

# BETA TEST



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## 0 BETA TEST INTRODUCTION

### 0.1 WELCOME TO THE BETA TEST

Congratulations! You have been chosen as a 2010 Control System Beta Test Team. We're happy to have you as part of this effort. *FIRST* is looking forward to your participation in making the 2010 control system ready for prime time. While many hours of testing have been logged there is always room for improvement in any new system. We expect that there will be fixes needed, things not working as expected, and we ask that you give the beta team support staff the opportunity to address and fix those issues. As beta testers you have a unique opportunity to represent *FIRST* and the 2010 control system to the rest of the *FIRST* community. Please remember the goal is to make this system better and to ready it for general release. We expect Gracious Professionalism in all team and individual communications, whether in postings, emails, or conversations with non-beta teams.

Please read through this document carefully. It contains the details you will need for success.

### 0.2 BETA TEST GOALS

The 2010 FRC Control System Beta Test has the following goals:

- Give as many teams as possible hands-on exposure to the 2010 control system;
- Use beta team feedback to refine/develop supporting documentation and training materials;
- Test the features and functions of the 2010 control system to uncover problems and provide solution suggestions;
- Develop a supporting network/knowledge database to ease the transition to the new system;
- Allow beta teams to become "Control System Experts" and serve as area leaders to mentor other teams;
- Share information broadly to minimize strategic advantage to being a beta test team; and
- Understand the difficulties and issues that teams may encounter with the 2010 control system.

### 0.3 REQUIRED BETA TEST TASKS

Beta test teams must perform the following tasks:

- Submit and execute a test schedule and plan;
- Use their 2009 robot as a test bed for the 2010 control system, with the understanding that they will not take this opportunity to test new mechanisms;
- Designate one lead student and one technical mentor to serve as the communicators of test results;
- Post their findings on the *FIRST* Forums at least twice per week;
- Be available to answer questions from teams in their region, and from the broader FRC community;
- Release all code developed;
- Open their facility to regional teams to observe or assist in the test program;
- Agree to serve as "Control Systems Experts" and provide support to teams in their surrounding areas for the 2010 season;
- Hold at least one Saturday controls training seminar open to all neighboring teams prior to the 2010 kickoff. This schedule is to be posted on the *FIRST* Forums; and

- Agree to return any 2010 Control System hardware received to *FIRST* by kickoff, January 9, 2010.

## **0.4 BETA TEST COMMUNICATION GUIDELINES**

### **0.4.1 Expectations**

We expect beta test teams to act as ambassadors for *FIRST* and the 2010 control system, and as such, beta test teams are expected to exhibit the highest degree of Gracious Professionalism in their communications both public and private. Beta test teams are asked to direct all concerns and issues regarding the new control system elements they will be testing through the *FIRST* beta test team forum described below to allow the technical support staff a chance to solve the issue. All communications should be constructive.

### **0.4.2 Agreements**

The Beta Team Disclosure Agreement governs all communications pertaining to the beta testing of the *FIRST* control system (attached at the end of this chapter.) This section of the beta manual (section 0.4, 'Beta Test Communication Guidelines', what you are reading right now) provides the specific 'written direction' and 'written consent' from *FIRST* referenced in items 2 and 4 of the Beta Team Disclosure Agreement. In particular, this section provides more specific instructions regarding information sharing with individuals who are not members of beta teams.

### **0.4.3 Timeline for Communication**

By September 28, beta teams should start monitoring the *FIRST* public beta forum (described below) and answering non-beta test team questions, as they are able.

### **0.4.4 Communication Locations**

There are three primary online communication mechanisms which we anticipate will be used by beta teams:

- *FIRST* beta test *FIRST* Forge site – this site will serve as the primary means of communication between beta test teams and *FIRST* technical support. Teams will receive direction, interact with technical support staff, receive manuals and system documentation, access software updates, submit their testing plan and post preliminary findings via this site at <http://firstforge.wpi.edu>. This is a private forum for beta teams and technical support staff only. Only individuals listed on the team email list you provided to *FIRST* will be given accounts. Individuals joining the *FIRST* beta team site are expected to keep the passwords to this site private. Additional information on how to use the *FIRST* Forge site can be found in section 0.9 of this document.
- *FIRST* public beta forum – this site (<http://forums.usfirst.org/forumdisplay.php?f=1260>) is where non-beta teams will be able to go for information and updates. Beta teams are expected to exchange information with non-beta teams primarily through this forum. This forum will give Beta teams and the larger community one primary place to go for the best information. Beta teams may discuss any aspect of the new control system elements they will be testing that they wish on the *FIRST* public beta forum: hardware, software, interfaces, wiring, personal impressions, etc. There are restrictions, however, on beta teams providing individuals not associated with beta teams with copies of preliminary documentation, software, and sample code. See sections 0.4.6 and 0.4.7.
- Team websites and public forums other than *FIRST* – Beta test teams may include plans to post information on Team websites and public forums other than *FIRST* in their testing plan. Beta teams are expected to post links on the *FIRST* public beta forum to any and all

postings on these sites in order to ensure all non-beta teams will have equal access to information.

#### **0.4.5 Exhibitions**

Beta teams may exhibit the new control system components and software they will be testing at any event of their choosing. Please post the time and location of any exhibition well in advance on the *FIRST* public beta forum so that all non-beta teams may have equal opportunity to participate. Exhibitions can take any form: presentations, training, hands-on activities, webcasts, Q&A sessions, etc. Teams may discuss, display, and demonstrate any aspect of the new control system elements they will be testing that they wish: hardware, software, interfaces, wiring, personal impressions, etc. Teams may also do 'on-line' exhibitions via their own websites, as long as links are provided on the *FIRST* public beta forum to those websites. There are restrictions, however, on beta teams providing individuals not associated with beta teams with copies of preliminary documentation, software, and sample code. See sections 0.4.6 and 0.4.7.

#### **0.4.6 Documentation**

Beta test teams will have access to preliminary system documentation on the *FIRST* beta test team forum. Beta test teams will be helping to mature this documentation for public release. Beta test teams are not to share this documentation with non-beta test teams or anyone else outside their beta test group. Early release would lead to multiple versions of the same document being referenced, and this could cause confusion and wasted effort. When *FIRST* determines the documentation is mature enough, it will be released publicly. Beta teams are encouraged, however, to create and release their own documentation and training on the *FIRST* public beta forum as long as that information and training is represented as coming from the team. Beta teams may also post their own documentation and training on their own websites, as long as links are provided on the *FIRST* public beta forum to those websites. This documentation and training may take any form: written, video, audio, photographic, packaged presentations, etc.

#### **0.4.7 Software**

Beta test teams will have access to preliminary system software and sample code on the *FIRST* beta test team forum and the DVD they receive. Beta test teams will be helping to mature this software and sample code for public release. Beta test teams are not to share this software or sample code with non-beta test teams or anyone else outside their beta test group. Early release would lead to multiple versions of the same software or sample code being referenced, and this could cause confusion and wasted effort. When *FIRST* determines the software and sample code is mature enough, it will be released publicly. Beta teams are encouraged, however, to create and release their own sample code on the *FIRST* public beta forum as long as that sample code is represented as coming from the team. Beta teams may also post their own sample code on their own websites, as long as links are provided on the *FIRST* public beta forum to those websites.

## 0.5 FRC CONTROL SYSTEM (2010) DEVELOPMENT SCHEDULE

The development of the 2010 FRC Control System has been an ongoing project since the Spring 2009. The final phases of the 2010 FRC Control System development schedule are as follows:

Date	Milestone	Description
4 Sept 2009	Beta Teams Announced	Announcement of the teams selected for beta testing of the 2009 FRC Control System
18 Sept 2009	Software Made Available, Hardware Shipped	Beta software shipped and made available on <i>FIRST</i> Forge, hardware for teams involved in hardware testing is shipped
25 Sept 2009	Test Plans Due	Beta teams are required to submit detailed test plans to the <i>FIRST</i> beta test <i>FIRST</i> Forge site, as outlined in section 0.7
2 Oct 2009	"Tasks 1-4" Complete	Beta teams must complete Tasks 1 - 4 below (up to the basic operator control of robot)
23 Oct 2009	"Task 5-7" Complete	Beta teams must complete Tasks 5-7 below
29 Nov 2009	Open House Held	At least one 2010 Control System open house / training seminar must be held by each beta team by this date
9 Jan 2010	FRC 2009 Kickoff	Kickoff of the 2010 FRC Build Season

## 0.6 REQUIRED TASKS FOR BETA TEAMS

All beta teams are required to start their testing with the following tasks. Upon completion of each task, teams should create an entry in the Accomplishments / Tasks Results / Findings" discussion forum on the *FIRST* Forge site. Teams should use the template provided in the appropriate task discussion, but are encouraged to add additional comments, suggestions and other feedback. Please read the feedback template for a task before commencing the task to ensure that you are prepared to provide the desired information.

### 0.6.1 Preparation – Confirmation of 2009 robot and driver station status

Confirm your 2009 Robot and Driver Station are functioning as expected before beginning the beta test. Ensure that the robot is located in such a way that if it were to become immediately operational, it would not pose a safety hazard. Also ensure the joysticks plugged into the Driver Station are centered.

### 0.6.2 Task 1 – Out of the Box - for teams evaluating Driver Station Hardware

This task is to test the hardware works in a controlled environment.

- Follow 'Classmate Beta Test Instructions' to be posted on *FIRST* Forge beta site
- Post Task 1 results on the *FIRST* Forge Discussion

### 0.6.3 Task 2 – Install and Update Software - for all teams

This task is to verify the software and firmware installation procedures.

- Using the Beta Software DVD or the files located on *FIRST* Forge.WPI.edu, install software for the language assigned onto your Software Development System (details in section 2.3) For teams testing the Driver Station hardware, do not attempt to install the software on the Classmate.
- License the software as directed

- Upgrade the software with the latest *FIRST* software (details in section 2.3)
- Post Task 2 results on *FIRST* Forge Discussion

### 0.6.4 Task 3 – Software Development Tools Verification– for all teams

This task is to verify the development tools are working properly.

- For teams using C/C++, complete the following tasks as described in the WPILib C/C++ Users Guide (to be posted on *FIRST* Forge):
  - Re-image the cRIO with the image that supports C/C++
  - Configure WindRiver Workbench for use (see the C/C++ Programming Guide for FRC, section on Setting up the Environment)
  - Install the FRC 2010 WPILib source code (see section 4.x)
  - Create a new sample program (see the C/C++ Programming Guide, section on Creating a robot project)
  - Compile the sample program in Workbench (see the C/C++ Programming Guide, section on Building your project)
  - Create a debug configuration in Workbench and download / debug on the cRIO (see the C/C++ Programming Guide, section on Debugging)
  - Deploy the program onto the cRIO using the *FIRST* Downloader in Workbench (see the C/C++ Programming Guide, section on Using the *FIRST* Downloader)
  - Confirm the deployed program starts automatically when the cRIO reboots
  - Confirm that your robot still functions correctly with the software you built.
- For teams using LabVIEW:
  - Re-image the cRIO with the image that supports LabVIEW
  - Follow the instructions in the “LabVIEW Beta Getting Started Tutorial” (to be posted on *FIRST* Forge)
  - Confirm that your robot still functions correctly.
- For teams using Java:
  - Re-image the cRIO with the image that supports Java
  - Follow the instructions in the “Java Beta Getting Started Tutorial” (to be posted on *FIRST* Forge)
  - Confirm that your robot still functions correctly.
- Post Task 3 results on the *FIRST* Forge Discussion.

### 0.6.5 Task 4 – Operator Control – for all teams

This task is to verify minimal usage of the software development environment. This task also provides a baseline before porting the complete robot code.

- Choose one of the template programs, and modify appropriately to drive your robot.
- Post Task 4 results on the *FIRST* Forge Discussion.

### 0.6.6 Task 5– Port Last year’s Code into Beta Language – for all teams

This task is to verify application of the software.

- Port (or re-implement) your prior robot software for this robot with the 2010 language assigned.
- Debug and test the operation of the robot
- Post Task 5 results on the *FIRST* Forge Discussion.

### **0.6.7 Task 6 – Utilize dashboard – for teams evaluating Driver Station Hardware**

This task is to verify usage of the USB I/O module.

- Follow 'USB I/O Module Beta Test Instructions' to be posted on *FIRST* Forge beta site
- Regularly post Task results on the *FIRST* Forge Discussion

### **0.6.8 Task 7 – Develop unique programs in Beta Language – for all teams**

This task is to test and evaluate new control system elements fully. It is anticipated that beta test teams will be developing programs which are more complex than have been previously tested at *FIRST*. Accordingly, we anticipate that teams may encounter bugs and/or difficulties with sensor support, programming libraries and the debug and testing process. We are looking for feedback not only with respect to specific problems, but also in regard to whether the structure of the software that we provided makes it easy or difficult to develop your robot programs.

- Develop new programs to utilize your robot's existing features
- Debug and test the operation of the robot
- Regularly post Task 7 intermediate results on the *FIRST* Forge Discussion.

## **0.7 DEVELOPMENT OF TEAM-SPECIFIC TEST PLANS**

All beta teams are required to provide detailed test plans and training/information sharing schedules. All training and information sharing plans should include at least one weekend on-site event open to all teams who want to attend.

Test plans must include specific target dates for completing Tasks 1-7 listed in section 0.6. Dates should meet or improve upon dates set for task completion in section 0.5.

Test plans also must include specific dates for open houses / training sessions for non-beta teams, along with other information-sharing details.

Teams may also wish their plans to include details such as:

- A description of the 2009 robot being used to test the 2010 control system. This should include drive train description (number of driven wheels or special type of drive), upper assembly description (pictures, CAD drawings, etc.), number and types of motors used, number of spikes/victors/Jaguars used, etc.
- Sensor testing (please include a list of sensors used on the robot and the plans for testing)
- Review and feedback on support documentation
- Developing supplementary educational materials.

Detailed test plans are to be posted on the *FIRST* Forge site, in the 'Test Plans' section, by the end of the day Friday, 9/25.

## **0.8 BETA TEST SUPPORT**

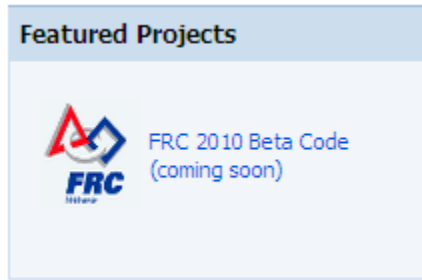
Beta teams should seek support through the relevant section of the *FIRST* Forge site. Appropriate technical personnel will be monitoring the forum and will respond not later than 24 hours after posting, with some leeway given for weekends and holidays.

## **0.9 FIRST FORGE SITE USAGE**

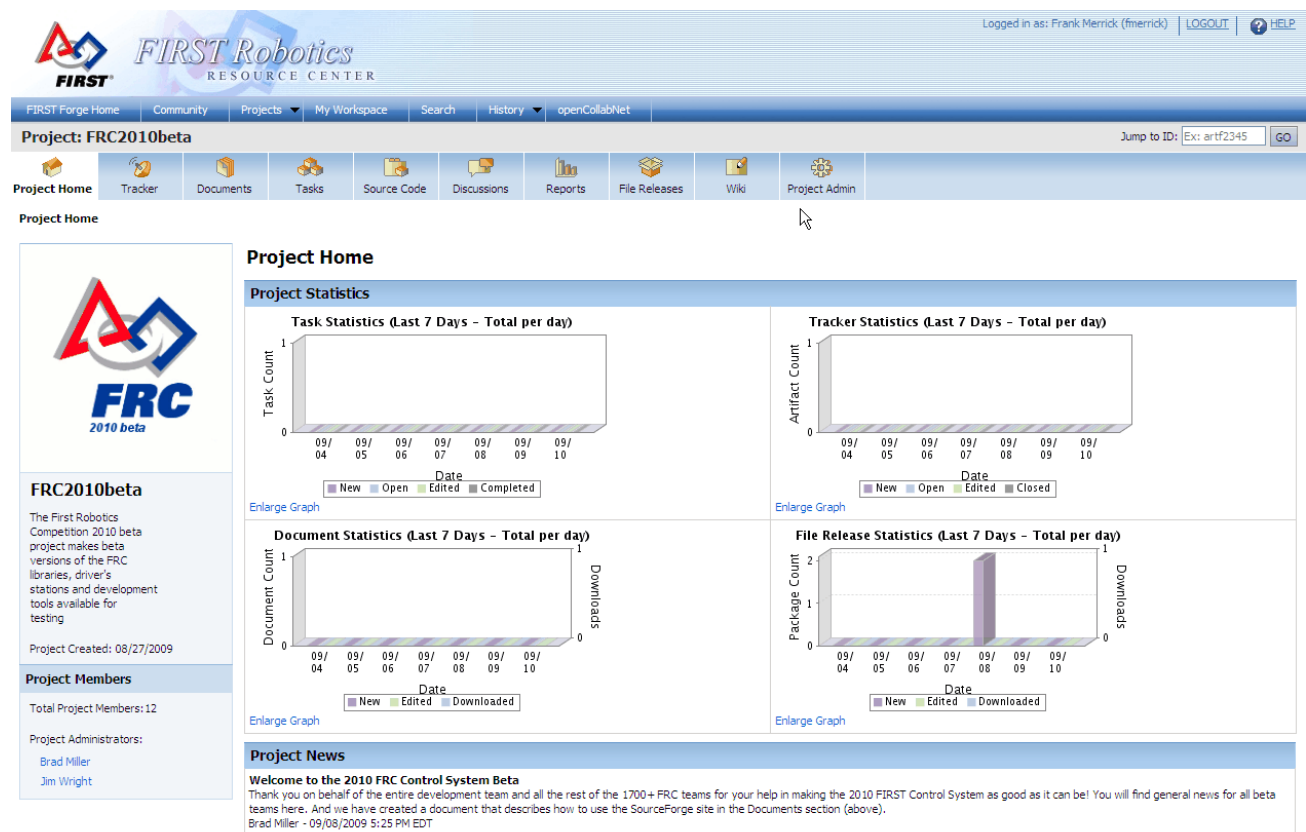
The *FIRST* Forge site will provide your main source of information on technical and support issues and serve as a place to post your feedback. There are a number of areas on *FIRST* Forge where you can find documentation, acquire source code, report bugs, and engage in a number of other activities.

## 0.9.1 Using *FIRST* Forge

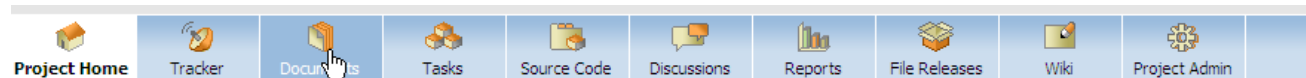
After your application for an account is approved, you need to select the Beta test project by clicking on the FRC 2010 Beta project in the 'Featured Projects' section on the right side of the screen.



This will put you into the home page for all of the beta teams. Look at the home page for general news and announcements for all the Beta Teams.








A screenshot of the FIRST Robotics Resource Center website, specifically the Project Home page for FRC2010beta. The page includes a navigation bar with options like 'Project Home', 'Tracker', 'Documents', 'Tasks', 'Source Code', 'Discussions', 'Reports', 'File Releases', 'Wiki', and 'Project Admin'. The main content area features four charts: 'Task Statistics (Last 7 Days - Total per day)', 'Tracker Statistics (Last 7 Days - Total per day)', 'Document Statistics (Last 7 Days - Total per day)', and 'File Release Statistics (Last 7 Days - Total per day)'. There is also a 'Project News' section with a welcome message and a list of project members.

The principal method of navigation around the site is the tool bar below the “*FIRST* Forge” logo. It lists all the areas that you can then navigate to for interacting with us and the other beta teams.



Below is a description of all the areas on the site and how we expect you to use them for the duration of the beta test.



 Tracker	<p><b>Trackers</b> are the way we track bugs or other deficiencies in the software that you find that need to be addressed by the development team. We will assign categories and responsible individuals to problems and you will be able to see progress as the problem is worked on. Please be sure to report all bugs in the appropriate area of the tracker page regardless of where else you might have mentioned it. This is our way of keeping track of progress and ensuring things don't slip through the cracks. So even if you mention a problem in a status report – always create a tracker in addition.</p>
 Documents	<p>The <b>Documents</b> area will be populated with documentation as it is released to you. There are a number of documents in process, so many will not be complete when you see them. As we continue to work on any given document, new versions will be posted in the documents area. If you have suggestions or find problems with the documentation, please be sure to create a tracker that addresses your concern.</p>
 Tasks	<p>The <b>Tasks</b> section is generally used to track unfinished work about various pieces of a project. We might elect to use this section for the beta and you will hear more about that if we decide to use it.</p>
 Source Code	<p>The <b>Source Code</b> area is where you can view source code that we are making available to teams. The source code is actually stored in a repository called Subversion that backs up the web pages that you see in the Source Code section of <i>FIRST</i> Forge. To get source code for your use in development for C/C++ you should use a subversion plug-in in Workbench as described in the C/C++ and Java Robotics Programming Manual. For Java, you should use the subversion plug-in in Netbeans. Here you will find the complete source code for the C++, LabVIEW, and Java versions of the WPI Robotics Library.</p>
 Discussions	<p><b>Discussions</b> is the primary area where you can report general status and receive help on the use of the control system. As you go through the initial tasks assigned to the teams, your feedback will go in the Discussion area. Once you get into porting your robot code, any questions of overall impressions, suggestions, etc. can be reported in the Discussion area. We will be monitoring your feedback closely and will respond as soon as possible. Teams are free to post suggestions or answers to questions from other teams as they come up. If you know the answer to a question posted by another team, don't hesitate to respond with a suggestion based on your own experience.</p>
 File Releases	<p><b>File Releases</b> will contain new versions of programs or updates that you can install on your development system or cRIO to update it. As the development team fixes problems, the new code will be generally posted here.</p>
 Wiki	<p>The <b>Wiki</b> will generally contain bits of information we wish to pass onto the Beta Teams. Please look here to see additional information as we make it available. For example, general suggestions on how to solve a particular problem of interest to all teams might be posted as a Wiki article.</p>

### 0.9.2 *FIRST* Forge Discussion (Forum) Categories

Accomplishments / Task Results / Findings	Beta teams will be posting their accomplishments, task results, and findings here.
Beta Test Logistics	Discussion and technical support on the logistics of the beta test. Questions about beta test procedures, schedules, shipments, and tasks.
Documentation	Discussion and technical support of the beta documentation for the 2010 control system.
Classmate driver station and additional hardware	Comments and questions about the new Classmate driver station laptop and additional hardware that goes with it.
Programming, C/C++	Discussion and technical support of programming the 2010 control system in C/C++.
Programming, LabVIEW	Discussion and technical support of programming the 2010 control system in LabVIEW

Programming, Java	Discussion and technical support of programming the 2010 control system in Java
Technical Discussions	General control system-related technical discussion and support not covered by the other technical forums.
Test Plans	Beta teams should post their test plans here.

### 0.9.3 Templates for Feedback


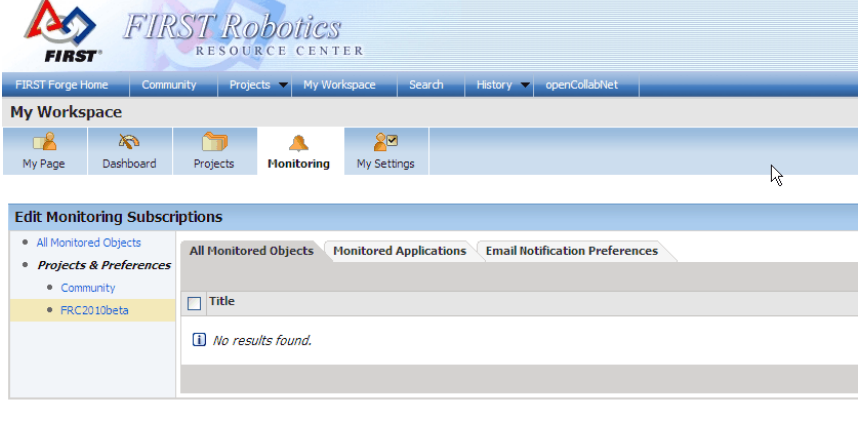
Templates for providing feedback on all tasks will be posted on the *FIRST* beta test *FIRST* Forge site.

### 0.9.4 Monitoring *FIRST* Forge via Email Notifications

*FIRST* Forge can provide email notifications to users when changes are made to the site (e.g. new or modified entries in the Tracker, Documents, Tasks, File Releases, Discussions, or Wiki.)

Monitoring all of the *FIRST* Forge contents can generate a very large number of emails, but provides a very convenient way for users to stay informed of all updates to the site. Emails can be sent either individually for all changes, or as a daily digest.

The following procedure will walk you through the *FIRST* Forge screens to set up email notifications for changes.

<p>Click on "My Workspace" at the top of the <i>FIRST</i> Forge page.</p> <p>On the resulting page (My Workspace &gt; My Page), click the large "Monitoring" button in the button bar (the second row from the top of the page.)</p>	
<p>Click on the appropriate project along the left side of the page</p> <p>Click on the "Monitored Applications" tab.</p>	

Click on the checkbox next to "All Applications" and then click on the "Save" button at the lower right.

Use the "Email Notification Preferences" tab to select either "Email Per Change" or "Daily Digest Email." These preferences can alternatively be set site-wide under "My Settings" in the "User Preferences" tab.

The screenshot shows the FIRST Robotics Resource Center interface. At the top, there is a navigation bar with links for 'FIRST Forge Home', 'Community', 'Projects', 'My Workspace', 'Search', 'History', and 'openCollabNet'. Below this is a 'My Workspace' section with icons for 'My Page', 'Dashboard', 'Projects', 'Monitoring', and 'My Settings'. The main content area is titled 'Edit Monitoring Subscriptions' and contains three tabs: 'All Monitored Objects', 'Monitored Applications', and 'Email Notification Preferences'. The 'Monitored Applications' tab is selected, displaying a list of applications to monitor with checkboxes. The applications listed are: All Applications, Tracker, Documents, Tasks, File Releases, Discussions, and Wiki. All checkboxes are checked. A note above the list says 'Select the applications that you want to monitor. This might generate a lot of email.'

## 0.10 BETA TEAM DISCLOSURE AGREEMENT

The next page consists of the Beta Team Disclosure Agreement as signed by all beta teams.



## Beta Team Disclosure Agreement

This Memorandum of Agreement will confirm the purpose and scope of discussions/activities to be held and certain obligations of confidentiality to which the Team / Team Members / Individual ("You") agree with respect to those discussions, written or oral, and any and all correspondence.

The purpose and scope of the discussions/activities referred to in this Agreement pertain to the Beta testing of the new *FIRST* (For Inspiration and Recognition of Science and Technology) Control System release to teams for the 2010 Season. Information, whether protected by patents/copyright or not, which *FIRST* provides to you as part of the discussions/activities (whether written or oral) is referred to as "Proprietary Information".

By signing this Agreement, you hereby acknowledge that:

1. any early disclosure of the substance of the aforementioned "Proprietary Information", will be damaging to the integrity of the *FIRST* organization and the Robotics Competition as well as its participants;
2. you agree to preserve the confidentiality of said "Proprietary Information" received hereunder and shall not disclose or use it for any purpose other than for evaluation as per the arrangement with *FIRST* without prior written direction from *FIRST*;
3. any improvements or developments made, either alone or jointly, by you in conjunction with the aforementioned activities that is derived in whole or in part from any of the "Proprietary Information" shall become the property of the *FIRST* community;
4. any and all aspects of the system, software, issues and background information relating to the *FIRST* Robotics Competition 2009 Control System that may become known through the aforementioned discussions/activities are included in the "Proprietary Information" definition and cannot be shared, in writing or orally, in any form at any time without prior written consent of *FIRST*; and
5. any and all contact information relating to staff/management of the *FIRST* organization, the *FIRST* Robotics Competition, and/or any suppliers or vendors associated with the aforementioned discussions/activities shall not be retained or disclosed in any manner at any time.

This Agreement shall be governed by and interpreted in accordance with the laws of the State of New Hampshire, and the signatory below consents to the jurisdiction of the State and Federal courts of New Hampshire for its enforcement and interpretation.

*I hereby agree/accept the above terms/conditions on behalf of the Named Team and certify that I am authorized to sign on their behalf: (Please attach a list of team members and mentor(s) governed by this Agreement)*

**Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**Name (Print)** \_\_\_\_\_ **Affiliation(Team#)** \_\_\_\_\_

**Address** \_\_\_\_\_ **City/State** \_\_\_\_\_ **Zip** \_\_\_\_\_