

2017-2022 Report of the Innovation and Development Committee (IDC)

Dimitrios Zekkos

Chair of Innovation and Development Committee (IDC), Associate Professor, Department of Civil and Environmental Engineering, University of California at Berkeley, zekkos@berkeley.edu

SUMMARY: The Innovation and Development Committee (IDC) is a board level committee that was established in 2009 with the mission to develop innovations to better serve ISSMGE member societies, geoprofessionals and the profession as well as to increase the impact of ISSMGE. In this report the activities of the IDC during the 2017-2022 period are briefly presented. Through partnerships with several other board level committees, technical committees, and member societies, IDC has continued to push forward with efforts that can have a positive impact on the geotechnical engineering community at the global scale. These include: (a) the expansion in content and capabilities of the open-access online library that now has 16,000+ papers available; (b) the development of a conference paper review platform that is available at no cost and can support conference organizers in peer-review of conference proceedings; (c) the ability of ISSMGE to publish proceedings online, or even in print, and issue DOIs on conference papers or ISSMGE reports; (d) the development of ISSMGE's Virtual University that presently includes 149 recordings with original content; and (e) the continued growth of ISSMGE's online presence through its website, GeoWorld, its mobile application, and social media.

1 INTRODUCTION

The Innovation and Development Committee (IDC) of ISSMGE was established in 2009 as a Board Level Committee (BLC) by Past-President Jean-Louis Briaud. The first term of the committee was from 2009-2013. President Roger Frank renewed the IDC for 2013-2017 followed by a third renewal by President Ng for the 2017-2022 period. The following report outlines the activities of the IDC during the 2017-2022 period and provides some recommendations to ISSMGE and member societies for the future of IDC.

2 TERMS OF REFERENCE

The IDC charge was originally provided in 2009 by the ISSME President and Board and was summarized as "to think of ways to make ISSMGE progress in a manner which will increase its usefulness to the members and provide excitement for the future of geotechnical engineering in ISSMGE.". The original charge was followed up by a number of tasks many of which have been completed. After eight years, with consultation with the President, the IDC revised its tasks, which were approved by the Board in 2017. The revised charges are:

- "Feel the pulse" of the geotechnical community through a survey that will help set new priorities.
- Expand the use of information technology (IT) tools to continue to enhance the value of the ISSMGE web site as a technical resource worldwide.
- Expand the open-access of ISSMGE publications database and explore innovative schemes to promote open access publications at a global scale.
- Implement educational initiatives under "ISSMGE University" (which was later termed Virtual University).
- Promote next-generation communication among Geo-Professionals through GeoWorld.

3 MEMBERSHIP

For the 2017-2022, the membership of the IDC was reduced compared to previous terms, to allow for a flexible and easy-to-meet and act committee that consisted of the following:

Chair: Dimitrios Zekkos (USA & Greece) – Associate Professor, Civil and Environmental Engineering, University of California at Berkeley; zekkos@berkeley.edu
Vice Chair: Kok-Kwang Phoon (Singapore) – Professor and Provost, Singapore University of Technology and Design

Jennifer Nicks (USA), Research Engineer, Federal Highway Administration

Roger Estephane (Lebanon), Director at Dar Al-Handasah (Shair and Partners).

In addition, to ensure a smooth transition of leadership, the IDC has been planning for Dr. Nicks to take over as Chair of IDC.

4 ACTIVITIES

4.1. Conduct IDC Survey

Since its establishment in 2009, IDC has been leading various initiatives. Major previous initiatives include the launch of a new ISSMGE website, the establishment of a webinar series, the launch of an open access library, the launch of GeoWorld, the development of an online Lexicon, as well as the development of a mobile app. It was, thus, deemed useful to "take stock" and assess past initiatives before setting new ones. Thus, the IDC conducted a survey with the objective to have the geo-community review previous IDC activities and their impact and solicit feedback on what should the priorities of the IDC be for the 2017-2021 period.

The survey was conducted from March 6th 2018 to May 1st 2018 with 701 participants and included 13 questions. The results of the survey have been analyzed and a public report on the survey can be found on the ISSMGE website.

Briefly, the survey indicated that all initiatives undertaken were generally valuable, but especially the ones that related to the ISSMGE website, open-access and educational resources (webinars, online lectures, etc.) were particularly appreciated. The survey respondents also provided feedback on proposed activities, and an outcome of this feedback are the six initiatives that IDC undertook in the 2017-2022 period and are listed in sections 4.2 to 4.7.

4.2. Expand Content and Capabilities of ISSMGE's Open Access Library

During the 2013-2017 tenure, the IDC established the Online Library that is available through ISSMGE's website (URL: <https://www.issmge.org/publications/online-library>). The online library provides open access to papers published in conferences organized under the Auspices of ISSMGE, but also papers published in other conferences.

4.2.1 Expansion of Online Library capabilities

In 2021, the IDC undertook a major upgrade of the Online Library. Specific new features of the library that have been incorporated are:

- Improved layout and indexing based on specific sub-disciplines/topics in geotechnical engineering. This allows for better indexing and collaboration between content available in the online library and virtual university.
- New conference proceedings added in the library have now a dedicated page for each conference. This supports ISSMGE's initiatives related to publishing.
- Each new publication/paper has its own URL allowing for the ability to issue DOI for new papers as well as reports published by ISSMGE.
- Each author is now an "entity" within the library that is also integrated with the individual's ISSMGE and/or GeoWorld profile (if desired). This allows for someone to search the library using the author name, and find an author's profile.
- Changes to the online library that support indexing of conference proceedings in databases such as Scopus.

4.2.1 Increase in Online Library's content

The IDC continued to work with many member societies, Technical Committees, and other groups to expand the papers included in the database of the online library. As of February 2022, the online library has 16,387 papers from 68 conferences. From November 2017, when the platform was launched, to December 2021 there were 1,683,000 downloads of the papers included in the Open Access Library, with about 350,000 paper downloads just in 2021.

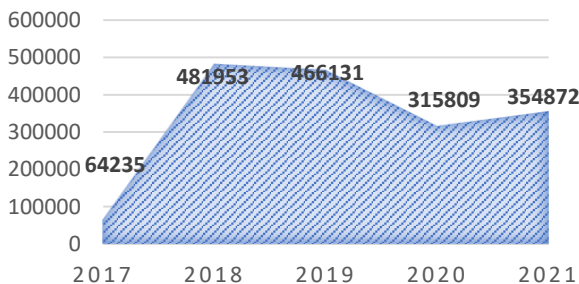


Figure 1: Paper downloads from the online library since its launch in 2017.

The following proceedings have been added to the online library since September 2017:

- 18th International Conference on Soil Mechanics and Geotechnical Engineering (Paris) (930 papers added)
- 19th International Conference on Soil Mechanics and Geotechnical Engineering (Seoul) (799 papers added)
- 5th International Conference on Forensic Geotechnical Engineering (42 papers added)
- 6th International Young Geotechnical Engineers' Conference (iYGEC6) (107 papers added)
- SFGE - 2016 (12 papers added)
- 14th Pan-American Conference on Soil Mechanics and Geotechnical Engineering 64th Canadian Geotechnical Conference, October 2-6, 2011, Toronto, Ontario, Canada (503 papers added)
- EUROFUGE 2016 (Nantes, France) (58 papers added)
- 3rd International Conference on Performance-based Design in Earthquake Geotechnical Engineering (Vancouver 2017) (238 papers added)

- 6th International Conference on Earthquake Geotechnical Engineering (Christchurch, New Zealand) (371 papers added)
- 7th International Conference on Unsaturated Soils 2018 (Hong Kong) (219 papers added)
- 17th Nordic Geotechnical Meeting (NGM-2016) (142 papers added)
- 5th International Conference on Earthquake Geotechnical Engineering (Santiago, Chile) (182 papers added)
- 26th European Young Geotechnical Engineers Conference (51 papers added)
- 13th Australia - New Zealand Conference on Geomechanics (Perth, 2019) (201 papers added)
- 1st Australia - New Zealand Conference on Geomechanics (Melbourne, 1971) (81 papers added)
- 17th European Conference on Soil Mechanics and Geotechnical Engineering (679 papers added)
- 2nd Australia - New Zealand Conference on Geomechanics (Brisbane, 1975) (62 papers added)
- 10th Australia - New Zealand Conference on Geomechanics (Brisbane, 2007) (203 papers added)
- 17th African Regional Conference on Soil Mechanics and Geotechnical Engineering (139 papers added)
- Field Measurements in Geomechanics 2018 (42 papers added)
- 11th Australia - New Zealand Conference on Geomechanics (Melbourne, 2012) (277 papers added)
- 7th Australia - New Zealand Conference on Geomechanics (Adelaide, 1996) (154 papers added)
- XVI Pan-American Conference on Soil Mechanics and Geotechnical Engineering (XVI PCSMGE) (356 papers added)
- IS SAO PAULO '17 (41 papers added)
- 5th Australia - New Zealand Conference on Geomechanics (Sydney, 1988) (114 papers added)
- 8th Australia - New Zealand Conference on Geomechanics (Hobart, 1999) (129 papers added)
- 4th Australia - New Zealand Conference on Geomechanics (Perth, 1984) (129 papers added)
- 25th European Young Geotechnical Engineers Conference (49 papers added)
- 7th International Symposium on Geotechnical Safety and Risk (ISGSR 2019) (145 papers added)
- 1st International Symposium on Geotechnical Safety and Risk (ISGSR 2007) (78 papers added)
- 6th Australia - New Zealand Conference on Geomechanics (Christchurch, 1992) (104 papers added)
- 12th Australia - New Zealand Conference on Geomechanics (Wellington, 2015) (159 papers added)
- 3rd Australia - New Zealand Conference on Geomechanics (Wellington, 1980) (110 papers added)
- International Conference On Geotechnical Engineering Education 2020 (GEE2020) (29 papers added)
- 9th Australia - New Zealand Conference on Geomechanics (Auckland, 2004) (128 papers added)
- 7th International Conference on Earthquake Geotechnical Engineering (Roma, Italy) (674 papers added)
- 13th International Symposium on Landslides (ISL2020) (125 papers added)
- 3rd International Symposium on Coupled Phenomena in Environmental Geotechnics (CPEG2020) (83 papers added)
- 10th International Conference on Scour and Erosion (ICSE-10) (142 papers added)

A complete listing of the conference proceedings available in the ISSMGE Online library is provided in Appendix A. The IDC remains committed to expand the content of the open access library and, as described subsequently, aims to support open-access publications through its Conference Paper Review Platform.

4.3: Support open-Access Publication: Development of a Conference Paper Review Platform

The IDC has also been actively working towards supporting the geo-community in expanding open-access publication of papers for future events. As part of that initiative, the IDC has developed, following authorization by President Ng and the Board, a Conference Paper Review Platform (URL: <https://www.issmge.org/publications/review-platform/ongoing-conferences>).

The ISSMGE Conference Review Platform is part of ISSMGE's cyber-infrastructure and aims to support the review of abstracts and papers for Conferences organized by ISSMGE Member Societies, Technical Committees and other groups affiliated with ISSMGE.

This platform is provided at no cost with the only requirement that published papers become available in open access through the ISSMGE Online Library. The platform supports the management of conference papers for ISSMGE and ISSMGE-affiliated events and allows also for the seamless integration between this paper review platform and the ISSMGE Online Library. The platform can be used by conference organizers of the ICSMGE, ISSMGE sponsored events, ISSMGE regional conferences, or conferences organized or sponsored by Technical Committees. Member Societies can also request from the Board to use the platform as long as they commit to make available the conference proceedings in open-access.

The platform is presently operational and has already been used successfully to support the following conferences:

- 6th International Conference on Geotechnical and Geophysical Site Characterization (ICS6), "Toward synergy at site characterisation", held on 26-29 September 2021 in Budapest, Hungary.
- XIII International Symposium of Landslides (XII ISL) held on 22-26 February 2021 virtually.
- 3rd International Symposium on Coupled Phenomena in Environmental Geotechnics (CPEG2020), held on 20-21 October 2021 virtually.

The proceedings published from these conferences are already available through the online library. IDC sees this platform as a major step towards a more integrated approach to open access publication (from submission to publication) in the field of geotechnics.

4.4. Towards ISSMGE Publishing

In the 2013-2017 period, IDC played an active role in setting the open access policy of ISSMGE. During this term, the IDC aimed to make open access in geotechnical engineering a reality. Through the conference paper review platform and the growth of the online library, ISSMGE provides the ability for papers to be submitted and published completely open access. Should ISSMGE make that decision, it can support not only the online, but also the printed publication of proceedings and other documents.

4.5. Establishment of ISSMGE Virtual University

A major activity of the IDC, following the request by ISSMGE President, Charles Ng, was the development of open-access, educational material to professionals globally. The activity, titled "Virtual University" is a step beyond the webinars that ISSMGE has launched in the last decade.

The purpose of the Virtual University platform is to educate geoprofessionals at a global scale, and support Universities that may not have the resources to provide detailed educational material on specific topics. The platform was publicly launched in 2020 and is available at <http://virtualuniversity.issmge.org/> and through the main ISSMGE website. The platform has the capacity to deliver educational content such as educational videos, webinars, keynote lectures, or short courses freely to anyone. All content is archived based on sub-disciplines and topics that are also used in the online library. An ISSMGE account can be created to "save" content. The platform also bundles recordings in short courses and provide recommendations, based on previous videos watched.

The virtual university platform also has the following capabilities:

- Provides Video Analytics: Course instructors (who have an account as instructors) are able to review video analytics for each video uploaded within the platform. This allows them to better understand how users are interacting with their lectures. Statistics are provided for the number of enrolled users for each video, and what portion of the video recording is mostly watched.
- Exam Functionality: Virtual University can support simple or timed exams for each of the courses (or lectures). The exams are of "quiz" type and can be timed.
- Learner/Student Progress Functionality: This functionality allows the instructor to set homeworks for the learner that can also inserted at any point during the recording.
- Certificate Functionality provides the ability to issue certificates, should ISSMGE decide to do that in the future;
- Incorporates Collaborative Learning through Discussion Forums: Discussion forums are available for registered members to ask questions on specific topics.

The more advanced capabilities of the Virtual University listed above are not yet used extensively, but pave a direction for the future of geotechnical education. Out of the numerous recordings available, it would be important to highlight one course developed by Prof. Marina Pantazidou and TC306 titled "What happens when soil compresses", which uses some of these advanced capabilities. The video is segmented in short-duration subsections, each with a descriptive title, allowing for smaller subsections (recommended 7-15 min) that are likely to be well attended. Subsections are accompanied with quizzes of multiple-choice questions. The video is accompanied with the presentation slides and transcript for download. The transcript also appears as text next and below the presentation slides.

The IDC would like to acknowledge Board Member Prof. M. Bouassida who worked closely with the IDC and was responsible to reach out to individuals to develop educational content. Presently the Virtual University has 149 videos, and 11 short courses that aggregate videos of similar content. Average visits/pageviews for 2021 was 6,500 per month. In total, since its launch in 2020, ISSMGE videos have been played 114,000 times.

4.6. Upgrade ISSMGE website to increase its functionality, usage and impact

IDC has been continuously upgrading ISSMGE's online presence with the goal to provide relevant and valuable content to ISSMGE membership. The following major upgrades have been completed during the 2017-2022 period:

Visitors of the ISSMGE website have the capability to "sign-up" to receive updates from Technical Committees that fit their interests. Once content is posted by the TCs, it is automatically promoted through the website, but also, by integrating with GeoWorld, an e-mail is sent to the individuals who have opted-in to receive that content. This feature empowers technical committee to promote their work and allows ISSMGE to directly reach out to members and provide valuable content to those that need it.

Emphasis was also placed to further increase the use of ISSMGE website by TCs and easily assess level of activity. Towards this objective, the current website platform was expanded to allow TC Chairs to upload their progress reports online and make them accessible to TOC leadership.

4.7: Continue to support networking opportunities, and expand ISSMGE's reach through GeoWorld

The opportunities for international networking that ISSMGE provides are valued by ISSMGE members. Beyond the ISSMGE website, IDC has been trying to positively affect the careers of geoprofessionals by expanding ISSMGE's messaging and reach, through the following means:

GeoWorld: Since its launch in 2011, with the support of ISSMGE, GeoWorld has become the largest global network of geoprofessionals. GeoWorld has exceeded 25,000 members from 145 countries in January 2022 and is supporting many aspects of ISSMGE activities. Through GeoWorld, ISSMGE delivers content and information posted on the ISSMGE website. GeoWorld and ISSMGE continue also to publish annually the Geotechnical Business Directory, the largest geotechnical business directory in the field that includes an online format, an e-book format and a printed format and included all GeoWorld members who have opted-in. In June 2022 the 8th directory will be published.

Social Media Presence: ISSMGE's social media presence has also been increasing. Currently, there are 5566, 1527, and 11782 members on ISSMGE's Facebook, Twitter and LinkedIn account respectively.

Mobile Platform: ISSMGE's mobile platform, launched in September 2017, is presently used by 559 iOS and 790 Android users. Individuals who download the ISSMGE app, can receive push notifications of ISSMGE news.

5 RECOMMENDATIONS FOR THE FUTURE

For its first three terms (2009-2013, 2013-2017, and 2017-2022), the IDC has been able to undertake some major initiatives that have had a positive impact to the profession. As the first chair of the IDC all these years, I would like to thank the members of the IDC for their continued support and work, as well as the ISSMGE Boards, Presidents, and Chairs of Board-level Committees of ISSMGE that I worked with. As I step down from my role as Chair of IDC and I pass on the baton to the new Chair, Jennifer Nick, I would like to provide some recommendations for the future of IDC:

- IDC should be renewed and continue its work. I do not believe that a forward-looking IDC will ever fully complete its Mission. There are always many additional initiatives and activities that the IDC can pursue that can make an impact to the Profession, the member societies and geotechnical engineers.
- There is more work to be done for the IDC to further strengthen the content of the ISSMGE website with useful resources that the membership can use. This can be done with further engagement of Technical Committees, member societies, young members and corporate associates. In addition, the IDC should continue to support the open access vision of ISSMGE, whether it is through the Publishing initiative (conference paper review platform, online library) or the educational content (through the Virtual University), as well as additional initiatives.
- ISSMGE may also want to consider the establishment of a standing committee on Open Access Publishing to support the activities of ISSMGE. This may allow IDC to undertake additional new and exciting initiatives.

6 ACKNOWLEDGEMENTS

The IDC would like to gratefully acknowledge the support of the ISSMGE Board, the President and the Secretary General, and the Chairs of the other Board level Committees for their support in conducting this work.

7. APPENDIX

The following proceedings are currently available in open-access on the ISSMGE online library:

International Conference on Soil Mechanics and Geotechnical Engineering

- 19th International Conference on Soil Mechanics and Geotechnical Engineering (Seoul)
- 18th International Conference on Soil Mechanics and Geotechnical Engineering (Paris)
- 17th International Conference on Soil Mechanics and Geotechnical Engineering (Alexandria)
- 16th International Conference on Soil Mechanics and Geotechnical Engineering (Osaka)
- 15th International Conference on Soil Mechanics and Foundation Engineering (Istanbul)
- 14th International Conference on Soil Mechanics and Foundation Engineering (Hamburg)
- 13th International Conference on Soil Mechanics and Foundation Engineering (New Delhi)
- 12th International Conference on Soil Mechanics and Foundation Engineering (Rio De Janeiro)
- 11th International Conference on Soil Mechanics and Foundation Engineering (San Francisco)
- 10th International Conference on Soil Mechanics and Foundation Engineering (Stockholm)
- 9th International Conference on Soil Mechanics and Foundation Engineering (Tokyo)
- 8th International Conference on Soil Mechanics and Foundation Engineering (Moscow)
- 7th International Conference on Soil Mechanics and Foundation Engineering (Mexico)
- 6th International Conference on Soil Mechanics and Foundation Engineering (Montréal)
- 5th International Conference on Soil Mechanics and Foundation Engineering (Paris)
- 4th International Conference on Soil Mechanics and Foundation Engineering (London)

- 3rd International Conference on Soil Mechanics and Foundation Engineering (Switzerland)
- 2nd International Conference on Soil Mechanics and Foundation Engineering (Rotterdam)
- 1st International Conference on Soil Mechanics and Foundation Engineering

TC306 Conferences on Education

- ICETGES - 2008
- SFGE - 2012
- SFGE - 2016
- International Conference On Geotechnical Engineering Education 2020 (GEE2020)

TC204 Underground Construction Conferences

- IS NEW DELHI '94
- IS LONDON '96
- IS TOKYO '99
- IS TOULOUSE '02
- IS AMSTERDAM '05
- IS SHANGHAI '08
- IS ROME '11
- IS SEOUL '14
- IS SAO PAULO '17

International Conferences on Geotechnical Engineering (ICGE) ICGE Colombo 2015

TC102 Conferences on In-situ testing

- Fifth International Conference on Geotechnical and Geophysical Site Characterization (ISC'5)

TC302 Conferences on Forensic Geotechnical Engineering

- 5th International Conference on Forensic Geotechnical Engineering

Young Geotechnical Engineers' Conferences

- 6th International Young Geotechnical Engineers' Conference (iYGEC6)
- 25th European Young Geotechnical Engineers Conference
- 26th European Young Geotechnical Engineers Conference

Regional Conferences on Soil Mechanics and Geotechnical Engineering

- 17th Nordic Geotechnical Meeting (NGM-2016)
- 17th European Conference on Soil Mechanics and Geotechnical Engineering
- 17th African Regional Conference on Soil Mechanics and Geotechnical Engineering

TC104 Conferences on Physical modelling

- EUROFUGE 2016 (Nantes, France)

TC203 Conferences in Earthquake Engineering

- 3rd International Conference on Performance-based Design in Earthquake Geotechnical Engineering (Vancouver 2017)
- 5th International Conference on Earthquake Geotechnical Engineering (Santiago, Chile)
- 6th International Conference on Earthquake Geotechnical Engineering (Christchurch, New Zealand)
- 7th International Conference on Earthquake Geotechnical Engineering (Roma, Italy)

TC106 Conferences in Unsaturated Soils

- 7th International Conference on Unsaturated Soils 2018 (Hong Kong)

TC220 Conferences in Field Monitoring in Geomechanics Field Measurements in Geomechanics 2018

Pan-American Conferences on Soil Mechanics and Geotechnical Engineering (PCSMGE)

- 14th Pan-American Conference on Soil Mechanics and Geotechnical Engineering 64th Canadian Geotechnical Conference, October 2-6, 2011, Toronto, Ontario, Canada
- XVI Pan-American Conference on Soil Mechanics and Geotechnical Engineering (XVI PCSMGE)

Australia - New Zealand Conferences on Geomechanics

- 13th Australia - New Zealand Conference on Geomechanics (Perth, 2019)
- 12th Australia - New Zealand Conference on Geomechanics (Wellington, 2015)
- 11th Australia - New Zealand Conference on Geomechanics (Melbourne, 2012)
- 10th Australia - New Zealand Conference on Geomechanics (Brisbane, 2007)
- 9th Australia - New Zealand Conference on Geomechanics (Auckland, 2004)
- 8th Australia - New Zealand Conference on Geomechanics (Hobart, 1999)
- 7th Australia - New Zealand Conference on Geomechanics (Adelaide, 1996)
- 6th Australia - New Zealand Conference on Geomechanics (Christchurch, 1992)
- 5th Australia - New Zealand Conference on Geomechanics (Sydney, 1988)
- 4th Australia - New Zealand Conference on Geomechanics (Perth, 1984)
- 3rd Australia - New Zealand Conference on Geomechanics (Wellington, 1980)
- 2nd Australia - New Zealand Conference on Geomechanics (Brisbane, 1975)
- 1st Australia - New Zealand Conference on Geomechanics (Melbourne, 1971)

TC304 Conferences On Engineering Practice of Risk Assessment and Management

- 1st International Symposium on Geotechnical Safety and Risk (ISGSR 2007)
- 7th International Symposium on Geotechnical Safety and Risk (ISGSR 2019)

TC213 Conferences on Scour and Erosion

- 10th International Conference on Scour and Erosion (ICSE-10)

Other

- 13th International Symposium on Landslides (XIII ISL)
- 3rd International Symposium on Coupled Phenomena in Environmental Geotechnics (CPEG2020 - Kyoto, Japan)