

CIIR ACTIVITIES

July 25, 2005 – October 30, 2005

Overall objective: During the period under consideration, the main focus of CIIR activities is on teaching of I*I course at the PG Dept. of Computer Science, S. N. D. T. Women's University, Mumbai and on offering the I*I Continuing Education Program (CEP) Certificate course at CIIR's Pune Center. These I*I education initiatives are leading to rapid growth in I*I research initiatives involving a wider I*I research community.

Overview of Main CIIR Activities: From July 25, 2005 – October 30, 2005, CIIR pursued research & education activities of: (1) Information Integrity Course Teaching at PG Dept. of Computer Science, S.N.D.T. Women's University, Mumbai – Course lectures are delivered weekly; (2) I*I Paper Presentation at 3rd Interdisciplinary World Congress on Mass Customization and Personalization (MCPC 2005) held at The Hong Kong University of Science and Technology, Hong Kong, 16-21, Sept. 2005; (3) Delivering faculty seminars at AISSMS's Engineering College, Pune on the topic of Information Integrity ; (4) On the occasion of Teacher's Day, delivering a Key Note Address at AISSMS's Engineering College for Women, Pune; (5) I*I expert participation in the doctoral admission committee proceedings at Gov. College of Engineering, Pune; (6) A brief report on I*I research activities to the date as undertaken by Mr. Milind Mali in active support from CIIR; (7) Initiation of Doctoral research in I*I at Pune Center: Mr. Mind Mali admitted to Doctoral research in I*I at University of Pune; (8) I*I Course Offering under Continuing Education Program (CEP) activity at CIIR, Pune; (9) Organizing One-day I*I Course Student Seminar at SNDT University, Mumbai; (10) Initiation of Master's project in I*I; (11) Networking with institutions and professionals to initiate I*I research and education programs; (12) Doctoral research in I*I; (13) Work on a comprehensive I*I Research Paper; (14) Further strengthening of I*I Research Web Site at CIIR; and (15) Editing of CIIR's Research Publications.

These activities are briefly described here.

1. **Information Integrity Course Teaching at PG Dept. of Computer Science, S.N.D.T. Women's University, Mumbai – Course lectures are delivered weekly**
Post Graduate (PG) Department of Computer Science, S.N.D.T. University, Juhu Campus, Mumbai has introduced "Information Integrity" course as an elective course category under the University's Master of Computer Applications (MCA) degree program.

The first offering of I*I course is being made in the 1st Semester of the Academic Year 2005-06, which is from June 24, 2005 – 15 December 2005.

Prof. Vijay V. Mandke is invited to teach the course. He is assisted by Prof. Silven Simon and Ms. Sulbha Powar of the PG Dept. of Computer Science, S.N.D.T. University, in this course teaching activity.

Information Integrity course teaching began on July 24, 2005. The course has 3 lectures a week, which are delivered on Thursday/Friday.

2. ***I*I Paper Presentation at 3rd Interdisciplinary World Congress on Mass Customization and Personalization (MCPC 2005) held at The Hong Kong University of Science and Technology, Hong Kong, 16-21, Sept. 2005***

The Hong Kong University of Science And Technology (HKUST), Hong Kong and Technische Universitat Munchen (TMU), Munich jointly organized the 3rd Interdisciplinary World Congress on Mass Customization and Personalization (MCPC 2005). The Congress was organized in two parts; namely the Main Conference, which was held at HKUST, Hong Kong from 16-21, Sept. 2005 and the Special MCP Seminar in China from 22-23 Sept. 2005.

Information Integrity (I*I) research paper entitled “*Modeling Information bases with Integrity in a Mass Customized Supply Chain*” jointly written by Sidharth Verma (IMT, Ghaziabad, U.P., India), Reema Khurana (IMT, Ghaziabad, U.P., India), Vijay Mandke (CIIR, New Delhi, India) and Subhash Wadhwa (IIT, Delhi, India) was presented at MCPC 2005 Main Conference (See page 56, Programs and Abstracts Document, MCPC 2005).

Mr. Sidharth Verma and Vijay attended the Main Conference. The paper “*Modeling Information bases with Integrity in a Mass Customized Supply Chain*” was slotted under “Supply Chain Management” track from 11:30 – 13:00 Hrs. on September 20, 2005. Sidharth assisted by Vijay presented the paper.

For detailed paper one may refer to the MCPC 2005 Conference CD.

Paper Abstract:

Information Integrity is dependability and trustworthiness of information. Its determinants are accuracy, consistency and reliability of information. Supply chains are slowly moving from standardization and mass production towards increasing customization.

Many firms are trying to resort to mass customization in order to cater to differing requirements while keeping costs under reasonable control. Flow of timely and accurate information is critical to the success of any supply chain. However, this transfer of information is more complicated and critical in mass customized supply chains since each customer may have unique requirements, which change under the impact of environment, and decisions cannot be taken on the basis of stored information. The environment is also continuously changing both for the organization and for the customer. These make the requirement of Information Integrity mandatory. Presently, information bases are closed type as these do not change with changing environment. In order to ensure Information Integrity in the supply chain we need to shift from the present closed type of information bases to open information bases, which define an operable goal under the impact of uncertainties arising from the environment and continuously identify, originate and acquire information to achieve ever-changing goal. Even the schema design of the

information base needs to be continuously upgraded to keep in tandem with the changing environment.

Research Highlights:

Mass customization and personalization (MCP) aim to provide services and goods serving individual customers' personal needs with near mass production efficiency. Against this with innovations in IT, the volume and speed of information processing and decision-making are undergoing sharp increases forcing enterprises for their competitive survival to look for bigger business opportunities through customized products. In the language of *control theory* this is requiring businesses to pass on the control baton to *controlling Information Integrity* (i.e., *correctness* aspect) of flexible business information decision. This makes I*I fundamental to customer satisfaction and product/system/service competitive advantage. As academic fields, both these knowledge development initiatives – MCP and Information Integrity - are still in their respective formation periods.

Within this framework of the research opportunity, the paper extends the design of integrity open information bases to the area of supply chain management for MCP. Specifically, the paper develops on the approach to schema design of the information base needs in the presence of the changing environment as studied by Reema Khurana, one of the authors of the paper, under her ongoing doctoral research in the area of I*I. Further, the paper also constitutes a collaborative research effort of IMT faculty, IIT Delhi faculty and CIIR. Thus the paper strengthens the ongoing I*I research directions, indicates an opportunity to expand I*I results' application base and suggests collaboration by networking between researchers from different disciplines and institutions.

3. *Delivering faculty seminars at AISSMS's Engineering College, Pune on the topic of Information Integrity*

On July 25, 2005 and August 29, 2005, Prof. Mandke delivered faculty seminars at AISSMS's Engineering College on the topic of "Information Integrity – Research & education Issues".

4. *On the occasion of Teacher's Day, delivering a Key Note Address at AISSMS's Engineering College for Women, Pune*

On September 5, 2005, on the occasion of Teacher's Day, Prof. Mandke was invited by the AISSMS's Engineering College for Women, Pune to deliver a Key Note Address to the students and faculty. The address covered the topic of education, research and technology issues in the wake of rise of information and communication technologies.

5. *I*I expert participation in the doctoral admission committee proceedings at Gov. College of Engineering, Pune*

On August 9, 2005, Prof. Mandke participated by invitation as expert member in the doctoral admission committee at the Dept. of Production Engineering of the Govt. College of Engineering, University of Pune, Pune for the Information Integrity research area.

6. A brief report on I*I research activities to the date as undertaken by Mr. Milind Mali in active support from CIIR

Since 2004, Mr. Milindkumar Sadashiv Mali (Milind Mali), Asst. Prof. in Mechanical Engineering Institute, Smt. Kashibai Navale College of Engineering, S. No. 44/1, Vadgaon (Bk.), Pune – 411041, Maharashtra, E-mail: mali_milind@yahoo.co.in, Phone Nos.: (O) 020 24350468 Ext. 513, (R) 020 24355771, (M) 9370158805, has been actively associated with CIIR in its I*I research and education activities.

Paper presentation at National and International conferences:

Specifically, in the academic year 2004-05, Milind presented following I*I research papers:

1.
 - (a) Milind Mali, “*System Design: An Information Integrity Approach*”, National conference on “Advances in Engineering Design” at Bannari Amman Institute of Technology, Sathyamangalam, Tamilnadu, India, April 29-30, 2005.
 - (b) Milind Mali, “*Achieving Integrity in System Design: An Information Integrity View*”, National conference on “Business Information Management”, BIMC-2005 at Institute of Management Technology, Ghaziabad, India, April 9-10, 2005.
 - (c) Milind Mali, “*Designing Systems for Changing and Complex Environment: An Information Integrity Approach*”, International conference on “System Identification and Control Problems”, SICPRI-2005 at Institute of Control Sciences, Moscow, Russia, January 25-28, 2005.
 - (d) Milind Mali, “*Information Control During System design: An Information Integrity Approach*”, International conference on “Instrumentation”, INCON-2004 at Pune Institute of Engineering and Technology (formerly Gov. College of Engineering), Pune, December 19-21, 2004.
 - (e) Milind Mali, “*Designing High Performance Mechanical Systems: An Information Integrity Approach*”, National conference on “Emerging Trends in Mechatronics”, MIT Aurangbad, July 23-24, 2004.

Further following papers are accepted for presentation in National and International Conferences in Academic year 2005-06 (Forthcoming Events):

- (f) Milind Mali, “*Informational Ergonomics in Product Design: An Information Integrity View*”, Accepted at the International Ergonomic Conference 2005 on “Humanizing Work and Work Environment” at Dept. of Design, IIT Guwahati, Scheduled to be held on December 9-12, 2005.
- (g) Milind Mali, “*Designing systems for global products in local markets: an information integrity based approach*”, Accepted at the International Conference on “Productivity Research & Quality” at IIT Delhi, Dept. of HSS, Scheduled to be held on December 12-15, 2005.
- (h) Milind Mali, “*Addressing high performance system by adapting an information integrity approach*”, Accepted at an ISME international conference on “Mechanical Engg.

Knowledge Management” at Mech. Engg. Dept. of Delhi College of Engg., Delhi, Scheduled to be held on December 12-14, 2005.

- (i) Milind Mali, “*Uncertainties due to 5c’s in product design*”, Accepted at National Conference on “Advanced Manufacturing Processes” at Dept. of Mech. & Prod., K.I.T. Kolhapur, Scheduled to be held on January 7-9, 2006.

Doctoral research in the area of Production Engineering with specific reference to product design methodology using Information Integrity based approach:

Milind is registered for Ph. D. in Production Engg. at University of Pune. His Doctoral research is titled “*Product Design for Changing and Complex Environment: An Information Integrity Based Approach*” under the guidance of Dr. S. P. Kallurkar.

Continuing Education Pursuit:

As preparation for his research work, currently Milind is appearing for the Continuing Education Certificate Program in “Information Integrity” offered by CIIR, Pune starting from September 10, 2005.

7. Initiation of Doctoral research in I*I at Pune Center: Mr. Milind Mali admitted to Doctoral research in I*I at University of Pune

On August 8/12, 2005, Mr. Milind Mali, Asst. Prof. in Mechanical Engineering Institute, Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.), Pune, was admitted to his doctoral work in the discipline of Production Engineering in the topic based on I*I.

Specifically, from August 8/12, 2005, Milind is registered for Ph. D. in Production Engg. at University of Pune. His Doctoral research is titled “*Product Design for Changing and Complex Environment: An Information Integrity Based Approach*” under the guidance of Dr. S. P. Kallurkar, Principal, College of Engineering and Professor of Production Engineering, Pune.

Doctoral Topic Abstract:

With advent of steam power, success in production automation sharply increased the volume and speed of energy conversion and material processing. This precipitated various structured and periodic control responses for ‘standard’ product in high volume mechanical manufacture. With innovations in information technology, the volume and speed of information processing and decision-making has undergone sharp increases. Accordingly, product design processes for their competitive survival are looking for bigger business opportunities through customized products. For competitive advantage, this is requiring for product design processes to pass on control baton to control Information Integrity (I*I) of unstructured and aperiodic information i.e. continuous individual information origination and processing situation in the presence of uncertainty.

After Reema Khurana, IMT, Ghaziabad, Milind becomes 2nd Doctoral candidate in India pursuing I*I doctoral research.

8. I*I Course Offering under Continuing Education Program (CEP) activity at CIIR, Pune

From September 10, 2005, Prof. Vijay Mandke is conducting I*I course at CIIR, Pune. The course is under the Continuing Education Program (CEP) Activity of CIIR for the faculty of the engineering colleges and other institutions at Pune. Objectives of the Semester long I*I course offering are: (a) Faculty development for research in I*I, (b) Faculty development for I*I education, (c) Development of I*I research desk at institutes in the region, and (d) Planning for I*I Seminar at National level.

The current batch for the CEP Certificate course session starting September 10, 2005 includes:

- (a) Professor (Ms.) Manisha Dale, Head, Dept. of Electronics, Wadia College of Engg., Pune,
- (b) Professor Milind Mali, Asst. Prof. in Mechanical Engineering Institute, Smt. Kashibai Navale College of Engineering, Pune,
- (c) Professor Gajanan Patil, Faculty, Dept. of Electronics, Armament Institute of Technology, Pune,
- (d) Professor Pandurang Patil, Head, Dept. of Electronics, AISSMS's College of Engg., Pune, and
- (e) Professor Vijay Thorat, Head, Dept. of Civil Engg., AISSMS's College of Engg., Pune.

I*I CEP Certificate course is conducted at the CIIR's Pune Center. I*I course lectures are scheduled weekly on Saturday and Sunday and during vacation time for the participating faculty/candidates. The course is expected to be completed by the end of February 2006.

On successful completion of the course, CEP certificates would be awarded to the participating candidates.

9. Organizing One-day I*I Course Student Seminar at SNDT University

On September 14, 2005, as a part of the course requirement, I*I course students under the MCA Degree program at SNDT University, Mumbai, namely, Alka, Natasha, Shalini and Surbhi, presented One-day Seminar on "*Introduction to System Dynamics Modeling – Information Integrity perspective*".

Professors from Pune, namely, Ms. Manisha Dale (Wadia College of Engg.), Milind Mali (Smt. Kashibai Navale College of Engineering), Gajanan Patil (Armament Institute of Technology) and Pandurang Patil and Vijay Thorat (AISSMS's College of Engg.) attended and participated in the day-long seminar.

Prof. Sanjay Pawar, Head of PG Department of Computer Science, SNDT University, Professors Silven Simon and Sulbha Powar, faculty of the department and Mr. Anudeep Jain, IIT Bombay, also participated in the seminar.

The seminar presenters introduced and discussed the application of System Dynamics modeling methodology and related computer tools to search for an approach to I*I Technology Development.

Participants found the seminar proceedings of great academic interest.

In his capacity as the I*I course instructor at the PG Dept. of Computer Science, SNDT University, Prof. Vijay Mandke chaired the seminar.

10. Initiation of Master's project in I*I

Natasha Kapoor, MCA student, SNDT Women's University, Mumbai, India, who is currently attending the I*I course at SNDT, will be doing her final semester (from Jan-May 2006) Master of Computer Application (MCA) Degree Program Project Work at CIIR on a problem of I*I Technology Development.

11. Networking with institutions and professionals to initiate I*I research and education programs

CIIR is networking with institutions from Delhi (IIT Delhi inclusive), Pune and from Bombay (IIT Bombay inclusive) to develop and to implement education and research in I*I. Within this framework, Prof. Mandke had following notable meetings during the period under consideration:

- (a) Meetings at RBI, Pune with Ms. Jivani, Faculty, RBI College of Agricultural Banking, RBI, Pune
- (b) Meetings at AISSMS's College of Engineering, Pune with Dr. Bapat, Principal, AISSMS's College of Engg.,
- (c) Meeting at Engineering Educators' Council, Pune, with Prof. Ratnalikar and other Council Members.
- (d) Meeting at IIT Delhi with Dr. B. S. Panda, Dept. of Mathematics and Computing,
- (e) Meetings at IMT, Ghaziabad with Professors Kamna Malik and Reema Khurana.
- (f) Meeting at PG Dept. of Computer Science, SNDT Women's University, Mumbai with Prof. Sanjay Pawar, Head, PG Dept. of Computer Science

12. Doctoral research in I*I

From July 2003, Ms. Reema Khurana, Computer Science Faculty of Institute of Management Technology (IMT), Ghaziabad, Delhi is registered at S.N.D.T. Women's University, Bombay for her Doctoral work in the topic "Achieving I*I for Open System Data Bases". Dr. Ramesh, Professor of Computer Science & Engineering, IIT Bombay and Professor Vijay Mandke are her joint guides.

- **Guiding Ph. D. research**

Prof. Mandke is actively engaged in guiding Ms. Khurana in her doctoral work progress.

Note: This is a continuing activity.

13. Work on a comprehensive I*I Research Paper

Currently Prof. Mandke is also working on a comprehensive research paper entitled "Systems Engineering of Information Integrity".

14. Further strengthening of I*I Research Web Site at CIIR

Work for development of I*I Research Web Site is complete. The site address is: www.centerforinformationintegrityresearch.org.

Currently the site is being further strengthened by introducing a facility of “Discussion Forum” for the expanding research community.

15. Editing of CIIR’s Research Publications

CIIR is working on strengthening the task of editing its research publications.