

Industry/University Cooperative Center for Research in Software Technologies (CRiST)

*Report on the Brainstorming Session held at
The Birla Institute of Technology and Science, Pilani, on
November 15, 2003*

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Summary Report

A brainstorming session, hereafter referred to as SESSION, to discuss the establishment of the proposed industry/university cooperative Center for Research in Software Technologies was organized at the Birla Institute of Technology and Science (BITS), Pilani, India. This document is a summary of the proceedings of this 1-day SESSION held on November 15, 2003.

Participants in SESSION were sampled from universities, software industry in India, Central Government, and research laboratories. The selection was based on the on going and past collaboration of the organizers with companies, research laboratories, universities, and government agencies. It is emphasized that the participants represent a very small sample of the many organizations in India who are likely participants in the proposed center and will be encouraged to participate. A complete list of the attendees appears in Table 1.

A summary of the events at the SESSION and discussions that took place follows.

1. The SESSION was inaugurated by Dr. S. Venkateswaran, Director, BITS. Dr. Venkateswaran¹ welcomed the participants to the session and emphasized the importance of the proposed research collaboration.
2. Following Dr. Venkateswaran's welcome, Professor Aditya Mathur made a brief presentation wherein he outlined the purpose and details of the proposed center. This presentation was intended to serve as a basis for discussions during the day.
3. Representatives from BirlaSoft, IBM, iFlex Solutions, Mahindra BT, Patni Computers, Stayam, TCS, and Wipro each gave a brief presentation outlining their research interests. There was one presentation by Central Electronics Engineering Research Institute (CEERI), a government supported research laboratory located in Pilani. Research areas mentioned by the representatives include the following:
 - Applications for emerging technologies
 - Applications in specialized domains such as healthcare, banking, telecom
 - Application integration
 - Business modeling and simulation
 - Code analysis for the extraction of specifications and performance prediction
 - Component technology
 - Data analysis and data quality
 - Data warehousing
 - e-business
 - Embedded systems software
 - Fault-tolerance
 - Grid computing

¹Dr. Venkateswaran is now the Vice Chancellor of BITS.

Table 1: List of Participants in the One-day brainstorming Session on Nov 15, 2003 at BITS, Pilani (ordered alphabetically by the last name of the participants).

| Participant | Organization |
|------------------------|------------------------------------|
| M. M. S. Anand | BITS |
| S. Balasubramanian | BITS (CS) |
| S. Balasubramaniam | BITS (ECE) |
| S. M. Balasubramaniyan | Wipro |
| Gautam Banerjee | BirlaSoft |
| Rahul Banerjee | BITS |
| Subir Banerjee | IBM |
| Rajendra Bera | IBM |
| Dheeraj Bhardwaj | IIT Delhi |
| Kiran Cavale | Satyam |
| P.K. Chaturvedi | Ministry of Information Technology |
| Veena Deshpande | Banasthali Vidyapith |
| K. V. Dinesha | IIIT Bangalore |
| Goldi Gabrani | Delhi College of Engineering |
| Navneet Goel | BITS |
| Poonam Goel | BITS |
| Rekha Govil | Banasthali Vidyapith |
| S. Gurunaryanan | BITS |
| Ravi Jain | Mahindra BT |
| S. Jagdish | BITS |
| Rajni Jindal | Delhi College of Engineering |
| Harish Karnick | IIT Kanpur |
| Neeta Khare | Banasthali |
| Aditya Mathur | BITS and Purdue University |
| Pratishtha Mathur | Banasthali Vidyapith |
| J.P. Mishra | BITS |
| R. K. Mittal | BITS |
| B. R. Natarajan | BITS |
| Kesav V. Nori | TCS |
| Shanta Pendkar | BITS |
| Ravi Prakash | BITS |
| Guru K. Prasad | IBM |
| Deepak Ranade | Patni Computers |
| V. S. Rao | BITS |
| Ranendra Saha | BITS |
| Vijay Sharma | iFlex Solutions |
| Yashwardhan Sharma | BITS |
| Aditya Shastri | Banasthali Vidyapith |
| Chandra Shekhar | CEERI |
| R. S. Shekhawat | CEERI |
| Raj Singh | CEERI |
| S. Venkateswaran | BITS |
| K. Venkatsubramanian | BITS |
| Om Vikas | Ministry of Information Technology |

BITS: Birla Institute of Technology and Science, Pilani.

CEERI: Central Electronics Engineering Institute, Pilani.

IIIT: Indian Institute of Information Technology.

BT: British Telecom

IIT: Indian Institute of Technology

TCS: Tata Consulting Services

- Hardware independent software
 - Image processing
 - Multi-paradigm visual computing
 - Real-time reconfigurable systems
 - Security
 - Soft computing
 - Software architecture
 - Software process improvement
 - Spatial decision support systems
 - Usability analysis
 - Workflow management
4. Presentations from the industry were followed by presentations from academia. Representatives from BITS, Banasthali Vidyapith, Delhi College of Engineering, IIIT-Bangalore, IIT-Delhi, and IIT-Kanpur outlined the ongoing and past research in Information Technology in the various related academic departments.²
 5. Dr. P. K. Chaturvedi and Dr. Om Vikas presented a view from the Ministry of Information Technology (MIT). This ministry has played an active role in fostering the development of multilingual computers in India. Both representatives offered support to the center via the possibility joint funding with industry.
 6. Presentations by representatives of various organizations were followed by a lively open discussion. Representatives from companies raised important issues that were addressed by other participants. Following is a summary of the list of issues raised and responses.
 - (a) Research culture: One significant concern related to the absence of a “research culture” in Indian universities other than a handful of IITs and its impact on the chance of success of the proposed center. Participants from both academia and industry responded by arguing that (a) This center is an attempt to change the research culture in Indian universities. (b) Students at the participating universities are already engaged in thesis work as part of their master’s and doctoral degrees. The proposed center will allow industry to provide an opportunity for faculty and students to work on problems of interest to the industry. (c) Experience with similar centers in the US has shown that individuals often excel in applied research when they work in a center-like environment and in cooperation with industrial partners. Discussion on this issue occupied a significant portion of the SESSION.
 - (b) Affiliation fee: There was a concern as to how the affiliation fee will be used. It was explained that at least 85% of the annual affiliation fee will be used to support research and the remaining to support center administration.

²It is to be noted that Banasthali Vidyapith is a women’s university consisting of approximately 5000 students. The proposed center plans to encourage women and minorities to actively participate in all its proceedings.

- (c) Project funding: Some participants wanted to know why would a company come to the center to sponsor projects and not go directly to faculty whom they know. In response it was pointed out that the option of direct funding already exists and companies will continue to use this model. However, the proposed center provides an opportunity for companies to get exposed to a large number of researchers from many universities who have varied research interests and expertise. This allows companies to evaluate and select who to fund. The center thus provides a platform for new industry-faculty relationships that might not be possible otherwise. It was also pointed out that often university faculty are not willing to welcome research inquiries from industrial representatives. However, those faculty researchers who participate in the proposed center will likely develop rapport with companies through interaction at center meetings. This improved relationship will likely lead to meaningful research collaboration where both parties form a bond through mutual respect.
 - (d) Fee structure: The issue of varied affiliation fee structure was raised. The response was that all industrial affiliates will be charged the same affiliation fee. Not doing so will likely create difficult managerial issues.
 - (e) Center as an entity. It was suggested that the center be registered as a non-profit organization.
 - (f) The discussion ended with a summary of the next step in the establishment of the center. The next step is to develop a center constitution, get it reviewed by the participants, revise it appropriately so that it is acceptable to most of the universities and companies who are the likely participants.
7. The entire SESSION was funded by BITS with partial support from a UGC grant. The SESSION was officially titled: “UGC Sponsored Brainstorming Session On Industry-University Research Cooperation (in the area of Software Technologies)”. In addition, BITS provided free boarding and lodging for all participants from outside of Pilani. Travel arrangements were also made by BITS for participants who requested a ride between Delhi and Pilani. BITS and Purdue University provided partial funding for Aditya Mathur’s sabbatical to BITS during first semester 2003-2004.

Ragul Kumar, graduate student, BITS, assisted with the organization of the meeting. Dheeraj, Karteeek, Praveen Kumar, Antony Vivek Justin, Swarna and Arpita, all students of BITS, helped with registration and other arrangements.

End of Report