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REPORT ON THE
2ND EUROPEAN CONFERENCE ON
COMPUTER-AIDED DESIGN (CAD)
IN SMALL AND MEDIUM-SIZE INDUSTRIES
(MICAD 82)

W. G. MAGNUSON, JR.

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October 1982

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Report on the
2nd European Conference on
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in Small and Medium-Size Industries
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Waldo G. Magnuson, Jr.
Lawrence Livermore National Laboratory, University of California
Livermore, California 94550

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ABSTRACT

A summary is presented of the 2nd European Conference on Computer Aided Design (CAD) in small and medium size industries (MICAD82) held in Paris, France, September 21-23, 1982. The conference emphasized applications of CAD in industries with limited investment resources and which are forced to innovate in order to sustain competition.

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INTRODUCTION

This report is divided into two main sections. The first section (THE SESSIONS) describes the 2nd European Conference on Computer Aided Design (CAD) in small and medium size industries (MICAD82). The second section (SUMMARY) contains several conclusions regarding the conference and how it relates to the CAD activities of the European Economics Community (EEC).

The conference was organized by the French Association (A.F.) MICADO (Mission for Computer Aided Design). MICADO was established in 1974 for the purpose of assisting French industry to adopt CAD techniques. The association is made up of over 120 French members representing government, research centers, universities, service bureaus, industry and future users of CAD.

This meeting follows the first MICAD conference in September 1980 also held in Paris. Whereas about one-half of the participants and two-thirds of the authors came from outside France for the 1980 conference, the 1982 conference had a much stronger French representation. MICAD82 had 319 attendees from 16 countries. The attendance was again limited due to the size of the rooms. About 77% were from France. Twelve sessions were held including two panel discussions. Two-thirds of the authors were from France (as opposed to one-third for the first conference). Over 80% of the panel members were from France.

The conference dealt with a variety of problems in CAD with such topics as CAD-CAM investment strategies, basic CAD techniques, CAD-CAM user groups, mechanical engineering applications, CAD-CAM education and training, and applications in architecture and building design.

All papers having French authors were presented in French with simultaneous English translation provided. All other papers were given in English (with simultaneous French translation provided).

THE SESSIONS

The inaugural speech was given by the Chairman of the French Agency of Information, C. Garrigues. In his talk, Garrigues emphasized some of the targets for French industry for the next four years. He mentioned the following objectives:

- Production increases of 9% per year,
- creation of 80,000 jobs by 1986,
- balance of trade (French) improved,
- modernization of production systems,
- social issues emphasized, and
- the scope of CAD enlarged.

He suggested that small businesses must have a global plan coupled with a management plan to successfully incorporate CAD techniques. Several difficulties of introducing CAD in small and medium sized companies were pointed out:

- High cost,
- short depreciation periods,
- data base problems,
- lack of human skills, and
- training problems.

Garrigues stressed that a link must be established for the development and distribution of CAD tools. He said that priority should be given to developing tools appropriate for small companies. Stress, he said, should be placed on making educational institutions realize the importance of CAD being integrated into their teaching. He said that on the other side, they must be modest but accurate and global in their approach to the introduction of CAD.

Following the opening speech, three interesting papers were presented in the first session. The paper titles were:

CAD productivity: fact or myth?

Investment strategies for CAD-CAM, and

Planning the introduction of CAD systems in small and medium size companies.

The first of these papers made some strong statements on the subject of CAD system return-on-investment. The author stated that most firms are not prepared for the high costs of training operators, the long learning cycles, the disruptive impact on current operations, and the demands on management. Only through proper planning, training, organization, and management can a firm successfully install a CAD system and have it pay off. To be effective, the presentation stated, a CAD system must be an extension of current skills and experience.

The second paper outlined where companies must focus their planning if they are to have CAD-CAM success. Six strategies running from walk-in centers to multiple linked systems were described. For all systems it was pointed out the need to consider the impact on the total organization. Proper training at all levels was pinpointed as probably the most important single ingredient to success, even over hardware and software selection.

The third paper was based on an analysis of the structure of the German mechanical industry. Their data showed that small companies (less than 500 employees), although making up 92% of the companies, had only 23% using electronic data processing compared with 63% for large companies. The reason

for the hesitation for small companies to adapt CAD were given as the excessively high cost, the considerable effort with planning and introducing a CAD system, and a lack of CAD awareness in most of the companies.

Several alternatives for CAD options were presented. Likewise an algorithmic-like procedure for conducting a feasibility study for CAD introduction was outlined in the talk. It was pointed out that since any risk involved in the introduction of CAD in a small or medium sized company is not acceptable, only those areas should be selected which promise success.

To assist small and medium sized companies, the Institute of Production Systems and Design Technology in Berlin (IPK) has held, in the last few years, numerous seminars on CAD introduction. Their experience in assisting companies, coupled with intensive efforts of CAD producers to offer cheaper solutions, leads IPK to expect a intensive propagation of CAD technology in small and medium sized companies.

Seven sessions of the conference were rather typical of CAD conferences in that they dealt with specific applications, particular program developments, or experience in an area. These sessions were:

- Basic techniques
- Mechanical engineering applications 1 and 2
- Applications in Electrical Engineering
- Applications in Architecture and Building
- Other CAD applications 1 and 2

I will not comment on the papers presented in these sessions.

Three sessions I will comment on as they were more general in nature and some of the comments made during presentations are of interest. These three sessions were:

User's groups for CAD-CAM,
CAD-CAM Education and Training, and the
Closing session.

The session on user's groups was a panel session in which one paper was presented, by J. Delvac of Sperry Corporation, followed by a discussion of ten panelists. It was agreed that user groups serve a very useful purpose for small and medium size industry users. Time spent by participation in such groups is more than repaid through benefits to the company, it was stated. It was pointed out that there are several types of user groups, e.g. within a company, professional, union, collective associations (MICAD), etc. and each can serve a different but useful purpose.

The panel discussion on CAD/CAM education and training had a mixture of industrial and educational representatives (eight in all) but could not find a consensus on what was required. Several of the panelists expressed some doubt as to how education should approach teaching of CAD/CAM. They were unsure what the future techniques would be and how to teach the idea of design and the use of computers. MICADO is sponsoring a national symposium (French) in 1983 to cover CAD/CAM training and technology so perhaps the issues will become better defined.

Mr. Dieli Lechanteux, from the Ministry of Research and Industry, gave the last presentation at the conference. His talk "Government policy for

developing CAD in France" was rather wide ranging but did underline the fact that the French government intends to support CAD development, particularly for small and medium sized companies.

The government recognizes that France is at the beginning in implementing CAD/CAM when compared to the U.S. and Japan. They have training problems, a lack of CAD experts, and in general businesses are not CAD equipped. In the last regard, Lechanteux stated that the government will make loans to small and medium companies 2% under rate for the purchase of CAD equipment. He also said that the government does have money allocated for the support of CAD development--"if a good case comes up it will be financed."

Lechanteux stated that France is at the forefront in 3-D systems and modeling but currently are exporting few systems. One of their goals is by 1986 for French firms to have a significant share of the U.S. market in CAD/CAM systems and likewise a share of the Japanese market. They have a broad-based plan and are currently studying 12 areas where CAD can change the trade balance.

SUMMARY

It seems as though the intent of the conference has somewhat of a dual personality: Its principal aim is to promote and develop CAD in French industry and yet the conference is trying to be an international conference. These two objectives are at odds with each other.

The European countries recognize that in many areas of high technology they trail the U.S. and Japan. Computer aided design, they feel, is essential to gaining an equal technology foothold on international markets.

The Council of the European Communities has taken some action to develop European CAD. This was reported in Lawrence Livermore National Laboratory report UCID-18154, December 1978. A number of basic problems are present in Europe which will probably inhibit the success of a cooperative effort in CAD. In addition to the difficulty of exchanging information between companies on a formal or informal basis, the nationalistic goals and pride among each of the various nations, together with the language barriers, tend to emphasize the difficulty of pursuing common goals.

Nevertheless the EEC in August 1982 released a proposal calling for up to \$1 billion funding for research in information technologies. Five target areas are being asked to be approved by the Common Market countries:

- microelectronics,
- software technology,
- advanced information processing,
- office automation, and
- computer-integrated manufacturing.

The 1983 EEC budget includes \$11.5 million to start activities.

Whether the EEC effort compliments or acts against the French reorganization of their electronics industry will become clearer in a year. There is no doubt though, that since the election of a Socialist government in France a year ago that France is making strong moves to change their position in the electronic industry. The government has budgeted more than \$20 billion for the electronic industry over the next five years (about a 30% increase over current spending). Fourteen projects have been proposed and nine have been adopted. The nine adopted are: CPUs for mini- and micro-computers, consumer electronics, display systems, local communications networks, cable-TV networks, design and fabrication of VLSI, and computer-aided design, fabrication, instruction, and translation. These projects overlap the EEC thrust areas and if national interests can be put aside to some extent, there could be some significant changes in the European and the French balance of payments in electronics in a few years.

A 568 page proceedings of the Conference was published. Copies should be available by addressing a request to:

A. F. MICADO
Zirst
Chemin du Pré Carré
38240 Meylan
FRANCE

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