



Engaging Students in the World of Standards

CSA Group is committed to engaging students and young professionals, the future leaders of our society, in the world of standards development. Standards have an enormous impact on safety, the environment and are vital to the global competitiveness of industry. The Academic Challenge connects students across multiple areas of study with the world of standards to discover how standards impact everyday life and how participating in their development can positively impact their careers. In the process, students have the opportunity to bring new perspectives to the standards development community.

Be Creative & Challenge the Status Quo

Every year, students are invited to participate in the Academic Challenge by sharing their research and perspectives about industry practices or issues that are influenced by standards and those that should be in future. This is your chance to have your say in issues that impact the world around us!

Challenge Finalists, as selected by our judging panel, are fully sponsored to attend the CSA Group Annual Conference to present their project to our Members and conference participants who will vote on the winning presentation.

Eligibility

The Academic Challenge is open to registered, full time undergraduate students from:

- University Programs – Any discipline
- College Programs – Any discipline

Applicants cannot hold a post-secondary degree. The CSA Academic Challenge is open to undergraduate students enrolled in any post-secondary institution in Canada and the United States.

Educational Institutions & Academics

The theoretical and applied principles of standards and standardization can be applied to an almost endless list of topics, including safety, sustainability, technology, healthcare, engineering, design & delivery of services, management, and education.

The results from these projects will help CSA Group to better understand how the principles and practices of standardization are taught at your institution and to more effectively provide you with access to the information you need to keep your programs current and relevant. We believe that awareness of how and why standards are developed will give your students a competitive edge when competing for careers after graduation.

Schedule – Key Dates

Intent to Submit	April 2, 2018
Submission Deadline	May 1, 2018
Finalists Notified	May 23, 2018
CSA Group Annual Conference	June 18 – 19, 2018

Project Topics

Topics are limited only by your imagination – *as long as the subject matter is relevant to standards development*. You can submit a project as an individual or as a team of students (maximum 4).

Projects may take a very specific approach to a technology or standard or consider broader issues and principles related to standardization. Your project could address questions or issues such as:

- The potential impact of new or modified standards on an established industry or on people working in that industry
- The potential role of standards or standardization in any emerging industry, technology or other activity
- The impact of new or established standards on worker or public safety
- The role of standards or standardization in issues related to sustainability
- Economic, political, or cultural barriers to development, implementation or acceptance of standards
- Strategies for increasing consumer, business, and government awareness of the importance of standards and standardization
- The influence of standards on international trade and manufacturing
- The expansion of standards or standardization into novel or even seemingly improbable areas

Submissions

An Academic Advisor must support the submission and provide necessary resources and coaching for the student(s) throughout all Challenge activities.

Submission Requirements

1. An original academic paper with primary and/or secondary research components with specific quantitative and/or qualitative data and data analysis and a recommended course of action or set of recommendations outlining practical considerations for implementation.
2. A draft supporting presentation that effectively addresses the topic, major findings and key recommendations.
3. A video of the student(s), demonstrating their presentation skills and abilities.

Given the broad spectrum of disciplines and range of potential subject areas, and to provide for various approaches in research, the general guideline for academic papers in terms of length (words/pages) is that the paper should be of a length and nature appropriate to the needs of the topic. Papers should be formatted to provide for an effective review of the content with legible fonts, spacing and margins. Charts, graphs and pictures within the text are encouraged where they support the quality of the paper. Papers must cite sources and provide necessary copyright attribution for charts/graphs/pictures.

The Academic Paper must be original and not previously submitted for a previous CSA Academic Challenge. If the paper is a *substantial* revision of a previously submitted paper, it may be submitted as long as notification of that fact is provided to CSA Group in the Notice of Intent for the current Challenge Program and describes the changes that have been made. CSA Group will determine whether the submission is considered eligible as an original paper.

Papers may be submitted in English or French.

The draft presentation (e.g. Powerpoint) is a supporting component. Finalists selected for the Academic Challenge 2018 will have a 12 minute maximum time limit for delivery of their presentation. The draft presentation should demonstrate that the topic, major findings and key recommendations can be effectively addressed within that time limit.

The video is a supporting component and is intended to demonstrate the speaker and presenter skills and abilities of the student(s). The format and duration of the video clip(s) need only provide for a reasonable demonstration of these skills.

Intent to Submit

An *Intent to Submit* must be forwarded to CSA Group *by April 2, 2018*. The Notice of Intent form is available at www.csagroup.org/challenge, upon request by email AC@csagroup.org or through the CSA Communities Academic Challenge space <https://community.csagroup.org>

The following information is required:

Student(s)	Name(s) of students <ul style="list-style-type: none">• Maximum of 4 students on a submission team.• Students commit to attend the CSA Annual Conference if their submission is selected as a finalist.
Academic Advisor(s)	Name of Academic Advisor(s) <ul style="list-style-type: none">• An Academic Advisor must be identified• Academic Advisor commits to coaching students throughout the Challenge activities• Academic Advisor commits to attending the CSA Annual Conference if the student / student team submission is selected as a finalist.
Institution	Name of academic institution
Project Title & Abstract	Title and abstract that clearly indicate topic and focus of the project. Examples of abstracts from previous Academic Challenge submissions are included with this package.

Upon receipt of a Notice of Intent, detailed instructions for submission packages will be forwarded.

Submission Package

Submission packages must be forwarded to CSA Group *by May 1, 2018*. The package must include the following components:

1. Academic paper
2. Draft support presentation – expected to be delivered within a 12 minute time limit.
3. Video(s) demonstrating presentation skills of student / team members.

Judging – Selection of Finalists

Submissions meeting all necessary requirements will be reviewed by a judging panel consisting of representatives from academia, government and not-for-profit organizations. Three finalists will be selected by the judging panel based on criteria which particularly focus on the relevancy to standardization and the quality of the academic paper submitted.

Academic Challenge Finalists will be notified *by May 23, 2018*. Student(s) selected as Finalists are expected to present at the CSA Group Annual Conference and will receive detailed information about the presentation requirements and event. Costs are covered by CSA Group for all Academic Challenge Finalists and their Academic Advisor(s).

Annual Conference & Challenge Champion

Finalists will present their projects during the CSA Annual Conference, *June 18-19, 2018* in Edmonton, Alberta. The winning submission or Challenge Champion, is determined through the combined scores of the judging panel and voting results from conference participants based on the criteria noted below.

Conference Participants – Judging Criteria

- A. The value and relevance of standardization are evident in the paper and supporting presentation.
- B. The speaker(s) clearly present and explain their methodology and results.
- C. The conclusions and recommendations made are justified by their findings.
- D. The speaker(s) convince(s) the audience that the topic is interesting and relevant.

For more information on the Academic Challenge please visit our website at

www.csagroup.org/challenge or contact us at AC@csagroup.org

Get Involved – Join the CSA Communities

Additional resources and communications are posted regularly on the Academic Challenge space in our CSA Communities

<https://community.csagroup.org>

Examples of Submission Abstracts

Facilitating CSA Z767 Compliance for a Small Business

Finalist(s): Andrew Kostruba
Katie Marie Dritsas
Kayla Musalem
Kenny Wei

Representing: University of Toronto

This project was designed to support the rollout of the CSA Z767 Process Safety Management Standard in hopes of reducing the number of workplace incidents and fatalities in small businesses. According to Ministry of Labour studies and reports, most workplace fatalities occur in small businesses and many of these incidents can be prevented by establishing proper process safety management systems. This project was created to enable small businesses in demonstrating compliance without requiring additional time, resources or support.

This project includes an example CSA Z767 compliance document for a mock small business, "Basic Bleach Co.". This exemplar first started with the creation of a small business. Then, company documents, procedures, and structures were developed and subsequently organized in accordance with sections outlined in the standard. Finally, this exemplar was reviewed by academics and industry professionals and recommendation were implemented. The exemplar demonstrates that a simple, organized, framework provides small business with a starting point to tackle standard compliance. By encouraging companies to analyze their current structure, small businesses can identify points of improvement in their current processes. This may prevent workplace injuries, fatalities and devastating financial losses for small businesses. By demonstrating explicit compliance and CSA certification, a company can also improve its reputation and attract additional customers.

Future recommendations for this project include making the exemplar available online with the CSA Z767 Standard to ensure more businesses are engaged. Future directions for this project are to create similar exemplar documents for other standards in various industries.

The Role of the CSA A3000 Compendium in a Context of Sustainable Development

Finalist(s): Antoine Lamontagne Dalphond
Hugo Houde Brouillette
Anthony Côté
Raphael Gosselin

Representing: Université de Sherbrooke

Although today's industries mainly care about the profitability of the projects, the concept of sustainable development and reduction of environmental impact is becoming more and more important to them. Cement and concrete industries don't make exception. Nearly 4.1 billion tons of cement are produced annually and they generate about 7 % of global greenhouse gases emissions (GHG). Cement consumption is therefore in the center of socio-economic and environmental issues. This can be reduced by the CSA A3000 compendium and the use of standardized supplementary cementing materials.

However, the limited availability of these cementitious materials lead to new environmental considerations because of the large transport distances required. The CSA A3004.E1 appendix allows to update new alternative supplementary cementing materials that can be produced and consumed locally such as glass powder, biomass ashes, etc. It contributes greatly for the reduction of GHG and for sustainable development.

To regulate the use of supplementary cementing materials, several recommendations can be considered. First, the standard method should be performance-oriented rather than being restricted to a prescriptive standard. In addition, to encourage the use of alternative supplementary cementing materials, their good performances and positive influence on the environment should be valued more with ecolabels, for example. Finally, adequate awareness and education also need to be made to future engineers and actors in the field of engineering.

The Need for a Canadian Standard for the Design of Emergency Response Vehicles and Equipment

Finalist(s): Michelle Boileau
Kayla Wierst

Representing: Centre of Research Expertise for the Prevention of Musculoskeletal Disorders (CRE-MSD), University of Waterloo

Paramedics play a crucial role in the healthcare system, providing an invaluable service to the public by providing timely pre-hospital emergency care. However, due to various adverse working conditions, paramedics have disproportionately higher rates of death, Musculoskeletal Disorders (MSD), fatigue, and mental health problems compared to other working sectors.

Many efforts have been put forth to improve the health, safety and performance of paramedics; however, results have been suboptimal due to the lack of coordination between stakeholders. The lack of integration has resulted in paramedic work evolving over time with little consideration for whole system functionality. Although challenges vary daily, standardization of ground emergency response vehicles and equipment with ergonomic considerations could reduce injuries and errors, and improve workflow. To develop this standard, our research team is using a systems-based approach from the human-machine-environment systems model from an international standard (ISO 26800, 2011) as a guiding framework. Developing a CSA standard for emergency transport vehicles and equipment design will not only improve paramedic safety and patient care, but will also affect all levels of the paramedic system including the public, manufacturing and procurement.

The influence of material compliance on the dynamic response of a Hybrid III headform

Finalist(s): Lauren Dawson
Representing: University of Ottawa

The purpose of this study was to define the relationship of impactor compliance on the dynamic response of a Hybrid III headform. A monorail drop rig system was used to impact a Hybrid III headform using three different material anvils of Vinyl Nitrile (VN), Steel, and a Modular Elastomer Programmer pad (MEP) at a velocity of 3m/s and 4m/s where peak resultant linear and rotational accelerations were measured at the side impact location. The results showed that each anvil of differing material compliance created significantly different dynamic responses of the headform. Understanding the importance of anvil compliance in measuring the risk of concussive injuries requires a full understanding of the materials involved in head impacts. In some cases increasing the compliance of the environment may result in an increase in the risk of concussion. Therefore it is important to consider the compliance of the impact anvil when developing test standards to measure the ability of a helmet and other sports equipment to mitigate the risk of concussions. This is important as differing environments have an effect on compliance of the event and mechanism of injury for concussion.

International Synthesis and Case Study Examination of Promising Caregiver-Friendly Workplaces: Steps towards a Standard

Finalist(s): Shruti Ramesh
Representing: McMaster University

The nature of unpaid caregiving is changing significantly in response to the changing nature of families, increased average life expectancy, and the rise in elderly populations. In order to adapt to these challenges, there is an increased focus on the workplace as a source of support for caregiver-employees (CEs), or employees providing unpaid care to a family member or friend while also working in paid employment. A number of employers in Canada and abroad are currently showing leadership with respect to the provision of caregiver-friendly workplace policies (CFWPs).

The purpose of this presentation is to explore what is currently being offered to caregiver-employees by Canadian and international workplaces, as well as how these CFWPs have been defined, developed, introduced, integrated and sustained within the workplace. To this end, a qualitative comparative case study of 21 workplaces was conducted. Participants were recruited via strategies such as snowball sampling, cold-calling and social media blasts. These workplaces, which operate as exemplars in meeting the needs of caregiver-employees, are pivotal to understanding the process which takes place in the implementation and success of CFWPs across various sectors and industries.

The results of this study will be used to bridge the wide gap in our knowledge about CFWPs while providing the evidence needed to employers and other organizations to introduce CFWPs into their employment practices. Ultimately, the results of this study will inform the creation of a caregiver-friendly workplace standard. Targeted recommendations for developing this standard are structured based on the themes identified from analyses of the interview data.

Privacy in Mobile Devices

Finalist(s): Corinna Claus
Representing: University of Guelph

The use of mobile devices is increasing as society is becoming more digitized. Mobile devices, such as smartphones and tablets, are classified as handheld computers. Mobile and Internet culture are inseparable as mobile devices are used to access the Internet for business related, or for personal reasons, especially social media. With the increasing use of smartphones as a means of communication, entertainment, education, and gathering information, downloading applications (apps) to satisfy these needs is very common. However, there have been increasing concerns over the lack of privacy regulations and standards for mobile apps. This is due to the diminishing transparency of app developers and companies that are collecting personal data from their users, possibly without their knowledge. The lack of enforcement is a result of the low level of public awareness in regards to the right to privacy.

This presentation will explain current policies in different app market places and their impacts, as well as the used methodology to validate the need for a standard before discussing the recommendations themselves. Creating a label or icon would grant users the reassurance that companies not only respect, but also protect their privacy. Furthermore, when choosing software and hardware, the consumers' decision making process is highly influenced by previous experience and information that is available to them. This justifies the need for easy to understand, user-friendly privacy policies and a more transparent app design, as well as a user education program. As users are becoming more aware of the privacy problem, companies can profit from a standard as well, as its implementation can give them an advantage in marketing their products.

***Creating a better, safer, more sustainable world
where standards work for people and business.***



About CSA Group

CSA Group is an independent, not-for-profit membership association dedicated to safety, social good and sustainability. CSA's strategic focus and core service offering includes: standards development; training solutions; consumer product evaluation; and global testing & certification. CSA products and services target a range of key businesses, including: hazardous location & industrial; plumbing & construction; medical safety & technology; appliances & gas; alternative energy; lighting; and sustainability. The CSA certification mark appears on billions of products worldwide. For more information about CSA Group visit www.csagroup.org

Top Photo: Mary Cianchetti, President of Standards; Greg Weeres; Chair, CSA Group Board of Directors; with 2017 Challenge Finalists Michelle Boileau and Kayla Wierls representing the University of Waterloo, Kayla Musalem, Andrew Kostruba, Katie Marie Dritsas and Kenny Wei representing the University of Toronto and Holly Meaney representing Western University; Hélène Vaillancourt, Vice-President, Standards Research & Planning; Dick Graham, Vice-Chair, CSA Group Board of Directors and David Weinstein, CSA Group President & CEO.