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---

Editors' Note

For a Society to be dynamic, its members should not only be individually active but also collectively so. Members must learn, share thoughts and participate, so that the group itself can grow in a constructive way.

Obviously this needs a media. For CSI, the CSI Communications is just such a media. It seeks to discern, amplify, collate and rebroadcast signals from different locations, organisations and people - signals that centre around a common area of interest - Computers.

In fact as the main vehicle for informing readers about CSI and its members, the CSI Communications is really the nervous system of the organisation. With the burgeoning growth of membership and the resulting increase in spans of communication, it has become for many members a regular link with CSI and for a few ( hopefully only a few ) the sole reminder of its existence.

It is necessary therefore, that CSI Communications mirror not just the activities but also the mood of CSI which means, besides reports and articles, proper expressions of opinions, views and ideas of our readers. Otherwise what we will have is not an organisation but a performance put up by a few for the benefit of a possibly interested but essentially uninvolved audience.

Such mirror can only be achieved if readers themselves mobilize to supply us their inputs. More than (ie) article in this issue contains a request for reader's views. By replying, you will not only help make CSI Communications more lively, but also simultaneously contribute to an increased sense of belonging.

We feel it will be worth your while.

---

Calendar of coming Events

1) Three day workshop on computer graphics and applications.
   May 29-31, 1981, West End Hotel
   Contact: Dr. B.D. Pradhan
   Chairman
   IEEE Computer Society Chapter
   C-2, TEC R & D Labs
   Saki Vihar Road
   BOMBAY - 400 072

2) Conference on Foundations of Software Technology and theoretical computer science.
   Dec. 11-12, 1981, Bangalore
   Contact: Dr. R.K. Shyamasunder
   NSC SCT, RIFR
   BOMBAY 400 006.
   Papers invited 200 words
   Abstracts to reach before May 15, 1981

3) Advanced workshop on Scheduling An "Advanced Study and Research Institute on Theoretical Approaches to Scheduling Problems" to be held
   July 6th - 17th, Durham England.

---

Contact:
J.K. Lenstra/A.H.G. Rinnooy Kan
C/o, Econometric Institute
Erasamus University
P.O. Box 1739
3000 DR ROTTERDAM
The Netherlands.

4) EuroMicro’81
   Sept. 8-10, 1981
   Contact: Mrs. E. Erkamoff
   EUROMICRO
   18, RUE FLANCHAT
   75207, Paris FRANCE

or
S. Murugan
Control System Section
ISRO Satellite Centre
Peenya
BANGALORE - 560 058.

5) EDINFO 82, International Symposium on Education in Informatics
   June, '82 MADRAS.

6) CSI 82
   Annual Convention of the Computer Society of India 1982
   MADRAS.

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Vijay Seirangan
Editorial Associate
Pratibha Patil

For Subscription correspondence write to:
Executive Secretary
Computer Society of India
C/o, Institute of Engineers,
15, Fusi AB Park Road,
BOMBAY 400 034.
Dear Sir,

We were all extremely delighted to know that CISI has published a Directory indicating the list of Computer Centres, Software activities and Training Centres. Prof. N. Narasimhan, Director, NCSDCD is definitely to be congratulated for the preparation of such a Directory. But after looking at the CISI Directory 1985-86, we find a Committee constituted from CISI members, the Services and Training Organisations are omitted from the Directory. One such mistake is the Indian Statistical Institute. We are astonished to see that omission of the name of the Indian Statistical Institute could be overlooked which has been functioning as a Centre of Excellence in the field of Computer Centre and a Training Organisation but has been functioning as an international recognised R & D Organisation in Computer Science and Technology for the last two and half a year.

It is well known to the readers of CISI Communications that Professor D. Dutta Majumdar of IIS is Chairman of the Computer Society of India, CISI Centre for the last two years. I wonder if the Management Committee of CISI Chapters in the country was consulted in preparing the Directory. I also did not receive the name of the Computer Centre of the Bata India Limited, Calcutta which is also omitted from the Directory. It is also well known that in the Head of the Computer Centre of Bata India Limited is Mr. N.K. Roy who is also the Director, Bata India Limited, Calcutta Chapter.

On personal enquiry I understand that neither Prof. Dutta Majumdar nor Mr. N.K. Roy received any questionnaire regarding the Directory. Prof. J. Roy, Head, Computer Science Unit in IIS also did not receive any questionnaire.

Yours faithfully,

Dr. B.B. Chowdhury
Indian Statistical Institute
203 B.T. Road, Calcutta - 35

Jyotirmoy Das
Indian Statistical Institute
203 B.T. Road, Calcutta - 35

The Publications Committee Says . . .

The Directory questionnaire was sent to them on two occasions to interest as many centres as possible. We have understand your difficulties in ensuring a high level of coverage. When the next edition of the Directory is under consideration, it will be able to correct a large number of omissions and add many more centres. Agencies concerned ensure that the relevant information is made available to CISI in time.

Bugs

In the last issue in our Chapter Notes, we mentioned that Mr. S. Krishnamoorthy was elected interim Chairman upto 30-1-87. That should be amended to 30-6-87.

(a) For nominations committee - 81 - 93
(b) For nominations committee - 81 - 92
(f) For T. TRILOKESWAR

T.R. TRILOKESWAR

News

Brief features of COS/ISIS and MINVISI software packages. Ms. Faye discussed in greater detail the current status of the Satellite Ground Terminal configuration (HP5000) for MINVISI. This package can be run both on an on-line and batch mode. Dr. Prakasam discussed the software for Satellite Data Systems, USA, gave an interesting and an informative talk. The computer was very well received and appreciated by the audience. Col. Shrivastava and Col. S.N. Shrivastava, of ITD, introduced the theme and welcomed the participants.

Gupta proposed a hearty vote of thanks.

3. Delhi Chapter had organised a course on COBOL programming during December 15 - 15 February 1981. The course was conducted by Mr. R.K. Choudry, OMC, Mr. M.M. Agarwal, Police Computer Centre; Mr. T.N. Misra, Govt. Computer Centre and Dr. R.G. Gupta of JNU. 45 candidates participated in the training.

ROURKE CHAP.

The Chapter organised a talk on Data Entry Systems by Shri Ganguly of HCL on 11th Feb., 81 at the Chapter’s Chairman Shri H.S. Manjumandar welcomed the speaker and members.
Mr. Ganuguly gave the details of HCL's product range and product performance. He also explained data entry systems as well as the benefits of various data entry systems.

On 19th March an old timer was arranged in Ahmadi Bhawan in which the Chapter's ex-Secretary B.V. B.Srinivas Rao shared his experiences in rural development in Andhra Pradesh with the Chapter members.

A two week Fortran IV programming course was conducted by the Chapter from 3rd March. The course was inaugrated by S.C. Nayar, Deputy General Manager of Rourkela Steel Plant. The course was attended by eighteen participants from R&O and MECON. Computer concepts and Fortran Programming were taught with a view to preparing participants to appear in NSTPC-3. A number of programs were written by the participants.

TRIVANDRUM CHAPTER

The second popular lecture was conducted on Wednesday 11th April 1981 at the Institution of Engineers Hall, Trivandum. Dr. L.N. Ambikaiy Nair, Associate Professor of Biophysics, Medical College, Trivandum, spoke on 'Data Processing and Computer in Medicine'. He touched upon the various aspects relating to the application of computers in medicine. After explaining briefly how computers are successfully used in advanced countries in the medical field, he pointed out the bottlenecks facing the introduction of computers in the Indian medical scene. According to Dr. Ambikaiy Nair, even with all these constraints there is ample scope for computerization in this country.

POONA CHAPTER

In the last two months many Poona Chapter had quite a number of activities. For example, a one-day workshop on 'Awareness of Computerisation Information Processing' for the benefit of the High School teachers in Pune Area. Besides lectures, the teachers were taken around the SSC Board Computer Centre and the working was explained. Recently, they had two very important lectures by Mr. Mukhopadhyay and by Mr. V.R. Bhashkar. The lecture was on 'AWARENESS OF COMPUTERISED INFORMATION PROCESSING'. On April 28th, the workshop was organized by the Poona Chapter. The workshop was attended by a large number of teachers from Pune area. The workshop was well received and was appreciated by all the participants.

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CSI Communications, May 1981
Lok Sabha Questions

LOK SABHA
UNSTARRED QUESTION NO. 5956
TO BE ANSWERED ON APRIL 1, 1981
CHAITANYA (RAJ.)

REVISED
OR
POLICY
OF
GENERATION
OF
COMPUTER SOFTWARE?

1986, SIRI R. MALLANNA:

Will the PRIME MINISTER be pleased to state:
(a) whether, as a fact that Government have announced its revised policy for promoting the generation of computer software, particularly for exports, and
(b) if so, the details regarding the new policy in the regard?

ANSWER

THE MINISTER OF STATE IN THE DEPARTMENT OF SCIENCE & TECHNOLOGY AND ELECTRONICS (SHRII C.P.N. SINGH)

(a): Yes, Sir.


Annexure referred to in reply to part (b) of Lok Sabha Unstarred Question No. 5956 for 1-4-81

New Policy and procedures for projects of Computing Software Export

A programme for promoting the generation of indigenous computer software, particularly for exports, has been operational since the Department of Electronics (DOE) since September 1970. Under this programme computing software could be individually or groups wishing to export software, provided that foreign exchange equal to twice (200%) of the CIF price of the computer was earned by the party through the software exports over a 5 year period. In July, 1976 the Government revised the general policy of allowing import of Capital Goods by Indian nationals set aside abroad but wishing to invest their foreign exchange earnings in industries here. Under this scheme, computer software houses were allowed to be set up with imported computers, but with an export commitment of 100% of the CIF value of the computer imported over a 5 year period.

2. DOE set up an Expert Committee in April, 1980 to review both the above software export programmes and make recommendations for strengthening our software export effort and making it more effective. The report of the Committee is interested in the Electronics Commission and a revised policy and procedures have been approved by the Government for promoting computer software exports.

Enhancement:

1. One of the distinctive features of the current computer scene in the country, is the vastly greater number and much wider range of types of computers, and hence overall computing capacity in 1980 as compared to 1970. The total number of systems has increased from 120 in 1970 to around 600 in 1980. What is more, some 120 third and fourth generation computer systems have been installed and become operational over the last five years. In addition some 100 indigenous computers have been also introduced over the same period. Therefore revised policy and practices place emphasis on the generation and export of software using the existing computing capacity in the country, rather than on the import of computers. Let alone the import of a particular type of computer, for such software enhancement.

Policy: Frame

4. Proposals for approval to undertake generation and export of computer software (whether with or without import of a computer) would normally fall into one of the following categories:

(a) An Indian organisation proposing to set up an export-oriented software company and requiring FE for import of a computer for the purpose.

(b) An Indian national(s) settled abroad setting up an export-oriented software industry not requiring national FE but wishing to import a computer using FE he has earned abroad.

(c) An Indian organisation wishing to import a computer with a view to enhance/modify system hardware and/or software for a specific export order, and then sell the assembled computer.

If after evaluation (see para 8 below), it is assessed that import of a computer is essential for effective implementation of such an order, the following policy would apply for each of the above categories:

(i) For Category A: The applicant should have at the time of making the application a guaranteed export order(s) for at least 20% of the CIF value of the computer proposed to be imported. Import of computing equipment normally does not exceed 50% of the project export commitment value, over a five year period, may be allowed.

(ii) For Category B. The applicant should have at the time of making the application, a guaranteed export order(s) for at least 20% of the CIF value of the computer proposed to be imported. Import of computing equipment normally does not exceed 50% of the project export commitment value, over a period of five years may be allowed.

(iii) For Category C: Imports may be allowed without any extra obligations. Normally such an action would not take more than two years. However, these systems should not be used for any domestic purpose.

5. Apart from the specific top category conditions of the proposal set out in para 4, all approvals for software generation project involving import of a computer system would carry the following general conditions:

(a) A total bona fide executed by the party with the CC&E for the software export operation applicable to his case.

(b) The bond would include a provision that the party would undertake to follow the following minimum levels of export (both port by value) over the 5 year duration of the export obligation:

- 20% of the total export obligation at the end of 2nd year.
- 40% of the total export obligation at the end of 4th year.
- 60% of the total export obligation at the end of 5th year.
- 100% of the total export obligation at the end of 7th year.

The party should send in the CDE performance report once in every 6 months.

(iv) The party should provide the CDE all assistance in regard to any on the spot technical inspection of the exporting facility and project performance which the CDE may wish to undertake.

(v) In the event that the party defaults in meeting the minimum export requirements laid out in (iii) above, the party is liable to be debarred from availing any CDE protection or any CDE assistance in regard to any on the spot technical (vi) the Committee proceedings may be initiated at any time after the completion of 2 years from the date the computer becomes operational.

Procedure

6. Applications for undertaking export of computer software projects (with or without import of a computer for the purpose) would be dealt with by the DOE on the basis of the following 4-step procedure:

Step-I: The applicant would be asked to present his proposal (along with the proposals vis-a-vis the Computer Group of the DOE covering: background of the applicant, technical feasibility, nature of export project etc. on the basis of pro forma obtainable from the Computer Group).

Step-II: Applications would be examined by the DOE and Computer Software Technology Consultants set up by Secretary, DOE. The first aspect to be examined is the technical feasibility of the project. The second aspect would be the capability/credibility of the applicant to undertake software generation and that far too export. The second aspect would be (a) whether the applicant could use a locally manufactured computer for software generation and (b) if not, whether he could import computers already in country.

Step-III: If the Standing Committee finds the project acceptable from technical and economic angle and if it is found that neither (a) nor (b) in step II are technically possible, such computer and related data processing equipment, in regional application may be allowed except in cases where software generation activity, may be permitted for import through the special import procedure for computer systems administered by the DOE.

Step-IV: Once a project is cleared and the approval issued by the DOE the progress of the project will be actively monitored and monitored. The monthly performance report etc. will be obtained from the parties. Periodic, on the spot technical reviews of project progress would also be undertaken by DOE staff. Should such project progress documentation be unsatisfactory, the Standing Committee could direct by a representative of the DOE and including reports of CDE. Ministry of Commerce and Ministry of Law as members.

7. Applications for the generation and export of computer software under this policy and procedure may be submitted to:

The Additional Director, Computer Group,
Department of Electronics,
Lo Yavat Bhavan, 3rd floor,
Near Khan Market,
New Delhi-110 003.

8. All parties, whose applications for import of computers for software generation (whether with or without import of a computer for the purpose) would be dealt with by the DOE on the basis of the following 4-step procedure:

9. This new policy and procedure would come into effect from the date of this Press Note.

Raja Sabha

UNSTARRED QUESTION NO. 6906
TO BE ANSWERED ON APRIL 1, 1981
CHAITANYA (RAJ.)

REVISED
OR
POLICY
OF
GENERATION
OF
COMPUTER SOFTWARE?

1986, SIRI R. MALLANNA:

Will the PRIME MINISTER be pleased to state:
(a) the number of foreign collaborations approved by Government in the field of computer technology in recent times; and
(b) the steps Government have taken to increase production of indigenous technology in the field?

ANSWER

THE MINISTER OF STATE IN THE DEPARTMENT OF SCIENCE & TECHNOLOGY AND ELECTRONICS (SIRI C.P.N. SINGH)

(a): So far, 7 approvals for foreign collaboration have been approved, of which 3 have received foreign financial participation.

(b): To increase the production of indigenous technology in the computer sector, the Department of Electronics (DOE) has been directly undertaking the development and supply of computer systems and software and promoting and financing R&D work in public sector companies, R&D laboratories, and academic institutions. As for the former, this has been done principally by the Systems Group of the DOE, which is currently executing Rs 12 crore worth of projects for developing and supplying sophisticated computer-based control systems for ships and related Defence applications. Moreover, the DOE has produced consumer electronics, by them through DOE formulated and technology development projects. The DOE has also funded a major Rs 6 crore R & D project undertaken collaboratively, by a leading Indian company, to enhance the Right to Information Act.

Collaborations for computer technology

144. SHRIMATI SUSHAB HA:

Will the PRIME MINISTER be pleased to state:
(a) the number of foreign collaborations approved by Government in the field of computer technology in recent times; and
(b) the steps Government have taken to increase production of indigenous technology in the field?

ANSWER

THE MINISTER OF STATE IN THE DEPARTMENT OF SCIENCE & TECHNOLOGY AND ELECTRONICS (SIRI C.P.N. SINGH)

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Interview

with Prof. P.C.P. Bhattacharya, Director (Computers), DOE

Prof. Bhattacharya gave an interview recently, mainly covering conclusions reached by a DOE Committee on research and teaching computer centres (R. C. C.s). The D. O. E. is concerned with the pattern of usage at R. C. C.s; when there are a number of Indian made computers available which can handle routine EDP, it is important that the expensive and sophisticated imported systems should be used for especially valuable work. The DOE will now insist that 50% or more of the time of any R. C. C. should be used for promotional work — encouraging new applications in planning. Around 35% should be in design & development, competence building, and other oriented work. Commercial usage should not exceed 15%.

Can R. C. C. break even on this pattern? Don't they have to earn interest on their capital and meet their depreciation? No, says DOE. It is more important that computers be used in socially valuable roles, profits don't matter here.

What about future R. C. C.s? Will we get a few more machines? Future R. C. C.s, yes. Imports, not always necessary. Why? Isn't a R. C. C.

some article about attributing books to people in the DP industry and the impact of those attributes on stress creation. Much that was said there related to the American environment, but certain points were felt to be worthy of discussion in the Indian context. To promote such a discussion, several points of the article are extracted below:

1. Long Working Hours: A job in the DP industry is often characterized by long working hours. One DP manager, in a meeting at his office, another consultant, has to work late into the night to meet a deadline. And they put in hours:

2. Unpredictable Work Times: This is true of operations work. One manager returns at 3:30 in the morning after drinking cups of coffee and periodically splashing water on his face to keep awake. Another is called up at 4:30 in the morning to be told that the system is down:

3. Work Carried Home: This is characteristic of development activity. Print outs are carried home for analysis. Programs are written to meet specifications. Manuals are read at home because the day is used up interfacing with the system.

4. Effort Underestimation: Development time estimates made under unfamiliar conditions often turn out to be gross underestimates. Delays are imposed, deadlines are missed, and the consequence: deadlines compensatory additional effort is put in...

5. Timing Stress: Such situations create timing stresses, which get mirrored at home. As an outcome of this unstable feedback loop stress becomes distress...

6. Personality Stress: There are other kinds of stress too. One manager-related stress specialist says an average person who enters the DP industry is more interested in dealing with machines than with other people. Such persons are skill
d in isolation. Here again, the organizational hierarchy can experience a sense of shock at having to deal with people...

7. Obsolescence Stress: Technology and software change with extraordinary rapidity. After five years on the job, an individual may find a raw college graduate better equipped to do the work than he is. These needs constantly, continuous upward.

8. Family Impact: In America personal break downs are very widely spread in this industry. And divorce rates are very high if not actually causal. India is yet far removed from such a spectacle because divorce is still socially unacceptable. But strains in the family in the form of late marriages and household tensions may still be there. And they will remain there as long as people who become professionals in the computer industry care more about their work than about anything else in their lives.

CROSSWORD — COMPUTERS

Across

1. Run and back up to form the best known example of a metalanguage (6,6,4)
2. No sales tax, tariff for the multiplying (1,1,1,1)
3. You can't pull this, it's in every book (1,1)
4. This package probably serves three societies (1,1,1,1)

10. Not for writing, perhaps in the future capital (1,1,1,1)
11. Sounds like a good language for winter sports (6) without (3)
12. No creature for publish movement (1,1,1,1)
13.probably no maps in this first virtual reality system (6)
14. Start with the Jim Hopper's computer (1,1)
15. Two hundred and five hundred in between (1,1,1,1)
16. You can't get this (1,1,1,1)
17. Name tag appended to a system in a program (5)
18. This computer website also known in software (1,1)
19. The National Physical Laboratory (3,1,1,1)
20. It's as fundamental as ABC (5)
21. Scramble a top doctor and a young scientist to take care of your problem (1,1,1,1)
22. You get this after floating (4)

Down

1. Naval station loc. book helps in finding actual memory location (7,1,1)
2. Engineer's rude helper (1,1,1,1)
3. In a 20th century dictionary articles and forest product (6)
4. Top bosses liked to have one of these (1,1)
5. One party is not another (1,1,1,1)
6. Mix-up hundred ways (1,1,1,1)
7. First language for describing the Book's fast moves (7)
8. Lead on (1,1,1,1)
9. Not a good university for legal training (4)
10. Med. way to get up (1,1,1,1)
11. Improvisation keeps lock on screen (6)
12. Fix hair in the mirror (1,1,1,1)
13. Company owned bottom underwear (hands) but speaks the usual language (1,1,1,1)
14. A shed with a memory (1,1)
15. Two alphabets to form the number (1,1,1,1)
16. The most common letter would have taken the association to great heights (1,1,1)

Solutions are on page 13

CSS-82 What Kind of Program you would like to have...

Haven't taken the responsibility for making the technical program of CSS-82 worthwhile for the participants, I earnestly solicit feedback on following topics from CSI members at large and particularly from those who attended CSSI-81 at Delhi.

(i) Many felt that some sessions of the manufacturer's presentations at CSI-81 were scheduled so early in the day that no interest persons were left present. Further, many that they were forced to select only one out of the more than one parallel presentations that they were interested in. Can we have manufacturers' presentations to be a regular parallel session throughout the day? Each session repeated in a different time slot so that those interested can attend as many as desired. Here again, we can have either one or more at a time.

(ii) How does one handle the theme of the convention? The theme, "CSII is EDUCATION and MANPOWER TRAINING," is the key word. It is crucial that our computers be matched with appropriate manpower. Everybody's feeling the pinch of manpower shortage. Here are some suggestions for handling the theme:

(a) Professional recognition: On how to handle the CSI-82 theme. Obviously, the theme can not be broad in concept because we have no idea on what original activities can be incorporated. Will it be possible to start a certification exam for those who have completed an A. M. E. or at least be held at standard levels for various courses through discussions at CSS-82?

(iii) Now about paper presentations. Obviously, the program committee can only play with the papers submitted. It is difficult to get in more papers on a common topic to make up a session! Further, standard of presentation is essential. This is the time to present your best. Thus, if CSI have stopped submitting papers. A time has come to take a close look at the role of papers in the convention. Obviously, we have to do better or outstanding work will be presented not only in order to give professional recognition to an article or a full course to an author but at least give an opportunity for workers in the...
area to exchange notes. Can we
achieve the objectives without
organizing very artificial sessions,
with frequent walkouts by bored
members of audience and with possi-
bly severe curtailment of time to au-
thors who have to present towards
the end, etc. Further, with increased
audience size, quality of visual mate-
rial particularly regarding size of let-
ters etc. has become very important.
Many have expressed the feeling that
these sessions are not worth the time
of participants. This feeling incident-
ally is true of such sessions at large
international conferences also.

There is nothing more satisfying to
an author than to talk to a few people,
however small their number be, ab-
out the work in order to obtain valu-
able feedback and also establish pro-
fessional contact. Some learned
bodies have solved the problem
through POSTER SESSIONS where
the author(s) is/are available for discus-
sion in front of a display of relevant
posters on the paper at a prescribed
time and place. Regular poster ses-
sions (one hour) are scheduled listing
the papers and exact locations. Earlier
enough information (through exten-
sed abstracts or full text of papers)
is provided so that participants can
choose the authors they want to
meet. We can further try to help
identification of authors through
photographs and special badges. Last
but not least, it is thought that papers for poster
presentation are second grade, all
contributed papers will have to be
treated this way. Only invited papers
will be presented in the regular way.
Special mini sessions can be ar-
ranged based on polling among dele-
gates. We can also try to show our
appreciation to the authors of con-
tributed papers by presenting a
momento.

Are there any problems in adopting
poster presentation? Also are there
ways in which poster presentation if
adopted can be made a success?
Program committee will appreciate
obtaining feedback on above points.

Please mail the associated pro-
forma with your observations before
11 June 1981. All those who respond
will be put on a direct mailing list so
that they receive future announce-
ments directly.

SUGGESTION ON CSI-82 TECHNICAL PROGRAM

1. Manufacturer's presentation
   Regular parallel session     Yes  No
   If No to above best timings
   Any other comment

2. Theme ‘Education and Manpower Training’ Suggestions on How to Handle it.

3. Paper presentation
   Poster presentation
   For all
   For some
   None
   Give category below

Category: ____________

Will you present a paper by POSTER   Yes  No

If you don’t like poster method at all give reasons, further give suggestions for improv-
ing present method.

4. Advance notice of contributory paper
   Are you thinking of presenting a paper? If so please give us the approximate title. This
   information is only for purpose of planning. All probable authors will be put on a special
   mailing list so that they will be reminded directly of approaching deadlines.

5. Suggestions for invited talks. Review papers and panel discussions.
   Indicate persons (with addresses) to be contacted.

6. Tutorial: Suggest topic and lecturers:

7. Any other suggestion to make CSI-82 worth the effort
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before 9th June, 1981.

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CSI Communications, May 1981
Microprocessors and Process Control

V. RAJARAMAN
Professor of Electrical Engineering
Computer Science
Indian Institute of Technology, Kanpur

I. INTRODUCTION:
With the advent of general purpose computers three decades ago the opportunity to use this tool in controlling plants and processes was realised by control engineers. Substantial effort began in line with the advent of second generation transistorised computers which had reasonable reliability and speed. This area got its real thrust with the applications as transistors further developments in electronics in the late decades have given the process control engineer in expensive microcomputers. Besides this there have been revolutionary developments in solid state transducer equipments. We have available today reliable and inexpensive electronic transducer which in some cases give digital outputs. These two developments when combined together provide a tremendous opportunity to the process control engineer to apply this technology to a diverse range of applications.

Historically the control processors of computers used to be expensive and were the bottleneck in solving applications and one had to resort to reprogramming and designing an expert operating system. With the availability of large capacity microprocessors processing power is no more a bottleneck. The recent development of 16 bit microprocessors with the promise of 32 bit processors within two years has made it feasible to use independent microprocessors for different control functions in a process. The trend is towards managing multi microprocessors working simultaneously.

In the rest of this paper we will discuss the need for computer based process control and its relevance in a developing economy such as ours. We will then point out how one may explore, in existing processes, where such control would be applicable. Next we will discuss implementation problems and give some hints for successful application of this technology.

II. NEED:
For Computers
One of the main problems encountered by Indian Industry is the wide variation in input raw materials. In many instances if pertinent parameters of the input can be measured, these can be used to control available controllable parameters to maintain the desired characteristics of specified outputs. For example in foundry India it was found that the quality of scrap input to a furnace could not be controlled and this led to bad castings. A system to measure the composition of the molten metal and based on that add a controlled quantity of silica and carbon to get desired parameters for molten metal is planned. The computation of the quantities of silica and carbon needed requires the use of a small computer as it has to be done in real time.

Another important reason for the use of computers in control is the increasing cost and scarcity of energy. There are a lot of applications which need computers for control to save energy. Arc furnace control is an important area where the distance between the electrode and molten metal may be controlled by a microcomputer to minimise maximum demand and consumption of electrical energy. Thermal power plant control is another area where such controls are used in India.

A third problem we encounter in India are production difficulties arising out of outdated control systems. Many systems supplied in turnkey plants which are not suitable for local conditions. In many cases changes were made in the systems installed, a new control computer (with micro or mini-computers) was added worth Rs. 50 lakhs. Another problem faced by Indian Steel Plant was that a bill mill computer control was installed as the previous system led to production disruption. This could be solved by a computer control system based on a TDC-312 computer. A microprocessor control system is currently being tested for a coiling mill. Such sophisticated controls were not feasible at the time the plant was installed in the fifties.

With increasing competition in the market there is more quality consciousness in India as well. The trend Fortunately is away from production regardless of quality, which implied disconnection of even existing controls. Better quality implies more sophisticated controls.

Another difficulty encountered is the maintenance problem of older systems. This often requires replacement of electromechanical and electromechanical components by solid state devices. This discourages the exploration of better controls with the system.

To summarise, the need for computer control is felt by industry in the following ways:

- Variability in input raw materials: Quality
- Scarcity of energy: Production due to outdated controls
- More quality consciousness in production
- Maintenance shut downs which have become frequent due to outdated plants.

III. EXPECTED BENEFITS OF COMPUTER CONTROL:
The primary benefit expected is productivity increase of existing plants and processes. This will occur through reduction in variability of output product leading to less rejections and easier maintenance problems. The saving effected is cumulative over a number of years whereas the cost of computer based control system is a one time cost. Thus the system pays for itself within the first year of operation.

In the billet mill control system of Bhilai the reduction in variability of billet lengths brought about by computer control reduced production stoppages and thereby increased production. The system paid for itself within the first year of operation.

Computer control provides flexibility in operation. For instance in a power system control, any unexpected failures occur, rescheduling of generation is possible.

The introduction of computers for control demands the replacement of outdated instrumentation with newer, more reliable, solid state based systems. This improves the reliability of the overall system. This im-
good operational data to enable a mathematical model to be built. Plant data collected by operators is notoriously inaccurate. Thus special planning effort is needed either through automatic data logging or specially planned data gathering effort.

The heart of any control effort lies in picking the appropriate parameters for measurement and the appropriate transducers. As we pointed out in the introduction a number of state space transducers have come into the market recently. A reasonable effort needs to be expended in exploring this area.

There are many situations (such as the furnace control example we discussed earlier) where there is a need to go on-line analysis of output quantities. Appropriately measuring these quantities and on-line analysis instruments are thus to be picked.

Installation of any computer based system needs careful evaluation of environmental factors in a sharp floor, electrical transients, stray magnetic fields, temperature and humidity. Various factors need particular attention. Special electrical isolation circuits, and environmental conditioning with their electrical and magnetic shielding may be required. Optical couplers are becoming inexpensive and available and should be seriously considered. Some microprocessors are now available with MIL specifications and need to be evaluated.

A still serious bottleneck in computer based systems is the software. Development needs expertise which is scarce. Maintenance after installation is a more difficult problem. An expert bug free software is still an elusive goal. The situation is getting better but with higher level languages such as A PASCAL becoming available on microcomputers, it is however, still a serious problem.

Lastly it is very important to carefully handle human factors. Among difficulties to be foreseen are resistance to change, displacement of existing labour force, retraining and reorganization problems and side effects of the system in other sectors of the company. Full management support is a prerequisite for success implementation. Careful disbursement of appropriate information about all the proposed system to all levels of person in plant is essential and should be carefully planned.

In summary, the main points one should attend to are:

* Selection of transducers
* Picking appropriate measuring and analysis instruments
* Attention to plant environmental factors
* Software development
* Handling parameter problems
* Planning appropriate actions at all human levels

VI SUGGESTIONS ON PLANNING CONTROL COMPUTERS:

The most important point to realise is that an engineer planning to use computers for control is the fact that it is pointless to think of a very complicated model of a process. Simplified models are more available for data logging in cases of command control. Optimum parameters and values to evolve and implement with such simple optimal models.

Those planning to install computer control should first begin with uncomplicated systems. As major factories are very large and the environment is very complicated, success will be hard to achieve if an understated process is tackled. The determined optimality should not be over optimistic.

A thorough study of the process should be accurate data logging and good statistical techniques. Suitable parameters should precede any attempt to introduce control computers.

Alternative schemes should be evaluated and from points of view of maintenance, case of implementation, cost and man power. A well modulated feasibility report should be submitted before embarking on the project.

In summary our offering to this conference on microprocessors for control:

* Major models
* Plan to introduce control in simple, uncomplicated systems
* Data log carefully first
* Then evaluate alternate schemes

VII CONCLUSIONS:

The main thrust of our paper is to point out the fact that microcomputer based process control could provide a highly relevant form for industrial use today due to variability of raw material, scarce energy, and obsolete equipment.

This increased availability of inexpensive microprocessors and solid state circuitry make the introduction feasible.

The problem of introduction of computer control is the form of better data availability for management control. Any benefits that can be obtained from this instrumentation with solid state equipment and better quality product. This control strategy is a relatively simple and straightforward way of improving control.

Software is an essential processing instrument and the real time computer is a very appropriate technology for speeding up socio-economic development in the third world.

Prof. R. Narasimhan pointed out the importance of information technology to developmental efforts. He argued that information technology, which underlies productivity in the service sector, is a very appropriate technology for speeding up socio-economic development in the third world.

Anand Rao.

Conventions, Seminars, Symposium - Call for Suggestions

As you are aware, the CSI has grown in strength, as the years go by, and is now the focal point of the body of computer professionals. It has been decided that this year, that at least some part of the annual conventions be held in the CSI. It has been decided that this year, that at least some part of the annual conventions be held in the CSI. Through your suggestions, we would like to hear from you and we will be happy to abide by your suggestions.

If you would like to suggest a topic for a seminar, we would be more than happy to hear from you. Please let us know what topics you would like to see covered.

Chapter regarding the organization of these activities:

8. What were the financial responsibilities of the concerned bodies towards the event?

9. How much was shared?

10. Did you find the seminars, conferences, etc. of interest? What changes could be made?

11. What was the benefit of attending the conferences?

12. What was the role of the Conference Committee in the context of initiating, planning and controlling of these activities?

The Conference Committee wishes to carry out a detailed study of these events and I would be glad to hear from all members who wish to assist in this process. Kindly send your suggestions to me by the end of May 81. It is hoped to bring out a detailed conference manual, clearly spelling out policies and procedures to be followed for future conferences, conventions, symposia and seminars.

N. S. Narasimhan

Chairman, Conference Committee

Computer Centre

National Textile Technology

Bombay 400 076

CSI Communications, May 1981

Delhi News

Prof. R. Narasimhan gave a talk on the 27th April at the India International Centre. He discussed the Social and Economic significance of information technology to developing countries. Particularly, he discussed the role played by computers in manufacturing industry and the tertiary, or service sector. The computerisation and control systems in industries is information.

The increasing importance of information for control and management is the reason for the shift of labour. Prof. Narasimhan pointed out the importance of information technology to developmental efforts. He argued that information technology, which underlies productivity in the service sector, is a very appropriate technology for speeding up socio-economic development in the third world.
DATA BASE MANAGEMENT SYSTEMS
Edited by Dr. S.S. Pillai.

This is a collection of exhaustive and comprehensive lecture notes based on lectures delivered at the Tutorial on Data Base Management Systems conducted by the Computer Society of India during its 16th Annual Convention Engineering Sciences, Social Sciences, Medical Sciences and Schools. Issues of content, hands on experience, faculty requirements and overall resource requirements should be addressed. Stress should not be too much on why as on how.

Contents:-
DBMS - an overview; models and their implementation; file structures; DBMS selection, evaluation and data base languages; data independence in language interfaces; experience with a three-schema architecture of DBMS; framework for advanced mass storage applications; problems of conversion from manual to EDP systems and Data Base security and privacy.

Limited copies available with the editor can be had on payment of Rs. 54.25 by Demand Draft drawn in favour of "Computer Society of India - 81" payable at New Delhi. Requests for the book may please be addressed to Dr. S.S. Pillai, Joint Director, Indian Agricultural Statistics Research Institute, Library Avenue, New Delhi - 110012.

CALL FOR PAPERS:
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4 copies of full paper: 21, Sept 1982
Review and acceptance: 16, Nov 1981
intimation to authors with offset masters: 14, Dec 1981
Receipt of ready to print masters, biodiversity: 1982
photograph:

Papers are invited on how to introduce effectively computer topics in Engineering Sciences, Social Sciences, Medical Sciences and Schools. Papers are invited on how to meet manpower needs in:

(i) Maintenance personnel
(ii) Operations and Computer Centre management
(iii) Application programming and system analysis
(iv) Systems programming
(v) Faculty needs at various levels

Papers must lay down a concrete plan of action based on educated guesses of manpower needs and resource requirements thereof and its mobilization.

A paper may concern one or more areas stated above. Authors of the accepted papers in this category will be appropriately honoured at CSI-82.

The length of papers should not generally exceed eight pages (2000 words) including figures, tables etc.

Contact for further information:
Prof. H.N. Mahabala
Chairman, Program Committee
Computer Centre
Indian Institute of Technology
Madras - 600 036.
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LOK SADHA QUESTIONS
(continued from p.71)

tion’s Air Defence Network. Techno-
logical upgradation of the IBM
1401 computers, in regard to both
hardware and software, as also the
development of the new INTEGRA
series of computers using central pro-
cessing units purchased from East
European countries, and peripheral
units purchased from North America
and Western Europe, have also been
financed by the DOE at the public sec-
tor company, Computer Maintenance
Corporation. In addition, several R &
D projects for development of com-
puter peripherals have been con-
tracted by the DOE to: Bharat
Electronics Ltd. (BEL), Bangalore,
Kerala State Electronics Develop-
ment Corporation (KELTRON),
Hindustan Teleprinters Ltd. (HTL),
Madras, and some academic institu-
tions. Finally, several R & D projects
on computer software development
of various kinds and for various types
of applications have also been finan-
cially supported by the DOE in
academic institutions. All in all, over
the period 1971 to 1979, the DOE has
promised to finance some 22 R &
D projects relating to the production
of computer technology, involving a
total outlay of Rs. 13.3 crores.

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(i) Maintenance personnel
(ii) Operations and Computer
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(iii) Application programming
and system analysis
(iv) Systems programming
(v) Facility needs at various
levels

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Chairman, Program Committee
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