Chairman's Award Entry, 2006

Your Team Number:	842
Team Name, Corporate / University Sponsors:	Arthur M. Blank Foundation/Honeywell/Intel/Phelps-Dodge/Wells-Fargo & Carl Hayden High School
Briefly describe the impact of the FIRST program on team participants.	In a school that was noted for a high dropout rate, over the last 3 years our FIRST graduates are not only the first in their family to graduate from high school, but 100% have gone on to the military or college, most with scholarships. After experiencing the "hard fun" challenges of FIRST, participants want to prepare themselves for a challenging, important career and yet still find time to inspire younger students.
Examples of role model characteristics for other teams to emulate.	We don't do just robots. We are involved with the Arizona and U.S. legislature. We mentor 10 FLL teams and we host the 50 team State FLL Competition on our campus. Our year round engineering activities include building full size electric race cars, ham radio, alt. fuel go-karts, and an underwater ROV. Realizing the value in VEX, we were the first AZ team to form four all-girl teams on our campus, and to inspire junior high and junior colleges to participate with us.

Describe the impact of the FIRST program on your team and community.	50 individuals on the robotics team have come together and bonded to form a single unit, which is the pride of our community. A community once known for gangs is now known for its robotics teams. Educators and policy makers from around the country come to our campus to see the positive affects of the Falcon Robotics. The Arizona IEEE wants to form the first Arizona high school chapter at Carl Hayden.
Teams innovative methods to spread the FIRST message.	We made over 45 presentations this year to students and teachers from 2nd graders to universities, as well as to parents, legislatures, and professional groups. Our publicity campaign netted over 25 articles (English and Spanish) in local, national, and international publication, and 18 media broadcasts, including ABC News Nightline. Warner Bros. is making a movie and we are in the Congressional Record.
Describe the strength of your partnership.	Our 15 year partnership with Phelps Dodge has expanded to include Intel, Honeywell, Wells Fargo, and smaller businesses in our neighborhood. Employees from these companies as well as Microchip, and Inventivity donate talent and funds to Hayden. In turn support Arizona teams as far south as Sierra Vista to the northern Navajo Reservation. We are also mentoring other rookie teams from South Carolina and Georgia as well as continuing our relationship with Team1401 from Mexico City.
Teams communication methods and results.	We reach a broad audience by hosting a bilingual website, speaking to diverse groups of people—mentoring young students, briefing state legislators and influencing legislation—and communicating through national media: TV, magazines, NPR radio, and countless Internet articles. We correspond with sponsors via conference calls, email, and site visits where several team members lead the dialogue. These communication efforts resulted in global recognition of our team hence the recognition of FIRST.
Other matters of interest to the FIRST judges, if any.	The Falcon Robotics primary goal is to positively affect our culture. More of our students are going into engineering and other technical careers, state and national leaders are calling us a model program, but it was not until Wired magazine, ABC News Nightline, Hollywood, and MTV reported our impact on our students and community that we realized how much influence our students have on the culture.

Chairman's Award Entry, 2006

Carl Hayden High School

Falcon Robotics team 842
Chairman's Award Essay, 2006

Annalisa, the president of the Falcon Robotics club, finishes her part of the presentation declaring that for the last three years, all of the club seniors have gone on to college or the military. Governor Napolitano asks her if she always wanted to go into engineering. Annalisa replies, "I never planned on going to college until I became a "FIRSTer", but now I will be going to ASU polytechnic campus to major in technology and business. With all the responsibilities and experiences I've handled, I know I want to do this for a living."

Presenting in front of the governor and her education council, which includes the presidents of the three universities and school superintendents from around the state, was only one of the 45 presentations members of the team made in the last 12 months. The FIRST message has been heard not only by hundreds of policy makers, but by local second and third graders.

Marco, a sophomore, and Rebecca, a junior, will never forget their two hour participation with the toughest crowd ever: the second graders at Lela Alston. The robotics team brought the FIRST robot, as well as a Lego robot, a VEX robot and several of the promotional videos. Several demos, hundreds of questions and two hundred hugs later, Marco knew what it felt like to be a hero. The boys all wanted to be an inventor like Marco; the girls wanted to be a robot builder like Rebecca.

The year 2005 was a banner year for Falcon Robotics. April's *Wired* magazine featuring, the team's ROV (Remotely Operated underwater Vehicle) brought national attention to the club. *ABC News Nightline* accompanied team 842 to the 2005 national FIRST championship where Carl Hayden H. S. was presented the Engineering Inspiration award. The half hour national program was aired in May. The story appeared on the front page of the *Arizona Republic* and as far away as *The Press* in Christchurch, New Zealand . The students have been interviewed three times on National Public Radio and by the BBC in Ecuador , in Spanish. The largest teacher organization in the U.S. printed an article about robotics, technology, and education written by our teachers, Allan Cameron and Fredi Lajvardi.

How does a team reach such a large audience? While it may appear like a lucky break, it is a result of believing that people really do appreciate those who work with science and technology and we are willing to appear anywhere, anytime. We have also learned the power of writing the press release.

One such press release finally reached Josh Davis, a writer for *Wired* magazine. He contacted us and asked, "Are you people for real?" He attended the AZ kickoff, AZ regional and went with us to Nationals. He has become a great friend and advocate of the FIRST message. He has become part of the network of professionals who we have met over the years who created the Falcon "lucky breaks."

Cristian is working on the 2006 ROV while he is chatting with U.S. Congressman, Ed Pastor. Representative Pastor is so impressed with the kids technical work and impact on the community, that he spoke about the Falcon Robotics team and Dean Kamen's dream on the floor of the U.S. Congress. Team 842 is now in the Congressional Record, a part of U.S. history. Ed Pastor has asked for copies of our DVD and publications to lobby other federal legislators to provide resources and incentives to bring programs like FIST to every school.

State Representative David Lujan is visibly excited while talking with Luis and Pablo. He's been trying to find a way to improve math and science education in Arizona . The team has been telling him it's more of an attitude problem rather than a curriculum issue. Representative Lujan is impressed and after discussing the teams

proposed Arizona Extracurricular Academic Association (AEAA) that promotes math and science activities after school and on the weekends, he writes draft legislation to promote and fund FIRST, FLL and other math and science activates for Arizona schools. Governor Napolitano, who has a third meeting with the Falcons, includes a $1,000,000 in her budget proposal to encourage FIRST-like activities.

Gerica graduated in May and is now sitting in Boston during a freezing snowstorm. Like many of the Hayden students, she is the first in her family to graduate from high school and like all the robotics team members, she decided college was essential, but it would require a scholarship to finance her dreams.

While in Atlanta for the FIRST National, the team visited the Arthur M. Blank foundation's headquarters and presented the team's message. Mr. Blank is the cofounder of Home Depot. The staff and officers were impressed with the "gracious professionalism" of the students and their involvement in the student's community.

While visiting the "trophy room", Gerica mentioned that Arthur Blank's college picture had the Babson College logo in it. When they asked if she was going to the prestigious business college, she replied that although she had been admitted, the tuition was way out of the question and scholarship applications deadlines had passed. Two months later, Gerica was awarded a "full ride" scholarship. The "hard fun" of the robotics team has prepared Gerica for the "hard fun" of Babson. The warmth of the Blank Foundation offsets the frigid Boston winter.

Scholarships are important for our community. Per capita income in our neighborhood is $9,000, yet because of our FIRST activities, many of our students are seeking and receiving scholarships. The team has inspired ASU to create the Ira A. Fulton School of Engineering, Science, Math, and Engineering Competition Award for a student who has "fully participated in a regional or national science, math, or engineering competition". It specifically mentions FIRST and the MATE ROV competitions as examples. A Falcon graduate received the first one.

A group of businessmen, impressed with the aspirations of the robotics students, has created the Maecenas Fund which will provide over $200,000 in scholarships for Hayden students. Four robotics students were awarded four year tuition, room and board scholarships. More importantly, they will be mentored by some very wise patrons.

A wonderful lady, Alex, contacted our club and has "adopted" one of our graduated FIRST members, Emma. Emma has transferred from the local community college to the university because Alex is paying her tuition, dorm room and food allowance. Emma will probably visit Alex in China this summer!
Victor is a freshman with experience. At Issac Middle school , he was a member of the FLL team that was coached by Hayden students. In turn, this year Victor was a mentor to his alma mater. In 2005 the Falcon Robotics team mentored 10 FLL teams. The neighborhood around Carl Hayden is becoming the "robot hood".

After the few glitches in the sound system were solved, Victor tried to count the number of people in the stands. Maybe 500? The third annual AZ regional FIRST Lego League competition was about to get underway. Forty schools from around the state filled the three gymnasiums at Hayden. The Falcons with ham radio licenses were in charge of communications and the kids who built the ROV's underwater camera system wired 10 classrooms with audio and video so parents could remotely watch their Lego students' presentations. Victor was proud of his school.

Angelica is spending another Saturday at school. Everything seems to take longer than she thought it would. The VEX playing field took longer than expected. None of the girls had ever used power tools before. Angelica

was good in math and science and now she discovers she also likes working with her hands and figuring out how make things work. Angelica, a junior, is now very interested in studying engineering.
The all-girls Vex team was formed specifically to give the girls an opportunity to gain hands on experience. The Falcons had been concerned that girls on the robotics team seemed to shy away from the construction and fabrication activities, so when the VEX kits became available, the team bought four kits and formed the Carl Hayden VEXens. Even though there is no VEX regional competition, the VEXens will scrimmage with a team at Phoenix Community College and perform demo matches at the Arizona regional.

The numbers for 2005-2006:
Google Hits for "Carl Hayden" & "Falcon Robotics": 5,850
Percentage of Falcon graduates entering college or military: 100%
Active weeks per year: 52
Number of teams at AZ FLL: 50
Presentations given: 45
Print Publications: 25
Radio and TV broadcasts: 18
FLL teams mentored: 10
Adult Mentors (non teachers): 7
Countries reporting on team 842: 6
New 4-year Scholarships created this year for Robotics team: 6
FIRST high schools mentored: 5
Hayden teachers who spend FIRST weekends: 5
Visits to Governor's office: 3
Colleges and Universities mentored: 2
Legislation drafted: 1

Then there was all the traveling for competitions, presentations, and awards:
FIRST Nationals, Atlanta, GA
MATE ROV National, Houston, TX
NextFest, Chicago, IL
National Council of La Raza, Philadelphia, PA
Teacher of the Year Awards, ETS & College Board, Princeton, NJ
IEEE National Pre College Teachers of the Year, Orlando, FL
John Wells Productions & Warner Brothers, Burbank, CA

Annalisa stares at the empty table where our robot, Karen, was built. The day after shipping is always a quiet day. Partly due to the lack of sleep and stress, but also because it's a time for reflection. What a year! Meetings with the governor, lawmakers, industry leaders, university presidents; trips across the country; speaking in front of large crowds; winning and losing; long nights and longer days; mountains of paperwork; endless deadlines; creating new teams… Cameron barges in, "We just got a phone call from MTV. They want to do a documentary!" She wonders if college will be this exciting.

Chairman's Award Entry, 2007

Your Team Number:	842
Team Name, Corporate / University Sponsors:	Arthur M. Blank Foundation/Honeywell/Intel/Phelps-Dodge/Wells-Fargo & Carl Hayden High School

Briefly describe the impact of the FIRST program on team participants.	While many are enamored with the "Rags to Riches" achievements of the Team's surprise success, most now realize the kids simply discovered the potential they never thought they had. For the last four years all team members graduated to college or the military, most with "full ride" scholarships. Falcon team member's earned almost $1 million in scholarships. Volunteerism, dedication, "gracious professionalism", and experience has prepared our FIRSTers to be first.
Examples of role model characteristics for other teams to emulate.	Before it was Dean's Homework, it was Falcon's work. Four years ago team 842 began lobbying our high school and feeder school boards for support. Their networking has grown to include business leaders, local schools, legislators (state and national) as well as the teachers in neighborhood schools. Falcon Robotics are now spokesmen for policy makers and corporate leaders. Team 842 not only hosted the inaugural AZ VEX competition, but was also the main sponsor. The team, for the fourth year hosted the AZ FLL competition.
Describe the impact of the FIRST program on your team and community.	The Falcon's FIRST experience was the catalyst for community recognition (teachers, engineer societies, legislators and the governor) is now a model for participation that is spreading throughout Phoenix and all of Arizona and the nation. While members, teachers and mentors have received many awards, 842 promoted the $2.5 governor's budget for STEM activities like FIRST as well as the governor's presence at the FIRST competition.
Teams innovative methods to spread the FIRST message.	The message of FIRST is being spread to over a dozen high schools and universities around the country. Team 842 has received funding to hold a summer teacher workshop for people who are interested in starting a FLL team at their school. The story of the Carl Hayden High school robotics team was published in Readers Digest and the story is going to be included in a text book. Team 842 is sponsoring a national underwater robotics competition that embodies the message of FIRST. This is an opportunity for teams around the country to experience the challenges of a real world game. The competition is closely modeled after the FIRST philosophy, putting engineers and students together to build a robot to complete a set of mission tasks.
Describe the strength of your partnership.	Team 842's partnerships are as strong as they are diverse. The strongest partnership our team has fostered is with FIRST. Not only are we 6 year vets but we have also partnered with FIRST to plan and run the FLL AZ regional for 3 years along with the first Vex challenge in AZ. We are working closely with team 1290, ASU, Intel, WHOI and several engineers to create the first ROV competition in AZ. Partnerships have built our team and allow us to expand the influence of FIRST to a new level.
Teams communication methods and results.	Over 100 Google videos, several blog pages, a Reader's Digest article, three text book articles and numerous T.V., magazine and newspaper articles have been the result of our P.R. and email and letter writing campaigns. The most effective method, however, is still the handshake and the look-in-the-eye contact. For years, the Falcons average one presentation a week to all types of

	groups.
Other matters of interest to the FIRST judges, if any.	Two years ago, the Falcons met with the Governor to share our experience with FIRST. She invited us to speak in front of both her education and technology councils in the executive meeting room. She refers to Hayden when proposing legislation to support activities like FIRST. This year she accepted our invitation to attend the AZ FLL regional. We have invited her to attend the AZ regional and look forward to seeing her there, along with over a dozen politicians who have accepted our invitation.

Chairman's Award Entry, 2007

The following hypothetical letter to MIT professor Woodie Flowers is Team 842's submission for the 2007 FIRST Chairman's Award:

February 21, 2007

Dr. Woodie Flowers,

Over the last three years, our *FIRST* robotics team has received a lot of publicity as the "team that beat MIT." We are long overdue in sending this letter to set the record straight.

After our inaugural few years competing in the *FIRST* Robotics Competition, we wanted to find activities to keep us busy all year long. When we heard about the underwater robotics competition, MATE, we signed up for the June 2004 competition in the university category. We figured with our *FIRST* experience, we would do better than the average rookie team. Winning the 2004 MATE underwater robotics competition, university category, was as much of a shock to us as it was to everyone else. The media eventually created the "high school that beat MIT" tag line which has created quite a buzz, but the story behind the headline is a far more impressive tale.

As you know, we began entering the underwater robotics competitions to extend our *FIRST* activities year round. We carried our gracious professionalism with us and many veteran teams were surprised to witness our openness and helpfulness at the competition.

The news media focuses on the competitive aspects of the *FIRST* competitions so we guess it's natural that they would dwell on who wins at competitions. They miss the bigger story. We try to guide the media to the cooperative aspects of our activities. We point out how we post most of our construction plans and photos of our robots on our web site. (Our site has received over 20,000 hits in this year alone.) Last June at the national underwater ROV championship, a first year all girls team was awarded the second place, high school division award. The rookies thanked us for having a web site where they could learn about building underwater robots. This year, we even have a "ROV in a Box" so younger teams can build a ROV and compete.

Falcon Robotics is always willing to help any one who may need it. We are mentors to six other high schools, even one in Mexico. It's Falcon Robotics team to the rescue! After the kick-off, we decided to invite the teams we mentor over to our campus to share ideas, and talk about strategies. We were all brainstorming our ideas like a big happy family! That's what we do: encourage networking among teams, professionals and schools.

The media also dwells on our inner city school's economic status and misses the richness of our team. We know we have been blessed with experiences that are priceless and we share the wealth with all we can. Our involvement in hosting *FIRST* competitions is our way of giving back to the community. We are proud to say that last December, we were the first team in Arizona to host and sponsor the *FIRST* VEX Challenge and that was a lot of fun. A week later we had the *FIRST* Lego League competition (our 4th year) on our campus. The FLL participation has grown from 35 teams to over 70. We invited the

Governor to attend and she did. The six teams we coach in the neighborhood have created a demand for teacher training and we are going to provide a week long FLL camp for teacher this summer! We are sharing our wealth. The media doesn't notice how rich we are.

It's not easy hosting one competition after another! This year, we are not able to enter the MATE Competition even though we were the second place team in 2006. Instead we decided to host our own underwater national competition modeled after *FIRST*. The National Underwater Robot Challenge (NURC) will be a venue for the *FIRST* message. The competition will include teams ranging from elementary to universities. So as you can see, we already have our plans to continue involving many schools after the Atlanta Championship. By the way, you are welcome to come join us at our underwater competition here in the desert June 8 - 10!

You know Woodie, it feels great knowing that we are role models, not only for our own students, but for younger kids as well. While at one of our 70 presentations, a mother sat with her two sons and when it came time for questions, she shared with us that her two sons wanted to be just like us! Can you imagine how flattered we were? Thanks to the students that volunteered to be mentors for the FLL teams, we have received plenty of positive feedback. One of the elementary schools invited us over to be the judges for their science fair, the teacher was very pleased and she mentioned her interest in involving her team in our ROV NURC competition. Eleven year olds want to compete with the high school and college kids!

This March, we attend the *Microcomputers in Education* conference at ASU which will be attended by a couple of thousand teachers and techie people. We have had an information table there for a couple of years, but this year, not only will be have a session on starting a *FIRST* team, but we are the keynote speakers! After many years, our hour-long presentation has reached audiences form second grade to the scientists at FermiLab. Our email list has grown to over a thousand readers. Our story is even in several textbooks and will one day be a movie.

But the most dramatic media hit this year was the article "The Amazing Robot Boys" published in the May issue of *Reader's Digest* and we even were the cover story in *Iguana* magazine for Spanish speaking kids. The news has missed the angle of a school in a Spanish-speaking neighborhood that is one of the loudest voices for math, science and engineering education.

You know, Dr. Flowers, homework always comes *FIRST*! So we all pitched in and we e-mailed all our state and federal level representatives. We sent out over 2000 communications. Over a dozen legislators, the mayor and a number of local dignitaries have responded that they will visit us at the AZ regional. The governor had tentative plans to attend, but she had to cancel. Our U.S. representative, Ed Pastor, will not be able to attend the competition, but will visit us in April.

We are definitely 100% advocates of the *FIRST* message. Through our many presentations to schools, companies, and organizations, we are able to gain support for science and technology. All of the methods of communication such as presentations, pubic events, e-mail blogs, websites, mentoring, school paper, and networking are used to get the message across. Through our tax credit brochures we gain support and new members.

Our students have certainly become more interested in science and technology. When our students graduate they all have gone on to college or the military and we are sure the trend will continue. Our team is home to valedictorians, club presidents, and top students, who plan to go on to college as well as team members who could, and do, improve their grades. We aid our students who have difficulty in their classes. We are not the robot builders, we are the college freshman builders.

We get a lot of requests for curriculum. We have none. We explain the value of our team is the experience of doing, rather than the lesson plans. It's working with Karen and Jerry, and Paul and Carol and Marcos and Josh and all the other adults who work with us that makes the difference. At first we were a little intimidated about the prospect of having Karen, a physicist and inventor, and Jerry the architect work with us.. After a couple of day, though, we became friends and have become family. Our robot this year is named in Jerry's honor (last year our robot's name was Karen). The bond with our mentors has influenced many of us to pursue engineering as a career.

The really big story that the media has missed, however, is the cultural shift that has taken place in us, and to some extent, in our state. While the U.S. census indicates we are a poor neighborhood, we are a rich neighborhood sharing our knowledge and talents city, state and even nation wide. While standard test scores place us in the lower half of the national list, we have more kids going into college (and engineering, computer science, etc.) than ever before and we are the role model for other schools. Ten years ago we believed that we were a poor inner city school with limited possibilities and maybe we were. But we have changed. We realize in retrospect, that we accepted the media's view of what we were. The journey of the Falcon Robotics has shown that it matters little what people expect, it's what we believe. As Dean says, "Determination beats ability every time." We know how to learn, network, lobby politicians, and build professional bonds. We are determined and we are increasing our ability to affect not only our own lives, but of us all.

So, to end this letter, we want to thank you and Dean Kamen and the thousands of volunteers for creating *FIRST*. It provided us with the experiences to find out "what we are made of." We know the goal was to increase awareness of math and science and engineering, but we have become aware of a greater value: Our experiences have shattered many people's stereotypes of what we are capable of, but our own perceived limitations were the real crippler. Although we have sent far more students into engineering, our *FIRST*ers are also entering business colleges, medical schools and engaging in politics, community service, education and entrepreneurship. "The high school that beat MIT?" Nope. We're the team that learned NOT to beat ourselves.

Thanks,

Your friends at Falcon Robotics, team 842, Carl Hayden High School

Chairman's Award Entry, 2009

Your Team Number:	842
Team Name, Corporate / University Sponsors:	Arthur M. Blank Foundation/Honeywell/Intel/Phelps-Dodge/Wells-Fargo & Carl Hayden High School

Briefly describe the impact of the FIRST program on team participants. (500 characters allowed)	All 12 of the team's 2007 graduates entered ASU on full scholarship (worth $2M). Of Hayden's graduating class 12 are engineering students. Historically, virtually all the team grads enter college or the military and are very successful. District and state officials notice. This year, most schools in our district have started FRC teams due to the success of 842 students. FIRSTers consistently receive civic awards.
Examples of role model characteristics for other teams to emulate. (500 characters allowed)	Five years ago team 842 began lobbying our high school and feeder school boards for support. Their networking has grown to include business leaders, local schools, legislators (state and national) as well as the teachers in neighborhood schools. Falcon Robotics are now spokesmen for policy makers and corporate leaders. Team 842 not only hosted the inaugural AZ VEX competition, but was also the main sponsor. The team, for the fifth year hosted the AZ FLL competition.
Describe the impact of the FIRST program on your team and community. (500 characters allowed)	The Falcon's FIRST team and participants have received many awards from the city, state and nation. 842 promoted the $2.5 AZ budget for STEM activities like FIRST and we have actively lobbied SFAz to continue the $600K support for AZ FIRST. After a presentation, the Phoenix Union school board move to pay FIRST teachers as they do sports coaches. The robotics team is the pride of Hayden and the community.
Teams innovative methods to spread the FIRST message. (500 characters allowed)	The Falcons produced a FIRST 1 minute video that is being shown in area movie theaters. The story of the Carl Hayden High school robotics team was published in Readers Digest and is included in a text book. We are sponsoring a national underwater robotics competition that embodies the message of FIRST. Teams around the country experience the challenges of a real world game that are web cast live gaining world-wide interest.
Describe the strength of your partnership. (500 characters allowed)	Team 842's partnerships are as strong as they are diverse. The strongest partnership our team has fostered is with FIRST. Not only are we 7 year vets but we have also partnered with FIRST to plan and run the FLL AZ regional for 5 years along with the FTC challenge in AZ. We are working with ASU to "bridge" high school students with the U. We are active and well known with AZ legislators.
Teams communication methods and results. (500 characters allowed)	Over 100 Google videos, several blog pages, a Reader's Digest article, three text book articles and numerous T.V., magazine and newspaper articles have been the result of our P.R. and email and letter writing campaigns. The most effective method, however, is still the handshake and the look-in-the-

	eye contact. For years, the Falcons average one presentation a week to all types of groups.
Other matters of interest to the FIRST judges, if any.	Currently we are working with MGM and Selma Hayek's production company on a full length movie about the Falcon Robotic team and our successes.
(500 characters allowed)	One of our teacher/mentors was invited to testify about our team's successes and the impact of FIRST in Washington at a house hearing last May.

Team Essay (10,000 character max)

Diary entry, Spring 2008:

" 'And the chairman's award winner is...' I felt my heart pounding like I'd bust an aorta as I heard the announcer dramatically stretching the final announcement. My foot was tapping rattlesnake rhythms as we sat in the stands waiting, hoping, and praying that the announcer would call out 842. I felt as if I was in a movie. My whole life flashed in front of my eyes. But it wasn't really my whole life; it was just my life after I joined the Falcon Robotics team years ago. All the community service, all the demos and conferences, all the hard work, successes and failures and all the fun I had on the team led us to this moment."

Virginia 's pod, 2038:

As I sat on the closet floor, taking in all of the words my father wrote so long ago and reflecting back to everything that led him to this moment, I had to put the journal down and begin thinking about his struggles and accomplishments. My name is Virginia Jimenez and I am at the Andover Mars Colony, in the Lowell Terra-Forming Complex. I recently snuck into my father's room and looked through his teenage diary. He was away on a week long aqua mining project and I was alone at home, bored and curiosity got the best of me. On Earth my dad was part of a FIRST robotics team that influenced AZ and the country. They had quite an impact on the culture. I can see how my dad became so competent and innovative.

Diary entry:

"I don't look at Jerry, Paul and Karen as scientists, engineers, nerds or geeks; they're adult friends with answers and knowledge and that's the kind of person I want to be."

Virginia :

Due to the culture and the time period my dad grew up in, he didn't know many professionals. The only people that he knew with a college degree were probably his teachers. Working with professional scientists and engineers from places such as Honeywell, Intel, General Dynamics, and Microchip changed his perspective of what was 'cool'. Their robotics gained support from the community, feeder schools and teachers. Team 842 also helped create a nonprofit organization called APASE (Arizona Promoters of Applied Science in Education.) This program promoted extra curricular STEM activities.

Diary entry:

"As I looked through the faces in the scrapbook, I realized that all of our seniors have gone on to college. I also noticed that most of them made it with full ride scholarships; many in engineering. Our team has been responsible for greater college preparation and

admissions and the number of students trying to join robotics has increased dramatically."

Virginia:

There is nothing that excites people more than sports, Right? Well my dad mentions how popular robotics was at Carl Hayden. It was even more popular than football! He even writes about some of his friends that quit sports to spend more time in robotics. Team 842 had won more recognitions than the sports teams and because of that they gained the support of many teachers in their school district. 62 graduates had earned almost $3 million in scholarships, far more than all the year's of sports scholarships.

Diary entry

"Norma swears that FIRST's experiences and encouragement that she along and the other girls seriously began to pursue careers in science and technology. The girls proved that it is not just 'a man's world'. She is now our electrician expert and things can't get done without her. Girls are not just working on the paper work, scrapbook, or taking pictures, they are actually working on the robot and machinery. Last year, a bunch of girls graduated and are now in ASU's engineering programs"

Virginia:

In the competition of 2007 the team decided to do something different. The team made the decision to take only girls to the San Diego Regional competition. After their experience, the girls on the team decided to work on an underwater robot. They wanted to use what they learned in FIRST in a different type of competition so they entered the National Underwater Robotics Challenge,(NURC) competition. Team 842 sponsored and hosted the NURC Competition. This competition was modeled after FIRST's philosophy, with engineers and students of all ages working together.

Diary entry:

"This morning our laptops were stolen. I was so stressed. I didn't know how we were going to pull off the Lego competition. After putting in all the time to mentor a Lego team after school, the competition must go on. Michael and John said they could try to reprogram a laptop, but they wouldn't guarantee anything. As my team and others arrived we assured everyone the competition wouldn't be cancelled. In the end we were able to recover with different laptops. We were successful and, once again, hundreds of FLL teams had a fantastic experience. We have three major FIRST competitions at our school in December: FLL qualifying, FLL AZ regional and FIRST Technical Challenge regional and we do all the organizing and work. We sure meet a lot of families."

Virginia:

I admire my father's team because they knew how to take up challenges. They took time out of their busy schedules to mentor a dozen Lego teams in their neighborhoods and half a dozen high schools. The team also received funds to hold workshops for teachers interested in starting Lego teams and are a major resource for all schools in AZ. They also hold the FIRST Technical Challenge in Arizona .

Diary entry:

"As a team we've hosted many of presentations, I even attended a presentation for a group of troubled adults who had an interest in our team and needed some encouragement. We were even the keynote presentation at a major teacher conference. The standing ovation was awesome. I think we've presented pretty much everywhere, from well known companies to career conventions. And out of all of them I think the hardest one was talking to kindergarteners. They are the most excited and interested about robots. They all want to join a robotics team."

Virginia:

My father's speaking skills developed when he began giving presentations for other companies, organizations and people while on team 842. Every year his team would give many presentations (several per month) that support science, technology, academics, and FIRST. Thanks to their appearances, they were able increase donations. Most of the high schools in their district started a new robotics team in the year of 2008. Many schools came to the Falcon campus for workshops, advice and encouragement.

Diary Entry:

"I finally have some time for myself. I just finished writing my 330th letter to Arizona state representatives and state congress. If every Falcon does the same we'll have a total of 4,000 emails."

Virginia:

Team 842 was dedicated to getting as much political support for FIRST in 2007. As a result 14 representatives and the governor came to the Arizona FLL and FRC competitions; one state representative also attended the national competition in Atlanta . The campaign was so impressive that Dr. Cameron, my dad's mentor, was invited to the nation's capitol to testify how our team, and FIRST, was having such a dramatic impact on "traditionally underrepresented" minorities and how federal legislation could greatly improve the technically educated workforce.

Diary entry:

"I just got back from the movie theatre that played our one-minute promotional video about FIRST! It took two months to raise $5,000 by working long hours writing letters to pending sponsors and calling businesses for their support."

Virginia:

That's right, movie theaters! Their belief was that young people who chose movies for entertainment would be interested in attending a FIRST regional and maybe wonder why their school does not have a robotics team, 842 put together a one minute promotional video about FIRST that was viewed by over 160,000 people just before the AZ competition.

Diary entry:

"My mother shook hands with Governor Napolitano and William Harris, the CEO of the Science Foundation Arizona . They were proud of what I had accomplished that day. It was a private meeting with the most important people and I was part of it!"

Virginia:

In 2005 my father presented FIRST to the Governors Education council and the next year $2.5 million were allotted for school programs like FIRST. The SFAz granted AZ FIRST $600,000. The team became effective promoters of academic programs in Arizona schools.

Diary entry:

"Today it was announced that Salma Hayek's company and MGM bought the rights to produce our movie. Wow, I can't wait until I meet her."

Virginia:

My father's robotics team was even published in Wired magazine, Reader's Digest (English, Spanish & Italian) and they were all over the internet. Their story was translated into 4 different languages. They also appear in 3 different national school approved text books.

Diary entry:

"More than a club, I would say that we are a family. We see each other in zero hour, we eat together during lunch, and we work together after school. Our team has created study groups amongst each other to become successful in school and we even have parties together. It might have been that special bond that has made our team really successful."

Virginia:

As I sat on the closet floor reflecting back to everything that led my father to become the man he is today, I realized that it shouldn't be a surprise. His galaxy-famous landing on the Mars moon of Phobos was the natural extension of the work he started on Team 842 as a teenager. His high school activities - the competitions, the work in the community,

the engineering laid the foundation for his success. And even here - 173 million miles from earth and 30 years later - Team 842 still has the power to inspire. Just yesterday, I established the inaugural FIRST Mars regional championship. Of course, I'll probably win since I'm the only kid here. The hard part will be finding a shuttle to take me to the Galaxies in Atlanta back on Earth. But hey, if Dad could do amazing things, then so can I.

Thanks,

Virginia

On the floor of the Arizona House of Representitives

Falcon Robotics "Girls Only" Team

2007 San Diego Regional

One of the many media interviews during 2007-8 robotics season. We send out many press releases

Meeting with the Gov abut funding for after school STEM activities. 2008 budget contains $2.5 Million!!

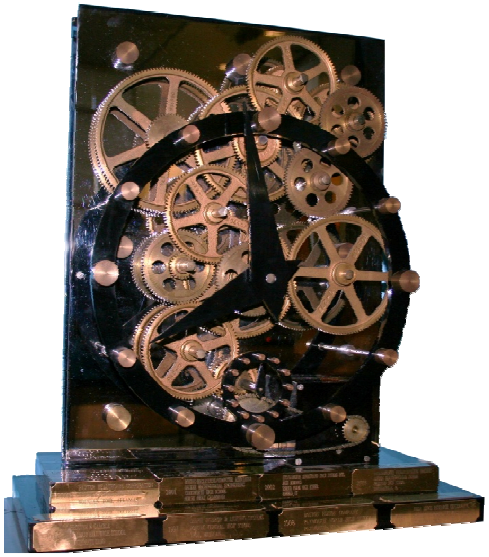
Chairman's Award Entry, 2009

Your Team Number:	842
Team Name, Corporate / University Sponsors:	AARP/West Valley Amateur Radio Club & Carl Hayden High School

Briefly describe the impact of the FIRST program on team participants with special emphasis on this year and the preceding two years.	All of the team's 2008 graduates entered ASU on full scholarship Of Hayden's robotics alumni 14 are engineering students. Historically, virtually all the team grads enter college or the military and are very successful. District and state officials and now ASU admin notice. This year, most schools in our district have started FRC teams due to the success of 842 students. FIRSTers consistently receive civic awards
Examples of role model characteristics for other teams to emulate.	Six years ago team 842 began lobbying our high school and feeder school boards for support. Their networking has grown to include business leaders, local schools, legislators (state and national) as well as the teachers in neighborhood schools. Falcon Robotics are now spokesmen for policy makers and corporate leaders. Team 842 not only continues to hosted the AZ FTC competition, but was also the main sponsor. The team, for the sixth year hosted the a FLL competition.
Describe the impact of the FIRST program on your team and community with special emphasis on this year and the preceding two years.	Most state Legislators met team 842. 842 promotes activities like FIRST and we have actively lobbied state legislators After a presentation, the Phoenix Union now pays FIRST teachers as they do sports coaches. Team is invited to many honors and demonstrations as ambassadors for FIRST The robotics team is the pride of Hayden and the community.
Teams innovative methods to spread the FIRST message.	We sponsor and administer a national underwater robotics competition (NURC) that embodies the message of FIRST. Teams around the country experience the challenges of a real world game. We also work with ASU to webcast the competition live. We receive a lot of positive feedback, even from Europe and Asia. Participation from schools and universities increase as well as viewership. Of course we write press releases and post blogs regularly. Our email list is close to 1000 readers.
Describe the strength of your partnership with special emphasis on this year and the preceding two years.	Team 842's partnerships are as strong as they are diverse. The strongest partnership our team has fostered is with FIRST. Not only are we 6 year vets but we have also partnered with FIRST to plan and run the FLL competitions for 6 years along with the FTC challenge in AZ. We have worked with ASU to "bridge" high school students with the U. ASU is now hosts the AZ FLL championship.
Teams communication methods and results.	Over 100 Google videos, several blog pages and numerous T.V., magazine and newspaper articles have been the result of our P.R. and email and letter writing campaigns. The most effective method, however, is still the face-to-face contact. For years, the Falcons average one presentation a week to all types of groups. We still are working with MGM and Selma Hayek's production company on a movie about the Robotic

	team. It's been 4 years now and they hired the third set of writers. Patience
Other matters of interest to the FIRST judges, if any.	"Determination beats ability every time",says Dean Kamen. The Falcons are proof. Poor inner-city neighborhood; no machine shop; few resources... yet, team 842 was honored with the Chairman's Award. Our alumni enter engineering and thrive. The students did not learn technical skills, they learn that their determination makes all things possible. They also learn to depend on others and to contribute to the community. We now has SO MANY success stories. It's not he robot, its the Gracious P.

The Clock



Handcrafted by Dean Kamen, the Clock visits the new Championship Chairman Team each year. This year, sitting in the Falcon Robotics trophy window, the clock marks the progress of team 842's commitment to "changing the culture".

As the timepiece hands whirr, the team's seniors prepare scholarship applications. All have been admitted to college, but tuition can be a "deal-breaker" in the inner city neighborhood. For the last four years, all the team's seniors (except one) have gone on to college and have been awarded scholarships. So far, all are continuing their education, most in engineering. While the engineering dropout rate is greater than 50%, all of 842's alumni remain in the program. Several will be awarded their degrees this May.

With so many alumni, especially Hispanics and women, entering, and succeeding, at ASU's College of Engineering, the institution has finally taken notice. James Collofello, Engineering Dean for Academic Affairs asked, "How can we replicate what is happening at Hayden?". Our answer was easy, "FIRST."

Engineering Dean Meldrum, who was lobbied by the Falcons for years, created an outreach position and hired Patty Smith to partner with the Falcons to take over the organization and administration of Arizona's FLL competitions. While Carl Hayden H.S. hosted the FLL since it's AZ inception, the program grew too large (from 30 teams to 120 teams) for one high school campus. This year, ASU's state tournament was held at the university to great acclaim. The Falcon's still host the Phoenix FLL competition and coach many grade school teams.

Dr. Yinong Chen, ASU's professor of Computer Science, had a problem. He wanted his seniors to solve robotic programming challenges, but the students spent way too much time building the robots and had little time for programming. (A familiar complaint for FIRSTers). There is now an alliance between 842 and the engineers of ASU. The Falcons provide the seniors with a robot platform and the ASU programmers share knowledge and software routines with the FIRST teams. "Gracious Professionalism" and educational interdependence among the institutions will yield tremendous results in the next few years.

The clock's intermeshed gears demonstrate the interdependability of each part to the whole system. The Falcon's relationship with the larger community is also essential and strong. Connections with the Phoenix Union High School district has created an almost 100% participation of district high schools with FIRST. Other high school districts are now taking notice how a FIRST program energizes STEM education.

Not every school can commit to a FRC team so 842 hosts the FTC tournament every year in Arizona and again this year they will webcast the state's FTC competition to a worldwide audience.

The Hayden engineers even have a live webcam broadcasting to the world the daily activities of the robotics team. 842 posts details about their robot design and building progress for all to see. Even the Chairman's essay is posted on Chief Delphi so other teams can learn from the Falcon's successes and failures. The Falcon Robotics team has thousands of people around the world reading the team's blogs, watching their Google videos, and accessing the volumes of information on their website. "Changing the culture" is a global activity that depends on communication.

This openness and transparency has created a interdependence of schools and teams sharing the hard fun of FIRST.

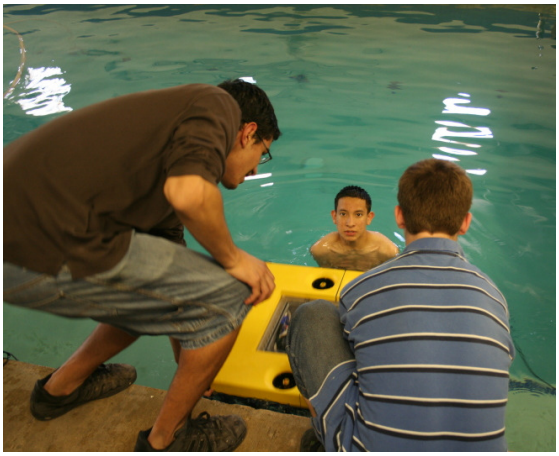
The team has continued it's commitment to "spreading the message of FIRST with scores of public appearances and demonstrations in Arizona. They have been on many TV and radio programs and

newscasts and featured in the state's newspapers. Speaking to civic groups, writing press releases, submitting presentation proposals and sharing a great big smile have become the most important tools in the engineering toolbox. One principal was heard to say that he wanted his school "to be the next Carl Hayden."

While the clock divides the passage of time into hours, minutes and seconds, our political time is divided into terms and this year's elections, brought in a new term. The Falcon team was invited yet again to the floor of the Arizona State House and honored by the elected representatives. Mable Munoz, FIRST's Paul A. Allaire Medal awardee, even sat at the head of the chamber and open the day's session.

Team 842 continued its' friendships with many of the legislators and created new contacts with those who have such a strong influence on education. The new session, however brought changes. Our friend, and FIRST supporter, Ann Kirkpatrick joined our representative, Ed Pastor, in the U.S. Congress and our governor, who has met with us several times, has moved to Washington as the head of Homeland Security.

The only political disappointment for the team was not being invited to the White House to meet the President, an honor some of the previous Chairman teams received. One team member quipped, "When I'm President, ya'll will be invited for a sleepover. None of this 5 minute handshake photo op business!"



Three years ago, after a series of national successes building and competing with remotely operated underwater robots (ROVs) the Carl Hayden team formed NURC (National Underwater Robotics Challenge). This June, elementary schools, high schools from Arizona and California will celebrate this year's contest, "Mount Terror, Fire Under The Ice! June 12 -14, 2009. The competition extends the purpose and goals of FIRST into a new venue with the following differences:

* An underwater field of play
* Held in summer
* Elementary schools, high schools, universities and even adult teams compete for the grand prize. (There is a trophy for highest elementary school, high school, etc.)

This year the administration of Embry-Riddle met with the Falcon team to explore a new competition similar to FIRST and NURC. However, instead of terrestrial robots or underwater robots, we proposed an aerial challenge to be open to all schools and age groups. With the addition of the flight competition, Arizona will have year round engineering activities. There is even talk of a tri-competition, all around engineering award!

As the clock marks the days, so does the delivery of the morning newpaper. The Carl Hayden team wrote many press releases and a few of them made the dailies. We even had a feature article about the members on our ROV team.

Most all the local TV stations met us at the airport when we returned from Atlanta with the Chairman's trophy. The team has been on several cable shows, "Tom Simplot's" Issues show as well as a couple of local morning shows.

Since many fo the students are bilingual, Telemundo television and local Latino radio shows have featured the robotics team. Robotics is muy bueno!

Chairman's Award Entry, 2009

Each year we name our robot to honor a person who inspires us and is a fantastic role model for young people. This year our robot, Carmen, is a tribute to Carmen Cornejo, a woman who has become our main PR contact person and a social activist for young people. Her idealism and energy is so impressive that the team had no hesitation in choosing her for this years tribute.

Hosting the Phoenix FLL, the AZ FTC, NURC and competing in the FRC while mentoring several FRC teams and coaching several FLL team and also presenting the FIRST message to civic groups and schools, we are often asked, "Where do you find the time?" The clock gives us no breaks. The Falcons have learned to manage time and to meet deadlines. All the members believe they are doing very important work in inspiring young people (and a few adults) in science and engineering. The popularity and growth of the events demonstrate the effectiveness of their campaigns.

FIRST is all about innovation and 842 is on the forefront of new inventions. Our scouting system is three years old and uses intuitive game controllers for data entry. Students in the stands record each robots performance and the results are downloaded in moments and analysis in done almost instantly. Being able to identify our partner's and opposition's strengths and weaknesses has given us an advantage.

We have created a full-color 3 dimensional viewer. With two cameras placed on a robot, we will let drivers see "real time" robot driving at our school demonstrations.

Last April in Atlanta, senior Mable Munoz chatted with Steve Wozniack, the co founder of Apple. The "Woz" and Mable compared high school activities and Mable learned how two teenagers liked "plying with technology" and how the Apple came about. Someday she will be tell her grandchildren about the man who brought computing to everyone.

It's time for the Chairman's traveling trophy to be packed in it's case. While the little hand cycles through the hours, the clock itself cycles through teams. It has been awarded 17 times to teams that are "changing the culture." As preparations for the 2009 Championship event begin, the clock will be primed for presentation to this year's most inspirational team that has worked so hard to inspire greater levels of respect and honor for science and technology. We are changing our culture. It's about time.