

IACEE Porto Declaration: A Global Challenge for Engineers

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- PhD from University Florida, USA as Fulbright scholar in 1989
- Associate professor at University Porto, Portugal
- Founder and vice-president of EUCEN from 1992 to 1998 (European Universities Continuing Education Network – www.eucen.org)
- Member of the Council of IACEE since 1995 and president from 2001 until 2004 (International Association of Continuing Engineering Education – www.iacee.org)
- Founder and president of AUPEC from 2001 until 2005 (Association of Portuguese Universities in Continuing Education – www.up.pt/aupec.htm)
- Founder of RECLA and member of the Board from 1998 until 2002 (Latin American Network of Continuing Education – www.cfp.upv.es/recla)
- President of SEFI from 2003 until 2005 (European Society for Engineering Education – www.sefi.be)
- Chair of Scientific Committee of THENUCE (Thematic Network on University Continuing Education)
- Coordinator and partner in several projects sponsored by the European Commission
- Invited expert as evaluator and consultant for the European Commission on continuing education, adult education, access to education, networking and elearning
- Member of editorial board of EJEE (European Journal Engineering Education - www.ntb.ch/SEFI/Publications/journal.html)
- Member of editorial board (1999-2006) of JHEOE (Journal of Higher Education Outreach and Engagement - www.uga.edu/jheoe)
- EDEN Award (2008)
- International Hall of Fame of Adult and Continuing Education (2006)
- Representative of Ordem dos Engenheiros in FEANI in CPD Committee
- Coordinator of project VIRQUAL (virqual.up.pt – 2009), of project EQUIPE (equipe.up.pt – 2004/2006) and of project ATELCOMA (www.fe.up.pt/atelcoma - 1997/2000)

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Bente's research field is Continuing Engineering Education primarily with focus on small and medium sized enterprises. She is council member of The International Association for Continuing Engineering Education (IACEE) and Chairs European Society for Engineering Education (SEFI) Working Group on Continuing Engineering Education and Lifelong Learning.

Ms. Kim A. Scalzo, State University of New York, HQ

Kim Scalzo is the Executive Director of Open SUNY, SUNY's online learning initiative at the System level. Open SUNY includes a set of supports and initiatives for students, faculty, and campuses designed to help ensure quality and success in online learning. Kim is responsible for strategic leadership of Open SUNY, ensuring quality and excellence in the Open SUNY operations, managing relationships with SUNY campuses, and aligning Open SUNY services and supports with the system priorities of improving Access to a SUNY education, increasing the number of students who Complete SUNY programs, and ensuring that SUNY programs prepare students for Success in their lives and careers.

She initially joined SUNY in 2009 as as Director of the SUNY Center for Professional Development, a university-wide program providing training and professional development to faculty and staff across the SUNY campuses in support the SUNY Strategic Plan, The Power of SUNY. In that role she led the development of competency-based, community-driven certificate programs and the establishment of services and an online platform to support, promote, and facilitate communities of practice across the system.

Prior to joining the SUNY in 2009, Kim spent 18 years at Rensselaer Polytechnic Institute, her last position as Director of Academic Outreach Programs with overall responsibility for Rensselaer's Distance Learning, Continuing Education, summer, and Outreach programs. Kim has also served as a reviewer for the New York State Education Department Office of Higher Education for several Institutional Capability Reviews for distance learning programs. She was a US institutional representative in EU-US collaboration to develop international quality standards for continuing education and is currently leading the Open SUNY Institutional Readiness program to implement quality standards for continuing education and distance learning organizations based on the Online Consortium Quality Scorecard for the Administration of Online Programs. She is also a co-creator of the Bray-Scalzo Partnership Model for creating and sustaining successful partnerships in higher education.

Kim currently serves as Past-President for the International Association of Continuing Engineering Education (IACEE) Council. Additionally, she has served as Chair of the Executive Board for the Continuing Professional Development Division of the American Society for Engineering Education (ASEE-CPD) and a member of the National University Telecommunications Network (NUTN) Advisory Board, the SUNY Plattsburgh Alumni Association Board of Directors, the SUNY Provost's Open SUNY Advisory Council (POSAC), the Faculty Council on Teaching and Technology (FACT2), the SUNY Council on Assessment (SCoA), the SUNY Shared Services Steering Committee, the SUNY Language Consortium, the SUNY Alliance for Strategic Technologies, and the Executive Board for the SUNY Information Technology Exchange Center (ITEC). Kim received her bachelor's degree in Computer Science from SUNY Plattsburgh and master's degree in Education in College Student Personnel from the College of Saint Rose.

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Justification and Goals

In the IACEE (International Association for Continuing Engineering Education – www.iacee.org) world conference held in May 2016 and under the theme “Innovation in Continuing Professional Development: A vision of the Future” a declaration was signed by participants.

IACEE is an international organization dedicated to the Continuing Professional Development (CPD) and to the Continuing Education in Engineering (CEE). The International Association for Continuing Engineering Education (IACEE) was founded in 1989 to foster a global network of organizations promoting lifelong engineering education and developing CPD and CEE across the world.

IACEE recognizes the scale and complexity of the gap between existing solutions and the needs facing our planet and that the IACEE is uniquely placed to act on this opportunity.

IACEE seeks to pivot the organization to connect individuals, universities, industry, government and NGO organizations to meet the grand challenges facing humanity and the world. Keeping with its dedication to leading lifelong learning, IACEE has developed and will continue to develop global initiatives to address those twenty-first century challenges threatening the survival of human kind through collaboration, design, creative thinking and engineering. IACEE wants to implement the declaration within the engineering community and influence a majority of stakeholders to comply with a framework of global sustainable development.

CPD and CEE can influence on short term the pledge of the engineering community and of related sectors to a global commitment in actioning this call to service. This change and improvement can be obtained mostly by education and training of the engineering community around the world.

Engineers and related stakeholders have a major influence in the world development. It is crucial that within a global and international arena the engineers take charge of the sustainable measures to ensure a future for the world. This called Porto Declaration can act as major beacon and motivation for all and especially for active engineers and for future engineers.

Currently the association is implementing measures to materialize the goals of the Porto Declaration. It is the intention of IACEE to share and to discuss these plans in international arenas and the ASEE International Forum is a preferred stage. The paper describes some examples of the association activities, member presentations made at the IACEE world conference and the association short term plan.

Quality Program of IACEE

IACEE's Quality Program for Continuing Education, earlier known as Continuing Professional Development Benchmarking and Quality Improvement Program (CPD-BQIP),

originated as the Development of Accreditation in Engineering Education and Training (DAETE) project sponsored by IACEE. It has been developed over the past five years with IACEE support and external funding through the U.S. Department of Education and the European Union. The Program's standard is based on the European Foundation for Quality Management (EFQM) Excellence Model, adapted for applicability to CPD and Continuing Education (CE) organizations.

All institutional IACEE members are encouraged to register for this organizational quality improvement and benchmarking program, which is a FREE benefit of IACEE membership. As the number of users increases and the size of the database increases, the quality of the benchmarking data will improve and be of greater value to all of us! The IACEE has shown itself to be at the forefront in continuing professional development by establishing CPD-BQIP as the first ever international standard for managing quality in CPD programs at the organizational level. IACEE is making this program available to CPD and CE organizations from all disciplines.

CPD organizations can use the tools and processes of the CPD-BQIP to:

- Assess their quality with respect to the standard
- Benchmark their quality against peer institutions
- Share best practices among similar organizations, to allow continuous quality improvement
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Data collection and reporting within CPD-BQIP have been automated via a web-based platform to enable better and more scalable access to the self-assessment and benchmarking tools¹. This quality program allows engineers to have access to training courses and activities that provide assurance of quality necessary to help the implementation of the Porto Declaration.

Continuing Engineering Education Managers Training

The program is composed by a series to face-to-face and online workshops, new and seasoned continuing engineering education managers are trained in global program development, management and marketing strategies. For individual members, this is a perfect opportunity for professional development.

Those who should attend are both new and experienced CEE Managers from Universities, Government, Industry, and consultants who are interested in gaining competency skills and receiving some credentialing by a professional organization to authenticate the learning experience.

The topics covered are programs addressing the following topics are designed and presented for an international market. Recognized experts from various countries lead the workshops that are presented at the biennial IACEE World Conference or at Conference for Industry and Education Collaboration. These topics are:

- Marketing Strategies
- Demand Analysis
- Managing the Brand
- Learning and Delivery Technology Applications

- International and Global Competition

Earning a badge and a certificate: A "badge" is a unit of measurement to recognize learning that individuals have acquired through a training program. Badges generally are offered as a set or "system of badges." In order to earn a Badge, each participant will be asked to complete a follow-up assignment in which each participant will apply the tools introduced and discussed in the workshop concerning the related organization. The report will then be evaluated and approved by the IACEE Council. To earn a certificate each participant will need four badges.

The first opportunity to earn an IACEE training Badge was at the 2014 IACEE World Conference in June, 2014 at Stanford University. "E-Marketing through Social Media and Online Tools" was offered as a 4-hour pre-conference workshop on June 24. The second opportunity was at the 40th Conference for Industry and Education Collaboration, held in Palm Spring, CA, USA on Feb 3, 2015, when a workshop titled "Managing your Brand" was presented prior to the main conference ².

Some participants through successful completion of an assignment following a CEE Manager Training workshop on "E-Marketing through Social Media and Online Tools", have met the requirements and qualified for a Badge towards the CEE Manager's Certificate. It takes only 4 badges for Certification from IACEE. One example was a project using specific examples to demonstrate competency and newly acquired skill sets in E-marketing using webinars as a marketing tool for Continuing Engineering Education seminars. This training empowers those in charge of management of CDD to acquire the competencies needed to align the courses offered to engineers to comply with the social and professional responsibilities presented in the Porto Declaration.

The CEE Manager Training Program Team has been delivering a new feature for members: "A Knowledge Share Moment!" it is planned to provide each participant with some valuable tips and expertise on various topics of interest to all in CEE. If each participant would like to learn more on the topics, or have suggestions for future tips to be provided, it can contact IACEE. This will help IACEE us to build a Certificate Program for new and experienced CEE Managers based on specific training needs ³.

Case Study 1

The first example of the value of the Porto Declaration value is related with the value of CEE in regional terms ⁴. There are many challenges and opportunities as CPD organizations engage and partner with regional and governmental organizations to develop and deliver education content which will have an impact. In this case study, we will explore how a regional incubator, Euratechnologies, and an education partner, Stanford University and its Center for Professional Development (SCPD), worked together to create a unique industry/university partnership.

Founded in 2009, Euratechnologies, an IT ecosystem (incubator, accelerator, enabler) in Lille, France, has become one of the fastest and most attractive hubs for high technology start-ups in Europe (the 3rd best accelerator in 2015 Fundacity European Ranking). It was created and supported by the Lille Nord region to revitalize the community and spur high technology innovation and entrepreneurship. At the time, the notion seemed a bit of a stretch

as there existed in France vibrant entrepreneurial communities around Paris and Lyon. However, the ingredients for success seemed to be in place. Euratechnologies hoped to capitalize on Lille's strengths as home to research centers, higher education institutions, and laboratories and a new urban center to house IT start-ups with state-of-the-art facilities, research equipment, and support.

At the time of the launch, Euratechnologies CEO Raouti Chehik stated, "Our vision is become the place where entrepreneurs, projects, and innovation converge." While the Euratechnologies had a beautiful, world class facility and the technical infrastructure to support entrepreneurs and existing businesses, they realized they needed education as the proverbial third leg of the stool. The education program Euratechnologies contemplated needed to be different from the standard education programs.

While there are many excellent schools in the region, Euratechnologies sought Stanford University, based in the Silicon Valley, to create a dramatically different education intervention. Stanford CPD, since 2002, has delivered a number of education programs around the globe, but had never embarked on a regional engagement of this sort. Over many months of development and with active dialogue between Stanford CPD, its faculty leads and Euratechnologies leadership, the education program began to take shape. And now, after 6 years of partnership and hundreds of graduates from the program, this paper will share lessons on the journey in hopes others might learn about the challenges and opportunities with international collaboration.

Case Study 2

The second example is related with the learning of the 21st century and with competencies of global CPD and CEE leaders and trainers ⁵. The global Continuing Engineering Education (CEE) or Continuing Professional Development (CPD) units of today face unique challenges. The administrators and the faculty of such units must be ready to meet the new global learners and must continuously innovate new programs to respond to the needs of these lifelong learners in engineering. Are the leaders and the managers of these units ready for this new world? Do they have the right competencies to foster innovation within their organizations that will be responsive to the new learners' needs and will be able operate their CE units for growth and fiscal success? Do the administrators have the right competencies to form sustained partnerships with global engineering organizations?

During the one hour-long session, the administrators and faculty of nine organizations from three different continents debated the definition of such competencies and engages in further discussions. This debate considered the new learners who are culturally diverse, globally distributed yet connected via technology. These learners, unlike their previous generations, change jobs more frequently and thus need to learn new skills quickly and conveniently.

Even at their present organizations, they are continuously assigned new projects that require new skills. As CEE or CPD administrators and faculty, one wants to be ready for these new learners. Do we possess the right skills and competencies ourselves to respond to these learners by innovating programs or teaching methods that help acquire interdisciplinary skills and knowledge of multiple disciplines in a format that can reach the learners with diverse learning styles? The debate was moderated by the CEE administrators from Washington University in St. Louis (USA) and University of Delaware (USA),

The participants panel was represented by the faculty and administrators of Aalborg UNESCO Centre for Problem Based Learning in Engineering Science and Sustainability (Denmark), China Association for Continuing Engineering Association (China), The Hague University of Applied Sciences, Research Group Sustainable Talent Development and Delft University of Technology (The Netherlands), Georgia Institute of Technology (USA), Stanford University (USA), The State University of New York (USA) and The University of Tulsa (USA). The group also discussed the evolving business and operational models of CPD units worldwide and focused on skills required to form strategic CPD partnerships and generate financially sustainable innovative CEE programs.

Case Study 3

The third example deals with the need for sustainable knowledge flows between universities and enterprises⁶. The necessity of ensuring knowledge flows between HEI's and SME's is widely acknowledged, not only by stakeholders and policymakers, but also by researchers in the area of Continuing Engineering Education (CEE). It results from the challenges of our society and from the increasing complexity and pace that characterize economic growth - innovation, productivity and competitiveness. Derived from such challenges diverse models enhancing knowledge transferee has been developed. About one decade ago the tailor-made approach first entered the stage of continuing engineering education – facilitating a flexible and sustainable knowledge flow. The paper provided light on how the stakeholders, i.e. companies and universities received the approach.

Generally, the support of tailor-made continuing education is mostly positive. Policy makers have since the early 1990's supported activities of continuing educations with funding possibilities and through the years up until today supported collaboration between companies and higher education on continuing education. With the Erasmus+ Programme and the initiative of 'real problem-based teaching and learning' a tailor-made approach would be unavoidable. Also the end-users are positive towards the pilots of tailor-made course and what is interesting to notice, is that tailor-made approaches are seen as an answer to competence development regardless of the state of the market (boom or slump) – money or no money; time or no time, tailor-made course was reflected as a possible approach for continuing education.

The view of the suppliers (universities) were somehow a continuation or inspiration of policy makers but it is important for suppliers to notice that between 53 to 88% of the learners in continuing educations are adults who are work-related motivated – but only half of the adults who are work motivated, experiences large work-related benefits, which is clearly a challenge for the suppliers. To create new work-related learning opportunities for learners would increase their work-related benefits. With a tailor-made approach the likelihood of fulfilling both the company's need for skills and also to meet the preferences of the learner is higher.

Conclusions and Action Plan

One member of the IACEE team has developed a plan for gathering crowdsourced continuing engineering education contents that address topics around energy and other subjects that help

solve human problems. The team also developed a video which received constructive feedback. A communication plan related to the initiatives will be the next step.

Strategic partnerships have been sought to partner with related associations related with CEE and with industries. The existing Quality Program may be considered for leadership face-to-face and online training in some countries. Based on the needs of local CEE managers' programs and curriculum based on the Quality Program and CEE Manager Training from IACEE will be provided.

Strategic planning and planned tactical work will be used to create a shared vision among stakeholders. Templates for the strategic and tactical tasks will be debated and timelines and measurement metrics will be defined. Some ideas for the future comprise a digital journal on CEE, creation of a framework that will allow to expand connections with other organizations and stakeholders to further implement the goals of the Porto Declaration. The engineering community must assume its responsibilities to preserve the unique Earth that exists. CEE is the most effective to update technical knowledge, develop skills and change attitudes of the decision making engineers.

The value of these IACEE initiatives is expressed by the improvement of the competences of the engineers involved and by the benefits of the other stakeholders involved. These case studies and the IACEE Porto Declaration illustrate the contribution of CPD and of CEE to win the challenge placed to engineers to create a better world that is unique and where we all live. The results of the strategy and of actions resulting from the implementation of the declaration will be presented and discussed at the next IACEE conference in Monterey, Mexico in May 2018. All interested in having a more valuable engineering community are welcome at IACEE2018 to share and to contribute.

Bibliographic Information

- 1 - http://www.iacee.org/quality_program.php#sthash.SH89loj9.dpuf, accessed 10 April 2017.
- 2 - http://www.iacee.org/cee_manager.php#sthash.l2fxX2yC.dpuf, accessed 10 April 2017.
- 3 - http://www.iacee.org/knowledge_share.php#sthash.BGBC2CCD.dpuf, accessed 10 April 2017.
- 4 – J. Fauquembergue and P., Challenges and Opportunities: CPD Education Case Study with Lille France, IACEE2016 Proceedings, pp. 229-231, ISBN 978-972-752-199-9, Porto, 2016.
- 5 – S. Chakrabarti, E. Borbely, N. Baker, P. Hall, P. Marca, B. Nørgaard, E. Sjoer, K. Scalzo, Z. Guoqing, Are We Ready to Facilitate Learning in the 21st Century? A Debate On the Competencies of Global CPD and CEE Leaders and Managers, IACEE2016 Proceedings, pp. 227-228, ISBN 978-972-752-199-9, Porto, 2016.
- 6 – B. Nørgaard, E. Sjoer, M. Goossens, Documenting the Need for Sustainable Knowledge Flows Between HEI's and SME's Using Tailor Made Continuing Education Approaches in a European Engineering Context, IACEE2016 Proceedings, pp. 147-152, ISBN 978-972-752-199-9, Porto, 2016.