

AC 2009-837: ALIGNING ENGINEERING EDUCATION INITIATIVES FOR KNOWLEDGE ECONOMIES: OUTCOMES OF THE IFEES GLOBAL ENGINEERING EDUCATION SUMMIT

Maria M. Larrondo Petrie, Florida Atlantic University

Dr. Maria M. Larrondo Petrie is Vice President of the International Federation of Engineering Education Societies, Vice Chair of Engineering for the Americas, Executive Director of the Latin American and Caribbean Consortium of Engineering Institutions, and a Board Member of the Women in Engineering Division and the Minorities in Engineering Division of ASEE. She is Professor of Computer Engineering and Associate Dean of Academic and International Affairs in the College of Engineering and Computer Science at Florida Atlantic University. Her email is petrie@fau.edu

Jose Carlos Quadrado, Instituto Superior de Engenharia de Lisboa

Dr. Jose Carlos Quadrado is President of the Instituto Superior de Engenharia de Lisboa (ISEL), Portugal. He is Vice President of the International Federation of Engineering Education Societies (IFEES), and served as Co-Chair of the 2008 IFEES Global Engineering Education Summit held in Cape Town, South Africa. He is the President-Elect of the Iberoamerican Engineering Education Society (ASIBEI).

Lueny Morell, Hewlett-Packard

Lueny Morell is President of the International Federation of Engineering Education Societies (IFEES) and Vice Chair of Engineering for the Americas (EftA). She is the Director of Engineering Education Innovation of HP Labs Open Innovation Office at Hewlett Packard.

Hans Hoyer, American Society for Engineering Education

Dr. Hans Jürgen Hoyer is the Executive Secretary of the International Federation of Engineering Education Societies (IFEES) and the Director for International Programs and Strategy at the American Society of Engineering Education (ASEE).

Aligning Engineering Education Initiatives for Knowledge Economies: Outcomes of the IFEES Global Engineering Education Summit

Abstract

The International Federation of Engineering Education Societies (IFEES) held its second Global Engineering Education Summit in Cape Town, South Africa in October 2008. The goal of the Summit was to begin aligning the initiatives of the engineering education societies, industries and government agencies around the world to maximize impact on knowledge economies. A five hour workshop specially designed by the World Bank Institute was embedded in the two day Summit to assist the leaders in formulating local and global, long and short term action plans. The highly interactive Summit began with policy makers presenting their perspectives, and was followed by short presentations by engineering education societies and industry leaders highlighting initiatives. The initiatives were grouped under an area of focus in the IFEES Strategic Plan: Infrastructure and Accreditation; Research, Development and Entrepreneurship; Student Success; and Lifelong Learning. This paper presents an analysis and summary of the outcomes of the Summit.

Introduction

The International Federation of Engineering Education Societies (IFEES)¹ was created on the 9th of October 2006 in Rio de Janeiro, Brazil. Within days IFEES joined the Organization of American States (OAS), the American Society of Engineering Education (ASEE), Engineering for the Americas (EftA), the Latin American and Caribbean Consortium of Engineering Institutions (LACCEI), the Asociación Iberoamericana de Instituciones de Enseñanza de Ingeniería (ASIBEI), and the Ibero-American Science and Technology Education Consortium (ISTEC) in signing the *Engineering Education Collaboration Agreement for the Americas*². IFEES has now grown to 52 member societies (see Appendix A) from academia and industry. It held its First IFEES Global Engineering Education Summit in Istanbul, Turkey in 2007³. The main outcome of the first Summit, whose theme was *Moving from Concept to Action*, was the approval of the IFEES 2008-2012 Strategic Plan³. The Founding President Claudio Borri challenged IFEES members to try to answer the question:

“How can education in Science and Technology help to reduce poverty to boost socio-economic development and to take the right decisions for a sustainable and environmentally compatible development?”

This question became the cornerstone of this first Strategic Plan and helped delineate the core values of IFEES:

- Promoting engineering education excellence globally
- Supporting IFEES member excellence
- Caring about our communities and our environment
- Promoting culture of community building and strong collaboration among members and other appropriate stake holders
- Fostering cultural awareness and diversity among its stakeholders

- Cultivating integrity, honesty, work ethics, and social responsibility in the engineering profession
- Promoting capacity building and contributing to the socio-economic development of lesser developed communities
- Acting with integrity, transparency and respect in dealing with members and non-members

The IFEES Assembly approved the Strategic Plan⁴, which determined that

- IFEES will work in close cooperation with national regional organizations from around the globe to influence public policy at the local, national and international levels in support of engineering education, while striving for operational excellence (including IFEES sustainability) and development of its members.
- The IFEES Vision is to foster and enhance the capabilities of an active global community of stakeholders empowered to advance engineering education worldwide.
- The IFEES Mission is to provide a global network to leverage the collective resources of members in fulfilling their individual missions by identifying discussing and advancing common objectives of the Engineering Education community.
- IFEES will focus on initiatives in four Action Areas: Engineering Education Infrastructure; Research, Development and Entrepreneurship; Student Attraction and Success; and Lifelong Learning

2007 – 2008 IFEES Initiatives

The first IFEES initiatives launched in the 2007 IFEES Global Engineering Education Summit in Istanbul focused on building the Engineering Education Infrastructure and on Student Attraction and Success:

1. Initiative to create the *Indo-US Collaboration for Engineering Education (IUCEE)*⁵, led by Krishna Vedula, Dean Emeritus of the University of Massachusetts - Lowell, brought together leaders of engineering education, engineering businesses from India and US, government representatives and World Bank colleagues to create the collaboration. One of its first goals was to design a Summer Faculty Leadership Institute⁶ to be held in 2008.
2. Initiative to create the *Global Engineering Deans/Rectors Council (GEDC)*^{7,8}, led by Dr. Seeram Ramakrishna from the University of Singapore. Dr. Ramakrishna explained the motivation behind this initiative:

“With the backdrop of globalization and rapid technological advancements, there is heightened expectation on engineering colleges to help respective economies to grow and sustain societies. An international forum would be useful to discuss the varied challenges and opportunities faced by engineering colleges around the world and to network and forge collaborations among the colleges.”⁷

The goals of the GEDC are to:

- a. Provide a forum for exchange of information and discussion of experiences, challenges and best practices in leading an engineering school
- b. Provide a means for engineering deans to partner in innovation, and collaborate with industry and other stakeholders

- c. Build a network that would support engineering deans to play a leadership role in developing regional and national policy to advance economies
3. Initiative to create a global student organization called *Student Platform for Engineering Education Development (SPEED)*⁹, led by Nicolò Wojewoda and Julia Ivanova, who collaborated with other student organizations to organize a Global Student Forum¹⁰.

In October 2008, the Second Global Engineering Education Summit was held in Cape Town, South Africa. The theme was *Aligning Engineering Education Initiatives for a Knowledge Economy*. This paper presents IFEES progress in its three stated initiatives. It evaluates the format used for the 2008 Summit and outcomes of the 2008 Summit.

IFEES Outcomes 2007-2008

This section discusses the progress made on the three IFEES initiatives identified in 2007.

IUCEE – Indo-US Collaboration for Engineering Education

IUCEE aims to identify, promote, catalyze, and add value to assist in the scale up and multiplication of promising practices for collaboration in

- Research and Development
- Curriculum and Technology Enhanced Delivery
- Innovation and Entrepreneurship
- Quality and Accreditation Processes
- Industry Participation

The IUCEE initiative strives to prepare the next generation of engineering faculty in India and the United States, and to dramatically increase the number of collaborations in research and teaching to better prepare engineers for the global economy. The planning phase involved almost 200 academic and business leaders from both countries and resulted in raising close to US\$1M to fund the first Summer Faculty Leadership Institute. The Institute was designed as a series of 23 one-week Train-the-Trainer workshops taught by US faculty members and corporate representatives known for their pedagogical skills. The topics covered general effective teaching techniques as well as best practices teaching in specific engineering disciplines. The workshops were held during a six week period during the Summer 2008 at the InfoSys Technologies' Global Education Center in Mysore India. The 585 Indian faculty participants were selected from a pool of 1400 applicants based on their potential to be trainers in their own colleges and regions. Each typically enrolled in a methodology workshop and a discipline-based workshop. All agreed to lead regional workshop throughout India. The participants had the following profile:

- All participants had at least a Master of Technology or Master of Engineering Degree.
- 25% had PhDs;
- 75% has more than 10 years teaching experience;
- 25% were senior administrators or heads of colleges;
- 24% were female
- 15% from AP, 7% from Gujarat, 26% from Karnataka; 16% Maharashtra; 20% from Tamil Nadu; and 15% from other states in India.
- 175 colleges were represented

As a follow up, the participants have been contacted several times to ensure they are practicing the techniques, are doing outcome based assessment, and are conducting seminars for other faculties in their colleges and regions. Mentoring of participants in technical and academic research has started to occur and has resulted in publications¹¹. Over the next five years, IUCEE hopes to cover all the core courses in engineering and computer science and make the resources generated, easily accessible to faculty all over the world. A second Institute is planned for Summer 2009, several academic leaders from other parts of the world will be invited to participated to explore how to adapt the IUCEE model to carry the initiative to other parts of the world.

GEDC – Global Engineering Deans/Rectors Council

On May 8 and 9, 2008 the Global Engineering Deans/Rectors Council was formed in Paris by engineering education leaders representing prestigious institutions from all continents. *The Paris Declaration: Inaugural Statement of the Global Engineering Deans Council*¹² was translated to 13 languages and reproduced. It declaration affirms the commitment to nurture the development of locally pertinent and global engineers, and collaborate in a global scale. It defined the GEDC immediate goals:

- To provide a world-wide forum for exchange of information and discussion of experiences, challenges, and best practices in leading an engineering school.
- To provide a means for engineering deans to partner with one another in curriculum development and innovation, and to collaborate with industry, government, and other stakeholders.
- To build a network that would support engineering deans to play a leadership role in developing regional and national policies to advance economies.
- To participate in the development and maintenance of a global system of quality standards for engineering education.

The GEDC elected Cristina Amon, Dean at the University of Toronto, Canada, was elected GEDC Chair. Hasan Mandal, Dean at Anadolu University was elected Vice Chair. Yong Hoon Lee, Dean of Korea Advanced Institute of Science and Technology was elected Secretary Treasurer. The American Society of Engineering Education hosts the secretariat of both IFEEES and GEDC.

SPEED - The Student Platform for Engineering Education Development

The Global Student Forum (GSF) is a one week event that is organized by students in the format of a series of workshops, discussions, presentations and action plan development sessions that enable them to have a voice and impact on engineering education. At the first GSF in 2006, the concept of the Student Platform for Engineering Education Development (SPEED) was born and has developed over subsequent GSFs. Before the end of the 2008 GSF, the students gathered to write the first draft constitution and bylaws to formalize the organization. SPEED is a global, non-profit student organization of engineering students with the goal of voicing student opinion to create an impact to enrich engineering education curricula worldwide and its effect on society and the environment. A web site has been created⁹. Nicolò Wojoweda, a co-founder of SPEED, is the coordinator of the initiative, and Jennifer DeBoer is representing SPEED within IFEEES.

IFEES 2008 Summit Evaluation, Outcomes and Goals

The 2008 IFEES Global Engineering Education Summit theme was: The theme was *Aligning Engineering Education Initiatives for a Knowledge Economy*. The Summit had 6 objectives:

1. Advance understanding of the relationship between engineering education and knowledge economies
2. Share successful initiatives and best practices, and how they can be adapted to the developing world, with the goal of catalyzing alliances to align initiatives and leverage resources to support knowledge economies
3. Develop local, global, short term and long term action items, relevant to the participant's organization or sector that advance engineering education and knowledge economies.
4. Bring together global leaders from relevant sectors and provide opportunities to network to identify action items that advance common objectives, and to form alliances and working groups to advance these and report outcomes in the next summit
5. Understand the needs and best practices/successes of IFEES member organizations (primarily engineering education associations) in order to initiate a dialogue that will enable IFEES to develop focused strategies to support development of these members in a focused sensible way (identifying needs of both developed and developing world engineering education associations)
6. Understanding the engineering education situation in Africa and how IFEES and engineering education can support/help.

A key session to meet these objectives, was a five-hour workshop that was jointly developed by the World Bank Institute and IFEES: *Engineering Education in the Knowledge Economy*, aimed at giving a deeper understanding of the concept of a knowledge economy in theory and in practice, specifically how engineering education can be better structured to support this economy in the context of the widely varied regional and sector perspectives. In particular, initiatives and perspectives from Africa and India were highlighted.

With this foundation, some sessions were designed to *reach out* to stakeholders to understand initiatives, perspectives, challenges and expectations; while others used round tables designed to *reach in* to communicate to IFEES members to identify initiatives that IFEES should endorse and help IFEES and the participants define long and short term, global and local action items for the coming year.

The Summit began with the perspectives of policy makers from Africa, China, Russia, and the U.S. speaking on *The Role of Engineering Education and Innovation in Knowledge Economies*. Panels highlighting engineering education initiatives were grouped into 3 sessions organized by the IFEES focus area: Engineering Education Infrastructure; Student Attraction and Success; and Research, Development, Entrepreneurship and Innovation.

When asked how the Summit met these 6 objectives the participants responded as shown in Table 1 and Figure 2. According to the evaluation 79% of the respondents were either Very Satisfied (28%) or Satisfied (52%) that they had gained a deeper understanding of the relationship between engineering education and knowledge economies, and 75% of the respondents being Very Satisfied (39%) or Satisfied (36%) indicating the Summit met objective

number 4 related to providing opportunities to network and form alliances to identify action items and form working groups.

**Table 1. Participant Responses to Satisfaction that the Objectives were met
IFEES - International Federation of Engineering Education Societies
2008 Short Term Summit Objectives and Evaluation**

		Evaluation / Scale				
		Very Satisfied (5)	Satisfied (4)	Neutral (3)	Disappointed (2)	Very Disappointed (1)
Objectives	1	8	15	5	0	1
	2	6	10	13	1	0
	3	2	13	7	6	0
	4	11	10	6	1	0
	5	8	8	8	3	0
	6	7	5	12	0	0

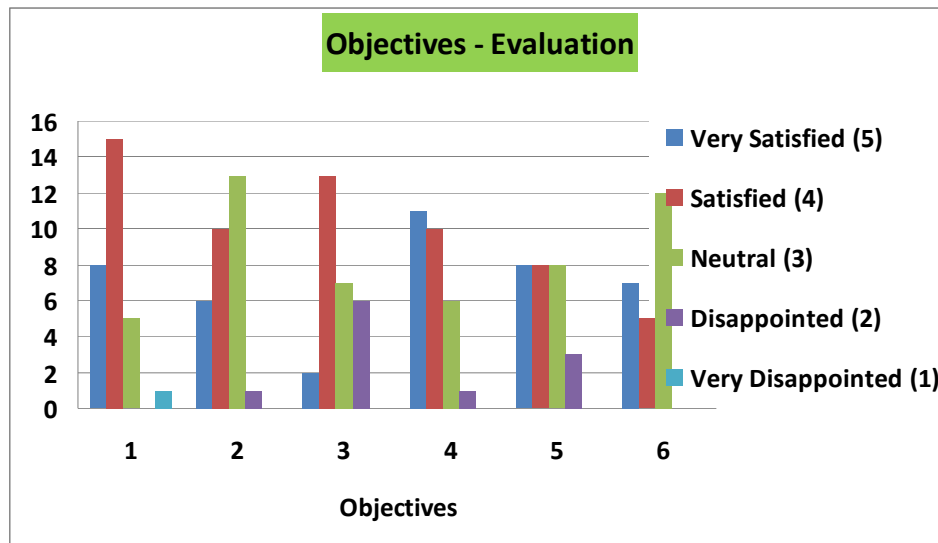


Figure 2. Histogram Summary of Participants Satisfaction Objectives were met

IFEES Summit Enhanced Interaction Format: Planned but not realized

The 2008 Summit was designed to begin with presentations from Ministers and Government Agency representatives from around the world, followed by a period of interaction. There were 3 panels featuring very brief spotlights on initiatives centered on 3 of the action areas of the IFEES Strategic Plan, each panel followed by interaction and a session with round tables focusing on regions or special topics. The format was designed to have very brief presentations with time for discussion providing enhanced interactions and networking. Because of logistics and transportation problems the first day of the Summit started about 1 hour late, which eliminated much of the interaction time of the morning. The afternoon featured the 5 hour World Bank Workshop, which had its full interaction but the venue was set up in an auditorium with fixed chairs, which was not optimal for communicating in groups. The second day of the

Summit the venue was changed to avoid the challenges of the first location, this caused delays beginning the event and caused elimination of a significant portion of the planned enhanced interaction. Part of the evaluation asked a question regarding the design of the enhanced interaction and its effectiveness. Table 2 and Figure 3 show the low response and the frustration of the limited interaction caused by the logistic challenges. It is important to note that there was no Enhanced Interaction, except in the World Bank Workshop, since most had to be eliminated. The responses indicate the participants would like more interaction.

Table 2. Responses to Satisfaction with Enhanced Interaction Format
The Summit - Enhanced interaction

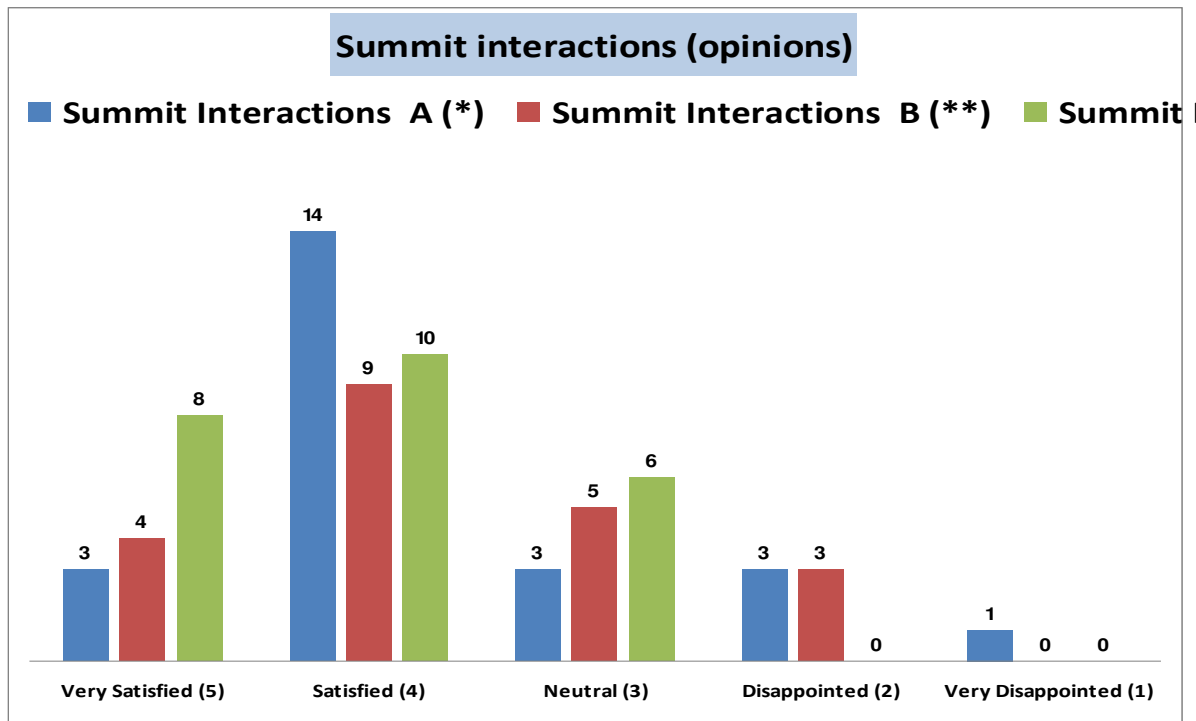
		Very Satisfied (5)	Satisfied (4)	Neutral (3)	Disappointed (2)	Very Disappointed (1)
Summit Interactions	A (*)	3	14	3	3	1
	B (**)	4	9	5	3	0
	C (***)	8	10	6	0	0

(*) Panels of many speakers presenting very short presentations centered on initiatives

(**) Embedded Workshop to provide a knowledge base, best practices, and action outcomes

(***) Round Tables on special topics

Figure 3. Histogram of Responses to Enhanced Interaction Format



There were two open questions in the evaluation survey. The questions and the responses to them are shown in Table 3.

Table 3. Evaluation Responses to Open Questions

Open Questions
<p>A - What did you find most valuable from attending the Summit?</p> <ul style="list-style-type: none"> • Contacts with world leaders • New ideas to implement in my institution and the networking • Network / Networking opportunities • Interaction with other regional bodies • To better develop the relation ship between Engineering Education and knowledge economies • Massage of the Workshop “Role of engineering, education in knowledge economy” • Best session was student attraction success but still not enough interaction time • Learning about other initiatives – the World Bank workshop • Clear outcome workshop • Exchange with worth – wide colleagues • Learning about a wide range of institution across the world
<p>B - What would you have changed to improve the Summit?</p> <ul style="list-style-type: none"> • More time for discussion, less speakers on panels • More seriousness to finding solutions for African countries. Make a committee to draw a strategies for African countries • More focused objectives for outcomes of round tables • Too many speakers, too little real discussion • Audition conditions • Always room for improvement • Make available more time to discussion and presentation • The summit is becoming more nature, not have changes in program • Be specific how Africa can be assisted in funding from foreign agencies • Outcomes from the Workshop – it’s unclear what more could have resolved as an outcome • Have joint session / speed IFEES for sharing ideas / action plans • More time allocated to round table discussions organized by region • More outcome oriented discussions • More time for discussions and interaction • Best format

As part of the Summit evaluation, the participants were asked to identify action items that resulted from participation in the Summit that they would take back to their organizations for possible implementation. They were asked to categorize them as short term vs long term and local vs regional/global. Twenty one individual volunteered their action items, all but one identifying themselves by name and email for follow-up so we can report progress at the next Summit. The action items came from universities, engineering education societies, accreditation agencies from 10 different countries: Australia, Canada, Europe, India, Malawi, Nigeria, Portugal, Romania, South Africa, and USA. Individuals identified a total of 25 Long Term Local Action Items, 29 Long Term Global/Regional Action Items, 19 Short Term Local Action Items and 23 Short Term, Regional/Global Action Items. A total of 96 action items were submitted and being taken back to their organization for possible implementation. Table 4 lists the responses. Appendix A contains a list of acronyms for members of IFEES for reference.

Table 4. Long Term and Short Term, Local and Regional / Global Action Items

Participants		A	B	C	D
		Long Term Local Action Items	Long Term Regional / Global Action Items	Short Term Local Action Items	Short Term Regional / Global Action Items
1	Country: USA Organization: University	Begin potential collaboration with UCT on DLMs for Engineering Education	Large Scale Center Proposal for Globalizing Engineering Education	Begin potential collaboration with UCT on DLMs for Engineering Education	Large Scale Center Proposal for Globalizing Engineering Education
	Country: USA Organization: Service Learning Organization				Create resource hub governing campuses activities (by engineers)
3	Country: Nigeria Organization: University	Sensitize my local university administrators, and funding agencies on the need to develop engineering education	Apply to World Bank and other funding agencies to assist with DLM unit acquisition and online lab. facilities	Sensitize my local university administrators, and funding agencies on the need to develop engineering education	Apply to world bank and other funding agencies to assist with DLM unit acquisition and online lab. facilities
	Country: Portugal Organization: University	-EUR-ACE Accreditation for our courses -“Develop” a new type of engineer -Workshops about: Innovation / Entrepreneurship / Leadership	-Social Entrepreneurship as a goal - Implementation of problem based learning courses -Mobility of students - Cooperation with Africa and Ibero American	-Sustainable project involving students and professors - BEST courses for students - On line resources	- Board of European students of technology (BEST) involving students association -Integrating international engineering education consortiums
6	Country: USA Organization: Global internet hub		- Sustainability competition		Link AEEA with ACE (American Council of Education)
	Country: Canada and Malawi Organization: Service Learning Organization	Implement initiatives to create a service learning opportunities for Malawian engineering students and to work with the university of Malawi to create a forum for industry university collaborations		Create a forum for industry university collaborations	
8	Country: USA Organization: Engineering education society		- Determine applicability of “changing the conversation” internationally - Work with SPEED - Develop strategies for implementation - work with / SPEED IFEES GDC		
	Country: ? Organization: ?			Make a study involving engineering education development and social and economic development	
10	Country: USA Organization: Industry	- HS Program built from Soyster’s PPT stack	HS or college student competition sustainable engineering		
	Country: Europe Organization: Accreditation Agency		Benchmarking and interacting with other international accreditation systems		Contacts with countries + HEE associations outside Europe to foster accreditation
12	Country: Australia Organization: Engineering	-Importance of benchmarking / understanding accreditation systems with ability to manage national needs and guarantee	- International competitions on sustainability (links to EWB?)		

	Education Organization	future change and improvement -Need to encompass “engineering technologists” as well as engineers in future thinking on engineers education for sustainable development	- Importance of real Engineering Education Research and development of Faculty to understate it		
13	Country: India Organization: University	To develop a network with as many countries by sharing best practices and help each other to adopt these by being partner to all	- Attend IFEEES – APRC in India - Make more of our students attend regional meetings - Help students to pick up real problems in not only their local countries but also in other countries	- try to get and keep connected with people with whom I met	- Help students to pick up real problems in not only in their local countries but also in other countries as well
14	Country: South Africa Organization: Engineering Education Association and University	Develop student service module for all engineering students at my university	- Develop action plan and implement it for my organization - Round table was very helpful in this regard	Liaise with Bob Hawkings (World Bank – Africa Initiatives coordinator) student service projects	Further promotion of aims of my organization
15	Country: Nigeria Organization: University	- Restructuring university engineering program for service to humanity - Strengthen the African regions local AEEA for actions - Government / industries / educators – forum to be establish for continuous support in engineering education	- AEEA to get government attention on engineering education -AEEA should get a strong regional voice - Initiate internal funding grants	- Nigeria should be informed that she may remains in poverty unless she is prepared to do what rich countries have done - Faculties in engineering should verify students projects to ensure conformity with 21 st century challenges - Presidents of universities should involve business men in to discussions to innovate engineering educations - Developing Nigeria Engineering Educations Associations	- Attract area memberships - Encourage IFEEES membership from Africa - Involve more Africa Presidents in program area to promote engineering education - Support Africans participants with sponsorship to attend engineering educations programs - Localizing AEEA
16	Country: Nigeria Organization: University	- Strengthen the AEEA in Africa -Government involvement in Africa - Link AEEA to industry	- Strong regional AEEA - Strong government involvement - Strong industry involvement	- Organize national conferences - Encourage collaboration. - Publicize AEEA activities	- Regional meetings - Collaborations - Publications
17	Country: Romania Organization: European Student Organization		- Promote IFEEES among other student organizations that we interact with - Help creating networks student leaders across Europe for cooperation and information exchange		- Provide ideas to other student organizations - Share best practices
18	Country: Nigeria Organization: University	Provide an avenue for information, resources which include internet resources sharing	Make available internet programs, and resources for enhanced teaching and learning already developed in the	Localize IFEEES to institutions let every university have a local IFEEES body	Provide a forum for revision of curriculum engineering, particularly with the needs of African industry

			developed nation to African in particular through the internet		
19	Country: Nigeria Organization: University	- Engineering Education Curriculum to be revised to meet the challenges of the 21 st century and the needs of the immediate society - To improve teaching/learning in engineering education through the use of hands on classroom/laboratory facilities	- Global Engineering Education Societies to coverage periodically to harmonize ideas/programs to bridge groups in Global Engineering Education for Social, Economic and infrastrural development	- Accreditation of Engineering Education programs to reflect the needs of the societal growth - Research and development activities of engineering base to be funded by all stakeholders (e.g. government, companies)	- Regional/global engineering societies to promote activities in African countries on engineering education - AEEA to collaborate with Global Engineering Organizations to achieve set objectives in terms of awareness and funding of activities - To assess funds from funding global organizations/agencies to promote engineering education
20	Country: Europe Organization: Engineering Education Society	- Create an “European Engineering Deans Council” (promotion by SEFI)	- Project proposal for a Global Thematic Network on Education Engineering with participation from all regions - To promote comparison studies between different quality - Ass. and Accreditation Systems		
21	Country: Canada Organization: University and Higher Education Society	- Follow up n some (course/curriculum) ideas for implementation at my university - Inspired to work harder to make my colleagues at home aware of the importance of sustainability, and to incorporate it in their work - Inspired to convey to my colleagues with modern student can and to figure out I can better tend to these students. - Will maintain contact with African colleagues and help link AHED and help fill possible vacancies in universities in African countries			

Round Table Results

The Summit concluded with Round Tables of Regional or Special Interests, with one table being open for initiatives proposed by member organizations outside these areas. The results of initiatives or action items for each table were as follows:

Group 1. Accreditation

– led by Iring Wasser (ASIIN), Hasan Mandal (MDTK, GEDC)

- Promoting a wider understanding of accreditation

- Benchmarking system training of Educators and Accreditors
- Overlap with Existing Systems
- Accreditation is for Q&A and Recognition but it should serve to facilitate mobility of graduates and students

Group 2. **Africa**

– led by Funso Falade (AEEA) and Duncan Fraser (AEEA)

- Strengthening AEEA
- Connecting its local industry and government
- Identify and connect with funding agencies within and outside region
- Results of governments in provisioning of infrastructure and the enabling environment for industry-academia to work
- Making the curriculum relevant to industry need

Group 3. **Americas**

– led by Maria Larrondo Petrie (LACCEI, UPE), Ramiro Jordan (ISTEC) and Jose Carlos Quadrado (ASIBEI)

- Conduct an IFEES Americas Regional Summit
- Collaborators: Signers of the Rio 2005 Engineering Education Collaboration for the Americas (IFEES, ASIBEI, OAS, LACCEI, ISTEC, ASEE, EftA)
- Goal – influence decision makers in S&T
- Themes – Investments & Incentives for S&T, IP, Visa-Mobility, Sustainability, Social Responsibility

Group 4. **Asia-Pacific**

– led by Nitte R. Shetty (ISTE)

- Conduct an IFEES Asia Pacific Regional Summit in December 2008

Group 5. **Student**

– led by Julia Ivanova (SPEED), Adriana Garboan (BEST), Nicolò Wojewoda (SPEED), and Jennifer DeBoer (SPEED)

- Overarching umbrella for populating engineering curriculum with sustainability
- Develop projects focused on:
 - Greening Campuses -create materials and resources for adaptation. Champion: ESW
 - Identify leverage points for creating partnerships among stakeholders - Student – Faculty – Industry
Champion: IFEES – SPEED
 - Create a new competition around sustainability
Champions: global.hub.org (Purdue), Mathworks, Autodesk (EMEA)

Group 6. **Member Suggested Initiatives**

– led by Lueny Morell (Hewlett-Packard), Claudio Borri (SEFI), and Yuri Petrovich Pokholkov (RAEE)

- Support current initiatives of global engineering education accreditation agreements
- Establish a fund to finance the mobility of faculty, students and managers
- Establish a Leadership Institute for Academic Administrators/Managers

Conclusion and Future Directions

Despite many challenges, the collaboration and efforts of IFEES members achieved major objectives and set even higher goals. Even though logistical problems impacted the planned enhanced interaction in a negative way, there were significant number of responses to development of action items, both long term and short term, and local as well as regional/global. Progress on the long and short term action plans put forth in the 2008 Summit will be examined during the Third IFEES Global Engineering Education Summit^{13, 14} that will take place May 19-23, 2009 in St. Petersburg, Russia. For more information and report of on ongoing initiatives see the IFEES web pages¹⁴.

References

1. Lueny Morell, Claudio Borri, Sarah Rajala, Seeram Ramakrishna, Jose Carlos Quadrado, Maria M. Larrondo Petrie, Duncan Fraser, Bruno Laporte, Adriana Garboan, Xavier Fouger, Hans J. Hoyer, "Engineering Education Societies Becoming Global: The Evolving Development of the International Federation of Engineering Education Societies (IFEES)," in *Proceedings of the 115th Annual American Society for Engineering Education Conference and Exposition (ASEE2008)*, Pittsburgh, Pennsylvania, USA, 21-25 June 2008. Reprinted in *Proceedings of the 7th ASEE Global Colloquium on Engineering Education*, Cape Town, South Africa, 19-23 October 2008. Reprinted in *Proceedings of the World Engineering Congress (WEC2008)*, Brasilia, Brasil, 2-6 December 2008.
2. Maria M. Larrondo Petrie, Clement Sankat and Roberto Loran, "The Turabo Declaration and the Engineering Education Capability Maturity Model: LACCEI Initiatives to improve Latin American and Caribbean Engineering Program Accreditation and Recognition," in *Proceedings of the 114th Annual American Society for Engineering Education Conference and Exposition (ASEE 2007)*, Honolulu, Hawaii, USA, 24-27 June 2007. Reprinted in *Proceedings of the 6th ASEE Global Colloquium on Engineering Education*, Istanbul, Turkey, 1-4 October 2007.
3. First IFEES Global Engineering Education Summit, Istanbul, Turkey, 30 September – 1 October 2007. <http://www.ifees.net/activities/upload/ifees-program-260907.pdf>
4. IFEES Strategic Plan 2008-2012. <http://www.ifees.net/publications/documents/ifees-strategic-plan-101707.ppt> and <http://www.ifees.net/publications/documents/ifees-strategic-plan-101707.pdf>
5. Indo-US Collaboration for Engineering Education (IUCEE). <http://www.iucee.org>
6. Indo-US Engineering Faculty Leadership Institute, Mysore, India, 26 May – 18 July 2008. http://www.ifees.net/documents/IUCEE_Leadership_Institute_Brochure.pdf
7. Paris Declaration: Inaugural Statement of the Global Engineering Deans Council. http://www.ifees.net/documents/GEDC_Brochure.pdf
8. Global Engineering Deans Council (GEDC) Leadership Institute Workshop. Boston, Massachusetts, 21 March 2009. <http://www.ifees.net/calendar/index.cfm>
9. Students Platform for Engineering Education Development. <http://www.worldspeed.org>
10. 5th Global Students Forum on Engineering Education, St. Petersburg, Russia, May 15-23, 2009. <http://www.ifees.net/news/index.cfm#070109>
11. Bhushan H. Trivedi and Maria M. Larrondo Petrie, "Beginning to Apply IUCEE Effective Teaching Strategies in India: An Experience in a Master of Computer Applications Program," in *Proceedings of the 116th Annual American Society for Engineering Education Conference and Exposition (ASEE2008)*, Austin, Texas, USA, June 14-17, 2009.
12. *Paris Declaration Inaugural Statement of the Global Engineering Deans Council* http://www.ifees.net/documents/GEDC_Brochure.pdf
13. 2009 IFEES Global Engineering Education Summit, St. Petersburg, Russia, May 19-23, 2009. <http://www.ifees.net/activities/Summit.cfm>
14. International Federation of Engineering Education Societies (IFEES). <http://www.ifees.net>

Appendix A

IFEES Member Societies	
ACOFI	Colombian Engineering Education Society
AEEA	African Engineering Education Association
ANSTI	African Network of Science and Technical Institutions
	Agilent Technologies, India
ASEE	American Society for Engineering Education
ASEAN	Association of South East Asian Nations Deans Steering Committee
ASIBEI	Ibero-American Association of Engineering Institutes
ASIIN	German Accreditation Agency for Natural Sciences and Mathematics
ANFEI	Mexican Engineering Education Society
ABENGE	Brazilian Engineering Education Society
AAEE	Australasian Association for Engineering Education
	Autodesk
BEST	Board of European Students of Technology
	Boeing
	Chinese Society for Engineering Education
CONDEFI	Council of Deans of Engineering of Chile
	Council of Engineering Deans of Thailand
COPEC	Council of Research in Education and Sciences
	Dassault Systemes
	Engineers Canada/Canadian Engineering Accreditation Board
ECSA	Engineering Council of South Africa
ESW	Engineers for a Sustainable World
ENAAE	European Network for Accreditation of Engineering Education
	Hewlett Packard Company
IACEE	International Association for Continuing Engineering Education
IGIP	International Society for Engineering Education
	Infosys Technologies
ISEL	Instituto Superior de Engenharia de Lisboa - Portugal
ISTE	Indian Society of Technical Education
ISTEC	Ibero American Science and Technology Education Consortium
IUCEE	Indo-US Collaboration for Engineering Education
JEE	Journal of Engineering Education
JSEE	Japanese Society for Engineering Education
KSEE	Kazakhstan Society of Engineering Education
KSEE	Korean Society of Engineering Education
KSDET	Korean Society of Semiconductor Equipment and Technology
LACCEI	Latin American and Caribbean Consortium of Engineering Institutions
MDK	Turkish Engineering Deans Council
	Nucleo de Decanos de Ingenieria de Venezuela
RACEE	Russian Association for Continuing Engineering Education
RAEE	Russian Association for Engineering Education
RCI	Cartagena Network for Engineering
SAE	SAE - Brasil
	Scalable Network Technologies
SEFI	European Society for Engineering Education

SIEMENS	SIEMENS
SPEED	Student Platform for Engineering Education Development
	The Institution of Engineers, Singapore
	The MathWorks
	Union Mexicana de Asociaciones de Ingenieros
UPE	Upsilon Pi Epsilon International Honor Society for the Computing Disciplines
WFEO	World Federation of Engineering Organization, Capacity Building Committee