



ROBOKRONOS

THE TITANS OF TECHNOLOGY

Leadership Manual

Table of Contents

- Leadership..... 2
 - Integration..... 2
 - Project Management..... 2
 - Tasks..... 2
- Team Structure..... 4
- Team Meetings..... 5
- Tracking..... 5
- Scheduling..... 5
- Leadership Team..... 6
- Tasks..... 7
 - Corporate..... 7
 - Marketing..... 7
 - Animation..... 8
 - Chairman’s Award..... 8
 - Committee of Correspondence..... 8
 - Communication..... 9
- Build..... 9
 - Strategy/Drive/Rules..... 9
 - Drive-train Design..... 10
 - Electrical/Pneumatics..... 10
 - Software Development..... 10
 - Mechanical/Fabrication..... 11
 - Scouting..... 11



Leadership

The cornerstones of leadership are planning and communication. This is an ongoing process of determining what needs to be done, who is going to do it, what progress is being made, what are the problems and what can we do to solve them.

The hardest problems to solve are psychological. These include motivating the team and helping them overcome obstacles. A very simple obstacle is “What do I do next?”. People don’t often know how or are afraid to express this. A really good clue is that team members are sitting around. This is where having a plan and knowing where we are comes into play. Now you need to communicate your plan. Initially this can be a presentation, but later you will just have to talk to sub-team leaders and assist the sub-team leader with talking with team members.

Integration

Communications among sub-teams is important to keep the team productive and on task. Representatives from each sub-team will meet regularly to discuss what their sub-teams are doing. A schedule for the meetings will be established by the representatives and approved by the Team Leader. One student from each sub-team will act as a delegate for their sub-team. They are responsible for providing everyone in the group highlights of what their sub-team has been doing, as well as bringing back information from the meeting to the rest of their sub-team. During these meetings, any needs a sub-team has will be addressed and acknowledged by the other sub-teams.

In the pre-season, the sub-teams will be responsible for reporting their progress to the Leadership team every two weeks. For build season, the sub-teams must report three times a week at integration meetings. During build season, it is critical that the sub-teams know how to interact and that the Marketing (corporate) sub-team is given full insight into the budget structure.

Project Management

Successful projects require careful upfront planning. A good project schedule helps all team members’ work together to meet project objectives.

A simple spreadsheet with these headings is a start

| Status | What | How long | When | Prerequisites | Notes | Who |
|--------|------|----------|------|---------------|-------|-----|
|--------|------|----------|------|---------------|-------|-----|

A large central bulletin board (where?) will be maintained with design and calendar information. Suggestions to implement include electronic white board, Team Project Sheet, project management tools on-line at <https://projects.zoho.com/portal/robokronosteam4203> or <https://www.redmine.org/> on our web site. And what will we use for the “engineering notebooks”?

Tasks

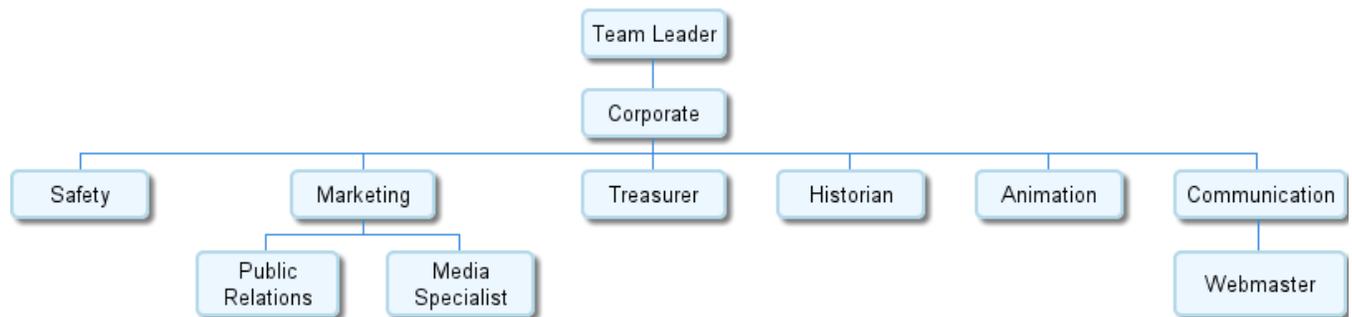
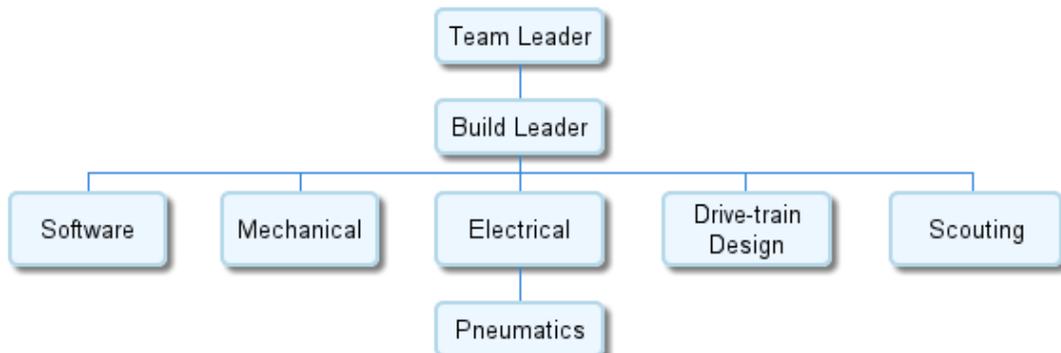
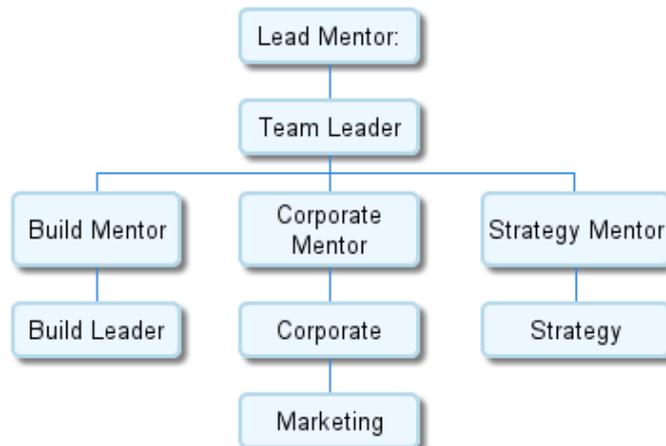
- Coming up with agendas and running the team meetings
- Organizing any pre-season team-building activities
- Keeping track of sub-team reports
- Making decisions about the team



- Creating and distributing team emails and newsletters
- Developing a foundation for the college and career opportunities
- Maintaining and updating the team calendar

Team Structure

These organization charts are in development.





Team Meetings

An agenda for all meetings will give focus to discussion and avoid wasting time.

Make teamwork between the sub-teams smoother by holding regular integration meetings.

Tracking

Additionally, each sub-team creates “engineering notebooks” during build season, which will be available on the team Google drive. Each engineering notebook entry includes the names of team members participating, the date and start/stop times, the tasks accomplished, and the next tasks to do. Entries can also include lessons learned that day, photos, details, spreadsheets, CAD screenshots or drawings, etc. The purpose is to make it easy for someone to pick up a sub-team’s ideas and keep them going if no one from that sub-team is present.

Scheduling

The Team Calendar is officially hosted on the team web site at <http://robokronos.org/events>. It consists of the Team Calendar Sheet and the robokronos@gmail.com calendar.

Pre-season goes from September to the end of December. During the pre-season meetings will be scheduled at the discretion of the mentors. Meetings are held at the Oneonta Middle School Tech room.

- Community Service and Robot
- Summer Fairs
- Build Season
- Team Meetings
- Activities

During build season, the sub-team activity will change.

- The Animation, Strategy/Drive/Rules, Corporate, and Marketing will pick up the pace during build season with presenting and marketing the team and learning the rules of the game and driving the robot.
- The Mechanical team will branch out into designing the drive-train and mechanisms as required by for game, and the Electrical and Software Development teams will work with the Mechanical teams to integrate a fully functional robot.
- Regular integration meetings between sub-teams will be held so that the team can complete tasks in a timely manner.

Think about ways to improve our build season process.

Summer season runs May through August, and the team should meet every week

- a kickoff meeting at the start of school.



- Summer is a great time to
- get started on activities and projects prior to pre-season,
- do demonstrations
- fund raising
- community service
- planning, strategizing and skill building for the next season

Leadership Team

The leadership of this team is a cooperative effort between mentors and student leaders. Each year's potential student leaders are selected by lead mentors and elected by the team and mentors prior to competition season. Students will demonstrate their leadership potential during pre-build season and will apply for the position at the end of pre-season. Students will maintain these leadership roles post-season and through the summer for follow-up and planning for the next year.

Mentors are a part of the Leadership Team. Mentors are also expected to help lead and guide the sub-teams with the students. All mentors will follow official protocol.

Students interested in applying for a Student Leadership position will:

- Apply using a written application.
- Mentors will review applications and select students to move on to the next round.
- Be interviewed by a panel of mentors.

It is the goal of Team 4203 to have maximum of eight student leaders. Each grade will be represented by at least one leader from that grade. Seven student leaders are elected in the spring for the next school year. In the fall, the eighth leadership spot will be filled by a new student member from any grade.

The Leadership team selects the Team Leader from among the team leaders. Within the Leadership group, additional roles and responsibilities will be assigned. The main roles of Leadership are: Intra-team Communications, Public Relations, Media Specialist/Historian, Treasurer, Student Coordinator and Sub-team Coordinator.

It is expected that all leaders be present for a minimum of eighty percent, 80%, of unexcused days within the build season and that for those days they be present for fifty percent, 50% of the scheduled time. It is also expected that leaders participate in eighty percent, 80%, of unexcused off-season events and that they be present for fifty percent, 50%, of the scheduled time.

In any case that a leader has not fulfilled these requirements it is determined that they have vacated their position. In that event, the team will look for a replacement so that the position does not remain unfilled. All members looking to fill the newly opened position must follow all regular leadership application processes, including an interview with mentors. A team meeting will be called and a request made for a new prospective leader. It is expected that mentors will schedule all interviews and leaders will be voted upon within a week of the application.

In addition to previous rule amendments, the team can follow the above process at any point during the build season if there are eligible applicants to any open leadership position.



(Excused absences include, but are not limited to, academic, family, health and religious reasons.)

Tasks

This is a precursor to the detailed project task list and schedule. After we determine our tasks (never ending source of ideas) we can make assignments to sub-team leaders who can then assign his people with marching orders as to the what and when of their objectives. Break down tasks only to the point where members understand. This may be more of a conversation so the leaders can tell if a member needs training and guidance. Who do you see about guidance? Experienced members and mentors.

In the pre-season, students will participate in whole group activities and begin to assemble into sub-teams which will be set up according to knowledge base and skill building and demonstration of interest in particular tasks and activities.

Tasks for sub-teams will be communicated and demonstrated to members and any new tasks will be added at this time. At the end of the pre-season (December time-frame), the sub-teams will each give a presentation on what they accomplished during the year.

Part of the time will be to cover team management, including administrative tasks, the plan for the coming season and any upcoming deadlines. The remaining meeting time will be used for presentations, training, work-sessions, or team building activities. The team will use the pre-season as a time to do team building, fund raisers, community service, and to learn about the necessary skills needed for the upcoming build season.

The following is a list of the sub-teams and their potential tasks.

Corporate

- Create team fliers, pamphlets, team newsletter and marketing items
- New member recruiting
- Monitor team budgets and fund raising budget (with treasurer)
- Art and Design. Helping us to look great; in our handbook, in the pit, and in the arena of competition.
- Maintain student handbook
- Keep track of student/team achievements
- Organize/oversee fund raisers
- Run a Patron Drive and develop the Patron Book

Marketing

- This sub-team will be responsible for promoting and presenting the team in its best light to draw in support of all kinds. This will require basic knowledge of team's goals and needs and who the audience is.
- Create presentations about the team and robot to be taken to community groups and posted online
- Thoroughly understand and review all materials that represent the team



- Study target audiences and explore ideas for presentation
- Design logo
- Design team shirts and buttons
- Record all team meetings and events through photo and video
- Create team recruiting videos and promotional videos
- Chairman's Award submission (essays, video, and presentation)
- Determine submissions/criteria for other awards: WFA, Technical, etc. and help team achieve them

Animation

- Review animation submission rules
- Learn AutoDesk 3DS
- Submit for safety animation
- Begin creation of next year's submission

Chairman's Award

It is a team goal to submit a strong entry for the Chairman's Award. The Chairman's Award requires our team to go above and beyond just building a robot. This means that our team demonstrates gracious professionalism and the most respectful form of sportsmanship. We ask that all team members, including adults, help us in achieving our goal as specified in the Chairman's Award requirements.

Chairman's Award Description - *FIRST's* most prestigious award, it honors the team that best represents a model for other teams to emulate and best embodies the purpose and goals of *FIRST*. The award helps keep the central focus of the *FIRST* Robotics Competition on the goal of inspiring greater levels of respect and honor for science and technology.

Committee of Correspondence

A group of three Team Members, comprised of a Team Leader and two additional team members, will be appointed for a term of one month. The task of the committee is to record the individuals or organizations from whom the team has received either cash, physical or any other assistance which has furthered the cause of Team RoboKronos. The committee shall also thank those individuals or groups, in writing, specifically indicating how such assistance advanced the cause of the Team. At the end of each month a new Team Leader will form a new Committee of Correspondence and this action will continue until such time as every team member has participated in the workings of the Committee. The Committee will maintain a monthly log of all assistance received, the name of the person or organization which provided the assistance, contact information for that person or organization, and the date the correspondence was mailed.

Communication

Team 4203 will have several forms of communication in order to keep everyone informed. A **weekly email** should be sent to all members from the robokronos@gmail.com account and posted to the team web site, <https://robokronos.org>.



Special announcements and news will also be posted as Articles to the website. There will be news for team members on the “Team” page. Articles for that will be topic 9. Announcements can also be put on the team Google calendar and Facebook. Not everyone can see Facebook pages. The Article topics for general news are by year.

The website is an informal way for the team to communicate and record ideas electronically, and should serve as the main repository for ideas, minutes, and anything that may be of interest. It is a goal that the Corporate and Leadership groups will be responsible for creating and distributing a team newsletter, which is intended to tell the community outside of the team what the team is working on, interesting topics, and present a calendar of activities. They will also set up an effective text messaging system.

If the webmaster assigns you to post information to the Team 4203 website www.robokronos.org an account will be created. You should receive an email to confirm your account and change your password.

All team members are encouraged to create an account on on Chief Delphi (www.chiefdelphi.com), which is a great resource for interacting with other teams. Both are safe and moderated, but as with all Internet communications, students are encouraged to use smart Internet activity, not give out personal information, etc.

- Learn webpage criteria from FIRST
- Assist other subteams in all manner of documentation and making this information available online
- Oversee and maintain bulletin board with documentation and calendars
- Work with Marketing to explore and implement new ideas for website
- Maintain, update and complete content to the website
- Maintain communication with and improve sponsor interaction
- Integrate database for achievements entry
- Update and maintain Facebook page
- Work with mentors on completing and sending out regular emails and newsletter

Build

Strategy/Drive/Rules

- Review and learn the rules from last year
- Create test arena for testing various parameters of Robot control
- Practice driving and aiming and controlling the robot and report back to other teams
- Decide on methods for strategy development
- Train drivers and human players
- Come up with scouting strategies and software/database

During the build season:

- Everyone on the drive team must read and understand all the rules in the game manual.



- Drivers must be available throughout the year for demonstrations.
- Select drivers, human players, and coaches for a primary and secondary drive team.
- Train drivers, human players, and coaches how to correctly play the game.
- Train drivers on how to handle driving the robot.
- Members must work together to develop strategies for game play.
- Coaches must be familiar with these strategies and be able to inform the drivers on how to carry out the strategy.

Drive-train Design

During the build season:

- Responsible for selecting a drive-train design that matches the team's primary strategies.
- Design the drive-train in CAD, select and design wheels, procure parts, build all drive-train components, and then assemble the drive-train.
- Interact with other sub-teams to determine the placement of components.

Electrical/Pneumatics

- Use CAD (AutoDesk Inventor) to make plans and schematics
- Develop a pre-season prototype board
- Learn motor characteristics
- Learn wiring diagram
- Learn pneumatics rules/regulations
- Develop a sample pneumatics demonstration
- Clean and rework prior robots' electrical systems
- Experiment with sensors

During the build season:

- Design and lay out the electrical subsystem using a 2d CAD software.
- Ensure system is designed and labeled so as to be simple to work on.
- Implement all sensor needs, and make sure that there is appropriate mechanical design to accommodate sensors and electrical components.

Software Development

- Use CAD (Autodesk Inventor) to make logic and data diagrams
- Learn Java programming language
- Learn the basics of Git and GitHub
- Experiment with different robot templates. Test and document.



- Write code for all available sensors. Test and document.
- Understand last year's code, assess and make notes.
- Make modifications/improvements to prior robots' code
- Develop techniques for autonomous mode. Assess and document.
- Learn to program the Arduino board
- Experiment with extending the WPI Robotics Library

During the build season:

- Responsible for designing a program that accomplishes the needs of all the functions of the robot.
- Responsible for determining best implementation of autonomous modes
- Communicate sensor needs with the electrical sub-team.

Mechanical/Fabrication

- Use CAD (AutoDesk Inventor) to make plans and document robot parts
- Design, build and document pre-season drive train
- Design, build and document pre-season mechanism
- Review past year's competition for ideas
- Clean and rework prior robots' mechanical systems and assess and document what worked and what didn't.
- Study other teams' previous robot designs for ideas and make a data base list for future reference.

During the build season:

- Design any arm, gripper, manipulator, or other mechanism that will be used to play the game.
- Design the mechanism(s) in CAD, select and procure parts, and build all mechanisms.
- Interfacing with the electrical and software development teams to communicate the needs for the robot mechanisms.

Scouting

During the build season:

- Scouting will be done before, during, and sometimes after competitions. Scouting includes robot design and performance, practice round results, and match results.
- Data retrieved from scouting will be analyzed so that coaches can develop new strategies and select team alliances.