IEEE COMPUTER SOCIETY
INTERNATIONAL DESIGN COMPETITION

BACKGROUNDER FOR MEDIA RELEASES

WHAT IS THE COMPUTER SOCIETY INTERNATIONAL DESIGN COMPETITION (CSIDC)?

While there are a number of substantive system design competitions in other fields of science, engineering, and technology, there is currently no such competition in computer science and computer engineering. The Computer Society International Design Competition (CSIDC) addresses this void. The value of a substantive design experience in undergraduate education is well recognized. For example, the Engineering Accreditation Commission recommends in its November 1998 report, "Criteria for Accrediting Engineering Programs", that:

> *"Students must be prepared for engineering practice through the curriculum culminating in a major design experience based on the knowledge and skills acquired in earlier course work and incorporating engineering standards and realistic constraints…" (p. 34)*

The CSIDC Committee's vision for the competition can be simply stated,

> *The Computer Society International Design Competition will advance excellence in education by having undergraduate student teams design and implement computer-based solutions to real-world problems.*

Consistent with this vision, it adopted two primary goals. The committee wanted to: (1) establish a competition that is prestigious, technically substantive, and well worth the time and effort to participate; and (2) impact undergraduate education in a positive way.

Furthermore, the committee wanted the competition to improve the dialogue among colleges and professionals in industry and government. We also believe that if the committee selects themes having substantial public interest, the national and international media would provide coverage of some of the competition's aspects (e.g., reviewing the winners' projects). This might be beneficial to the public image of computer science, computer engineering, and related disciplines.

WHO ARE THE CSIDC SPONSORS?

The Computer Society is indebted to a number of firms that are supporting this competition. Primary financial support is provided by Microsoft Corporation. Additional financial support is provided by ABB and the IEEE Foundation.

WHO CAN PARTICIPATE IN THE CSIDC?

The CSIDC is for teams of undergraduate students in computer science, computer engineering, and related fields. Teams will be made up of three-to-four undergraduate students who attend the same college or university. Students are eligible to be on a team provided they are not currently employed as full-time hardware, software, or system developers in industry or in similar full-time positions at their respective institutions. They will work under the supervision of a faculty advisor over a 3-½ month period.

HOW DO THE TEAMS COMPETE?

The competing teams will be tasked with the design and implementation of a prototype system that addresses a common problem. The competition provides a set of "real-world" constraints (and opportunities) the students must contend with in their design, similar to situations encountered in industry. A spending limit is imposed to eliminate a potential bias in favor of schools with greater economic resources.

WHAT IS THE CSIDC PROBLEM STATEMENT?

The theme of CSIDC 2004 is **Making the World a Safer Place**. Teams are asked to take a PC, laptop, or hand-held computer and turn it into something new by adding an external interface and the appropriate software. The application may use more than one computer and computers may be linked by any suitable medium.

CSIDC 2004 is looking for innovative applications of computers that fulfill a need in society. Part of the scoring of the final report will reflect the project's originality and its potential to affect society positively.

A possible application might be a system that monitors the behavior of an elderly person and reports if their behavior begins to differ significantly from their normal pattern of activity. Such a system may use personal locators, low-cost web-cams or IR-sensors to track the person. Teams may have to develop a program using AI algorithms to determine when a person's pattern of behavior changes.

The CSIDC 2004 project should be of general benefit to society; for example, in the home, or education, safety or security systems, healthcare, navigation, or wearable computing.

The resulting prototype will be a computer-based system that requires a combination of software, hardware, and human interaction. To design and implement the prototype, the students will have to address system-level, highly-dependent trade-offs that are encountered when designing and implementing a product in a specific period of time and in the context of given constraints.

HOW DO STUDENT TEAMS APPLY FOR CSIDC 2004?

CSIDC 2004 was launched in September 2003. The application form and guidelines for the competition was available on the society's Web site. The launch was announced worldwide to undergraduate institutions through a publicity poster and in email messages to students and faculty.

HOW ARE THE SUBMISSIONS EVALUATED?

By 23 April, teams will submit an operational prototype of their solution, along with a detailed report that describes the design and implementation of the project. Projects will be judged according to the team's ability to achieve the design objective; the creativity of the project; the project's usability, marketability, and maintainability; the choice of trade-offs made; and other factors.

Detailed judging criteria for CSIDC 2004 have not yet been released. However, the criteria will remain broadly similar to previous years. The following broad categories describe the areas that will be examined by the judges.

- Originality, innovation, and social usefulness of the project.
- System specification, algorithms and implementation.
- The design and construction of any tools that were developed in the course of the project.
- Achieving the design objective including the impact of the limitations of the design on the system.
- Creativity and ingenuity in the design and implementation.
- Usability, manufacturability, marketability, and maintainability.
- Validation testing, performance measurements and evaluations, and their thoroughness

Each project will be judged by one of several three-person Submission Evaluation Teams (SETs). The SET will consist of one person from industry having a hardware background, one person from industry having a software background, and one academic having a systems, software or hardware background. The SET will evaluate four to five submissions and identify the top one or two to a ten-person Judging Panel (JP). By 24 May, the panel will select the top ten teams who will advance to the *CSIDC World Finals*.

WHEN AND WHERE WILL THE CSIDC WORLD FINALS BE HELD?

The *CSIDC 2004 World Finals* will be held 27 June - 29 June 2004 in Washington, DC. The top ten teams will travel to Washington, DC at Computer Society expense to attend the finals. Each team will make a technical presentation to the JP that includes a demonstration of its project. The three-day event will also include media events and an awards ceremony. The judges will select the top three winners and the seven honorable mentions.

WHAT ARE THE TEAM PRIZES?

The top five teams will receive a cash award starting at $15,000; the seven honorable mention teams will receive $2,000 each. Each student member of the final ten teams will receive a Computer Society membership.

Place	Team Prize
1st	$15,000
2nd	$10,000
3rd	$6,000

The students determine how the prize money is distributed among the team members. In addition to the money prizes noted above, each student on the final ten teams will be given a one-year complimentary Computer Society membership and an award certificate.

What is the Microsoft Award for Multimedia and the Microsoft Award for Software Engineering?

The $3,000 Microsoft Multimedia Award will be presented to the team whose presentation at the World Finals makes the most innovative, exciting, and appropriate use of multimedia.

The $3,000 Microsoft Award for Software Engineering will be presented to the team whose project exemplifies the best use of good software engineering principles to the design and testing of their prototype.

For further information on the Computer Society, see the companion "IEEE Computer Society Backgrounder on Media Releases."

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