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18th CDIO International Conference

PROCEEDINGS – FULL PAPERS

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Editorial

The CDIO approach is an innovative educational framework which aims for an education that supports students in the acquisition of strong technical fundamentals while simultaneously developing the necessary professional skills required of a practicing engineer. This is done by providing students with dual-impact learning experiences that are based upon the lifecycle of an engineering project, the Conceiving — Designing — Implementing — Operating (CDIO) of real-world products, processes, and systems. Throughout the world, more than 190 institutions have adopted CDIO as the framework of their curriculum development.

The Annual International Conference is the key event for the CDIO community where CDIO practitioners from all over the world come together, share knowledge and promote the advancement of the practice of the CDIO initiative for producing the next generation of engineers. It includes presentations of papers as well as specialized seminars, workshops, roundtables, events, and activities. The 18th International CDIO Conference took place in Reykjavik, Iceland, June 13–15, 2022, hosted by the Department of Engineering at Reykjavik University. Due to the worldwide pandemic situation, the last two CDIO International Conferences, in 2020 and 2021, were held solely online. This year, therefore, the organizers were especially pleased to be able to welcome you to a long-awaited onsite event!

The main theme of this year is Surviving and Thriving – Preparing for the Future. This theme is visible in the keynote presentations, paper presentations, roundtables, and workshops. The rich topical program, which partly touches on lessons learnt from the recent pandemic situation, facilitated a lively discussion, and contributes to the further advancement of engineering education.

The conference includes three types of contributions: Full Papers, Project in Progress contributions, and Extended Abstracts for Activities. The Full Papers fall into three tracks: Advances in CDIO, CDIO Implementation, and Engineering Education Research. All contributions have undergone a full single-blind peer-review process to meet scholarly standards. The Projects in Progress contributions describe current activities and initial developments that have not yet reached completion at the time of writing. The Extended Abstracts summarize the Roundtable Discussions and Workshops held at the event.

Initially, 180 abstracts were submitted to the conference. The authors of the accepted Full Paper and Projects in Progress abstracts submitted 124 manuscripts to the peer review process. During the review, 391 review reports were filed by 102 members of the 2022 International Program Committee. Acceptance decisions were made based on these reviews. The reviewers' constructive remarks served as valuable support to the authors of the accepted full papers when they prepared the final versions of their contributions. We want to address our warmest thanks to those who participated in the rigorous review process.

This publication, which is available as an electronic publication only, contains the 86 accepted Full Papers that were presented at the conference, of which 4 are Advances in CDIO; 58 CDIO Implementation; and 24 Engineering Education Research. These papers have been written by 251 different authors representing 28 countries. Additionally, 20 CDIO Project in Progress contributions were presented at the conference and are not included in this publication. Also, in addition to individual contributions from authors, a total of 24 collaborative contributions for activities in 9 Workshops, 12 Roundtable Discussions and 3

Working Groups took place, as well as a range of social events.

We hope that you find these contributions valuable in developing your own research, curriculum development, and teaching practice, ultimately furthering the engineering profession. We also hope that you benefit through the truly unique community of practice that exists within the CDIO Initiative. A total of 71 educational institutions from 30 countries, representing 6 continents, were present during the conference. The total number of registered participants at the conference was 228. A great opportunity to discuss and share with colleagues, as global awareness and partnerships are of major importance in the education of the next generation of engineers.

The CDIO2022 Program Committee wishes all of you a wonderful CDIO experience!

Reykjavik, June 12, 2022

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