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Robotics Innovation Competition and Conference

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1. Introduction

The emerging field of Robotics Engineering is quickly gaining attention in the academic world on both an undergraduate and graduate level. In order to maintain growth and provide for continued development, a lasting community needs to be fostered. With this in mind, it was determined that the most effective method for developing a lasting community is to plan an event to provide a catalyst for community stimulation. For this event to have a lasting impact, it is important to focus upon innovation in all the fields comprising Robotics Engineering, including technical, theoretical and professional.

This grassroots event would be benefited most by encompassing a robotic competition which focuses on innovation and teamwork in a unique way. In addition, holding a conference at this event at which robotics engineering topics can be addressed in an open setting would allow for a stronger community. Therefore, the following question is proposed:

What are the necessary developments in order to build a recurring community-based robotics conference and competition?

To help answer this question and drive this project, a set of goals, objectives and metrics for success were developed. These criteria helped shape the project goals which are listed below.

- *To develop and moderate a framework for a college-level robotics competition and conference that focuses on pertinent aspects in innovation of the field*
- *To nurture an interest in Robotics Engineering at the Worcester Polytechnic Institute and to facilitate growth in the subject matter.*
- *To incorporate the overlying aspects of the engineering process into the event.*
- *To promote and improve upon leadership qualities and communication skills in participants.*
- *To maintain a high standard and code of ethics for all participants in the event.*

Based on these goals, the project objectives are listed as follows.

- *To produce a technical handbook for current event coordinators to utilize in the running of the event.*
- *To include sample forms for communication and the process involved in organizing the forms in an easy to use manner.*
- *To maintain a website in order to keep information on the event active for the interested communities to view.*
- *To provide an easy modifiable basis for competitions to suit various topics that may be used in future events.*
- *To provide a basis for conference scheduling and organizational methods for ensuring a successful conference session.*
- *To perform initial logistical work for the event to secure locations and services.*
- *To provide ample information about the event to potentially interested students of the Worcester area.*
- *To plan accordingly the running of an initial competition and conference at the location decided.*
- *To identify an initial target audience and promote the event via that channel.*

Further derived from these objectives, the metrics are listed below.

- *Number of event attendees.*
- *Percentage of attendees that are interested in a Robotics Engineering major at the Worcester Polytechnic Institute.*
- *Amount of use of the RICC website over the events progress.*
- *Number of event sponsors.*
- *The level of attention of the event in technical media.*
- *The number of engineering process log books received from participants.*
- *The amount of volunteers for running the event.*
- *The 'WPI Hype' level associated with the event.*

After conducting research into the various types of robotics competitions and other technology conferences available, several guidelines have been developed for the Robotics Innovation Competition and Conference. It is important that the event will incorporate the entire engineering perspective in its scope which is unique to this event's competition. While it is pertinent to maintain equal focus on both competition and conference, this projects aim is provide the groundwork for managing the event as well as a possible implementation for the competition. By providing an educational foundation within the RICC, the educational requirement of this project is fulfilled.

2. Background

There are many robotics competitions and expositions around the world from which aspects of the RICC can come from; the Boosting Engineering, Science, and Technology (BEST) competition; the For Inspiration and Recognition of Science and Technology (FIRST) competitions; the Defense Advanced Research Projects Agency (DARPA) competitions, just to name a few. After looking at these different competitions, a conglomeration of original ideas and the best aspects of each competition was made.

The FIRST competition is one of the largest robotics competitions in the country. Students in grades 5 through 12 form local teams, usually through a school or town. Teams are responsible for their own funding and are always led by an adult. Every year, a new competition is announced in which teams will compete to earn the most points. The team with the most points at the end of the competition wins. There are also several levels of competitions; local, regional, and national, so that teams that do well in the lower levels may move up to the national competition (Foundation for the Inspiration and Recognition of Science and Technology, 2007).

The FIRST competitions have several attractive elements. One, they are team based competitions that are able to attract thousands of students from around the country. Two, teams are allowed to have sponsors in addition to the corporate sponsors of the competition proper. However, the competitions have very narrow in their scope and focus on winning or beating the system rather than innovating (Melchior & al., 2005).

The BEST competitions are very similar to FIRST. Teams are told what the competition will be and the winner is the one which scores the most points in the competition arena. But BEST also has other components on which teams are awarded points; teamwork, log keeping, and a presentation made to the competition's judges (BEST Robotics Incorporated, 2007).

Teamwork; log keeping and presentations are very important and definitely have a place in the RICC. They shift the focus slightly from "hard" robotics to functioning in a professional and educational environment. Teams are given lots of opportunities to discuss with others what they learned each year and how they approached different engineering problems.

The Singapore Robotics Competition (SRG) is to FIRST as the Olympics are to a single sport. The SRG is comprised of many small games, often based around practical applications. Categories include balancing, underwater operation, team robots, and legged operation. Teams may enter build different robots for each game and a winner is chosen for each individual game (Singapore Robotics Games, 2007).

The SRG provides the best model for how the competition portion of the RICC should work. Teams should be able to compete in many different games that have practical applications in real life. In addition to this, teams should be able to submit ideas for competitions. In this way, the RICC can encourage teams to think of new and different applications for robots in everyday life.

There are few parallels between the RICC and the competitions discussed above. Apart from BEST, no other competition had any significant conference portion, which makes RICC unique, but it also makes it difficult to plan and research. In order to get a better idea of what was needed a number of non-robotics events were looked at.

The Makers Faire is, as the name suggests, a fair in which tinkerers, putterers, and hobbyists of all sorts gather to show off different projects that they have made. The hosts of the fair, MAKE magazine give out awards in different categories such as creativity. But what the fair is really about is to meet people with similar interests, network and enjoy each other's creations (O'Reilly Media Inc., 2007).

DEFCON, or Defense Convention, is a conference in which hackers, computer security analysts, and federal employees present papers, give lectures and socialize. The conference features a wide range

of contests, from the silly: "Guess the Flesh" and "Coffee Wars" to lock picking and hacking. DEFCON encourages attendees to register for sanctioned events as well as to create their own (DEF CON Communications, 2007).

3. Procedure

This project was divided into research and implementation sections. The research session pertained to performing various research into previous and currently running robotics competitions spanning the standard age groups, as well as developing our focus question along with a list of goals, objectives and metrics for success. The second portion of this project pertained to implementation of the focus question we developed and meeting those objectives set out in the procedures we created for them as a team. To show this progression, the following section is divided into the two subsections where each side of the project is described in detail.

3.1 – Preliminary Procedure

The primary focus of the project is to analyze and research current patterns in robotic education as well as community development in order to build a framework and operational guideline for the Robotics Innovation Conference and Competition that will be run in November of 2009. This will ensure that the RICC will have a strong initial offering that will make an impact in the robotics education and industrial communities and will hopefully allow the RICC to become the basis of a strong collegial community of practical robotic developers. With this task in mind, we formed the following goals.

1. *Research current technology-based competitions, conferences and public gatherings.*
 1. Primarily look into existing robotic competitions and conferences
 2. Look into events that utilize creativity as well as technology
 3. Focus also on events that are known and widely attended by members of industry
2. *Develop a unified vision of the RICC.*
 1. This should incorporate aspects of similar events that are successful
 2. The vision should have aspects that are lacking or missing and would be unique to the RICC
 3. The vision should attempt to stimulate practical robotic development in a collegial environment that reinforces an enterprising spirit and an air of social benefit
3. *The RICC should be a platform for students to display and present creative ideas to members of the robotic industry*
 1. Using the vision above, an overall framework of the RICC should be planned and laid out
 2. Specific roles should be described
 3. A website for the event with the ability to be easily changed and extended will be built
 4. Research and plans for research should be developed for information that will be needed before the event

3.1.1 - Existing Event Research

A vital part of the project is researching what events are currently run in the robotics community. With the overall intent of creating an event that will draw a wide range of personalities, ages and experience on a continuing basis, we need to make sure that the RICC is different enough to catch an eye but at the same time familiar enough not to feel overwhelming or worst yet, contrived. Using existing events, we should be able to get a feel for what current offerings exist in the robotics realm and hopefully gather an idea of what is lacking.

While doing our research we will not hold a bias towards robotic events only. Although a majority of our research will be on robotic based events but we will also be focused on general technology conferences, competitions and gatherings. By getting a solid understanding of other events

that have been successful we can incorporate the aspects that were successful while at the same time avoiding the common pitfalls in running a large technology-based group event.

Research will be done to investigate the correlation between events similar to the RICC and the effect that they have on educating the participants and surrounding community. We will look into how events that are aimed at community stimulation impact education connected the industry and how institutions and universities can better harness the power of these events to better educate and prepare students for practical robotic research and development.

A large portion of the research that will be done will be based on websites, forums and other Internet related resources. Utilizing surveys, group sessions, interviews and conversations will allow us to directory get a handle on the pulse of the robotic community and gauge how well the RICC will be received from the robotic community at large. As the robotic community is just on the brink of flourishing, more traditional forms of research directly on the topic may be limited, however, we do not plan on neglecting these sources. Media, such as books and publishing's that are focused on planning large group events, developing a community or founding a group will be more than plentiful and should provide a vast resource for the basic steps on getting an event like the RICC up and running.

3.1.2 - Unified Vision of the RICC

Using our research, we will develop one unified vision of the RICC. This vision will include as many aspects as we are able and will be as thorough as possible and will take on many different forms. Some forms will be formal such as documents, mock ups or images. Some may be less formal as in just notes or sketches. As a whole, the vision will be used to communicate the RICC as a whole to newcomers to the project and ensure that all project members are working on the same playing field. The vision will be based around building a lasting community of developers, educators and industrial specialists that will further the development of practical robotics among college students. This community should have a strong foundation in the RICC and have tight ties to industry but not so tight as to give a staunchly or closed feeling. This event and its surrounding community should have an open and free exchange of ideas among each other.

One of the most important documents that will be created in developing the unified vision of the RICC will be the "Vision Statement". This document will be a non-technical document that describes the intentions and goals for the RICC. This document will be used to keep a collected idea of what the end product should be. This document will be useful for keeping as a road map throughout the development and can double as a sales pitch for the event whenever a description of the event is necessary, be it for printed or published items, in a pitch to potentially interested parties or to refer to as a basis for decisions regarding the event.

As the vision develops more diverse documents will be created. Documents that describe the types of sponsors, demographics that will be targeted for participants, types of competitions, info sessions and seminars will be created to further build the RICC vision. Documents of this sort will be living documents that will be easily appended and modified throughout the entire RICC development process.

3.1.3 - Developing the RICC Framework

Once a vision for the RICC has become solid and robust, work on the framework for the RICC will take precedence of this project. The framework that will be developed will be, in essence, a fully developed conference and competition in a box. It will contain detailed descriptions of the roles that will be needed, responsibilities of all event members, tasks that will be needed to be completed, communication framework and documentation on every other aspect in running a group event.

Document examples may be a direct model the communication pathways and interactions between different event members such as the Event Director or the Public Relations Director. Other documents could be documentation templates, descriptions or even samples that would be used to generate actual documents used for the event. All of these items will tie together to form a full process for development, management, execution and documentation of the RICC.

The general approach will be to start developing three core documents: a outline of the event staff that describes each member's responsibilities and scope, a team/presenter/participant handbook follows all of the processes that will be involved in attending the RICC, and a rough draft of a master schedule for the event using times in for a nonspecific date (i.e. 00:00 corresponds to the official start time of the event, - 1 day would correspond to the day before the event, etc..). These documents will be developed in parallel.

With the responsibilities hashed out, work on a master communications handbook will start. This handbook will detail how communications will flow between the event staff, participants and third-party groups (media representatives, sponsors, etc.). It will document how escalation of issues will occur, what types of communication are appropriate and what types of record keeping will be necessary. As the framework becomes more solid, the master schedule will need to be continuously updated in order to keep it relevant. Once the master schedule has become finalized, it should be broken into logical chunks based on time and focus in order to disperse the information to the proper recipients.

Like the master schedule, the participant handbook will need to be updated continuously. The key issue with the handbook will be the necessity to publish it as soon as possible so that potential participants will have the information that they need to get started. Because of this need to publish as soon as possible, a website will be built in order to disperse the information as quickly as possible. This website will be regularly updated and participants will be directed to check the site as often as possible for updates on the event. In conjunction to the website, a contact list will be opened for participants to add themselves to so that when critical information is made available, they will be alerted. One possibility that will be explored is the development of public internet forums.

As these documents solidify, logs will be kept as to the design decisions. This log will be informal in format but will keep a record of the decisions that are made as much as possible. The purpose of the log is to give insight to anyone associated with the event the rational for decisions made and provide the ability to use precedence in decision making for future design considerations.

3.1.4 – Project Management

There was quite a lot of time put into developing a personal management scheme for this project in order to maximize our productivity during the three terms that we would be conducting it over. We utilized a number of techniques for this phase, including a time line which would visually represent the portions of the project we were to complete in a fixed amount of time, as well as the use of a media wiki page incorporated with Google Documents in order to keep our topics for various stages of the project organized and publicly shared in a concise format.

We decided to elect each member of the team the team coordinator for each term. This would provide each member with a leadership experience under a project team as well as the ability to improve upon their individual organizational and peer leading skills, as these are pertinent topics in the engineering and other such fields that requirement a fair amount of project management. The jobs of the coordinator would mainly consist of updating the project wiki page with meeting minutes and other documents as well as organizing the weekly information into a concise format for presentation purposes. The team coordinator would only be responsible for coordinating material, whereas each individual team member would be responsible for accomplishing their work and participating in a group leadership.

The creation of a timeline for the project was a necessity to keep the project on track. This visual aid would allow us to create a preliminary listing of topics needing to be done and from there laying those topics in order of priority and time needed to accomplish them. From this we created a timeline with the parameters listed above and began using it to keep ourselves on track. Along with this aid, we set up a media wiki to contain our written documents and forms as well as research material and meeting minutes to provide Professor Gennert with an easy to reach location to check our progress from week to week on the project. This tool also allowed us to keep a public share of our material for consistent additions and editing which we would need to be doing on a weekly basis. These are the techniques that we plan to employ and utilize for the entirety of this project. The division of coordination we hope to be a benefit for each member of the team as well as the allow us to keep each other active during the three terms on delivering our assigned tasks.

3.2 – Implementation

3.2.1 - Logistics

Information was gathered about the logistical concerns of running such an event as the RICC from Ken Stafford. This information was compiled into separate forms for each topic. They are broken down as:

- Chartwells Information
- Facilities Department Information
- Facilities Reservation Information
- Insurance Information
- Marketing Information
- Police Information

Chartwells Information

WPI has an agreement with Chartwells that requires any and all on-campus catering to be provided by the company. For an event the size of the RICC, all catering should be arranged through Chartwells' Catering Director, Bill Battelle. In an interview conversation, Mr. Battelle said that Chartwells' has many different levels of service, from high-class dining experiences or an unattended coffee stations. However, they do need to know 6 months in advance what will be required of them.

Facilities Department Information

Terry Pellerin is the Associate Director of Buildings and Events in the Facilities Department. His job is to arrange tables, chairs, custodians, et cetera for large jobs on campus. Mr. Pellerin said that currently, custodians are \$26.30/hour and that tables cost \$10.75 each. He said that the Facilities Department can also provide minor carpentry and electrical work, though through a third party contractor. Arrangements for Facilities Department's services can be made through the Events Office at the time of facility reservation, though they can be notified up to 1 month before the event. Since the need for arrangements was not pressing, it was left for future RICC IQPs. Additionally, a walk-through of the different facilities will need to be conducted one to two weeks before the event.

Facilities Reservation Information

Jim Kenary is the man that handles large events at the Events Office. Through discussion with him we discovered that proper procedure for reserving rooms for large events is to make the

reservations a year to a year and a half in advance. As such, we reserved a facility right away rather than wait for the next RICC to take care of it. The dates and rooms that we got are November 7th and 8th for the Campus Center Odeum and the Hagglund, Peterson, and Mid-Century Rooms. Additionally, he's able to provide layouts of the whole campus center for planning purposes.

Insurance Information

Michael Curley deals with insurance considerations for events on campus. He said that if an event is sponsored and managed by WPI community members, no additional insurance is required. However, if at any point an outside firm is hired to manage an event or to provide additional equipment or materials, the Finance and Operations office would need proof that the firm(s) carry liability insurance. WPI would also need to be listed as an additional insured. Proof of this insurance must be submitted to his office no later than one month in advance of the event.

Marketing Information

Lorraine Martinelle is the contact in the Marketing Department. She would like to be given some basic information on the event (date, time, abstract) first. After she's read through that information she will ask the project team some follow up questions to fill in any details before she would write up the final press release. In the past, she has distributed releases to local and national newspapers as well as some other business/tech periodicals for Ken Stafford. However, she's able to send the releases to any news organizations and is willing to take requests.

Police Information

A police detail will be required for the RICC, mainly for parking. Police details are \$56/hr for a minimum of four hours. Arrangements can be made through Captain Rod Beaton and Mr. Kenary. They need to be given event details two months in advance.

3.2.2 - Website

In order to develop the webpresence for the RICC, research was done into what similar groups have developed for their sites. While the RoboGames (<http://www.robogames.net/>) site is extremely easy to navigate and discover information on the multiple competitions hosted, it did not seem to contain the complexity necessary to help manage the competition and surrounding community as a whole. It also did not have as professional nor as innovative a style as was like for the RICC. Looking at the US First Robotics (<http://www.usfirst.org/>) site immediately gives a sense of professionalism and community, but felt too complex and bureaucratic for what the RICC's vision is. Using bits and pieces of the concepts for these sites, as well as a few others, a framework for the site came into focus. The website for the RICC is divided into three main sections. The first section and primary concern is the general access information section. This section's intended audience is anyone who is looking for general information on the RICC, its sponsors, the competitors and ways to become further involved. It is crucial that this section be eye-catching, easy and intuitive to navigate and readily available. Because of these requirements, the site needed to have a simple, almost minimalistic, style with bold distinctions between content and navigation.

The site was developed using a verity of proven web technologies. Server Side Include (SSI) was used to quickly develop the site prototype. CSS was used to help modularize the site's appearance and help to provide structure for the template. Perl and the Apache CGI module were used to create a

backbone for the site's form processing and a MySQL database was used to store user information. PDF's were used for the actual forms to allow users to either directly submit the form or to print out and scan a copy.

A traditional column with sidebar layout was chosen with a bold extended navigation stripe. Main navigation links were placed at the top and footer of every page to give a standardized navigation experience. In order to facilitate quick access to important information (i.e. registration, competition info, etc....), key links were placed at the bottom of the masthead and were also included in the same location on every page. By placing the mast head between the primary navigation and the key links, a distinction was made between the two which highlighted the key information. To add to this emphasis some CSS techniques were used to highlight the information when moused-over.

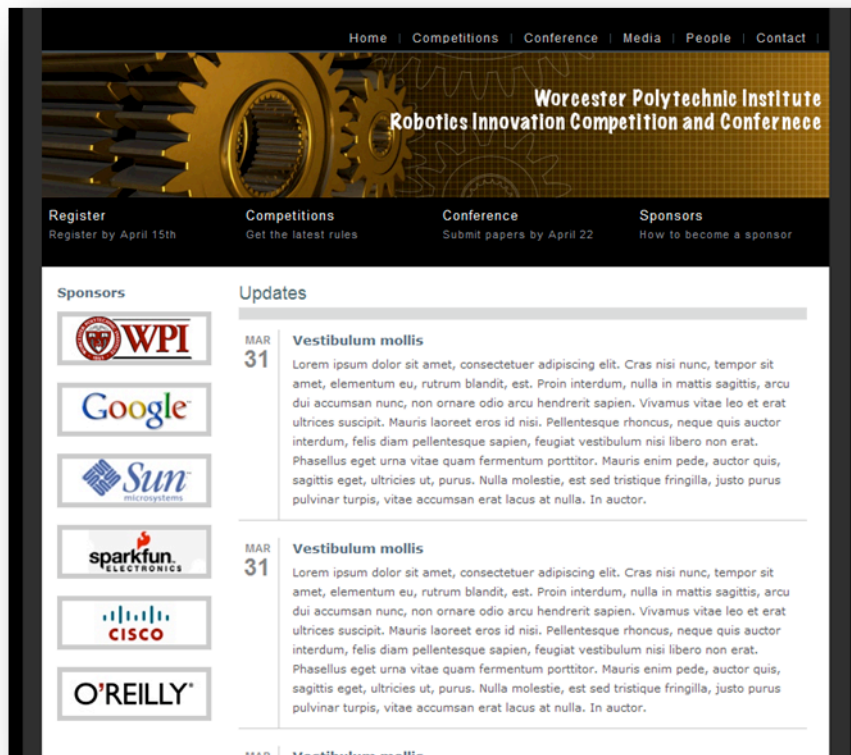


Figure 1: The site index

The body of the information was on a white background in the primary body column. This provided a separation between the primarily dark navigation of the site. This allows for quick scanning of the site for key information, good contrast for reading with a dark font and when printed using the main-screen css for easy to find information. Alongside the main body column is a slimmer side column that displays sponsors of the RICC. In order to keep the size of the site down and to prevent advertising saturation, only 6 – 8 banners will be displayed at any given time. Choosing which banners to display is done on via a simple but effective algorithm. Top level sponsors, groups that have donated the most to the RICC, are placed into the "Platinum" bracket. The uppermost 3 spots will be reserved for platinum sponsors only and which sponsors to load will be randomly decided, without duplicate, each page load. The next bracket, "Gold", will be the sponsors who have donated within a certain range below the top donors. The fourth position will be selected from a pool of both unshown platinum and gold sponsors.

Spots five will go to unshown gold sponsors. Below the gold sponsors, silver sponsors exist. These are sponsors who have donated within a certain range below gold sponsors. The last spot, number 6, will be drawn randomly from a pool of platinum, gold and silver sponsors. All sponsors (platinum, gold, silver and otherwise) are shown on the “sponsors” page.

Each RICC may have a specific theme to it (i.e. kitchen robotics). It will be a goal to make the site reflect this theme in site style and design in order to better represent the RICC. In addition, each site developed will have an archive section that will link and give users access to previous implementations of the RICC.

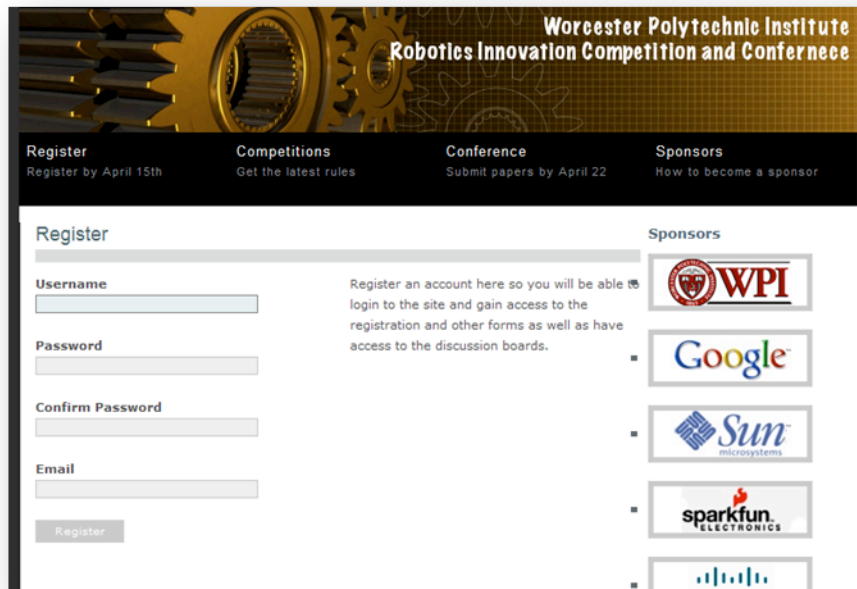


Figure 2: User Registration

The second section to the site is the registration application built for the RICC. This application allows an individual or group to register for the RICC, register for competitions, reserve spots for conferences and other tasks that directly involve administration and scheduling for the RICC.

Users are divided into two groups: general members or administrative staff. General members are users who have registered to attend the RICC, signed up for the discussion forums or anyone else who signed up for a public account. Their actions are limited to registering for the RICC, registering for specific parts of the RICC (competitions, seminars, etc...), have access to read and post to the discussion forums and receive updates via email about the RICC and associated community. General members may edit their own information, but limited to editing only the content that they've generated.

Administrator users are comprised of the RICC staff and event managers. There are varying levels of administration. Full administrators (i.e. the Event Director) may edit almost any part of the site. They have access to post schedules, create registrations, edit users and much more. Some administrators are only able to edit and control parts associated with a scope (i.e. the Competition Director may change any aspect dealing with competitions on the site). Some administrators may only view some information. In the case of general staff, the ability to view parts of participant registration forms is the extent to which they are allowed to access the site beyond just the discussion boards.

The third section to the site is the public forums for the RICC community. These discussion forums share a common login with the administration application and allow members to post ideas, discuss aspects of the RICC and robotic innovation in general. Moderation of the forums is done by

elevating the most active members that have shown responsible and thought-provoking discussion, or elevating members that have provided significant contributions to the RICC to moderator status. The discussion board is factored into the site in order to help facilitate RICC community driven content. The hope of this content is to perpetuate further RICC community and to help establish a venue for practical and innovative robotic development.

3.2.3 – Binder

Along with performing logistics work for this project to provide feasibility analysis for holding the event at WPI, we also developed a compilation of documents for handling event procedures, from logistical planning and personnel assignments to registration forms. These documents were compiled into an online Portable Document Format (PDF) as well as a physical binder, to allow for simplicity in use for all parties interested in such materials. The purpose of this collective document is to provide a distinguished set of guidelines as well as easy to access reference materials for future RICC project groups with the intention of holding the event in a fairly quick fashion. Providing the necessary material to get the event off the ground would allow future teams to be able to focus more time into deeper event planning such as themes and awards. The document provides extensive guidelines as to whom to contact for each particular phase of the event, pertinent to the WPI campus. With these ideals in mind, we divided the binder into three main sections which are as follows.

Event Forms

A major part of the binder is the appendix of various forms that will be useful for the competition and conference, whether it is registration or another type of data collection. These forms will be templates and provide a base level for gathering information for the event which may be built upon when more fields need to be added or used straight out of the binder when only the defaults may be required.

Personnel Breakdown

A number of roles exist to support the event and ensure success. Each role will be discussed as though an individual with no other roles will fulfill it, a sub-group however can fulfill any role and vice-versa, an individual may fulfill multiple roles. Dictation of how roles will be filled should be done as the situation calls. The higher-level idea is that roles exist in order to break responsibilities into discretely defined areas and helps bring order to the communication flows and directs escalation of issues as they occur. In addition, coordinators and directors may appoint subordinate groups not directly outlined as necessary to ensure planning, running and break-down of the RICC is as smooth as possible. The event positions are listed as follows.

Event Director

The Event Director exists to lead the RICC as a whole. His job is to act as a figurehead and to provide a unified vision of the RICC. He is to appoint the staff members directly below him and ensure that their tasks are carried out in an effective manner. He will resolve any conflicts among RICC staff. His sole focus should be to ensure that the RICC is successfully run.

Competition Director

Charged with selecting, organizing and executing all of the competitions, the Competition Director is concerned only with the competition aspect of the RICC. As competitions are suggested, she will be in charge of selecting what competitions will be run, how they will be run and who will run the. She will need to determine the scope and initial estimates of cost for each competition that she selects.

Once the competitions are approved, her next task will be to appoint competition coordinators to manage individual competitions. As the competition coordinators report the final costs and resources necessary for the competitions, she will check and approve the costs then pass the information to the Resource Allocation Coordinator. Throughout the RICC planning, she will be the central source for any information on any competition and will manage relations of the competition coordinators. As sponsors for individual competitions come around, she will be in charge of ensuring that the sponsors are properly represented during the competitions.

Competition Coordinators

Competition Coordinators are placed as the guru of any competition. Their job is to fully plan and execute a single competition. They must plan every aspect of the competition, report to the competition director the resources needed and ensure that the competition is executed flawlessly. They will choose judges and select the head judge, clarify any or make rules and aspects of the competition as necessary, and will act as a central point of contact for their competition. Competition coordinators will see that their competitions are run fairly and effectively.

Judges and Head Judges

Judges are in charge of monitoring each competition and ensuring that the matches are run fairly. They will act as score keepers, competitor rankers and will decide the winner of each competition. A head judge acts just as any other judge, but in the event of a judging dispute, they will make the final decisions or calls.

Seminar Director

He will decide which speakers will be invited to speak and which seminars will be run. As the RICC is planned, he is charged with determining a schedule for the speakers both on the level of when each session will be run but also as far as making accommodations for the speakers and presenters. He will be in charge of hospitality for the presenting guests. During the RICC, he is responsible for ensuring that each speaker session or seminar is run efficiently and on time.

Technical Director

The technical director's number one concern is safety. She is responsible for reviewing each competition and submitting to the competition director a safety guideline for each competition. She will publish general safety guidelines for the entire RICC and ensure that RICC staff and participants follow the guidelines. Her second responsibility is to plan any technical aspects (i.e. stage layout, lighting schemes, PA system, etc...) for the RICC. Technical planning also includes which facilities will be utilized, ensuring effective communications between RICC staff and acting as a central contact point for any 3rd party technical groups (DJ's, Presentation planners, etc.).

Resource Allocation Director

As competitions, speakers and any other RICC staff determines their resource needs, the Resource Allocation Coordinator will ensure that equipment, venues and other resources are available and will alert the technical director of any conflicts as they are discovered. They will be the central point of contact for any of the RICC staff or sub-groups that are looking for resources (projectors, cameras, etc...) during the RICC. The Resource Allocation Coordinator will also be responsible for tracking and logging the use of any equipment or facilities.

Technical Support Coordinator and Technician

During the setup and running of the RICC, the technical support coordinator will hire and manage all of the technicians for the event. He will act as a central point of contact for all technicians as well as any of the RICC staff or participants who require assistance. He will assist the technical director with planning logistics.

The technician will be responsible for providing general technical assistance for the RICC (i.e. setting up projectors, running power, etc...). They will report to the technical support coordinator.

Facility Support Coordinator

The facility support coordinator will act as an intermediate contact to the hosting facility's custodial and building services staff. She will manage communications; provide schedules for clean up, manage locking and unlocking of buildings and work with the resident facility staff on any other necessary tasks for the RICC to be successfully run.

Public Relations Director

The public relations director is in charge of managing any outward and public image of the RICC. She is tasked with portraying a sterling reputation to the public, investors and competitors. She will be the central point of contact for any media groups, will make public statements for the RICC and will ensure that all RICC staff adheres to a code of professionalism. She will also ensure that any sponsoring groups are properly compensated and represented. In addition, she will appoint the hospitality coordinator. She will choose the webmaster, a/v coordinator, and outreach coordinator

Hospitality Coordinator

The hospitality coordinator has only one mission: ensure that all participants, sponsors and presenters feel welcomed and to ensure that any of their needs are met in a timely manner. This includes hotel accommodations, meals and storage of personal belongings.

Security Director and Security Officer

The security director is tasked with ensuring the security of all participants and staff. Working with the technical director, he will make sure that all safety guidelines are met and that any incidents are quickly resolved. He will choose a security staff that will provide courteous points of contact (for directions, assistance, etc...) and have the staff patrol the entire event and provide a safe and secure environment at all times.

The security officer will work under the security director to help provide a safe and secure environment for the RICC. Basic tasks will be to patrol and provide first aid as necessary.

Financial Director

The financial director is concerned with the finances for the RICC. She will manage all expenses, provide a budget and requisition outside groups for funding. She will ensure financial stability for the current RICC and provide a foundation for future RICCs.

Webmaster

The webmaster, as can be assumed, is in charge of the website and what content is displayed on it. He will be in charge of creating a site that embodies the RICC and will be the administrator for the RICC community discussion forums. He will need to make sure that the site is consistently up to date and during the RICC making sure that the necessary information (schedules, competitions logistics, etc...) are available.

A/V Coordinator

The Audio-Visual coordinator will manage photography, video, interviews and public documentation of the RICC. He will coordinate with the competition coordinators and webmaster to get streaming video of competitions on the website and will take pictures and videos of the event as a whole and make them publically available.

Outreach Coordinator

The outreach coordinator is tasked with actively spreading the RICC to the outside world. Advertising, networking and promoting the RICC to schools and robotic groups are the base of her job. She will need to contact companies, professional groups, and anyone else whom might be interested and advertise the RICC. The more creative means the coordinator utilizes for advertising, the better for spreading the event to other audiences.

These main documents of the binder we have created describe the necessary steps as well as other important features of being able to run the initial Robotics Innovation Competition and Conference from start to finish at the Worcester Polytechnic Institute. The contact information section provides an easy to access lookup for initial and long term planning of the event and the personnel breakdown provides a detailed description of the roles people are needed to fill for the event to run smoothly. The forms included in the binder will provide a good starting solution for registration and other parts of the competition and conference that require this data collection, with the option to expand the templates to allow for customization and the application of new forms.

4. Conclusion

For the completion of this project, we looked back to our focus question and elaborated on our progress over our timeline of objectives according to what was completed and any troubles that occurred along the way. Our initial focus question is as follows.

What are the necessary developments in order to build a recurring community-based robotics conference and competition?

After performing the necessary background research into the various implementations of robotics development via competition and seminar, we have developed our focus for this project into goals, objectives and metrics. Our list of goals allowed us to encapsulate our ideals into a concise list to which we could narrow down objectives which could be weighted and evaluated against a list of metrics. With these preliminary operations of the project completed, we proceeded to the completion of our main objectives. These objectives included the creation of a RICC website, which would be responsible for fostering a community amongst participants and storing a wealth of information on the competitions and conferences from year to year, as well as a technical handbook. This manual serves as a source for storing various logistical information such as contact information and suggested personnel breakdown, as well as a detailed listing of guidelines and sample forms for event registration and running. These items will be the starting point for the running of the first WPI Robotics Innovation Competition and Conference by providing the necessary collective information and documentation for the event from start to finish.

Over the course of this project, we have all learned quite a bit on how the coordination of a large scale event can be both time consuming and take a lot of effort in planning. Logistics can take a lot of time and should be completed as early as possible to maximize the number of responses from professionals. For projects in general, the timeline should be kept up to date at all times to account for altered times as to provide a source for future teams to divide time slots up. We hope to have provided useful material to both the steering committee and future IQP groups to take on this project. The RICC will provide a knowledge base for future innovation, provide networking opportunities between the collegiate participants and industry specialists, provide a forum for discussion of robotics engineering and its related topics, provide challenges to force participants to think up new and different ways of doing common tasks and provide an arena in which to demonstrate completely new applications of robotics. We hope that the RICC will develop and grow to be part of the very foundation of the Robotics Revolution.

The Robotics Revolution is coming. The technology is here, all that is needed is a new generation of entrepreneurs and other technically savvy individuals to take control and lead the way. We hope to educate and train the people that will make this happen with the RICC by providing them the necessary base to develop these engineering ideals into an applied robotics field.

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Interviews

Interviews were conducted with the following people either in person or through email between January 31st and February 29th:

- Bill Battelle
- Captain Rod Beaton
- Michael Curley
- Jim Kenary
- Lorraine Martinelle
- Terry Pellerin
- Ken Stafford

6. Appendices
