



**CONRAD SPIRIT OF
INNOVATION
CHALLENGE™**

**2017-2018
Conrad Challenge
Judge Handbook**

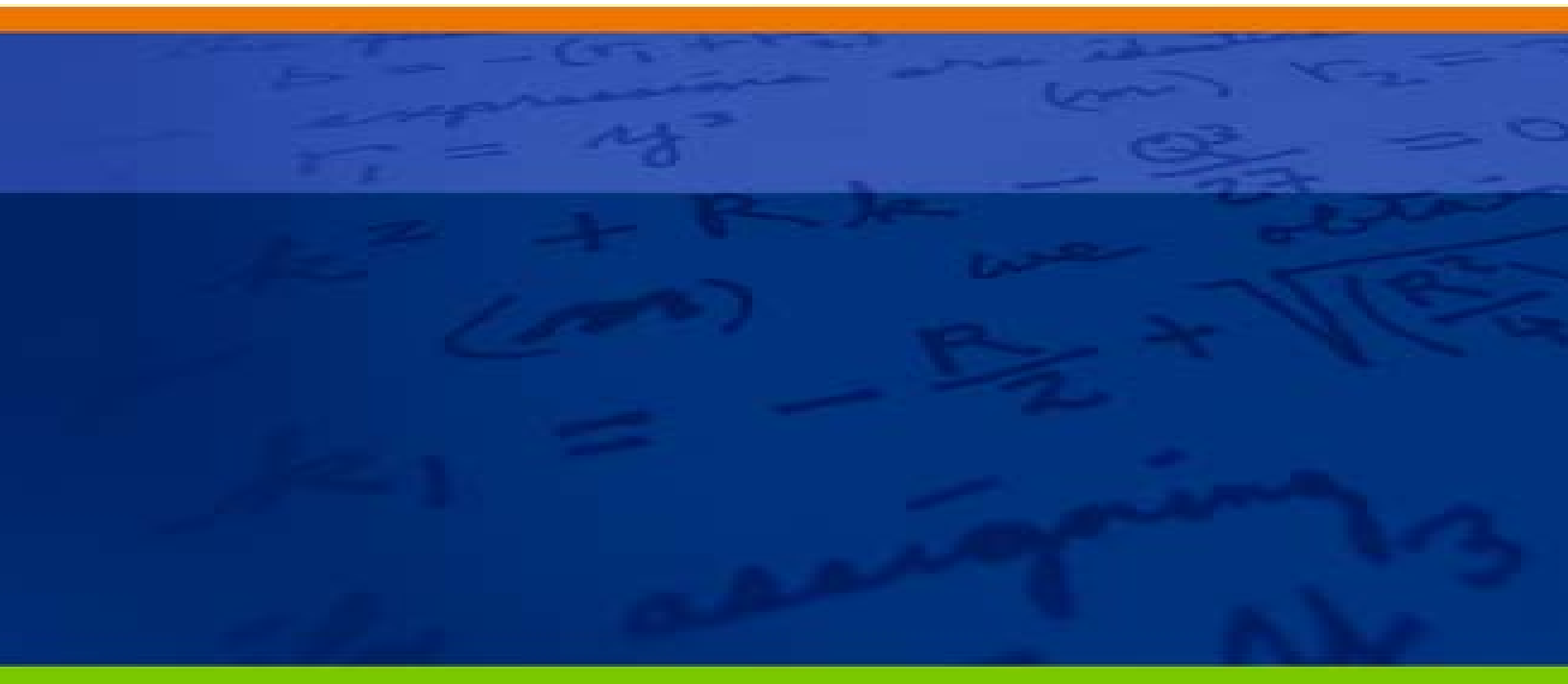


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Welcome to the Conrad Challenge!

Thank you for agreeing to participate as a technical judge for the Conrad Challenge 2017-2018. Your dedication, expertise and time is greatly appreciated. Your involvement has a huge impact on all of our students and their efforts in excelling in STEM related fields of study.

The Conrad Spirit of Innovation Challenge brings together a dynamic community of innovators and entrepreneurs driving a collaborative movement to develop extraordinary and viable solutions to benefit our world in one of four areas: Aerospace & Aviation, Cyber Technology & Security, Energy & Environment, and Health & Nutrition.

This annual competition challenges teams to use science, technology, engineering and math (STEM) innovation, as well as entrepreneurship to create a more sustainable world for this and future generations.

Questions?

Email us at info@conradawards.org

Conrad Challenge Overview

Who

The Conrad Spirit of Innovation Challenge invites students ages 13-18 to work together in teams of 2 to 5 members to use science, technology, engineering, math (STEM), innovation, and entrepreneurship to develop world-changing solutions to create a more sustainable world for this and future generations. Along the way, coaches and judges from the best in business, industry, research and academia worldwide will be there to guide teams' innovative ideas.

What

The Conrad Challenge is an annual, multi-phase innovation and entrepreneurial competition that brings together a dynamic community of innovators and entrepreneurs driving a collaborative movement to develop extraordinary and viable solutions to benefit our world in one of four categories: Aerospace & Aviation, Cyber-Technology & Security, Energy & Environment, and Health & Nutrition.

When

The 2018 Conrad Challenge officially opens with registration and initial idea submission starting on September 18, 2017 culminating with the Innovation Summit April 26-28, 2018 at the Kennedy Space Center Visitor Complex in Florida.

Where

Investor Pitch (entry phase) and Business Plan (semi-final phase) rounds of the competition are conducted completely online. First, student teams will register and submit their Investor Pitch on the Conrad website (ConradChallenge.org). From there, semi-finalist teams in each category will be announced and invited to the next phase of the competition where they will complete an in-depth business plan to support their product/service.

For the finalist round held at the Innovation Summit, the top five teams in each category will be given the opportunity to present their innovations in-person to a panel of expert judges. The Conrad Challenge recruits volunteer judges from among the best in industry, government, research and academia. The Innovation Summit will be held at the Kennedy Space Center Visitor Complex in Florida, April 26-28, 2018.

Why

Conrad Challenge teams learn they can make a difference in their world through innovation and entrepreneurship while applying science, technology, engineering, math, leadership, collaboration, creative thinking, critical thinking and problem solving. Teams compete for the opportunity to be recognized as Pete Conrad Scholars in addition to anticipated awards from sponsors that may include investment opportunities, patent support, business services and scholarships to support the growth of their solutions into a real business.

Conrad Challenge Categories

The Conrad Challenge gives teams the chance to develop products or services focused on four different categories: Aerospace & Aviation, Cyber-Technology & Security, Energy & Environment, and Health & Nutrition. These categories are intentionally broad to allow students a wide range of opportunities to innovate new ideas. The descriptions below are a guide for determining the best fit for your team's concept. Each team may only submit in one category.

Aerospace & Aviation: Describe the human effort in science, engineering and business to fly in the Earth's atmosphere and surrounding space. Aerospace organizations research, design, manufacture, operate, or maintain aircraft and/or spacecraft. Examples include: avionics, aerodynamics, human factors/cockpit design, and propulsion systems.

Cyber-Technology & Security: Information technology and security as applied to computing devices such as computers and smartphones; as well as computer networks such as private and public networks, including the Internet as a whole. The field covers all the processes and mechanisms by which computer-based equipment, information and services are protected from unintended or unauthorized access, change or destruction. The field also includes protection from unplanned events and natural disasters. Examples include: artificial intelligence applications, network defense systems, counter intelligence technologies for government, data-driven energy management technologies, smart security technologies, and database models to track, predict, and categorize natural disasters.

Energy & Environment: Includes all fields that study the human use of natural resources and the impact of human activity on the environment. Examples include: energy storage, energy efficiency, renewable resources, sustainable land use, recycling solutions, environmental health, water resources, biodiversity, climate change, waste management, and other clean technology innovations.

Health & Nutrition: Encompasses fields of study regarding the human body and behavior as they relate to wellness and medicine. Examples include: prosthetics, nutrition science, exercise science, medical technology, hunger solutions, mental health, assistive technology, healthcare services, healthcare safety, and biomedical engineering.

Judge Information

About Our Judges

The Conrad Spirit of Innovation Challenge, through the support of our sponsoring partners, recruits judges from among the best in business, industry, research and academia worldwide. During the Semi-Final round, each project is reviewed by a minimum of three judges with expertise in the Conrad Challenge category as well as on-site judging at the Innovation Summit. The Conrad Challenge team provides training and documentation to assist with the judging process.

Why be a Judge?

- Provide participating students with your specialized industry knowledge and experience
- Help students improve their products and services through scoring and comments
- Participate in selecting the Pete Conrad Scholars
- Inspire students to pursue STEM careers
- Encourage the next generation of entrepreneurs to design their future and benefit the world with their innovative solutions

A Judge's Responsibility

- Commit to judging the minimum projects in your challenge category of expertise
- Provide thoughtful, constructive and age-appropriate feedback for each submitted project
- Complete submission review and comments prior to the judging deadline
- Agree to confidentiality terms that protect the intellectual property of our students

Conrad Challenge Timeline

The Conrad Challenge reserves the right to update this timeline as needed. Please note all deadlines are United States Eastern Time (ET).

ROUND ONE: INITIAL ENTRY (INVESTOR PITCH)

Team Registration Open Online — *Monday, September 18, 2017 at 12:00 p.m. ET*

Team Registration Closes Online — *Monday, October 16, 2017 at 11:59 p.m. ET*

Investor Pitch Submission Deadline — *Tuesday, October 31, 2017 at 11:59 p.m. ET*

ROUND TWO: SEMI-FINALS (BUSINESS PLAN)

Semi-Finalists Announced — *By Wednesday, November 8, 2017 at 3:00 p.m. ET*

Semi-Final Teams Develop Business Plans — *November 9, 2017 to January 10, 2018*

Business Plan Submission Deadline — *Wednesday, January 10, 2018 at 11:59 p.m. ET*

Finalists Announced — *Friday, February 16, 2018 at 3:00 p.m. ET*

ROUND THREE: FINALS

Teams Prepare Presentations — *February 17 to April 16, 2018*

Team Presentation Submission Deadline — *April 16, 2018 at 11:59 p.m. ET*

Proof of Provisional Patent Deadline — *April 16, 2018 at 11:59 p.m. ET*

Innovation Summit On-Site Team Registration — *Wednesday, April 25, 2018*

Innovation Summit at Kennedy Space Center Visitor Complex — *Thursday, April 26 to Saturday, April 28, 2018*

Conrad Challenge: Round Two

Semi-Finals: Collaborate & Develop Business Plan

Business Plans Due January 10, 2018 by 11:59 p.m. ET

Below are the instructions provided to the Semi-Finalist teams for the Development of their Business Plan:

1. Develop Business Plan:

A business plan is a written description of your idea and its future. It tells what you are going to do and how you are going to it. It outlines the strategy for how your business will take your innovative idea to a viable product solution. By writing a business plan, your team will look to the future and set goals for your product and business. You will explain how those goals are attainable and how your business would propose to meet those goals. The business plan tells investors what you plan to do and how your business and investors can benefit from the business goals. A business plan represents all aspects of the business planning process including marketing, finance, intellectual property management, human resources management, and operations management.

Each team's Business Plan must be submitted as a PDF file via email to ConradSubmissions@gmail.com and include the following sections:

- I. **Company Introduction** – Introduce your team to the potential investors. How did the team form? What roles did each member play? What barriers or hurdles did the team overcome to develop its idea and complete its business plan? (350 words maximum)
- II. **Business Prospectus** – An explanation of the concept's market, expected development costs and sales strategy. Sections must include:
 - a) **Business Description** – Describe your product/service and what makes your concept different from existing businesses. Describe the industry in which your concept best fits and demonstrate knowledge of the industry practices for similar businesses. Describe the factors you think will make your business successful. (500 words maximum)
 - b) **Market Analysis** – Explain the market that your business is attempting to reach using its product/service. Do you plan to sell products commercially, license them to other companies, pursue government contracts, or some combination of these options? If commercial, who are the buyers? (500 words maximum)
 - c) **Competitive Analysis** – Describe similar product/services already on the market or in development. Why is your concept better than those already in existence? (500 words maximum)
 - d) **Cost** – Estimate the expenses in creating, operating, and marketing the business and its product/service. You will need to include the proposed team budget for attending the Innovation Summit should your team advance to the Final Round. (750 words maximum)
 - e) **Funding Sources** – How will you gather funding needed to create your product (i.e., government research and development grants, venture capital, private investors, etc.)? You will need to include your proposed method of raising the

funds to attend the Innovation Summit should your team advance to the Final Round. (750 words maximum)

- III. **Technical Concept Report** – An explanation of the product’s technical and scientific details. Sections must include:
- a) Technical Summary – Outline key technical and scientific principles your concept utilizes in its design and functionality. (500 words maximum)
 - b) Need Statement – Describe the challenge area your concept will address. Provide information and resources on why the concept is important and how it will be used in the selected industry. (1,000 words maximum)
 - c) Background Technology – State existing technology upon which the product/service is built. Note any competing technologies or relevant patents and explain how your proposed concept is innovative and better than existing technologies that produce similar results. (1,000 words maximum)
 - d) Concept Details – Describe in detail the concept’s conceived function, operations, proposed development and any other information about the technical or scientific merits that will make this product successful. (2,000 words maximum)
- IV. **Graphic Concept Representation** – Develop a graphic depiction of your product/service that will help the judges understand your concept. This could be a computer graphic program drawing (e.g., Photoshop), a 3-D computer model, or a photograph(s) of an actual prototype or model. If preferred, this component can be submitted separately from the PDF including the Business Prospective and the Technical Concept report. Accepted files include JPEG, GIF, TIFF or PDF.
- V. **Product Video** – Create a video (no longer than 5 minutes) detailing your team’s innovative concept. This video serves as your team’s final pitch to advance to the Final Round. Why is your concept needed today? How is it unique? Explain how your team is going to bring this concept to reality. For submissions, YouTube and Vimeo links are preferred, but MP4 video files will be accepted if the team would like to keep their video confidential prior to the Final Round.

2. Business Plan Judging:

Judging of the submitted and complete Business Plans will be conducted online by a panel of subject matter experts from industry and academia. The top five scoring teams in each category will be selected as Finalists and invited to the Innovation Summit (April 26-28, 2018) to participate in the final phase of the competition. Finalist teams will be chosen at the sole discretion of the judging panel and the Conrad Foundation.

Judges will score each Business Plan based on the following up to 100 points:

- I. Technical Innovation (20 Points):** *How new or unique is the idea? Does the product already exist? We look for innovation in any of 3 forms:*
 - The technology itself
 - A combination of existing technologies into a new system
 - Innovative business concepts - The team should show how their product uses one or more of these types of innovation.
- II. Technical Practicality (20 Points):** *Will this product work technically?*
 - The team must show that its product does not break any physical laws.
 - The team does not have to show proof that the product will work, but should show an understanding of what research or experiments are needed to prove that it will work.
- III. Marketability (10 Points):** *Understanding of the key markets for their product must be demonstrated.*
 - Who is the buyer?
 - Will the team pursue government Research & Development (R&D) grants, licensing to another company, or create an entrepreneurial startup?
 - Is there data showing how similar products have been successful?
- IV. Costs (10 Points):** *The team will estimate costs including costs for the team to participate at Innovation Summit and taking this product to the ultimate market.*
 - Costs need include any material estimates, R&D (including grants), market studies, and labor costs.
 - Teams need to be as detailed as possible.
- V. Industry Relevance (15 Points):** *How important is the idea to the industry?*
 - Does the product represent a substantial improvement in its industry or are there already products on the market that fill the need?
 - Please list examples of similar products, including patent searches or other examples of technology on the market, and explain how its product is an improvement of what already exists.

VI. Funding Mechanisms (10 Points): *Does the team understand the basics of how its product could be funded?*

- If it is relatively simple, can the team raise money for prototypes and begin sales through friends and family?
- Does the team need to consider grants, loans, or bringing on investors or partners in their efforts?

VII. Team Story (15 Points): Introduce your team to the potential investors.

- How did the team form?
- What roles did each member play?
- What barriers or hurdles did the team overcome to develop its idea and complete its business plan?

Finalists will be announced Friday, February 16, 2018 on the Conrad Challenge website and the teams will be notified directly by the Conrad Foundation as well via email.

Conrad Challenge: Round Two Judging

Judging of the submitted and complete Business Plans will be conducted online by a panel of subject matter experts from industry and academia. The top five scoring teams in each category will be selected as Finalists and invited to the Innovation Summit to participate in the final phase of the competition. Finalist teams will be chosen at the sole discretion of the judging panel and the Conrad Foundation.

Judging Process

Judging of the submitted Business Plans will be conducted completely online through a user-friendly survey platform, Survey Gizmo. Judges will receive a detailed email outlining instructions and download information to access their chosen Semi-Finalists submissions. Once you have received your email you are free to judge at your convenience.

We anticipate approximately 6 teams per judge. We estimate that each team will take about an hour to an hour and a half to completely review and score.

All scoring needs to be completed by Friday, February 9, 2018.

The Conrad Challenge will monitor and follow up on your progress through the duration of the judging period. However, if you feel you will be unable to meet the deadline please contact the Conrad team at info@conradawards.org as soon as possible to allow for other judging arrangements to be made.

Judging Scoring Criteria

Judges will score each Business Plan up to 100 points based on the following criteria.

Judges will also have a section for comments after each main section. It is encouraged to provide the student teams with helpful feedback and critique based on your industry insight.

We request that each entry is thoughtfully reviewed, cited sections and reference material is vetted, and other applicable research is completed to review validity of products.

- VIII. Technical Innovation (20 Points):** *How new or unique is the idea? Does the product already exist? We look for innovation in any of 3 forms:*
- The technology itself
 - A combination of existing technologies into a new system
 - Innovative business concepts - The team should show how their product uses one or more of these types of innovation.
- IX. Technical Practicality (20 Points):** *Will this product work technically?*
- The team must show that its product does not break any physical laws.
 - The team does not have to show proof that the product will work, but should show an understanding of what research or experiments are needed to prove that it will work.
- X. Marketability (10 Points):** *Understanding of the key markets for their product must be demonstrated.*
- Who is the buyer?
 - Will the team pursue government Research & Development (R&D) grants, licensing to another company, or create an entrepreneurial startup?
 - Is there data showing how similar products have been successful?
- XI. Costs (10 Points):** *The team should break down estimated costs (including costs for the team to participate at Innovation Summit) of taking this product to the ultimate market (whichever end-market the team describes).*
- Costs should include any material estimates, R&D (including grants), market studies, and labor costs.
 - Teams should be as detailed as possible.
- XII. Industry Relevance (15 Points):** *How important is the idea to the industry?*
- Does the product represent a substantial improvement in its industry or are there already products on the market that fill the need?
 - The team should list examples of similar products, including patent searches or other examples of technology on the market, and explain how its product is an improvement of what already exists.

XIII. Funding Mechanisms (10 Points): *Does the team understand the basics of how its product could be funded?*

- If it is relatively simple, can the team raise money for prototypes and begin sales through friends and family?
- Does the team need to consider grants, loans, or bringing on investors or partners in their efforts?

XIV. Team Story (15 Points): Introduce your team to the potential investors.

- How did the team form?
- What roles did each member play?
- What barriers or hurdles did the team overcome to develop its idea and complete its business plan?

Conrad Challenge: Round Three

Finals: Prepare and Present Concept at the Innovation Summit

Kennedy Space Center Visitors Complex in Florida

Presentation Deadline: Monday, April 16, 2017 by 11:59 p.m. ET

Provisional Patent Deadline: Monday, April 16, 2017 by 11:59 p.m. ET

On-Site Registration: Wednesday, April 25, 2018

Summit: Thursday, April 26 – Saturday, April 28, 2018

Just as entrepreneurs pitch their startups to investors, the finalist teams will present their concepts to a live panel of experts. Teams are evaluated on the innovation of their concept and the viability of their products/services. One winner will be named in each category and recognized as “Pete Conrad Scholars.”

Finalists are expected to be responsible for their travel expenses to attend the Innovation Summit. At least two team members must attend Summit and present their product to be considered a Finalist. A detailed itinerary and schedule, including hotel and transportation information will be distributed in 2018 to all participants.

Below are the instructions provided to the Semi-Finalist teams for the preparation of Team Presentations.

1. Prepare Team Presentations:

Presentations will include a 8-minute presentation of the team's concept, followed by a 8-minute question and answer session from the judges. Presentations will summarize and explain both the technical and business aspects of the team's concept including:

- Internal – How does your product/service work? Prove your product is technically sound by applying viable technology and scientific principles. Support your work with research.
- External – Discuss any potential external factors that may impact your concept. How is your product/service innovative? Why is it important?
- Illustrate Need – Why is there a need for your product/service? Discuss the market demand for your concept. Who is the target audience? Who are your potential competitors within the market?
- Design – Present graphical representations of your product/service to further explain your concept. Describe what elements were considered when creating the design and the functions they serve.
- Next Steps – Explain your team's plans for further developing this product/service.
 - Executive Summary – Present your team's next steps to bring your concept to market.
 - Statement of Work – What is your team striving for? A series of experiments, working prototype, a market study or something else. Outline your team's goals and the immediate next steps you will take to attain those goals.

- Existing Knowledge – Describe what data and information your plan builds upon in order to achieve the desired goals.
- Financial Plan – Understand the cost of your product. How will it be funded? Present a budget listing itemized costs for each item described in the R&D process, including any labor, materials, facilities or other costs.
- Timeline – Include the estimated deadlines to achieving your next step goals.

All Summit presentations must be emailed to the Conrad team at ConradSubmissions@gmail.com. File requirements will be specified closer to the Final round.

2. Apply for a Provisional Patent:

All Finalist teams are required to file for a provisional patent to be eligible to present at Summit 2018. You can find information regarding the process and requirements for filing a patent application at the U.S. Patent and Trademark Office's website, at www.uspto.gov

Teams must provide proof of the patent filing (in the form of the email confirmation) to the Conrad team by Monday, April 16, 2017 at 11:59 p.m. ET.

Conrad Challenge: Round Three Judging

Semi-Final judges are invited to participate in the final round of competition at the Innovation Summit (April 26-28, 2017) at the Kennedy Space Center Visitor Complex in Florida. Judges must attend in person to participate in this round of the competition as the top 5 teams in each category will present their presentations in-person at the Summit.

All judges will be instructed on site with a brief training on Round Three judging criteria and process.

If you would like to be a judge at the Innovation Summit please submit your request to info@conradawards.org by March 1, 2017.

Competition: Rules and Regulations

Please read the “Rules and Regulations” of the Conrad Challenge. The Conrad Challenge reserves the right to update competition rules at any time for any reason.

Submissions and Judging

This section refers to all concept elements submitted by the team to be considered for the Conrad Challenge. This includes but not limited to the Investor Pitch, Team Video and Business Plan.

1. All elements submitted by the team must be entirely the work of the student team members. Team coaches may guide the students, but may not do any writing of the submitted elements or have an excessive influence on the concept design.
2. All submissions must be in English.
3. Submissions must not copy or use other materials without properly citing the source.
4. The basic information (team name, product name, team location or school, and possibly student member names and link to Investor Pitch Video) for any team advancing to the Semi-Finals or Finals will be posted publicly on the Conrad Challenge website.
5. It is the responsibility of each team to determine how much detail about their concept is publicly disclosed. All submissions will be made privately and only viewed by the Conrad Foundation Team and Judges. It is advised not to post any proprietary information about your concept. Please refer to “A Word About Confidentiality and Patents” in this Handbook for more guidance.
6. The Conrad Challenge reserves the right to use basic team and judge information and photos taken at the Innovation Summit to promote the Conrad Challenge competition and Innovation Summit. Possible team information for use includes, but is not limited to, the following: concepts, videos, pictures and team member names. The Conrad Challenge will not use such information for any other purpose without team or judge consent.
7. All teams will receive a report with all judging scores and comments once the judging is complete. All judge personal information and details will not be shared with teams in this report.

Protect Your Privacy

- We caution you against giving out unnecessary personally identifiable information (such as social security numbers, credit card numbers, driver license numbers) online, which may be inadvertently obtained by others or, in rare instances, used for illegal or harmful purposes. To read the Site's Privacy Statement, [please click here](#).
- Judge's personal information will not be shared with teams or posted on the Conrad Challenge website. Judging is kept anonymous to the public and student teams.

No-Spam Policy

- Please don't "spam" through our Communication Services, none of our users like it. To spam includes sending identical and irrelevant submissions to many different discussion groups, mailing lists, chats or communities. Usually, such postings have nothing to do

with the particular topic of the group or are of no real interest to those on the mailing list. All spam will be deleted and the person who sent it may be ejected from the Online Community and/or the Conrad Challenge.

A Word About Confidentiality and Patents

When you conceive, design and create an innovative product as part of the Conrad Challenge competition, you are creating intellectual property that belongs to you. When you start work on your product, you should think about whether you want to try and protect your intellectual property through patents or confidentiality agreements. You may want to share your ideas with the public at large and decide not to seek any special legal protections for them. The choice is up to you. You should bear in mind, however, that venture capitalists and other investors usually consider whether the intellectual property in an innovative product has been kept confidential or claimed in a patent application, in deciding whether to invest in efforts to commercialize the product.

For this reason, the Conrad Challenge is asking all Semi-Final judges to keep confidential any technical or business information they learn by reading the Business Plan submitted by the teams as part of the Semi-Final Round. However, all materials you post to our website, and your entry round Investor Pitch, will not be confidential. Nor will any presentation or information you present at the Innovation Summit if you are selected as a Finalist. These materials are intended to interest the public and potential investors in your ideas!

The Conrad Foundation encourages all teams (and requires all Finalist teams) to file a provisional patent application covering their product and including any important confidential details from their Product Documents before submitting any materials that you think may include your unique ideas and inventions. You can find information regarding the process and requirements for filing a patent application at the U.S. Patent and Trademark Office's website, at www.uspto.gov

If you have any questions about the value or procedures for filing a patent application, we encourage you to consult your own patent attorney or agent who can give you advice tailored to your particular product. Unfortunately, because of the number of submissions, the Conrad Foundation cannot provide you any specific advice regarding whether to file a patent application.

Conrad Challenge Resources:

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Email: info@conradawards.org