



# CAD/CAM

## NEWSLETTER

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Information Compiled by the Canadian CAD/CAM Council

for the Advancement of Computer Integrated Manufacturing \*

### Summary of this Issue

- 1 - CAD/CAM Council and Newsletter Continuity
- 2 - Travels and Observations on Robotics, CIM and Automation Technologies
- 3 - News from the Canadian CAD/CAM & Robotics Centres
- 4 - CAD/CAM Information Available
- 5 - CAD/CAM Conferences
- 6 - Twenty Abstracts Selected to Provide a World View on CAD

#### 1. CAD/CAM Council and Newsletter Continuity

As explained in the CAD/CAM Newsletter for March 1987, the Department of Regional Industrial Expansion has advised the CAD/CAM Council of its intention to end the support it has given to the council. This decision has been reached in view of a new facility, proposed by the council in 1980 and 1983 as an adjunct to its capability and for which there is now a good possibility that it may be established.

The council is seeking an extension of its support, including the CAD/CAM Newsletter, in order that an orderly and effective transition can be made. In the meantime, distribution of the CAD/CAM Newsletter is continuing, essentially on a month to month basis.

In the event that there should be a break in continuity, which we hope can be avoided, members of the CAD/CAM Council and the Newsletter editor wish to express their thanks for the support received, the opportunity to have served the CAD/CAM community in Canada, and Canadian industry in particular.

The Newsletter began in 1979 with a small initial distribution, and has grown to nearly three thousand persons who have requested receipt on a regular basis.

Favourable comments on its format, content and usefulness are regularly received from both leaders in CAD/CAM and newcomers to this field.

The Newsletter for March 1987 contained figures for Canada's trade deficit in manufactured end products. This has grown to \$21 billion for 1986 according to preliminary estimates.

This is a deficit of more than \$400 million per week. The CAD/CAM Council believes firmly and clearly that the job of introducing CIM and other advanced manufacturing technologies into Canadian industry is not finished, but in reality has only just begun.

## 2. Recent Travels and Observations on Robotics, CIM & Automation Technologies

During the month of May the Newsletter editor had the opportunity to participate in a meeting in Germany of the Joint Coordinating Forum for the International Advanced Robotics Program (attended by representatives of the eleven participating countries), to attend a workshop on advanced robotics organized by the forum, and to attend the Canadian Engineering Centennial Convention in Montreal. Events such as these generally provide the opportunity to measure Canada's position and progress and to observe similar work in other countries. A few observations seem worthy of note and of interest to newsletter readers.

As background to recent observations on the organization of CIM development in Germany it is useful to note that a group of four Canadians, three of whom later became active members of the CAD/CAM Council, undertook a science and technology mission to the Federal Republic of Germany on CAD/CAM and Process Control in 1976. Even at that early time government support in Germany under their first, second and third data processing plans from 1967 to 1979 totalled approximately \$1.5 billion, (Canadian) of which approximately \$179 million was specifically for developments in CAD, CAM and process control. Support, largely for industry based development projects in advanced manufacturing, has continued in the 1980s under the first and second phases of a manufacturing technologies program at a level in the range of DM 112 million per year (approximately \$90 million per year at current exchange rates). Support is planned to continue under a third phase emphasizing computer integrated manufacturing. While one would not suggest a direct single correlation, one cannot help but note that during the time period from 1976 to 1987 the value of the Deutschmark has risen from 40 cents to 80 cents Canadian; conversely in relative terms the Canadian dollar has dropped to one half its previous value.

The Federal Republic of Germany has had a strong manufacturing industry sector for many years, accounting for 13 million employment or 48.6 percent of national employment in the early 1970s, compared to manufacturing sector employment in Canada of approximately 2 million, representing 21 percent of national employment.

This program for centrally coordinated and funded projects undertaken by industrial companies in Germany is but one element of the total development infrastructure. For example many of the thirty-four technology centres which are members of the Fraunhofer Society devote all or substantial portions of their effort to computer technology and

industrial automation projects. The total number of employees in the Fraunhofer institutes is more than 3000 with a total budget exceeding DM 300 million annually (approximately \$240 million).

In addition, the ESPRIT program with projects funded through the European Commission, supports research in information technologies, including CIM, in all European countries as one of its target areas.

The 1987 Conference "CIM Europe" was held in the U.K. in May 1987 as an activity of CIM Europe, an information and awareness activity of ESPRIT. Information on CIM Europe, which has an active set of special interest groups, study groups, workshops, publications and technical briefings can be obtained through its secretariat as follows; Mr. H. Petare, CIM-Europe Secretariat, CEC-DG XIII, 25, rue Archimède, B-1040 Brussels, Belgium.

The EUREKA program similarly is concerned with collaborative development projects in the European countries. EUREKA is concerned with cooperative projects for pre-competitive R&D in a wider range of technologies than just information technologies. While project costs are born by the participants, rather than by support from a central funding agency, many countries provide support at the national level to companies taking part in EUREKA projects. While ESPRIT's progress is sometimes described as encouraging, but slow, the EUREKA program is gaining great momentum, and is said to now total \$4 billion in cooperative projects.

The Canadian Engineering Centennial convention was held in the Palais des Congrès in Montreal, May 18-22 to mark the one hundredth year of the first organized engineering society in Canada. With up to twenty-five parallel sessions at any one time, organized mainly by the constituent societies of the Engineering Institute of Canada, the sessions on computer applications, artificial intelligence, robotics and automation were still filled to an overflowing and turn away audience.

Two of the thematic lectures, one dealing with artificial intelligence and robotics and one with engineering and the economics of future technology were filled to capacity. Brian Gaines, Killam Research Professor at the University of Calgary, traced past developments in computer technology to indicate by projection that mankind is really still just at the beginning in development of this resource. Christopher Freeman from the Science Policy Unit at the University of Sussex stressed the need for new infrastructures to deal with massive structural changes induced by new technologies. The future need was stressed for these technology driven changes to be not only technically feasible and economically justifiable, but also socially acceptable.

As an interesting point, the discussion session for both of these thematic lectures ended with expressions of concern for the disparity that exists between the developed countries and the third world and the need for the third world countries to somehow catch up. In many instances, and increasingly, the differences in employment levels and balance of payments that threaten world stability are derived not from differences in natural

resources but rather from differences in technological capability. A desire was expressed that possibly, and somehow, computer and information technologies might be used to correct these imbalances.

Returning to the cooperative activities under the International Advanced Robotics Program (IARP), the following schedule of workshops may be noted. Attendance at these is normally limited to the authors of accepted papers and a few additional attendees on an invited basis, for a total usually averaging five or six persons from each of the eleven participating countries. Canadian participation is encouraged to contribute and obtain benefit from the program. Persons interested in presenting papers or attending should contact N. Burtnyk, Division of Electrical Engineering, National Research Council, Ottawa, K1A 0R8.

Of particular note on the following list is the "First International Workshop on Robotic Applications in Medical and Health Care" to be held in Ottawa, June 23-24, 1988. The lead country for this activity under the IARP is the United Kingdom, with co-sponsorship and organization of this particular workshop by representatives from Canada, France the U.S.A. and Germany.

List of Planned Advanced Robotics Workshops

PLACE	SUBJECT	APPROX. DATE	SPONSORING COUNTRIES (main sponsor underlined)
UK (Lancaster)	Nuclear	June 29 - July 1, 1987	<u>UK</u> , F, J
Netherlands	Agriculture	end of 1987 (tentative only)	Neth, F, EC, USA
Canada (Ottawa)	Medical and Health Care	June 23/24, 1988	<u>UK</u> , CAN, USA, F, G
UK	Manipulators, Sensors and Steps Towards Mobility (No. 2)	Fall 1988	<u>UK</u> , G
Italy	Space	open (to be determined)	<u>I</u>
Japan	Ocean	1988	<u>J</u> , F
France	Multi-Sensor Fusion and Environment Modelling	May (?) 1989	<u>F</u> , UK

3. News from the Canadian CAD/CAM & Robotics Centres

- The Vanier College CAD/CAM Institute in Montreal offers courses in computer aided design and graphics to persons working in mechanical engineering, architecture, engineering and construction.

The equipment of the institute consists of two systems. One system comprises twenty Apollo workstations in a local network which uses the Autotrol 3-D software. The second system is a microprocessor laboratory using Auto CAD 2.5.

The institute is recognized as a national school of Quebec and is a member and participant in the activities of the CQIP group. For further information, contact:

Christopher Eriksson, Coordinator  
Vanier College CAD/CAM Institute  
425 de Maisonneuve Blvd. West  
Suite 1100  
Montreal, Quebec  
H3A 3G5

4. CAD/CAM Information Available

- Databook Manufacturing Automation Series

Datapro Research are well known in the computer industry for their subscription service reports. Each series covers a specific topic such as Electronic Data Processing, Microcomputers, Software, Microcomputers, Office Automation and Word Processing.

These have now been extended with a new series known as the Databook Manufacturing Automation Series. Available separately, or as the full set of five volumes, the reports are updated bi-monthly in loose-leaf form for subscribers. Titles of the five volumes in the Manufacturing Automation Series are:

- 1 - Management and Planning
- 2 - Manufacturing Information Systems
- 3 - CAD/CAM/CAE
- 4 - Factory Automation Systems
- 5 - News and Perspectives

An examination of their content indicates that by having and using source books such as these many companies could probably save considerable time and money in reduced search time for needed information, by avoiding false starts in their automation projects and just by knowing what is available on the market from CAD, CAM and CIM suppliers.

Volumes two, three and four each contain an initial overview tutorial to their subject, followed by descriptions of many hardware and software products. These are complete with approximate prices and vendors addresses. Detailed discussion and competitive evaluation reports are included for major and well known product offerings. For example, in the MIS Volume number two, there are descriptive evaluations of the MANMAN series of software products from ASK Computer Systems Inc., the CONTROL: Manufacturing System from Cincom Systems, COPICS and MAPICS from IBM and others. Volume two also includes shop floor data collection systems.

As its title indicates, Volume three covers CAD/CAM/CAE systems, including both multi-user systems, workstations and micro-computer based systems. The compilation and description of software products for CAD, CAM and CAE is impressive and could be of interest to many users.

Volume four focusses mainly on factory-based local area network products following the MAP protocol, programmable logic controllers, cell controllers and industrial robots.

Volume five is a new addition to the series containing news and perspectives. For example, issue number one dated March 1987, reviews the management planning behind the implementation of computer based automation within General Electric's Turbine Business Group in Schenectady, and how the use of computer based technology has been reviewed as a strategic technology in order to gain new business flexibility.

Volume one, as its name implies, deals with the management of, and planning for, computer based automation which is seen as essential to firms seeking to regain international competitiveness.

Since these publications are from a U.S. source, the supplier and vendor information represents only U.S. suppliers, consultants and other organizations. Canadian users would therefore wish to supplement this with information on Canadian sources of supply where possible, such as the Directory of Companies and Organizations providing CAD/CAM Products and Services in Canada (see CAD/CAM Newsletter, April 1987) or trade publication directories such as the 1987 Buyers Guide published as a recent 1987 issue of CAD/CAM and Robotics.

The Manufacturing Automation Series, published by the Datapro Research Corporation in Delran, New Jersey, is distributed in Canada by McGraw-Hill Information Services of Canada Ltd. The annual subscription price ranges from \$410 for one volume to \$1085 for all five volumes, hence organizations interested may wish to arrange for a trial examination in order to match the publications available and cost to their needs.

Contact: McGraw-Hill Information Services of Canada Ltd.  
330 Progress Avenue  
Scarborough, Ontario  
M1P 2A5  
Telephone: (416) 298-1177

- Computer Aided Design Report

A monthly newsletter which reviews and comments on new hardware and software product offerings in the CAD/CAM Marketplace with issues dating back to 1983. As stated in the May 1987 issue "at [today's] prices vendors can't afford to spend days running tests for each customer. ...Though prices have fallen, the cost of buying the wrong CAD system is still high .... if the wrong software is put into production, thousands of hours can be lost through inefficient use of an improper tool". As an example of content, the May and June issues describe and present the results of a new 1987 series of twenty-one PC CAD benchmark tests.

The report also reviews and has available for purchase other well known CAD/CAM reports of its own origin or authored by other organizations such as:

- "The Smart Manager's Guide to Selecting and Purchasing CAD/CAM Systems", S. Wolfe and staff of CAD Report.
- "The Smart Manager's Guide to Effective CAD Management" R. Wysack and staff of CAD Report.
- "CAD/CAM CAE Survey: Review and Buyer's Guide", Daratech.
- "Solid Modeling - A State of the Art Report", R.H. Johnson.
- "PC CADD: A Buyer's Guide", D. Smith and E. Teicholz.

CAD Report is available monthly in the U.S.A. and Canada at a subscription rate of \$138 (U.S.) per year.

Contact: CAD Report  
841 Turquoise Street  
Suites D & E  
SAN DIEGO, CA 92109-1159  
Telephone: (619) 488-0533

5. CAD/CAM Conferences

(See also previous listings in January, March and April.)

- "CAD/CAM 87" - Conference & Exhibition  
September 22-24, 1987, Montreal, Quebec.

Contact: CAD/CAM Association CAO/FAO  
c/o D'Avirro & Associates  
1440, Ste Catherine ouest, Suite 701  
MONTRÉAL, Québec  
H3G 1R8  
Telephone: (514) 879-9037

- "ISATA - International Symposium on Automotive Technology and Automation"  
October 5-9, 1987, Flims, Switzerland.

Twenty-five thousand copies of the provisional program will be distributed and several hundred delegates worldwide will be expected at the 17th ISATA, a conference at which many frequently referenced papers are presented. Conference theme for October 1987 is computer integrated manufacturing with a large array of appropriate topics plus special emphasis on the Manufacturing Automation Protocol (MAP), while the exhibition will feature the factory of the future.

Contact: ISATA  
42 Lloyd Park Avenue  
Croydon, CR0 5SB  
England

- "AUTOFACT" Conference & Exposition"  
November 9-12, 1987, Cobo Hall, Detroit.

Contact: CSA/SME  
One SME Drive  
P.O. Box 930  
DEARBORN, MI 48121, U.S.A.  
Telephone: (313) 271-1500

- "Management Training Programmes and Methods: Implications of New Technologies"  
November 17-19, Geneva, Switzerland.

Recognizing the spectacular technological advances made in computers, electronics, automation, robotics, computer integrated manufacturing and new materials this event is being organized by the Economic Commission for Europe (ECE) in cooperation with the International Labour Organization (ILO). The symposium is expected to be of particular interest to directors and staff members of management centres who are actively involved in developing and implementing management development programs and new training methods. No registration fee is charged.

Contact: ECE/ILO Symposium	or	ECE/ILO Symposium
United Nations Economic		Management Development Branch
Commission for Europe		International Labour Office
Palais des Nations		4 Route des Morillons
CH-1211 Geneva 10, Switzerland		CH-1211 Geneva 10, Switzerland

Tel: (022) 34 60 11 ext. 3254,	Tel: (022) 99 76 86
3258 or 3285	
Telex: 28 96 96 UNATIONS CH	Telex: 22 271 BIT CH

- "Vision Interface '88"

June 6 - 10, 1988, Edmonton Convention Centre, Edmonton, Alberta.

This is the second Canadian Conference devoted to Pattern Recognition and Picture Processing. This conference is in conjunction with the Artificial Intelligence '88 and Graphics Interface '88 which are respectively sponsored by the Canadian Society for Computational Studies of Intelligence and the Canadian Man-Computer Communications Society. Four copies of a draft paper due October 31, 1987 and the final paper due March 28, 1988.

Send Papers to:

T. Kasvand & A. Krzyzak, Co-Chairmen  
Vision Interface '88  
Department of Computer Science  
Concordia University  
1455 De Maisonneuve Blvd. West  
Montreal, Quebec H3G 1M8  
Tel.: 514-848-3027

For General Information:

Wayne A. Davis, General Chairman  
Conference '88  
Department of Computing Science  
615 General Services Building  
University of Alberta  
Edmonton, Alberta T6G 2H1  
Tel.: 403-432-3976

6. Twenty Selected Abstracts Provide a World View on CAD

Last, but not least, for a review of CAD/CAM developments around the world, please refer to the selection of twenty abstracts in the section attached.

By obtaining and using some of the references cited it is possible for industrial companies to save valuable management and engineering time in project planning and responding to the challenges of computer integrated manufacturing.

7. The CAD/CAM Newsletter is normally provided to the Department of Regional Industrial Expansion in camera ready form in English, for translation, printing and distribution. Due to travel and other office commitments the May issue was not available until June 9. The editor wishes to apologize for this delay.

This newsletter may be reproduced in whole or in part. Reprinting in other Canadian publications is encouraged. Acknowledgement to the Canadian CAD/CAM Council would be appreciated.

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