**OAKLAND
COMMUNITY
COLLEGE**

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COMPUTER HARDWARE ENGINEERING TECHNOLOGY

ADVISORY COMMITTEE MEETING

November 4, 1996

Present: Daniel C. Bednarski, Road Commission of Oakland County
John P. Brooks, Network Integration for Computerized Environments (N.I.C.E. Inc.)
Robert Colenso, General Motors Proving Grounds
Richard T. Collins, Oakland Technical Center - Northeast Campus
Patrick Dean, Paraprofessional, OCC
Barbara Einhardt, Interim Campus President, OCC
Barry Jocque, Computer City
Kim Le, Jabil Circuit Inc.
Verna Love, Counselor, OCC
Roger Martin, Jabil Circuit Inc.
Dr. Carlos Olivarez, Dean, Academic and Student Services, OCC
Dr. Robert Powell, Faculty, OCC
Willard Rush, Faculty, OCC
Ruth Springer, Secretary, OCC

1. <u>Welcome and Introductions</u>

Dr. Carlos Olivarez welcomed the group and thanked them for their willingness to serve as a part of the advisory committee. He asked those present to introduce themselves.

2. <u>Review of Curriculum</u>

Dr. Robert Powell and Mr. Willard Rush gave a brief description of each course included in the Computer Hardware Engineering Technology curriculum. They explained that students take the same basic core of classes in both the Electronics and Computer Hardware Programs. Computer Hardware students go on to take ELT 207, Advanced Digital Systems; ECT 215, Computer Repair I; and ECT 216, Computer Repair II. It was pointed out that students who took these courses a few years ago sometimes come back and take them again because the courses have been continually updated with current technology. Mr. Rush spends a great deal of time every summer updating these courses.

3. Curriculum and Equipment Recommendations

Dr. Olivarez asked whether the equipment in the lab is current to provide the necessary training. Mr. Rush responded that the lab is short on computers.

Mr. Kim Le commented that the lab has a number of 486 computers, but not many Pentium machines. Microsoft has recently brought out a system called Windows NT. This will soon become the dominant operating system. OCC needs to have computers that can run this system, which does not do well on the 486. OCC needs to have Pentium computers.

Mr. John Brooks agreed, stating that a minimum of 64 megs of RAM and 1 gig of hard drive space is needed, as well as CD-ROM. Probably the 486's could be used in other ways. Mr. Brooks reported that he recently attended two Microsoft seminars at which they were told that Windows 95 will soon be history, and that Microsoft will be emphasizing Windows NT. Thus, equipment purchased should come with Windows NT, not with Windows 95.

Mr. Brooks spoke regarding the intranet concept, which is an internal network which can be accessed only by select people. He suggested that such a network be set up which could be used by students to obtain information needed for their classes. Students could actually do assigned exercises at home through the network. He pointed out that using the Internet for such purposes can be a problem due to security issues. An intranet would be easier to secure and maintain.

Mr. Brooks pointed out that Novell, which is the system currently being used in the classroom, has had a number of problems and is losing money. He questioned whether Novell would continue to be a mainstay in the industry. Already Windows NT has outsold Novell systems and is the dominant system today. Mr. Brooks emphasized that teaching students without using the latest technology is not acceptable. A combination of hardware and software is needed in order for OCC to be up-to-date with what is being used in industry.

Dr. Olivarez asked whether curriculum changes would be required in order to teach the latest technology. Dr. Powell replied that the course descriptions are general enough that the necessary changes could be incorporated without doing a curriculum revision.

Mr. Le commented that he would like to see students receive instruction in both Novell and Windows NT, as both are in use in industry for the present.

Mr. Barry Jocque pointed out that it is not clear when a changeover will be made in the field to a true 32-bit operating system. Microsoft talks about going to a true 32-bit system, but no one knows when that will take place. It is impossible to know whether they will stick with NT or use another 32-bit system. It is not possible to predict when hardware and software will change; nothing is certain in 32-bit technology or in new chip technology. Mr. Jocque recommended that the College keep an eye on things for now and make a move perhaps in a few months. He pointed out that NT is a corporate

network; very little software is made to run on NT. There is no real indication that NT will be the next platform in a large portion of business or in most of the home market. Windows 95 or NT seems to be the new network platform technology, but for the non-networking market, both corporate and personal, Windows NT has not yet become the dominant system.

Dr. Powell asked whether the group would recommend that he and Mr. Rush be trained as network administrators. The group agreed that Dr. Powell and Mr. Rush should be trained as certified network administrators for both Novell and Windows NT. Two core classes would need to be taken: System Administrator and Advanced System Administrator. Dr. Olivarez stated that College funds budgeted for professional development could probably be used for this training.

The group agreed that the goal should be to teach both Novell and Windows NT. However, the lab currently has only computers which can accommodate Novell, and there are not enough of those for each student to have sufficient time on them.

Mr. Roger Martin pointed out that most of the computers in the lab have diskette drives. CD-ROM is needed, so that programs can be loaded more quickly into the computer. He agreed that more computers are needed.

Dr. Olivarez asked whether the College should wait awhile to decide whether to teach NT.

Mr. Jocque responded that NT does seem to be becoming the standard in the corporate market. However, he is not convinced it is the platform of the future. People have been saying that for several years now, but many experts are not convinced that Microsoft is going to stand by NT in the future. They may have something else under wraps. If the College makes a commitment to equipment that is capable of handling NT, that would be a good decision, because the same equipment would also be able to handle other systems which might come into use. Mr. Jocque expressed the opinion that, by the first half of the coming year, Pentium Pro Processor based systems would have come down in price and become more affordable.

Mr. Patrick Dean reported that a capital equipment request was submitted this year for 27 new Pentium 200's. The 10 Pentium 75's that are currently in the lab were bought last year.

Mr. Brooks suggested that a couple of units be purchased to be used as network servers. They should be high power Pentium Pro's with at least 32, or preferably, 64 meg and 2 to 4 gig of hard drive. There must be at least one lab that can be used to teach network capability, which will require Pentium machines. The existing computers should be updated in terms of memory, then more should be purchased. It would be possible to have a Novell server and an NT server side by side, and both could be accessed from the same work stations. There should be 2 high power machines and 14 or 15 work stations with Pentium 200's.

Mr. Dean reported that $18,000 has been budgeted this year for the purchase of computers. The group suggested that 2 Pentium servers be purchased, along with as many basic Pentiums as possible. Mr. Brooks stressed the need to purchase quality rather than quantity, stating that it would be better to buy eight premium machines than ten cheaper ones.

It was suggested that it would be good if the servers were equipped with Small Computer System Interface (SCSI). This provides faster transfer of data, which would be beneficial if one server has to serve 27 people in a classroom. It would also be good for students to be exposed to this technology, as it is predominant in the industry.

Mr. Martin asked what would be done with the existing computers in the lab if the College was able to obtain the new Pentiums recommended by the group. It was suggested that they could be used by students for doing such things as exercises and reports. Mr. Martin asked whether they should be upgraded by adding such things as CD-ROMs. Mr. Jocque expressed the view that more money should not be put into old equipment. However, Mr. Brooks suggested that a small amount of money could be spent to add CD-ROMs, which would make them more usable.

Dr. Olivarez suggested that a three- to five-year business plan is needed for the program. This could be presented to the College administration and budget council to help them understand what the program is trying to do and what equipment will be needed each year to meet program goals. The plan needs to be simple enough for people from other areas of the College to understand. The more they understand, the more they will be willing to give support and allocate funds to meet equipment requests. Any requests which are not approved this year can be submitted again the following year.

The group suggested that a two- to three-year plan might be more realistic, as it would be difficult to predict any farther into the future than that. Even then, with constantly changing technology, there will be new items needed in a couple of years that could not be predicted today.

It was pointed out that, if the program provides instruction using the latest technology, such as that recommended by this advisory committee, there will be a demand for the training. Former students will have a reason to return and take further training. On the other hand, if OCC is training students on out-of-date equipment, students will not get jobs, the word will get out, and this will be bad for the College. This is the number one reason for requesting new equipment.

Mr. Brooks reported that industry is looking for people who are familiar with the current technology. They will pay more for people with this knowledge because they can be put to work in the field sooner without a great deal of on-the-job training. If students can say they have been trained in NT and Novell, business will be interested in hiring them. NT is popular in the business market now. If OCC is training people to that level, 95 percent of students will be hired.

Mr. Jocque commented that hardware moves in terms of platforms, just as software does. We are currently nearing the end of the Pentium platform. Next year Pentium Pro's will be the standard on

the market. Thus, OCC needs to be equipping its labs with the current hardware which students will find in use in industry.
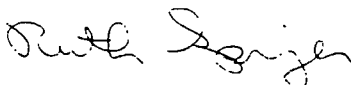
4. <u>Possibility of Combining Advisory Committees</u>

Dr. Olivarez asked the group what they thought about the possibility of combining this advisory committee with the advisory committee for the Electronics Technology Program, since the programs are so closely related. The group recommended that the two committees continue to meet separately.

<u>Committee Recommendations</u>

1. That the College consider setting up an intranet which could be accessed by Computer Hardware students to obtain information and do assigned exercises from home if they wished.

2. That students receive instruction in both Novell and Windows NT.

3. That Dr. Powell and Mr. Rush be trained as certified network administrators for both Novell and Windows NT.

4. That the $18,000 allocated for the purchase of lab equipment be used to obtain two high power Pentium Pro servers, along with as many Pentium 200's with SCSI interfaces as possible.

5. That the College consider adding CD-ROMs to the existing computers in the lab.

6. That a two- to three-year business plan be developed for the Computer Hardware Engineering Technology Program to include program goals and projected yearly equipment needs. This plan would be presented to College administration and budget council to seek their support for capital equipment requests.

7. That the Computer Hardware Engineering Technology Advisory Committee continue to meet separately from the Electronics Technology Advisory Committee.

Respectfully submitted,

Ruth Springer

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COMPUTER HARDWARE ENGINEERING TECHNOLOGY

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