



Workshop Report

1st LUMS Science and Engineering Workshop

Jan 2nd and 3rd, 2005



We would like to thank all the participants of the first two-day workshop of the LUMS School of Science and Engineering (SSE), which was organized to:

1. Develop a shared vision and approach for the School of Science and Engineering,
2. Brainstorm on the critical implementation challenges (faculty hiring and retention, resource mobilization and funding, and research and industrial collaborations) and identify specific action items for the next 6-12 months,
3. Build key support networks of individuals from corporations, government and academia.

About 70 people attended one or both days of the workshop, designed as a working dinner followed by a full day of presentations and focused discussion groups. Participants included corporate leaders, professionals, government representatives, academics from outside LUMS, LUMS faculty, staff and management committee, and members of the LUMS SSE Virtual Program Development Team (VPDT). The agenda and attendees list is at the end of this report.

We believe the workshop was successful in developing a common vision for the SSE initiative. It certainly generated a lot of discussions and substantial enthusiasm for the project. The workshop also provided potential faculty members visiting from abroad, an opportunity to gain first-hand understanding of LUMS through their interaction with LUMS faculty and management. This document summarizes our deliberations of the two days and serves as a useful roadmap for some action items for the next 6-12 months.

The complete proceedings of the workshop can be viewed from the LUMS School of Science and Engineering website at <http://sse.lums.edu.pk>.

**Project Team, LUMS School of Science and Engineering
Vice-Chancellor, LUMS
Management Committee, LUMS**

Session I – Objectives and Approach

9:30 am-11:30 am, Jan 3, 2005

This session consisted of overarching presentations by Syed Babar Ali and Prof. Zahoor Hassan on situating the SSE within LUMS goals, by Mr. Intesar Siddiqui on the Industrial imperative for quality education in Science and Engineering, and the vision for the SSE by Dr. Khurram Afridi. The stated vision of the LUMS School of Science and Engineering is to be a successful Research University model for Pakistan that achieves the following objectives:

1. Create globally competitive technology leaders and entrepreneurs,
2. Conduct multi-disciplinary research of national, regional and international significance,
3. Solve the problems of domestic and global industry and society; and anticipate and prepare for their technological needs.

Prof. Pervez Hoodbhoy raised the issue of the school's commitment to basic research and science without foreseeable commercial benefits. After much discussion a consensus emerged that a balance is needed between basic and applied research, and that the long-term vision of the school must include both. The proportion of each would largely depend upon the type of faculty and the nature of research support the school is able to attract. However, in the short-term, the school will need to focus the majority of its efforts on research that can directly benefit the industry in order to establish its credentials and garnish support from the industry. Over time the proportion of energies it can devote to longer-term research will increase.

Mr. Intesar Siddiqui (CEO of Himont Group) in his presentation on the industry's perspective emphasized the need for "360-degree" cross-disciplinary education and product-oriented research if Pakistan's industry is going to have any chance of maintaining market share after WTO. Prof. Zahoor reiterated this need for cross-disciplinary education and described how LUMS was achieving it through its plan for the four closely aligned and complementary schools (School of Management, School of Law and Policy, School of Arts and Social Sciences, and School of Science and Engineering). There was strong consensus on the need for a Research University (as opposed to simply a teaching university) and the need for both undergraduate and graduate programs.

Dr. Sohail Naqvi of HEC had earlier, at dinner the previous night, strongly supported the idea of the LUMS School of Science and Engineering. He said that this was exactly the kind of initiative the HEC was looking for and he promised to lend his full support to the SSE.

Sessions II and III – Making it Happen (Focus Groups)

11:40 am-1:30 pm and 2:30 pm-4:30 pm, Jan 3, 2005

The focus groups were designed to bring collective wisdom to bear on the three most critical areas for the School of Science and Engineering: (a) faculty hiring and retention, (b) resource mobilization and funding, and (c) research and industrial collaborations.

Faculty Hiring and Retention

The faculty hiring and retention focus group addressed the following four questions:

- 1) Who should we hire?
- 2) What should we expect of them?
- 3) What incentives can we give them to join?
- 4) How do we retain them once they are here?

The group primarily looked at the question of “who should we hire?” for two layers of hiring: (i) the “core” team, which will establish much of the basic structure of the programs, set the standards, and act as gatekeepers for the remaining faculty, and (ii) the subsequent faculty. For both cases, the group felt that to achieve its stated mission, SSE must not compromise on faculty quality and hire the “best” in the field as demonstrated by excellence in research (measurable through their published work and citations), past academic performance, and the potential for impact in their field. Furthermore, it is important that the faculty be intellectual/research entrepreneurs with a breadth of knowledge so that they are able to leverage the available opportunities and create new ones; and also have a very strong sense of mission. The sense of mission is critically important at least for the core team. The core team needs to be idealistically motivated – they cannot be recruited, they must buy into the vision of the school and recruit themselves for service. The group also emphasized the importance of considering non-Pakistanis (especially from our region and other countries where salaries are not too high) to increase the pool of available faculty. However, since sense of mission was crucial it was felt that core team will have to be Pakistani.

On the question of what LUMS SSE should expect from the faculty, the focus group suggested measuring their impact in terms of: (i) research, (ii) teaching, and (iii) institution building. While institution building is part of academic careers in foreign institutions, our faculty will by necessity be more pre-occupied with it in the early years and it will need to be recognized and rewarded. However, since we are trying to build a research university the faculty must also prove their ability to establish sustainable research programs.

Regarding incentives needed for recruiting faculty, the biggest competitive advantage of the LUMS School of Science and Engineering was consensually seen to be the “sense of achievement” derived from being part of an opportunity to make history. If successful the SSE would go down in Pakistan’s history as a turning point in Pakistan’s technological capability. Other incentives recommended by the group were: financial security, research support (students, startup grants, time for research, rational teaching load, sabbaticals, journal access, mentorship, and access to post-docs), and job security with academic freedom (tenure-track, and faculty empowerment and governance).

On the issue of retaining faculty once they are hired, three main recommendations were made: implement international standards for hiring and promotion (e.g. tenure-track), provide summer support for research during the first two years, and develop an empowering governance structure for the faculty. A concrete recommendation was to set

up a team to review the current LUMS policies and procedures for faculty hiring and promotions and make recommendations on the feasibility of a tenure-track based system.

Resource Mobilization and Funding

The following questions were addressed by the resource mobilization and funding focus group:

- 1) What segments of society can contribute?
- 2) What will motivate them to contribute?
- 3) What modes of giving should be targeted?

On the societal segments to target, the group came up with a list and a rough estimate of the contributions that could be realized from each segment. Local and multinational corporations co-lead the list with an estimated 35% contribution each towards the target. (Within the multinational segment, 20% out of the 35% contribution is expected from Technology companies.) They were followed by multilateral donors (USAID, DFID, etc.) and alumni at 10% each, expatriate Pakistanis came in at 5% and other sources made up the remaining 5%. Other contributors could include Pakistan Government (HEC etc), individual philanthropists, and international foundations.

On the question of “what will motivate” giving, the group came up with different reasons for the different type of donors. For corporations it will primarily be driven by a sense of corporate social responsibility and good investment in future human resources. For the alumni the motivation will be to enhance the LUMS brand. For many the motivation will simply be national and social development. One motivation that will be common among almost all donors will be the opportunity to gain recognition.

For modes of giving, the group recommended developing a product portfolio for each target segment, including naming opportunities, chairs and professorships, scholarships and financial aid, and donations in kind.

The group also recommended creating a powerful and compelling LUMS story, centering on the 18 years LUMS legacy and outreach, and highlighting the achievements and impact of its alumni. The collateral should include a video and printed matter. Related to this the group recommended undertaking a study to quantify the impact LUMS graduates have had on the Pakistani economy as well as in other areas, modeled on a study done for MIT in 1996.

Research and Industrial Collaborations

The research and industrial collaborations focus group addressed the following questions:

- 1) What does industry and society expect out of the SSE in the short and long term?
- 2) What modes of collaboration should exist?
- 3) How should we create global academic and industry linkages?

On the question of what the industry expects out of the SSE, the group felt that the SSE should train human resources by having them solve a healthy mix of local and global problems so that they are relevant to local industry and society but at the same time technologically at par with the rest of the world. A balance had to be struck between solving local and global problems, since solving local problems will have direct short-term benefits to the industry and provide sustenance to the SSE, while the global approach will facilitate knowledge transfer allowing Pakistani industry to become global leaders in the

long-term and build international credibility for the SSE. The group also strongly felt that the SSE must have a mechanism in place to get continuous feedback from the industry on the quality and relevance of its research and graduates. Furthermore, it should be proactive in going to the industry and telling them what it can do for it.

Regarding modes of collaboration and mechanisms for creating linkages the group identified a number of ways to collaborate with the industry including: (i) industrially relevant projects with an over-arching theme (e.g., design of a fuel-efficient automobile) that are done by teams of final year students over multiple years, (ii) a 5-year (joint BS/MS) co-op program where students spend a year in the industry, and (ii) graduate level research projects of relevance to the industry. To develop a strong relationship with the industry, the group recommended an industrial relations office at LUMS that proactively markets LUMS offerings to the industry.

Regarding collaborations with academia the group suggested leveraging existing collaborations between LUMS and other universities, exploiting existing peer linkages of faculty joining SSE from abroad and encouraging SSE faculty to spend summers at overseas universities and research centers (e.g., Microsoft Research). The group recommended targeting expatriate Pakistanis as visiting faculty (even for short durations) by providing a mechanism to attract them to LUMS when they are visiting Pakistan (e.g., by providing offices with internet connectivity). Additionally, SSE should leverage technology in the form of video-conferencing and web-casts to overcome physical distances between collaborators and help build a vibrant culture of research at LUMS.

Action Items

The discussions on faculty hiring, fund-raising, and collaborations led to a number of specific action items for the next 6-12 months. These are in addition to the critical activities of hiring the "core" team, fundraising and infrastructure development.

1. Form a committee consisting of people from within and outside LUMS to (i) review the current faculty hiring and promotion policies and procedures followed at LUMS and (ii) to recommend changes to it to bring it in conformance with international norms. Specifically, the committee would address whether LUMS should have a tenure-track based system and if so figure out how it should be instituted. Prof. Irfan Essa (GeorgiaTech) should be asked to chair this committee.
2. Conduct a study to quantify the impact LUMS graduates and faculty have had on Pakistan's society and economy (along the lines of the "Impact of MIT" study conducted by BankBoston in 1996).
3. Develop "The Story of LUMS" video to give potential donors an insight into LUMS, its socio-economic impact, and feel for what their donation can do to transform the technological capability of the country.
4. Develop a menu of giving options that can be presented to potential donors of the School of Science and Engineering.
5. Establish an Industrial Relations office within LUMS to liaison with Industry and match Industries interests with faculty working on related problems.

Agenda

Sunday, Jan 2, 2005 *LUMS Executive Dining Hall*

7:30 pm	Introductions
7:50 pm	Welcome Address (Syed Babar Ali)
8:00 pm	Dinner
8:30 pm	Workshop Objectives and Mechanics (Khurram Afridi)

Monday, Jan 3, 2005

Session I – Objectives and Approach – *Sayeed Saigol Auditorium*

9:30 am	National importance of the Science & Engineering initiative (Syed Babar Ali)
9:45 am	How the initiative fits into LUMS vision (Syed Zahoor Hassan)
10:00 am	Industry's perspective (Intesar Siddiqui, CEO Himont Group)
10:20 am	Plans and progress (Khurram Afridi)
10:40 am	Discussion on objectives and approach
11:10 am	Focus Group lead-off (Salal Humair)
11:30 am	Break

Session II – Making it Happen

11:40 am	Faculty hiring and retention – <i>Faculty Lounge</i> Resource mobilization and funding – <i>Room 272</i> Research and industrial collaborations – <i>Room 271</i>
1:30 pm	Lunch – <i>Executive Dining Hall</i>

Session III – Making it Happen (continued) – *Faculty Lounge*

2:30 pm	Presentation of discussion summaries
3:45 pm	Infrastructure plans (Habib Fida Ali)
4:00 pm	Action items and next steps
4:30 pm	Adjourn

Attendees list

An alphabetically sorted list of attendees who attended one or both days of the workshop is below. Most attendees were present for both days.

	Name	Organization
1	Aamir Shirazi	Atlas Honda
2	Ahmed Husain	CMU
3	Almas Hyder	SPEL
4	Altaf Saleem	LUMS
5	Amer Kamran Khawaja	Descon
6	Anwar Khurshid	LUMS
7	Arif Zaman	LUMS
8	Arifa Noor	LUMS
9	Asad Naqvi	University of Amsterdam
10	Ashraf Iqbal	LUMS
11	Asim Lone	LUMS
12	Atif Alvi	Cambridge University
13	Avais Kamal	Optiwave Technologies
14	Bilal Zuberi	Geo2Technologies
15	Burhan M. Khan	Zypher Textiles
16	Danish Lakhani	Lakson Group
17	Ejaz Ahmed	Institute of Business Management
18	Ehsan UI Haq	LUMS
19	Fareed A Malik	Pakistan Science Foundation
20	Farooq Anwer	LUMS
21	Faisal Sultan	Shaukat Khanum Hospital
22	Fridoon Jawad Ahmed	Drexel University
23	Habeeb Fida Ali	LUMS SSE Team
24	Hassan Syed	STM Networks
25	Imran Mahmood	Descon
26	Imran Niazi	Coca-Cola
27	Intisar Siddiqi	Himont
28	Irfan Essa	Georgia Tech
29	Irfan Virk	CambridgeDocs
30	Jahangir Ikram	LUMS
31	Javaid Iqbal	Mayfair
32	Khurram Afridi	LUMS SSE Team
33	Madeeha Daud	LGS
34	Mubashrah Raza	LUMS
35	Muhammad Ali Khan	LUMS
36	Musadik Malik	Arthur D. Little
37	Nadeem Khan	LUMS
38	Naseem Amin	Genzyme
39	Nooruddin Ferasta	Rupali Polyester Ltd.
40	Pervez Hoodbhoy	Quaid-e-Azam University
41	Qasim Mehdi	PAEC
42	Razzaq Dawood	LUMS
43	Rizwan Shoukat	BearingPoint
44	Salal Humair	Optiant
45	Salik Malik	Techlogix
46	Salman Akhtar	Techlogix
47	Salman Zakaria	Descon
48	Sarah Leghari	LUMS SSE Team
49	Sarfaraz Khursheed	University of Texas Austin
50	Shafay Shamael	LUMS

51	Shahid Abdullah	Sapphire
52	Shahid Husain	LUMS
53	Shahid Masood	LUMS
54	Shaukat Hameed Khan	PAEC
55	Sheikh Iqbal	LUMS
56	Sohaib Khan	LUMS
57	Sohail Naqvi	HEC
58	Suleman Daud	Haleeb Foods
59	Syed Babar Ali	LUMS
60	Syed Mubasher Ali	LUMS
61	Syed Zahoor Hassan	LUMS
62	Tariq Jadoon	LUMS
63	Waqar Malik	ICI
64	Waqar Qureshi	LUMS
65	Wenhsiu Hassan	Techlogix
66	Zakeesh I. Khan	LUMS SSE Team
67	Zeeshan Syed	MIT
68	Zulfiqar Ali	G-Tech