority of sites on the Web fail this simple test.

Some of your visitors may use a screen reader to access your content via text-to-speech or a Braille output device. It is important that images and links have the html tags (such as "title") which allow these assistive devices to convey this important information. A useful resource is the "Cynthia Says" web content accessibility tester at:

<http://www.contentquality.com/>

This free service will check the pages on your website for the most important things you can do to improve accessibility.

Activities

Home
Robotics
Animation
FIRST
Outreach

Resources

Robotics Workshop
Photo Gallery
Video Gallery
Web Resources
Press Room

Supporters

Mentors
Sponsors

Another useful tool is the "Fire Vox" add-on to the Firefox browser. This is a free screen reader which can read your web pages aloud to you. Listen to one or two pages with Fire Vox, and it will open your eyes (no pun intended). You will understand better what it takes to make images, links, and html tables accessible.

Also, keep in mind that videos, Flash media, and the like are not readily accessible via screen readers. This certainly doesn't mean you should avoid such media. Rather, it means you should be sensitive to design your site so the content remains useful and interesting to visitors who can't view this media.

What are the options for hosting our website?

Finding a host is perhaps the easiest hurdle to setting up your website. Maybe your school offers space on its webserver. Maybe you know of a commercial hosting service which will donate hosting for your site. If your team is in the State of Washington, one of your best options is the free hosting offered to FIRST teams by *FIRST Washington*. Known as "FIRSTWA", this is an organization which promotes FIRST activities within Washington State.

A hosting service will provide the server your website will run on. The server will have a fast and reliable connection to the Internet, and there will be backup power to keep the server running regardless of power failures. These are services you may not find on your own school's webserver. Another thing to consider is that your school's server may have policies that restrict what you can do, and a school server may have technical restrictions (such as a firewall) which also limit what you can do. A hosting service usually has fewer restrictions.

You will create and maintain your website by connecting to the host server from your own computer. Typically, you will use protocols such as **ftp** or **sftp** which allow you to transfer photos and other files between your computer and the host server. If the host server is your school's webserver, the school's firewall may prevent you from working from home.

How do we get a domain name for our website?

You will probably want to have your own domain name for your website, so the URL will be something like:

`http://www.yourclub.org`

The best domain name is one which establishes your club's identity. It might include your team name and FRC number -- extra points if it's easy to remember. Of course, you need to find a name which isn't already in use. Then you can register the name with a domain name registrar. The cost is a few dollars a year, but the cost can vary widely depending on which registrar you choose, so it's important to shop around. You can register a name for a term of one to several years, and when the term expires you will need to renew the registration.

When you register a domain name, you need to specify an "owner" -- someone who has the privileges of administering the domain name and the responsibility of renewing it before it

expires. Be sure this person is an advisor or mentor, someone who will be with your club on a continuing basis.

If you host your website on your school's server, your school will already have a domain name. The URL for your site might be something like:

<http://www.yourschool.edu/yourclub>

In this case, you don't have to worry about getting your own domain name, but you might want to do it anyway. If you are hosting your site outside your school, you really need to get your own domain name.

Here are a couple Wikipedia links which tell you more than you want to know, but you should read them anyway.

http://en.wikipedia.org/wiki/Domain_name_registrar

http://en.wikipedia.org/wiki/List_of_domain_registrars

Note that the Wikipedia list of domain registrars is based on market share. You will have to judge for yourself, based on your own research, which registrar is best for you.

How do we actually publish our pages on a website?

There are two ways to develop a website: the hard way and the easier way.

The hard way is to use a tool such as Adobe Dreamweaver to lay out all the visual elements on all the pages. The internal language of web pages is HTML (hypertext markup language). Dreamweaver and similar tools allow you to do your layout visually without having to write the HTML yourself. The reason this is hard, not easy, is that every decision about the appearance of a page is yours and yours alone. Furthermore, every page is a repeat: when you have polished one page to perfection, it's on to the next page and you have it all to do over again. Few team websites do it the hard way.

The easier way is to use a content management system -- a CMS. Most team websites do it this way. There are several CMS available and many of them are free. Joomla and Drupal are the best known and most widely used. You install the CMS on your host server, and the CMS allows you alter the design of your website by choosing from ready-made templates. More important, the CMS allows you to add articles and pictures, using your web browser, without the design experience that Dreamweaver requires. A CMS provides many useful features such as the ability to list your most recent articles or your most popular articles.

Assuming you decide to use a CMS, you will need to choose among them. Beware! Every CMS has fanboys, especially Joomla and Drupal. A fanboy will be unrealistic in praising one CMS, and rabid in denouncing all others (especially if the other CMS is actually a serious challenger). Furthermore, Joomla and Drupal are both under active development. A valid criticism today may be irrelevant tomorrow.

My team started with Drupal. It's the CMS used on the White House website, and it has a reputation as being very flexible and capable. However, the White House website is managed by professionals whose job it is, every day and all day, to manage that website. We found that we had a hard time doing what we wanted to with Drupal because every customization required understanding the structure of the database and writing PHP code or SQL code. (PHP is the language in which both Joomla and Drupal are written. SQL is the language for accessing the database.) Our site being a high school activity, the baton must pass from one group of students to another every year or two. So Drupal didn't work for us and we switched to Joomla.

Using Joomla, we modified one of the free templates which came with it -- that was the basis of our design. Our design is very plain, but it supports accessibility better than most website designs while maintaining a clean and professional appearance. The add-ons available for Joomla have been perfectly adequate for our needs.

You should do your own research. The Internet is a valuable resource, but beware of fanboys. Talk with your neighboring FRC teams about what they use and why.

There are books available for both Joomla and Drupal. Some are more helpful than others, but both Joomla and Drupal are changing rapidly, so it's hard to make a recommendation. Read the reviews on Amazon, but be wary: a book with a 5 star rating but only 2 reviews might not be as good as a book with 77 reviews and a 4 star rating.

What is important to know about managing a website?

Once your site is running, you will want to know how many people are visiting and which pages they are viewing. Many sites on the Web use *Google Analytics*, a service provided by Google which collects this information and much more. The way *Google Analytics* works is that you insert in each of your pages some code which Google provides. Whenever a visitor lands on that page, information is sent to Google servers and collated so that you can review it.

Google Analytics is an attractive service, but it has some problems from the point of view of an FRC team. To use the service, you must accept an agreement with Google which sets rules and responsibilities. One of your obligations under this agreement is to indemnify Google against any lawsuits which might arise from your activities. Check with your school board before you accept that agreement!

Google Analytics uses Javascript, so visitors who have Javascript disabled in their browsers will not be counted. And Google isn't entirely altruistic in providing this service -- your visitor data is going to a third party server and can be used by Google for various purposes.

Our team chose not to use *Google Analytics*, chiefly because of the indemnification requirement. Because we are using the Joomla CMS, we can use a Joomla add-on called JoomlaStats, which provides much the same information as *Google Analytics*, but which runs entirely on our own server and doesn't require us to share the information with a third party or indemnify a third party against lawsuits.

Check to see if your hosting service provides analytics tracking utilities such as *AWStats* and *Webalizer*. These are not as comprehensive as *Google Analytics*, but the information they provide is useful and well-presented with tables and charts.

It is important to post a privacy policy on your website, especially if you collect visitor statistics. The policy should state what information you collect and what you do with it. If you choose not to collect visitor information, just say so.

What else should we know about managing a website?

Regardless of how you host your website, you will probably be responsible for your own backups. A CMS such as Joomla or Drupal will use a database to store the text and the design of your website, so you need to backup the database regularly. Your photos, videos, PDF documents, etc. are kept as files on your website, not in the database, so you will also need to do a file backup of your site.

Some website teams find it practical and convenient to mirror their website on a computer of their own. They can try out new functionality and develop content on their own computer before uploading it to their actual website. This is a technically sophisticated capability, and it provides redundancy which is a good complement to (but not a substitute for) a backup.

Summary

Your website is perhaps your team's most valuable property. Why? It establishes your identity. It attracts new members. It informs potential mentors. It brings in dollars from sponsors. Give to your website the same love you give to building your robot each year!

Let's go over some of the important things you need to know about running an FRC team website:

- Think of your website as a magazine with editors. Content is first, middle, and last. The technical aspects of running a website are secondary to producing interesting content which will attract visitors.
- Visit other FRC websites. Note the features and types of content you want to see on your site.
- Design is important, but content is more important. People won't visit you for your design -- they are looking for content. The fanciest design won't show up at all in Google. Search engines know only content, and search engines can be a major source of visitors to your site.
- Accessibility of your website to people with varying physical abilities is also important. It's easy to make your pages accessible, and it's part of operating a professional site.
- Start small, go live, then build from there.

- Get a domain name which supports your team's identity. Be sure to have someone with a continuing relation to your club (your advisor or a mentor) register your domain, so that your domain can be administered and renewed as necessary.
- Make regular backups of your website. Backup the database. Backup the files. Few things are more tragic than the loss of a website, with its months of work, because no backup was done.
- If your FRC team is in the State of Washington, you should consider hosting your site with the FIRSTWA hosting service. It's free, and it allows you to avoid some of the restrictions (firewalls, etc.) that a school server might present. For more information about this option, contact the FIRSTWA hosting administrator, Brian Thomas (brian@thesquash.net).