

EcoCAR Mobility Challenge: Communications Plan

Chancellor's Honors Thesis

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Introduction

The EcoCAR Mobility Challenge is a four-year multidisciplinary competition hosted by General Motors, MathWorks and the U.S. Department of Energy, managed by Argonne National Laboratory. The competition challenges students from 12 universities across North America to transform a standard 2019 Chevrolet Blazer into a hybrid-electric, semi-autonomous vehicle. Students from electrical engineering, computer science, mechanical engineering, business and communications gain hands-on experience by leading this project through its various components, whether its building and testing the vehicle or through marketing and project management efforts.

This thesis provides a strategic communication plan to guide the UT EcoCAR team through its four-year competition. As the team's communications efforts play a large role in team recruiting and youth outreach events, it is important to have a plan going forward. Based in research and knowledge of the team's dynamics, this communications plan will allow the team to be more intentional with its time and allow for smoother transitions between team leads.

The thesis begins with a literature review that builds on the research of other communication professionals and explores relevant topics to the EcoCAR Mobility Challenge Team, such as organizational commitment, retentionship and debunking misinformation. Following the literature review is a situation analysis, which evaluates the current industry and state the team operates within, such as the today's automotive industry and the University of Tennessee. After these two research intensive sections is a strengths, weaknesses, opportunities and threats (SWOT) analysis, which is based on research, knowledge and

observations of Team Tennessee. Building off the research and analysis in the previous sections, the thesis moves into the strategic planning, which consists of identifying key publics, setting goals, objectives, strategies and tactics as well as key messages. Lastly, this thesis wraps up with ways to measure its success through evaluation and measurement.

Literature Review

The literature review features research and theories from communications professionals, outlining the connections between internal communication, organizational identity and employee retention as well as STEM recruitment and debunking misinformation. All of these topics are relevant to prevalent problems in STEM education as well as from issues observed by this team member of the UT EcoCAR Mobility Challenge.

Importance of Internal Communication

Internal communication is a crucial component to any successful organization as it engages employees in achieving goals and objectives, but Chen, Silverthorne and Hung (2006, pg. 242) argue that employees' communications wants and needs are often overlooked or ignored. According to TowersWatson (2010, p. 24), "Most firms do well at communicating about the business; however, less than half of firms report they are effective at communicating at employees regarding how their actions affect the customer or increase productivity." In fact, Hargie and Tourish found that companies communicate between little and some of the time about how problems are dealt with, how employers work contributes to the organization, how decisions affect employees, when things go wrong in the workplace, about staff development opportunities or about employees are performing (Clampitt, 2009).

Kalla (2005) suggests the multidisciplinary interest in internal communication as "integrated internal communications," which is "all formal and informal communication taking place internally at all levels of an organization" (p. 303). While internal communication is formally defined communication methods that stay within an organization's walls, internal communications can quickly come external, such as when an email is forwarded to the media or a newsletter is shared with another organization. Because of this, internal communication inadvertently impacts external reputation, making it even more important to an organization's success (Welch & Jackson, 2007). Employees play a key role in an organization's reputation, which increase the importance of understanding an individual's sense of organizational identity.

Organizational Identification and Social Identity

Organizational identification is "the degree or oneness with the organization and has been found to be associated with job satisfaction, job involvement, turnover intentions and in role and extra-role performance" (Asforth & Mael, 1989, p. 33). Organizational identity is used interchangeably with group identification, and it is based on social identity theory, Social identity theory is "a perception of oneness with a group of persons" (Asforth & Mael, 1989, p. 21). It refers to social categories, anything from place of work, to religious affiliation, gender, age cohort and many other groups.

In order to understand a person's commitment to its work, it is essential to understand its level of identification with its workplace. There are several factors to group identification. First, individuals do not need to put forth effort toward the group's goal to feel included; however, individuals need to "perceive him- or herself as psychologically intertwined with the fate of the group" (Asforth & Mael, 1989, p. 21). Secondly, individuals experience social/group

identification when they feel as though they are personally experiencing a groups' success and failures. Thirdly, individuals who experience group identification may still feel separated when it comes to internalization, as they may not agree with all values, attitudes and principles of the group (Asforth & Mael, 1989).

By understanding internal communications, organizational commitment and what motivates employees to feel connected to their workplace, this information can be applied to employee retention.

Employee Retention

Gregory Smith's book *Here Today, Here Tomorrow: Transforming Your Workforce from High-Turnover* to High-Retention explains that the antidote to high turnover is retentionship, which is the "process of attracting, selecting, caring about, training, developing and keeping a workforce" (2001, p. 44). The overall goal of retentionship is to create a work environment that encourages good employees to stay as long as possible and allows mismatched employees to find more compatible jobs.

According to Keeping Your Valuable Employees (1999), Dibble explains that employee retention starts at orientation, when employers should be providing employees with the organization's vision, mission, values and policies. By providing new employees a better understanding of the organization's goals and how they fit into achieving them, the employees are more likely to choose to remain with the organization (Dibble, 1999).

In addition, employees are more likely to stay if employers invest in training their employees. Heathfield's research found that employees experience greater satisfaction when they receive more training and development, motivating them to remain loyal to their

workplace. Ramlall concurred Heathfield's findings, explaining that keeping employees has a significant economic impact (2004). Ramlall also found that appropriate training exposes an employee's strengths and weaknesses (2004).

Employees are more likely to feel connected to their workplace if given a sense of leadership or roles in projects or has a positive working relationship with their supervisor. Individuals that are given an opportunity to grow and develop through a company as more satisfied and connected to the workplace.

Retentionship increases productivity in workers as well. Whether that employee is naturally high-achieving or an average worker, by creating a sense of belonging and purpose, "it's possible to transform average or even poor performers into highly productive people" (Smith, 2001, p. 46).

For the EcoCAR Mobility Challenge, the team will face more backlash and pushback from its consumers than in previous competitions. The team is shifting its focus from not only hybrid-electric vehicles but also incorporating the semi-autonomous component. Because of the various accidents and bad publicity currently circling the media about semi-autonomous vehicles, the team has already experienced concerned parents and skeptical consumers when speaking about the project. Because of this, knowing how to debunk misinformation is essential for the program's reputation.

Debunking Misinformation

Learning how to dispel misinformation is an important skill for professionals in many disciplines, specifically in scientific communications. Misinformation can lead to a difficult path for communicators, affecting their ability to control messages and manage their organization's

reputation. In addition, misinformation is a public concern because of its ability to hold back society from change, leading to public skepticism of the scientific community and slow adoption of scientific breakthroughs (Chan, Jones, Jamieson, & Albarracin, 2017).

Chan et al. (2017) define effective debunking as "presenting a corrective message that established that the prior message was misinformation" (p. 1540). After conducting and building on the research of effective debunking, their recommendations include reducing "the generation of arguments in line with the misinformation" (Chan et al., 2017, p. 1545). Chan and his research partners studies found that rather than focusing on the initial incorrect messages, a more effective messaging strategy is to report clearly and concisely about the new information found. Elaboration on the misinformation reduces the acceptance of the debunking message (Chan et al., 2017, p. 1544).

In addition, Chan et al. found that people are less likely to accept a debunking message when the initial message is labeled as incorrect without proper explanation and reasoning. Their research supports that the best way to present new information to recipients of misinformation is to properly explain the new findings and what evidence supports that the initial information they received is now incorrect (Chan et al., 2017).

Knowing the essentials to debunking misinformation will allow for more effective recruitment. Since the project is geared towards students interested in science, technology, engineering and mathematics, understanding the current recruitment market and what these students are looking for in a program helps form key messages for this audience.

STEM Recruitment

According to Herschbach of the University of Maryland, approximately 50 percent of any given student cohort does no elect to pursue additional education beyond high school (2011). Of the 50 percent that pursue higher education, only five to six percent of high school graduates enroll in an engineering program. Students face financial difficulties and other barriers that may keep them from pursuing higher education. Because of this, when thinking of STEM recruitment, it is important to think beyond the four-year education route and to encourage other paths to STEM to "serve the great number of electricians, warehouse workers, agricultural specialists and craftsmen and technicians of all kinds that also have to be equipped to participate in our scientific and technologically oriented society" (Herschbach, 2011, p. 113).

Becky Wai-Ling Packard's research outlines effectives strategies for STEM recruitment in her book, titled "Effective Outreach, Recruitment, and Mentoring into STEM Pathways: Strengthening Partnerships with Community Colleges." Packard explains that including both families and students in outreach efforts is important in order to provide a support system for incoming students.

In fact, continuing mentoring initiatives after students begin their university education improves student retention. Packard states, "interactions with role models with whom students can relate, such as alumni from their own communities or students just a step ahead of them in their education, discussing challenges they overcame, can be most effective at motivating students" (p. 62).

In addition, Packard hits on the importance of building relationships in outreach events rather than planning one-time events. She writes, "Any one-time initiative that simply exposes

a student to a range of interesting career options on a single day is not likely to have much of an impact. However, even short-term programs that integrate scientists into the classrooms or where students engage in hands-on, authentic activities can grow student knowledge and interest in science careers" (p. 62). Packard recommends that outreach efforts to be sustained over a period of time.

As explored throughout the literature review, there are multiple components to internal communication that a team and its leadership must keep in mind when planning. Internal communication directly affects reputation of an organization, and employees play a key role in conveying its employer's reputation to future employees. Because of this, it is vital to build an employee's sense of social identity from the beginning of their employment and consistently evaluate each employee's experiences throughout to improve. Keeping employee's social identity in mind when planning and leading also increases the likelihood of an employee to stay with the organization, increasing overall retentionship. Like many science-oriented programs, knowing how to dispel misinformation is important in order to gain public support and new team members. Lastly, because of the EcoCAR Mobility Challenge's high number of STEM team members and orientation, knowing the barriers and challenges of communicating with parents, families and incoming students is crucial for success.

Building off the theories and research in the literature review, next, this thesis will address the current internal and external factors Team Tennessee is faced with in a situation analysis.

Situation Analysis

Prior to making decisions for any communications plan, it is important to understand not only the organization you are representing but also the market in which it operates. All strategic communication plans require prior research to deeply and thoroughly understand the needs of an organization. A situation analysis exists to evaluate the niche that a team, organization or corporation sits within.

This situation analysis evaluates the larger market of Advanced Vehicle Technology Competitions as well as the individual history and culture developed through the many years of Team Tennessee. In addition, it is important to understand the types of people with whom you are communicating and how they prefer to receive information. This situation analysis discusses current market research on how engineers now prefer to communicate, as this is a crucial component for communications personnel within the EcoCAR Mobility Challenge. All of these topics will be discussed further throughout.

History of AVTCs

Both Argonne National Laboratory, the main organizer for the competition, and Team Tennessee have a long-running history with Advanced Vehicle Technology Competitions (AVTCs). Argonne National Laboratory, in conjunction with lead sponsor U.S. Department of Energy, has been organizing AVTCs since 1988. AVTCs are a unique collaboration between government, industry and academia that tasks students to design energy efficient vehicles. Designed as a multidisciplinary competition, both graduate and undergraduate students

combine their skills from engineering, business, computer science and communications to deliver a complete industry project ("AVTC Series").

Argonne's latest competition, including headline sponsors U.S. Department of Energy, General Motors and MathWorks, will take place from August 2019 through Summer 2022. This project, titled the EcoCAR Mobility Challenge, tasks students to reengineer a 2019 Chevrolet Blazer into a hybrid electric, semi-autonomous vehicle. Students will incorporate advanced propulsion systems, electrification and connected and automated vehicle technology (CAVs) that will improve the energy efficiency, safety and consumer appeal of vehicles ("AVTC Series").

Today's Automotive Industry

In order to plan for the upcoming four-year advanced vehicle technology competition (AVTC), it is important to research and understand the current state of the automotive industry. The EcoCAR Mobility Challenge is inspired by the shift of American consumers to cities. 82 percent of North Americans live in urban areas, and it is predicted by the year 2050 that 87.4 percent of American citizens will live in cities ("Urbanization and the Mass Movement of People to Cities," 2018). Because of this, the traditional model of personally owned vehicles will no longer by viable, due to factors like traffic and emissions. The automotive industry has seen this trend, and companies, like General Motors, are choosing to respond and adapt their niche in the market.

One of the most important and newest components to the AVTCs is the connected and autonomous vehicle technology component, better known as CAVS. Each team's Blazer will feature SAE Level 2 automation. This means that vehicle will be equipped to monitor acceleration and steering, but the driver must remain engaged while driving at all times. Scaled

from 0 to 5, the automation level ranges from no driver automation, such as a standard vehicle, or full driving automation, which would be characterized as a "self-driving car." An example of this is that the Blazer will stop if the vehicle is approaching another vehicle or object too quickly and closely or the Blazer will change lanes to avoid accidents. Teams will also program onboard sensors and wireless communication systems from the vehicle to the surrounding areas, which will improve overall operation efficiency within the urban environment ("AVTC series").

In addition to adjusting the vehicle, students are prompted to select their target market for carsharing. Carsharing, a form of Mobility as a Service (MaaS), allows users to combine the privacy of owning a car with the convenience of public transportation. MaaS allows consumers to pay based on their travel needs and frequency, such as pay per trip or a monthly fee ("AVTC series").

Team Tennessee

The University of Tennessee team, better known as Team Tennessee, has participated in 10 AVTCs since 1989. Across the span of 28 years, over 1000 students have participated in the unique design experiences provided by these competitions, like the EcoCAR Mobility Challenge.

Team Tennessee is fortunate enough to have well-trained faculty and staff in the engineering programs. In fact, its curriculum has propelled the graduate programs to be ranked 31st and undergraduate programs as 33rd by US News and World Report. Housed in the Tickle College of Engineering, engineering programs make up about 16 percent of UT's population, nearly 4,600 total students out of 28,000. These students are equipped with numerous resources and technology, and the college spends $79 million dollars annually on research

expenditures. UT's AVTC alumni have gone on to work with companies like General Motors, Oak Ridge National Laboratory, Denso Manufacturing, Honda and more.

How Engineers Prefer to Communicate

With the shift of technology, engineers are also shifting the way they choose to communicate. According to Weber Shandwick, one of the leading public relations firms of the automotive industry, 89 percent of engineers surveyed prefer to communicate via word-of-mouth. This includes through conferences, industry peers and professional organizations. 61 percent of engineers surveyed choose to get their news from social media and online sources, including LinkedIn, Facebook, YouTube, blogs and online forums. More traditional sources of information, like local and national news outlets or trade and enthusiast publications, are still accepted by 51 percent of engineers surveyed ("Engaging Today's Automotive Engineers," 2015).

Weber Shandwick found that engineers are choosing to communicate more frequently than they did three years ago. More than 50% of the engineers surveyed reported using social media, blogs and online forums, word-of-mouth and events as communication resources now more than they did three years ago. While these numbers have increased, there have been no dramatic decreases in the use of website or traditional news sources. Overall, engineers are embracing and using all forms of communication more now than they have before ("Engaging Today's Automotive Engineers," 2015).

Research suggests that 42 percent of engineers are looking for content regarding new products and technology. In addition, 34 percent of engineers are looking for industry news in the content they read. Meanwhile, only a small percentage of engineers are interest in trends

and insights (15 percent) and company-specific information (9 percent) ("Engaging Today's Automotive Engineers," 2015).

The last step to fully understanding the EcoCAR Mobility Challenge's purpose and current market is to evaluate its strengths and weaknesses as well recognizing its potential opportunities for growth and threats to growth, which will be discussed next.

Strengths, Weaknesses, Opportunities, Threats Analysis

Strategic planning uses a SWOT analysis to evaluate an organization's strengths and weaknesses, recognize potential opportunities for growth and be aware of potential threats to the organization's success. A SWOT discusses strengths, weaknesses, opportunities and threats. Strengths and weaknesses are internal and can be controlled by the organization while opportunities and threats are external, leaving limited control for the organization.

In order to thoroughly evaluate the team's current state, it is useful to understand its strengths, weaknesses, opportunities and threats. By evaluating the team's strengths, talking points and key messages will be more apparent for team recruiting. Evaluating the opportunities will help the team make plans on ways to grow. In addition, being aware of current weaknesses will be a useful when evaluating growth while knowing possible threats will inform the team of what to look out for as they move forward throughout the competition.

Strengths:

- **Long running program and legacy of participation in AVTCs**

  UT has been involved in AVTCs since the 1980s and more than 1,000 graduates have participated in a competition. The program is well-known by students and faculty of the Mechanical, Aerospace and Biomedical Engineering department. This program is a popular pick for mechanical engineering students for their senior design project.

- **Well-established leadership**

  The lead advisor, Dr. Irick, has been with the UT team since 2002. In addition, Several other advisors have been with the team through multiple competitions, some even being participants in the beginning. Specifically, Scott Curran, a former AVTC team member, now works with ORNL serves as the youth outreach coordinator for the team. Emily King Kinsey, the former Communications manager, now works with ORNL and serves as a mentor to the communications swimlane.

- **Hands-on learning**

  Students who participate in EcoCAR gain hands-on learning experiences in a real-world senior design project. EcoCAR is designed to resemble a company's work from start to finish. Students learn not only how to design and build a car, but they also learn the importance of understanding their target market and how to sell the finish product.

Weaknesses:

- **Learning curve for students**

  Since the competitions are spread across four years, these projects require time spent reading. The complexity of the project requires that new team members discuss the project in depth in order to understand. For non-engineering students, such as business or communications students, who are interested in working on the project, they must spend even more time understanding the main objective. These students have little to no background knowledge on the work being done, and they do not see what happens in the garage or lab, which makes it harder to comprehend.

- **High turnover of students involved**

  Engineering students often join the team for their senior design credit. These students graduate and move forward having reaped the benefits from the project, but the advisors and team leads are left to train new students to fill the holes on the team.

- **Special skills set required**

  Engineering students on the team need to take specialized classes with our lead advisor in order to have the skills to accomplish the full project. As this can require students to forfeit other classes or add to their current class load, this can keep other students from committing to the project.

Opportunities:

- **Networks for students and team**

  East Tennessee is home to many automotive, manufacturing and technology companies. These close-to-home connections are useful for students and our team. These companies, like DENSO manufacturing Maryville and Oak Ridge National Laboratory, serve as sponsors to Team Tennessee. After seeing these students breadth and depth of work, they look to hire these students, as well.

- **Shifting automotive industry**

  Companies like General Motors are looking to change their business model. They're looking to hire younger and experienced graduates, specifically those involved in a project like EcoCAR. In addition, they're looking to shift their businesses towards electric and energy-efficient vehicles. With these competitions focused on the changing automotive industry, these students are more prepared for their future careers.

Threats:

- **Quick changing/ unclear competition rules**

  EcoCAR teams are heavily reliant on the rules provided by competition organizers at Argonne National Laboratory. As these are their only guidelines for the competitions, this is where team members turn when there are questions. Unfortunately, these rules change or are updated often. At times, these rules will change a week or less before a deliverable is due because of an unforeseen issue. These updated rules sometimes cause the work that is already done to be completely

reworked. In addition, it is difficult to begin working on deliverables ahead of time because these rules are incomplete at times or changed often.

- **Lack of communication between sponsors, competition organizers and teams**

  With twelve other teams and only a small number of competition organizers, the communication streamline between team members can be difficult to manage. Sometimes communication between the two can take weeks in order to get answers to questions.

- **Change in mentor/leadership at General Motors**

  General Motors, one of the competition's lead sponsors, is currently going through a large turnover of employees. This causes a strain in communication, and many of the former employees have shifted to another department or moved companies. During this turnover, Team Tennessee's EcoCAR General Motors mentor was let go, and the team is awaiting a new mentor.

Target Publics

Prior to making plans for communications and recruiting efforts, it is crucial to understand the team's target publics. Since the team crosses between both the private and public sector, there are several key publics to keep in mind. Each of these publics have different wants and needs, and they require different messages in order to effectively reach and engage them.

Keeping secondary research from the literature review and situation analysis, knowledge and observations from the competition in mind, Team Tennessee has determined four target publics for its communications throughout the four-year competition.

PUBLIC 1: 6th through 12th Grade Students in Greater Knoxville Area

The EcoCAR Mobility Challenge team recognizes the importance of educating Knoxville youth about STEM opportunities. Competition organizers and sponsors integrate the responsibility of EcoCAR teams by requiring outreach events, but Team Tennessee hopes go beyond the requirements by encourage youth to engage in engineering opportunities early and embrace the new technology in the automotive industry.

PUBLIC 2: First-year, second-year and third-year undergraduate students and first-year graduate students at UT

Despite its long-running involvement, UT's AVTC program still struggles to recruit students to commit multiple years to the EcoCAR project. As the complexity of the project requires significant commitment and onboarding activities, the team would benefit from recruiting underclass students or first-year graduate students. Engaging students early in their program would provide a stronger team, and because of the need for additional leadership, students who can commit multiple years to the program is an important audience for the team.

PUBLIC 3: Team Sponsors, Partners and UT Administration

Team Tennessee relies heavily on its partners and sponsors, both within and outside the university. When communicating about the team's successes, needs and events, its essential that the team keep close partners informed. The Tickle College of Engineering and outside organizations like Oak Ridge National Laboratory, East Tennessee Clean Cities Coalition and DENSO Manufacturing Maryville provide networks and financial support regularly to Team Tennessee. By consistently communicating with these organizations, the relationship will continue to grow.

PUBLIC 4: Knoxville Media

Engaging in conversations and building relationships with Knoxville media is important in order to increase awareness of the EcoCAR Mobility Challenge. These media outlets can help Team Tennessee secure more sponsorships and mentors for the program. In addition, continuing to build relationships with Knoxville media will help the automotive industry overcome the barriers in communication, such as the social stigma against autonomous vehicles.

Barriers in Communication

Due to the bad publicity and crises related to self-driving cars, this team will see more discontent from parents than in previous competitions. This team will see is the push-back from constituents regarding autonomous vehicles. The EcoCAR Mobility Challenge is the first AVTC that incorporates the autonomy component to the vehicle. As this is a new and controversial topic, there is an air of skepticism when selling the importance of this competition. Despite the statistics that show self-driving cars are safer than traditional vehicles, it will take generations of work and communications from the automotive industry to dispel this stigma.

Goals, Objectives, Strategies, Tactics

In order for the EcoCAR Mobility Challenge team to grow and succeed, it must set goals for what its intentions are moving forward in the competition. Communications goals are typically aligned with the organization's goals, and they exist to be a broad baseline for how to grow as a team. Objectives are specific, measurable and achievable ways to meet the organization's goals. Strategies are creative methods and guides used to meet objectives. Lastly, tactics are specific tasks within a strategy that must be completed to achieve the objective. Below, all of these components have been used to create a strategic plan.

Goal 1: Increase awareness of the EcoCAR Mobility Challenge in the greater Knoxville community.

Objective 1: To increase the awareness level of UT students, specifically Tickle College of Engineering students, of the EcoCAR program by 25% by the end of Year 3 (2020-2021)

Strategy 1: Establish a team brand.

Tactic 1: Develop promotional materials with team logo (i.e. brochure, team merch, pop-up sign, table cloth, etc.)

Tactic 2: Buy team members uniforms (nametags, polos, jacket for cold weather/competition)

Objective 2: To increase the number of media placements by 3 by the end of Year 2 (2019-2020).

Strategy 1: Pitch stories to local news outlets regarding the team's involvement in youth outreach to better the reputation of the team.

Tactic 1: Identify and connect with local reporters whose beat aligns with the goals of Team Tennessee.

Strategy 2: Pitch stories to university and local news outlets regarding Team's Tennessee's performance at competitions to elevate the reputation of the program.

Strategy 3: Train team members on proper outreach and media communication messages/strategies.

Tactic 1: Conduct media training every spring prior to end-of-year competitions in preparation for interviews.

Goal 2: Improve the relationship between Team Tennessee, team sponsors and partners, and the UT Community.

Objective 1: To increase the number of retained team members by 25% by Year 3 (2020-2021) of the competition.

Strategy 1: Establish a formal onboarding process for all team members.

Tactic 1: Develop onboarding materials (i.e. presentation, applications, forms, documents, fact sheet, etc.)

Strategy 2: Increase the communications staff to two students, including an underclassman student and an upperclassman student to create a consistent flow of information.

Tactic 1: Hire new communications manager one semester prior to the current communications manager's graduation to allow for a transition period.

Tactic 2: Develop a contact list for incoming communications manager

Tactic 3: Develop an onboarding process specifically for communications manager (all former documents, contacts, social media passwords, tips + tricks, fact sheet, etc.)

Objective 2: To increase the number of Knox County Schools involved in youth outreach events per year by 3 by the end of Year 4 (2021-2022).

Strategy 1: Engage in strategic philanthropy by forming consistent partnerships with Knoxville middle schools and high schools for youth outreach events.

Tactic 1: Contact STEM teachers at Knoxville middle school and high schools to develop regular mentorship programs.

Tactic 2: Establish a consistent presentation and activity for outreach to ease planning and training with team members.

Strategy 2: Use youth outreach events to dispel misinformation about semiautonomous vehicles by having open discussions and providing factual evidence.

Tactic 1: Distribute quick surveys prior to outreach events to audience members, inquiring thoughts and opinions on semiautonomous vehicles.

Tactic 2: Create an informational and interactive presentation for middle school and high school students discussing the levels of vehicle automation and facts on the safety of vehicles. Incorporate the EcoCAR vehicle in Year 4 when automation features are operating.

Objective 3: To increase the number of team sponsors, donations/commitments partnerships by 2 by the end of Year 4 (2021-2022).

Strategy 1: Connect with new East Tennessee sustainability and STEM focused organizations/companies.

Tactic 1: Use current team connections in Knoxville to connect with new companies.

Tactic 2: Team leads and faculty advisors visit facilities to meet with professionals and speak about potential partnerships.

Objective 4: To increase social media engagement by 25% by Year 3 (2020-2021) of the competition.

Strategy 1: Create fun and interactive social media campaigns that encourage team members to share and engage with posts. (See Appendix D)

Tactic 1: Create a social media content calendar

Tactic 2: Use HootSuite to schedule posts and track analytics.

Evaluation and Measurement

In order to know if a campaign is performing well, it is important to include milestones and evaluation steps on how to measure performance throughout. In order to meet each goal, objectives must be specific, measurable, achievable, realistic and time-specific. Below are methods to track the performance throughout.

Goal 1, Objective 1: To increase the awareness level of UT students, specifically Tickle College of Engineering students, of the EcoCAR program by 25% by the end of Year 3 (2020-2021)

1. Using the college's newsletter, distribute a baseline survey to understand the awareness level at the beginning of Year 2 in Fall 2020.
2. Distribute another identical survey to understand the increase in awareness at the end of Year 4 in Spring 2022.

Goal 1, Objective 2: To increase the number of media placements by 3 by the end of Year 2 (2019-2020).

How to measure success:

1. Track analytics of social media posts.
2. Track number of media placements, locally and nationally.
3. 3. Request data from local media on number of people reached, number of placements through network, etc.

Goal 2, Objective 1: To increase the number of retained team members by 25% by Year 3 (2020-2021) of the competition.

How to measure success:

1. Track attendance at all-team meetings.
2. Track attendance at youth outreach events, ensure that all members meet the quota of 2 events per person, per year.

Goal 2, Objective 2: To increase the number of Knox County Schools involved in youth outreach events per year by 3 by the end of Year 4 (2021-2022).

How to measure success:

1. Distribute surveys prior to and after youth outreach events, gathering data about STEM knowledge and levels of vehicle automation, satisfaction with events and inquiring ideas and feedback on future events.

Goal 2, Objective 3: To increase the number of team sponsors, donations/commitments partnerships by 2 by the end of Year 4 (2021-2022).

1. Track monetary donations

Goal 2, Objective 4: To increase social media engagement by 25% by Year 3 (2020-2021) of the competition.

1. Collect social media analytics at end of Year 1
    - Track social media analytics throughout Year 2, Year 3 and Year 4
    - Use social media analytics from Year 1 to gauge needs of Year 2 and adjust social media plans accordingly.

Key Messages

In order to create a more engaging campaign, each message below is centered on the team's strengths as well as its public's wants and needs evaluated in the SWOT analysis. Below are two different messaging strategies to meet the four audiences outlined above in the target audiences' section. Without key messages, communicators can become distracted from its goals. These messages help guide goals, objectives, strategies and tactics. Without strategic messaging, this campaign would not reach the intended audience or be effective.

Messages for Publics 1+2 | Team Recruitment Campaign

We Want You For Team Tennessee

Similar to the old Uncle Sam Poster, using a photo of UT's mascot, Team Tennessee could benefit from similar, eye-catching advertising.

Key Messages:

2. <u>We encourage students to join as early as freshman year.</u>
    - Students who join the team early have an advantage in the project. There's a large learning curve, but we help prepare you for the years ahead in the project.
    - The longer you're on the project, the more responsible and experience you'll gain. Undergraduates who demonstrate responsibility and interest in the program have the ability to work their way up as a team lead with graduate students.
3. <u>We're a multidisciplinary team.</u>
    - Students from computer science, mechanical engineering, electrical engineering, communications and business work together.
4. <u>Hands-on, real-world experience</u>
    - You'll be working with people from multiple disciplines for the rest of your career. It's important to start early.
    - It's a student-lead project, which means you're in the driver's seat—designing, and implementing the plans for the car and project.
5. <u>This project is a pipeline to a career following graduation.</u>

- We travel as a team and network with professionals. There, you'll have the opportunity to talk about internships and even full-time jobs.
- You'll receive training from experts in the field. Our sponsors work to train students on the ins and outs of their software's and product's to prepare students to complete their deliverables.
- Our team's alumni work at companies locally and nationally, everywhere from General Motors in Michigan, Honda in Ohio and MathWorks in Boston to DENSO Manufacturing in Maryville and Oak Ridge National Laboratory in Oak Ridge.

Messages for Publics 3+4 | Sponsorship and Media

1. Our students receive a diverse experience
    - Students compete against teams from 12 universities across North America, exposing them to different types of people, programs and professionals.
2. Our students are being trained by some of the best in the workforce.
    - Organizations like General Motors, MathWorks, U.S. Department of Energy and a host of others send their experts to teach our students their skills.
3. We invest in the next-generation.
    - We're not here just for current students, but our team mentors and speaks with middle school and high school students about the importance of STEM education.
4. Our students are prepared for the work-force.
    - The EcoCAR Mobility Challenge project is the closest program to a real-life company. Students learn not only how to design and build a car, but also, they learn skills on how to work on a team, under deadlines and within tedious guidelines.
    - Students gain knowledge on the full process, from concept to finished product. The must choose their target market and then research and market to their specific audience.

Conclusion

Overall, the EcoCAR Mobility Challenge Communications Plan exists to be a strategic plan for the team as it moves forward in the next four years. Using research of team building, internal communications and recruitment to guide decisions, this plan aims to help position the program as an innovative and results-driven project. In addition, using research of how to debunk misinformation will allow the team to overcome negative stigmas regarding their work with connected and automated vehicle systems. Even as leadership and team members begin to turnover with graduation, the team will be able to go back to its original plan to keep itself on track.

Using these goals, objectives, strategies and tactics and keeping tabs on progress through evaluation and measurement, the team will be able to position itself as one of the top teams within the competition and within the Knoxville community as a leading program for innovation and collaboration. In addition, the team will be able to build rapport and begin dispelling misinformation by engaging youth in interactive and information programming regarding semiautonomous vehicles.

Appendix A: Team Logo/Branding, Polo Design

ECO CAR
MOBILITY CHALLENGE
UNIVERSITY OF TENNESSEE, KNOXVILLE





Appendix B: Communications Manager Contact List

Name	Role	Email	Phone Number	Notes
Andrew Rickerman	DENSO National (Michigan location) Communications Team	ANDREW_RICKERMAN@denso-diam.com		*Ashley Kronsell connected me (WB) with for 2018-2019 Sponsor Blog
Andy Luttrell	Boy Scout Troop 88 Leader	Andy.Luttrell@homefederaltn.com		*Youth Outreach Event Contact
Anne Klebenow	DENSO Manufacturing Tennessee (Maryville), Communications Department	anne_klebenow@denso-diam.com		*Emily filmed a video at DENSO and she was there with her
Ashley Kronswell	Communications advisor, Argonne National Laboratory	akronsell@anl.gov		*can answer any competition specific questions
Brian Crawford	DENSO Manufacturing Tennessee (Maryville), Staffing Advanced Specialist	BRIAN_CRAWFORD@denso-diam.com		*1st contact for DENSO communications
Bridgette LaRose	DENSO National (Michigan location) Communications Team	BRIDGETTE_LAROSE@denso-diam.com		*Ashley Kronsell connected me (WB) with for 2018-2019 Sponsor Blog
Christie Kennedy	UT Tickle College of Engineering Director of Communications	ckennedy@utk.edu		*first contact for the UT Team, she can disseminate information or pass you along to others on her team. Great help for all things campus communications
Daniel Silksay	Clean Cities Coalition Network, East Tennessee Clean Fuels	dsiksay@utk.edu		*great help for setting up outreach events, great connection to have for the team
David Goddard	UT Tickle College of Engineering Media Relations Team	david.goddard@utk.edu		*Media relations contact for Tickle College of Engineering, in contact with him for campus wide press releases
Dean Blanks	Project Manager, UT EcoCAR Mobility Challenge	jblanks@vols.utk.edu	(931) 581-5538	*leads the UT team
Dorene Lanza	VP Corporate Sales, Bacon & Co	dorene1@baconco.com		*contact to getting polos ordered in 2017 & 2018, you will need to ask for a written quote prior to ordering for UT's approval
Emilie Denson	DENSO Section Leader, DMTN Recruiting; Project Manager, North America Benefits	emilie_denson@denso-diam.com		*2nd contact for DENSO communications
Emily King Kinsey	Former UT Communications Manager (EcoCAR 3), Mentor for Comms Team, Public Information Manager for IACMI	ekingkinsey@iacmi.org		*can help with outreach, overall understanding past best practices, etc.
Jalonda Thompson	UT Tickle College of Engineering, Diversity and Outreach Coordinator	jalondat@utk.edu		*1st contact for finding connections with Knoxville schools. She can give you information on schools Tickle College of Engineering is targeting
Jim Harkins	DENSO National Contact (Michigan location) Main Technical Contact for EcoCAR	jim_harkins@denso-diam.com		*Ashley Kronsell connected me (WB) with him; he's the main technical contact with DENSO
John Huffman	Boy Scout Troop 88 Leader	johnlhuffman@charter.net		*Youth Outreach Event Contact
Jonathan Overly	Clean Cities Coalition Network, East Tennessee Clean Fuels	jgoverly@utk.edu		*great help for setting up outreach events, great connection to have for the team
Julian Bond	DENSO National (Michigan location) Communications Team	JULIAN_BOND@denso-diam.com		*Ashley Kronsell connected me (WB) with for 2018-2019 Sponsor Blog
Karly High	Sales, Threds, Inc.	facebook.com/thredsinc	(865) 525-2830 (P); (865) 405-9493 (C)	*polo/shirt contact in past

Kathy Williams	Project GRAD, Fulton High School	kzimmerman@projectgradknoxville.org		*Jalonda Thompson connected me with her. She is the main contact for connecting with Fulton High School. She connected me with Samuel Smyth and Kimberly Kennard.
Kensey Zimmerman	Communications advisor, Argonne National Laboratory	kdeclark@anl.gov		*can answer any competition specific questions
Kimberly DeClark	Environmental Science Teacher at Fulton High School	kimberly.kennard@knoxschools.org		*Attended interest meeting, but wasn't teaching Environmental Science during the Spring 2019 semester. Might be interested in including her students in the future
Kimberly Kennard	UT Communications Advisor, Director of School of Advertising and Public Relations	maureen.taylor@utk.edu		*Leaving UT in June 2019
Maureen Taylor	DENSO Project Manager, Community Affairs	melissa_smith@denso-diam.com		*Emily King Kinsey contacted her, Melissa connected Emily with the DENSO comms team
Melissa Smith	STEM Teacher at Fulton High School	samuel.smyth@knoxschools.org		*Most interested in STEM Youth Outreach at Fulton, Youth Outreach Event (2018-2019)
Samuel Smyth	Outreach advisor, Fuels and Engines Research at ORNL	scurran@utk.edu		*great help for setting up outreach events
Scott Curran	Project GRAD, Austin-East High School	tbaker@projectgradknoxville.org		*Contacted in 2018-2019 for outreach event, no response but could try again
Tanisha Fitzgerald-Baker	Accounting, Threds, Inc.	facebook.com/thredsinc	(865) 525-2830 (P); (865) 966-0541 (C)	*polo/shirt contact in past
Tonya Byrd	Former UT Communications Manager (2017-2018)	vogier@vols.utk.edu		*graduates in May 2019
Victoria Ogier	Former UT Communications Manager (2018-2019)	wbrothe1@vols.utk.edu	(615) 525-6307	*can help with transition to new comms manager
Whitney Brothers	Communications Specialist II, Tickle College of Engineering, Dept. of Mechanical, Aerospace, & Biomedical Engineering	williamk@utk.edu		*direct contact with the department level communications

Appendix C: Baseline Survey

Circle the option that best fits your opinion.

1. Students in the EcoCAR Mobility Challenge are majoring in:
    a. Business
    b. Electrical Engineering
    c. Communications
    d. Mechanical Engineering
    e. Computer Science
    f. All of the above

2. T/F: Students in the EcoCAR Mobility Challenge are both graduate and undergraduate students.
    a. True
    b. False

3. T/F: The EcoCAR Mobility Challenge is only a senior design project.
    a. True
    b. False

4. T/F: Students are eligible to join the EcoCAR team as early as freshman year.
    a. True
    b. False

5. I would like to hear more about the EcoCAR program.

    Strongly disagree 1 2 3 4 5 Strongly agree

6. I would be more likely to join the EcoCAR team if I knew more about the program.

    Strongly disagree 1 2 3 4 5 Strongly agree

7. How do you prefer to receive information regarding internship and research experience? (Check all that apply)
    a. Facebook
    b. Twitter
    c. Instagram
    d. Tickle College of Engineering Newsletter
    e. ListServ emails
    f. Informational booth on campus
    g. HandShake posting
    h. Other: _____

8. If applicable, where have you heard about the EcoCAR program? (Check all that apply)
    a. Facebook
    b. Twitter
    c. Instagram
    d. Tennessee Today
    e. ListServ emails
    f. Informational booth on campus
    g. From a friend
    h. From a professor
    i. From an advisor
    j. Other:_____

9. Please identify the category that best describes you.
    a. 1st year undergraduate student
    b. 2nd year undergraduate student
    c. 3rd year undergraduate student
    d. 4th year undergraduate student
    e. 5th year undergraduate student
    f. Graduate student
    g. Faculty
    h. Staff
    i. Other:____

10. What is your program of study? _____ (fill in the blank)

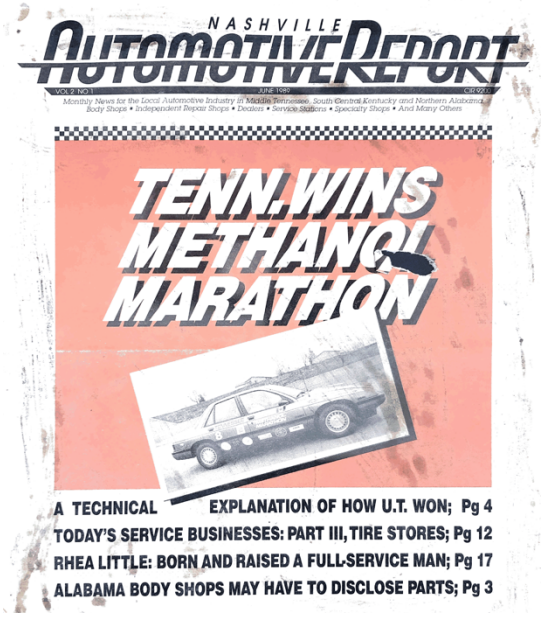
Appendix D: Example Social Media Messages

#MemberMonday: Every other Monday during the school year, use this opportunity to highlight a team member, alternating between undergraduate and graduate team members. Team members will be likely to share this content with their friends and family. This kind of campaign will help build the social media presence while increasing team member's social identity.



Meet Dean Blanks, Team Tennessee's Project Manager. Dean is a first-year master's student in business administration and mechanical engineering from Tullahoma, Tennessee. Dean attend UT to complete his Bachelor of Science in Mechanical Engineering. Dean is new to Team Tennessee this year, but he's looking forward to adding to his multidisciplinary education in a meaningful way. #MemberMonday // Read more about Dean at www.avtcseries.org

#ThrowbackThursday: Because Team Tennessee has a long-running history with AVTCs, sharing throwback photos from previous competitions can increase the number of alumni who engage with the social media accounts.



It's #ThrowbackThursday, which means that Team Tennessee is throwing it back to its roots with the Methanol Marathon competition from 1988, the first AVTC hosted by the U.S. Department of Energy and General Motors Corporation. The competition challenge students to convert a 1988 Chevrolet Corsica to use methanol fuel for the 1,100-mile, five-day marathon from Detroit, Michigan through Toronto, Canada to Washington, D.C. Tag your AVTC alumni friends, and tell us your favorite AVTC memory! // Read more about the history of Team Tennessee at www.atvcseries.org

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