



World Engineering Education Forum (WEEF™) 2013 Cartagena de Indias Conference Report

Prepared by Christina White and the IFEEES Secretariat
January 2014

Table of Contents

1.	About WEEF	3
2.	Executive Summary	3
3.	Support Systems	4
4.	WEEF Experiences	6
	4.1 SPEED's Global Student Forum	6
	4.2 Forum Format	7
	4.3 Workshops	7
	4.4 Keynote Presentations	10
	4.5 Panels	11
5.	Awards	13
6.	Elections	13
7.	Key Recommendations	14
8.	Looking Ahead	15
9.	References and Resources	17

1. About WEEF

The first World Engineering Education Forum (WEEF) was held in Singapore in October 2010. Leaders in the global engineering education community sought to bring together the world's engineering education societies to the same place at one time, allowing for logistical and programmatic synergies. Since 2010, the WEEF has been held in Buenos Aires, Argentina (2012), and most recently in Cartagena de Indias, Colombia (2013). The next WEEF will take place in [Dubai](#), United Arab Emirates (December 2014). In 2013, the International Federation of Engineering Education Societies (IFEES) obtained a Trademark Certificate from the United States Department of Commerce's Patent and Trademark Office (USPTO) for the World Engineering Education Forum (WEEF), a process that took over a year to finalize. The trademark ensures that this event is legally protected and bound to IFEES.



The WEEF has been an important event in furthering IFEES' mission to bring together the global community to build excellence in engineering education. Not only do international organizations benefit greatly from the Forum, but local engineering education institutions are heavily involved in the vision and execution of this event. The venue of the WEEF changes each year, and the event has brought great visibility to the local institutions which otherwise may not have had such opportunities to interact and cooperate with foreign and international engineering education organizations.

This report is a summary of the activities and lessons from the most recent WEEF in September 2013 in Cartagena de Indias, Colombia. We give great thanks to **Uriel Cukierman, Duncan Fraser, Ivan Esparragoza, and Jennifer DeBoer** for their valuable feedback on this report.

2. Executive Summary

Pressing and complex global challenges call for innovation in education and education for innovation. Hundreds of international change agents responded to that call by participating in the

WEEF 2013 in Cartagena de Indias, Colombia from September 23rd – 27th. WEEF 2013 Cartagena brought together diverse stakeholders in engineering education including students, industry members, policymakers, and academics, and provided a wide range of opportunities for each of those stakeholders to contribute significantly to the discourse of improving engineering education. Thought leaders presented key research about *engineering education pedagogy, innovation, entrepreneurship, diversity, retention, competitiveness, online courses, and multiple perspectives on ways to effectively engage and develop as global engineers* for our modern era. A collaborative effort by **IFEES, the Colombian Association of Engineering Faculties (ACOFI), the Student Platform for Engineering Education Development (SPEED), the International Institute for Developing Engineering Academics (IIDEA)**, renowned engineering multinational **corporations, governments**, and the **local Colombian community** made the Forum a leading engineering education conference. The event provided an important opportunity for stakeholders to explore research and teaching methods that foster innovative skillsets and mindsets to generate significant positive changes in the world.

The two salient themes for the WEEF 2013 Cartagena were *Innovation in Education* and *Education for Innovation*. Over two hundred research works were presented in a variety of formats by the WEEF participants. *Innovation in Education* encompassed topics of curriculum, pedagogy, research methods, and evaluation of effective ways to improve engineering education. This theme included analyses of the role that innovation processes plays in enriching the development of engineers. The other theme of the Forum, *Education for Innovation*, included applied research about stimulating entrepreneurship and competitiveness. This theme shed light on engineering innovation as a driver of local and global economies. With *Education for Innovation*, engineers can promote world-class scientific and technological development that can positively impact the welfare of societies through entrepreneurship. The complementary themes were analyzed and discussed from diverse perspectives including views of social, environmental, and economic contexts. These discussions will serve as springboards for the WEEF 2014 Dubai focus on *Engineering Education for a Global Community*.

3. Support Systems

The support and generosity of local and international communities made possible the several workshops, meetings, integrated cultural experiences, and social events that made up WEEF. An important part of making the WEEF successful is an active and strong local infrastructure. Colombia's institutes of higher education stepped up to the challenges for the WEEF, with valuable help from the University Corporation Rafael Nuñez, Technological University of Bolívar, the University of Cartagena, and the Admiral Padilla Naval School of Cadets.



As a prelude to the WEEF, the SPEED's ninth Global Student Forum (GSF) was hosted for three days at the **Universidad Tecnológica de Bolívar**, where approximately one hundred students from countries around the world worked on action plans to improve engineering education. The primary venue for the WEEF 2013 was the Convention Center in Cartagena de Indias with other forum events supported by the local community. The first workshop of the WEEF was organized and hosted by the **University of Cartagena** at the complex of La Merced. Throughout WEEF, the **University Corporation Rafael Nuñez** hosted several workshops and a Civil Engineering meeting on their campus. Another important part of the local contributions is to foster cultural connections. WEEF participants experienced some Colombian culture with social events, dance performances, a historical boat cruise, and with the contributions of the **Admiral Padilla Naval School of Cadets** who performed music at the inauguration including the Colombian and Cartagena anthems.

The WEEF was also made possible through the active participation, resources, and support of commercial, academic, and government entities from around the world. The WEEF 2013 included keynote presentations, workshops with certification, panels, poster presentations, hands-on commercial exhibitions, and several sessions including Engineering Chapter meetings and the IFEEES Strategic Planning, General Assembly, and Executive Committee meetings. These all came to fruition through the participation and support of the following sponsors:

- **Dassault Systèmes**
- **Mathworks**
- **Airbus**
- **Hewlett Packard**
- **Total, S.A.**
- **Stevens University**
- **Institute of Geography Agustin Codazzi**
- **University of Sinú Photography**
- **Caribe Jewelry Store**
- **Hard Rock Café**
- **Juniper Networks**
- **Universidad Tecnológica de Bolívar**
- **University Corporation Rafael Nuñez**
- **Pontificia Universidad Javeriana**
- **ACOFI**
- **Admiral Padilla Naval School of Cadets**
- **Universidad de los Andes**
- **COPNIA**

-
- Electroequipos
 - SMART Translators SAS
 - Fischer-Technik
 - FESTO
 - La Republica Newspaper
 - AVIANCA
 - Semana Publications
 - EBSCO
 - Semilleros de Investigación

4. WEEF Experiences

4.1 SPEED's Global Student Forum

As a precursor to the WEEF, **SPEED** hosted their ninth annual **Global Student Forum (GSF)** for undergraduate and graduate students interested in developing as a *glocal* engineer – one who acts locally, and thinks globally. Throughout the GSF, students worked together to design action plans that could be implemented on their local campus to positively improve their community as well as have global impact. The students worked alongside faculty, IFEES members, and industry leaders from GSF sponsors: **Juniper Networks, Total, S.A., Airbus, and Dassault Systèmes** to think critically about a variety of issues in engineering education that could be improved with their action plans. The action plans focused on project-based learning, sustainability, creativity, and culture and community involvement in engineering education. Student action plans included approaches to hands-on and technological learning environments, community and industry collaborations, issues of peace, and environmental sustainability. The GSF culminated in teams presenting their action plans to all student participants and to a judges' panel of industry and academic leaders who determined award-winning action plans. The overall award for innovation, feasibility, and sustainability was awarded to *Engineering Seeds of Peace* – an international collaborative effort to develop global citizenship and foster peace through engineering communities.



4.2 Forum Format

The WEEF 2013 opening ceremony set the tone for international, inter-institutional, and interdisciplinary engagement as **Jose Carlos Quadrado**, President of IFEES, **Javier Páez**, President of ACOFI and **Patricia Martínez Barrios**, Deputy Minister for Higher Education, at the Ministry of Education, welcomed hundreds of participants to this leading engineering education forum. Special considerations for these diverse participants from around the world were taken into consideration for the WEEF, including different types of discussion formats (keynotes, panels, workshops, meetings, poster sessions, small group discussions, hands-on industry exhibitions, cultural celebrations, and social events), as well as providing translators and complementary headsets for ease of communication between Spanish and English speakers.

4.3 Workshops

Participants also were able to have small group discussions and do hands-on learning in the workshops throughout the week, generously hosted by several previously listed local sponsors. Almost all of the workshops offered professional credits to participants. Summaries of the WEEF 2013 Cartagena Workshops are available below.

The **Dassault Systèmes** Workshops explored innovative technology in engineering education. **Charles Bonnassieux** led a workshop on the Secret of Digital Natives, inviting students from Colombia to share their breakthrough experiences with Product Lifecycle Management projects. **Charles Bonnassieux** and **Xavier Fouger** facilitated another workshop on how **Dassault Systèmes** helps educational innovation, internationalization, and multi-disciplinary learning. This session offered a global panorama of the new practices and technology in Latin American institutions with Product Lifecycle Management.



The **Hewlett Packard** Workshops, led by **Brian Beneda**, Global Director of HP Institute, and **Daniel Amato**, Certiport Regional Manager in Mercosur and Perú, focused on a) working with universities to develop tomorrow's IT workforce today and b) enhancing the employability of engineering graduates through practical business skills.



The **National Instruments** Workshop used a hands-on approach to display tools for teaching electrical circuits. This workshop included ways that **NI** helps solve engineering challenges by providing important tools for scientists, engineering, teachers, and students to increase their productivity. In this workshop, participants were introduced to **NI Multisim**, **LabVIEW Graphical System Design**, **myDAQ**, and other applications of their technologies, where theory becomes practice and concepts become applied knowledge for a wide range of students.

The **MathWorks** Workshop on Teaching with **MATLAB** and **Simulink** was coordinated by **Gerardo Hernandez Correa**. This technical session demonstrated how **MATLAB** can be used to shift the focus from mathematical manipulation to problem formation and visualization. The participants learned how **MATLAB** computational tools can improve comprehension by enabling students to explore and visualize fundamental principles, and then systematically apply them to the analysis and design of complex systems.

The Workshop on Retention of Engineering Students was led by **Uriel Cukierman**, **Diana Cukierman**, and **Bernardo Wagner**. This workshop guided participants to share ideas about a common, worldwide challenge – increasing student retention. This interactive workshop engaged participants in discussing ways to improve student retention rates in engineering and computer science courses and degrees.

The **ABET** Workshop was led by **Michael K. J. Milligan**, Executive Director. During this workshop, participants from Latin American institutions were informed of the various resources provided by **ABET** that focus on assessment, continuous improvement, and accreditation.

A research group of the **Faculty of Engineering of the Universidad Tecnológica de Pereira** offered the **GEIO** Workshop. During this workshop, participants learned about active methodologies for engineering education that emphasize the use of play as an innovative tool for teaching engineering concepts.

A workshop of **IIDEA** and **GAE** was facilitated by **Jennifer DeBoer** and **Stephen Hundley**. This workshop focused on global attributes and competencies. This workshop explored an initiative to identify and assess key characteristics of the world's future engineers. The workshop supported participants in achieving learning objectives about global attributes and competencies; it also served as a forum for broader collaboration with partners who will liaise with IFEEES partners for the growing initiative.



IIDEA led another workshop in conjunction with **Harvard's LASPAU** and **Olin College**. **Jose Oscar Mur Murinda** (Olin College) and **Kate Koehler** (Harvard's LASPAU Center) collaborated to offer a highly interactive Spanish/English workshop on stakeholders in engineering education. During the workshop, intergenerational groups of students, faculty, and deans from Colombia, Latin America, and global partners worked to classify the various stakeholders who have an interest in engineering education reform. After very involved discussions in small teams, they presented their final "perspective of the field of stakeholders" to the group of approximately 25 attendees. This workshop was conducted through **IIDEA** in collaboration with and support from **HP Calculators**, and it created the foundation for an ongoing partnership to support STEM learning in Latin America and internationally.

The Workshop on **Latin American Accreditation** was led by **Zenaida Otero Gephardt**, Vice President of Accreditation of the **Latin American and Caribbean Consortium of Engineering Institutions (LACCEI)**. This workshop included hands-on exercises allowing participants to become familiar with the accreditation process and techniques. It incorporated accreditation fundamentals, cultural aspects, responsibilities, and assessment vehicles.

Patricio Montesinos, from the Universitat Politècnica de València in Spain, guided the Workshop on Competencies to Define Competencies that Generate Innovation. During this workshop, Montesinos shared a simple methodology that enabled participants to identify competences for innovation, define competences for a specific purpose and identify the activities needed to transmit these competencies. It aimed to share tools for defining competencies and tools for defining activities with consideration of learning styles.

4.4 Keynote Presentations

The keynote presentations provided rigorous research across the two themes of the WEEF, *Innovation in Education* and *Education for Innovation*. The insights from the keynote presentations also resonated in much of the research in the WEEF conference publications including a main idea that education must prepare engineers to work in complex systems that impact all aspects of society. Indeed, participant research papers and the multiple speakers indicated that engineers need to understand problems as technical, economic, and ethical problems. The keynote speakers included rationales for reconceptualizing engineering education and provided salient examples of effective approaches for a variety of educational settings. **Anette Kolmos**, from Aalborg University in Denmark, prompted participants to understand ways to educate engineers as responsible change agents through problem based learning. **Autar Kaw**, from the University of South Florida in the USA, offered insights into improving engineering education worldwide through evidence-based learning research. **Seeram Ramakrishna** from the National University of Singapore, Singapore led the WEEF participants in applying current engineering research on the relationship between innovation and competitiveness. **Jaime Bonilla**, from Tecnológico de Monterrey in Mexico, explored the environmental relationships of innovation and entrepreneurship. **Julian Mariño** of ICFES-ACOFI, Colombia guided participants in current research on standardized testing and quality in engineering education.

The keynote presentations included several examples of ways to facilitate change in engineering education to meet the needs of higher education students and drive innovation. The presentations included research about learning environments that resulted in students who are more motivated, engage in deeper learning, have increased skills and competencies, develop innovative skillsets and mindsets, and earn higher grades. Changing pedagogical and curricular aspects of engineering education resulted in increased employability because students had learned relevant skills, understood effective ways to collaborate, were experienced in project management, and were flexible and adaptable, allowing them to be able to solve complex engineering challenges.

In the following sections, we describe the main ideas from the complementary WEEF experiences (panels and workshops) and conclude with overarching key recommendations and future work.

4.5 Panels

The WEEF included panels of diverse thought leaders to further the discourse around the two main themes. **Dulce García** (Ibero-American Science & Technology Education Consortium (ISTEC)) moderated a discussion of *Innovation in Engineering Education* that included Uriel Cukierman (Universidad de Palermo, Argentina), **Xavier Fouger** (Dassault Systèmes, France), and **Autar Kaw** (University of South Florida, USA). The panelists shared rationales for making changes in engineering education to better prepare students of the 21st century by including real world learning experiences that better connect to career and community expectations. The global engineer must be effective in collaborating across cultures and be able to incorporate dynamic applications of theory to practice in this rapidly changing world.

Within the *Innovation in Education* theme, another panel, moderated by **Marco Sanjuán Mejía** (Universidad del Norte, Colombia) explored the complex issues of accreditation and quality in engineering education. **Michael Woonkyung Kim** (ABEEK, Korea), **Claudio Borri** (Università degli Studi di Firenze, Italy), and **Michael K. J. Milligan** (ABET, United States) presented accreditation's impact on quality in education and the role accreditation takes in innovation. The panelists included examples of accreditation and quality assurance cultures in top higher education institutions. They discussed ways to stimulate the improvement of engineering education and encourage innovative approaches to engineering education and its assessment. The discussion included accreditation strategies (including relevant uses of direct, indirect, quantitative, and qualitative assessment tools) to ensure long-term quality through of effective classroom teaching.

One of the leading topics for Innovation in Education was the disruptive technological/pedagogical shift to Mass Open Online Courses (MOOCs) – the panel on this topic was moderated by **Carlos Palacio** (Universidad de Antioquia, Colombia). Joining in the discussion were panelists **Diego Leal** (Universidad EAFIT, Colombia), **Jennifer DeBoer** (Massachusetts Institute of Technology, United States), and **Patricio Montesinos** (Universitat Politècnica de València, Spain). This panel was an important part of the overarching WEEF discussion in relation to accreditation and quality. It included thinking about ways that traditional online courses charge tuition, carry credit, and limit enrollment to a relatively small class size to offer a range of interaction opportunities with course instructor(s). MOOCs, on the other hand, are typically offered at no or low cost; most do not offer academic credit and have enrollments of hundreds of thousands of students in a single course. There is little doubt that this complicated conversation will continue as more research sheds light on aspects of MOOCs including: course design, sustainability, retention, quality, accreditation, and impacts on reaching a broader and larger amount of lifelong learners.

As a way to prompt deeper understanding about *Education for Innovation*, a panel representing views of different institutes of higher education from around the world highlighted key aspects of engineering research with examples of effective teaching and learning. **Luis David Prieto Martínez** (Universidad Tecnológica de Bolívar, Colombia) moderated this panel focused on innovation and competitiveness. To meet the needs of modern students and compete in this global market, effective use of technology to expand educational scope and space is important. The panel included **Krishna Vedula** (University of Massachusetts-Lowell, United States), **Seeram Ramakrishna** (National University of Singapore, Singapore), and **Erik de Graaff** (Aalborg University, Denmark). The panelists discussed the need for incentives, including national investments in research and innovation, to support collaboration between universities and businesses. They also shared examples of global partnerships between universities that sparked new pedagogical approaches and reached a broader range of lifelong learners. The international, inter-institutional, industry and interdisciplinary partnerships that include strategies in *Education for Innovation* are critical in addressing the world's most pressing issues and to drive economies.

The panel moderated by **Eduardo Behrentz** (Universidad de los Andes, Colombia) discussed entrepreneurship and the relationship with the environment based on an *Education for Innovation*. This discussion of entrepreneurial environments complemented the panel on innovation and competitiveness. **Robert Murphy** (Ibero - American Science and Technology Education Consortium (ISTEC)), **Myongsook Susan Oh** (Hongik University, South Korea), and **Jaime Bonilla** (Tecnológico de Monterrey, México) shared examples of hands-on, real world student projects that enhance creativity and drive economic development. This panel expounded on how entrepreneurial environments provide a forum for startup companies and build bridges for students to transition effectively into the modern workforce.

SPEED, since its inception, has facilitated an Inter-generational panel as part of the IFEEES Summit and WEEF, including this most recent forum. **Joe Packhem**, a student leader from SPEED from Marquette University in the United States, moderated this inter-generational panel of students, faculty, and industry members. Joining in the panel discussion were **Uriel Cukierman** (Universidad de Palermo, Argentina), **Duncan Fraser** (African Engineering Education Association, South Africa and current IFEEES President-Elect), and **Javier Cano**, (Universidad Nacional de Colombia, Colombia and student leader from SPEED), and **Monique Simon** (Total, France). In this session, the panelists first shared different methods of improving engineering education, and then participants were prompted to form inter-generational small groups. These inter-generational small groups discussed global design challenges such as natural disaster relief and resistance. Participants shared their ideas through social media platforms like Twitter and uploaded short videos of their discussions to YouTube. Participants could access the ideas in real time through social media, prompting an additional avenue for discussions across small groups. By using technology to capture these ideas and sharing them on social media, participants extended an opportunity to a global audience and engaged people not in attendance.

5. Awards

The engineering education community honored leaders in the field and held elections for the IFEES and SPEED administrative teams for the coming terms. During the IFEES Awards Dinner Cruise, attendees enjoyed traditional music and dance performances, local cuisine, and a waterside view of the Colombian coast. **Anette Kolmos** received the IFEES Global Award for Excellence in Engineering Education for her important work focused on leading international initiatives in Problem Based Learning. The IFEES President's Award for "Global Visionary" was presented to **Lueny Morell**, who was recognized for her key contributions as one of IFEES' founding members and Past President, founding members of the Global Engineering Deans Council, and Co-Founder of the International Institute for Developing Engineering Academics (IIDEA). **Eduardo Silva Sanchez** was honored as the IFEES "Regional Pioneering Leader" with a President's Award for his significant research, teaching, and important administrative roles including serving as an Advisory Board Member for IIDEA.



6. Elections

The IFEES community voted **Duncan M. Fraser, Secretary General, African Engineering Education Association** as the **IFEES President-Elect**. Professor Fraser will serve as President-Elect from 2013-2014, and then serve as President for two years from 2014-2016, and then finish his term as Immediate-Past President from 2016-2017. The IFEES community also elected five new Executive Committee members who will serve from 2013 to 2015: **Ivan Esparragoza**, Latin American and Caribbean Consortium of Engineering Institutions (LACCEI), **Euan Lindsay**, Australasian Association for Engineering Education (AAEE), **Uriel Cukierman**, Consejo Federal de Decanos de Ingenieria (CONFEDI), Françoise Come, European Society for

Engineering Education (SEFI), and **David A. Delaine**, Student Platform for Engineering Education Development (SPEED).

SPEED President David Delaine and the leadership team organized the Global Student Forum and the General Assembly. The SPEED General Assembly allowed for students from around the world to participate through social media for real time discussion and voting. The SPEED elections resulted in the global student body voting in the 2014 Executive Committee, **President Claudio Freitas, Vice President Dhinesh Balaji, Finance Javier Cano, External Affairs Officer Joe Packhem, Internal Affairs Officer Rohit Kandakatla, and Web Officer Muthuchelvah Ek.**

7. Key Recommendations

WEEF 2013 Cartagena provided a broad range of opportunities for research discussions, hands-on learning, and collaboration. The keynote presentations, panels, workshops, small group discussions, meetings, and other educational experiences provided a forum for participants to share their diverse perspectives.

The following list of recommendations arose from WEEF speakers who were chosen to share leading ideas from the Forum. These research-based innovations in engineering education were important parts of WEEF. At the same time, engineering education stakeholders are still critically examining PBL, MOOCs, flipped classrooms, and other innovations for their effectiveness as well as areas of weakness. The following high-level recommendations resonated across the two main themes of the WEEF 2013, *Innovation in Education* and *Education for Innovation*:

- Design and offer interdisciplinary courses that are learner-directed, including project- and problem-based learning;
- Provide Mass Open Online Courses (MOOCs) to democratize education by offering adaptive, personalized learning at a no or low cost options;
- Teach with flipped classrooms;
- Facilitate real world projects in partnership with industry, community members, and other universities to leverage ‘glocal’ cooperation and networks that will ultimately improve the welfare of societies;
- Create innovative and entrepreneurial environments with infrastructure such as research parks and incubators that bridge education to industry, scaling ideas to markets; and
- Use meaningful and multiple modes of evaluation such as action research to improve teaching and curriculum.

8. Looking Ahead

It was important to evaluate WEEF 2013 Cartagena to gather data about the experiences of the participants, which helps guide the planning for the WEEF 2014 Dubai. The results of the Global Evaluation indicate that participants were highly satisfied with the academic level, topics, published conference research, and accomplished objectives. In looking ahead towards WEEF 2014 Dubai, redesigning the forum format and methodology, which ranked slightly lower in the Evaluation, could increase participant satisfaction.

Leaders and participants in the IFEES community have expressed enthusiasm for applying the very principles and findings from engineering education research to the WEEF. While traditional keynote presentations and lecture-style sessions have their place, several leaders have expressed interest in bringing a different approach to learning at the WEEF. At WEEF, and indeed all professional conferences, participants come to learn about the "state of the art," the "cutting edge," and what they can bring back to their individual institutions. A concept that constantly discussed in engineering education circles is how to improve engagement and increase participation with cutting edge ideas in education. This can be translated into the design of the WEEF, an exemplary model of effective engineering education, where we can re-conceptualize the format with a goal of improving engagement and increasing participation for all attendees.

Whereas most conferences are traditionally structured with keynote presentations, panels, and breakout sessions, the WEEF needs to include progressive, cutting edge approaches to the Forum design. The format for future WEEFs should incorporate more opportunities for participants to be actively engaged in idea sharing, collaboration, and working sessions, reflecting the pedagogical approaches (e.g. learner-centered and project-based) that have been found to be effective for high level thinking and long term engagement. The WEEF could incorporate findings from leading engineering education research, which include more time for small group collaboration and hands-on workshops to personalize the learning and engagement for each WEEF participant. The format of the Inter-generational Panel is a prime example of a successful and meaningful model of how to incorporate leading engineering education pedagogy into the format of WEEF. Typically, the structure of the Inter-generational Panel is as follows: 1) Panelists, which usually include a student, a representative from Industry, a policymaker, and a faculty member, share their perspectives in a panel discussion, 2) Participants in the audience break into inter-generational small groups, 3) These small groups work together on a common topic or challenge, and lastly 4) All participants come back together to share overarching ideas, questions, and outcomes. This year, the discussion extended globally via social media platforms including YouTube, Twitter, and Facebook. This virtual dialogue can continue and expand to include more topics in preparation for WEEF 2014.

Indeed, one of the most important values of WEEF is working with diverse people who are all committed to improving engineering education. The WEEF is unique from all other engineering

education conferences in that it brings together different societies in order to create logistical and programmatic synergies. The WEEF Planning Committee must create a format that is conducive to fostering those synergistic relationships for all participants. Leadership communities including the GEDC, IIDEA, and SPEED find great benefit in the working sessions of the WEEF format. During the WEEF, IFEEES meetings provided time to plan a vision for the future and ways to better connect with the local and global community on a more continuous basis. The upcoming WEEFs will offer more interactive and collaborative experiences to increase satisfaction for participants.

To have a longer and broader impact, issues of multilingualism need to be addressed in future WEEFs. This will focus on ways to support a highly interactive, multilingual community. Considerations include issues of translation across many languages and designing new strategies to attract participants from an even broader geographical range. WEEF 2014 Dubai will build upon the strengths recognized by WEEF 2013 Cartagena participants to continue to provide a premier academic level for the forum, discuss relevant global topics, accomplish key objectives in engineering education, foster collaboration, offer professional development, and publish valuable research.



References and Resources

The following is a list of resources and references that offer more information on WEEF 2013 Cartagena.

WEEF Report by ACOFI: <http://www.sefi.be/ifees/wp-content/uploads/INFORME-WEEF-2013-ACOFI.pdf>
The local hosts of the WEEF 2013 Cartagena, the Colombian Association of Engineering Faculty (ACOFI), have published a report of the Forum in Spanish, and have a translated English version.

IIDEA Workshops: IIDEA is the capacity building arm of IFEEES. If your institution is interested in hosting a workshop, please visit their website, www.iideainstitute.org.

Inter-Generational Panel: At this year's Inter-Generational Panel, we started discussions on different methods of improving engineering education. Keep the conversations going on SPEED's Facebook page: <http://www.facebook.com/speedinternational>, or use the Twitter hashtags **#IGPanel** **#9thGSF** or **#Colombia**. You may also follow SPEED's Twitter, <http://ww.twitter.com/SPEEDOrg>.

Sponsors of WEEF 2013 Cartagena: A full list of the sponsors for this grand event can be found on the WEEF 2013 Cartagena website, at <http://weef2013.co/en/sponsors/>.

WEEF 2014 Dubai: The theme of the next WEEF is *Engineering Education for a Global Community*. Please visit the official website <http://weef2014.org> for updates on registration, call for papers, and program content.