

COMPUTERIZED COMMERCE

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(Copies of Transparencies)

COMPUTERIZED COMMERCE

- . What is it?
- . How to get there?
- . Problems.
- . Conclusions.

- . **Computerized-Commerce is a way of using computers to perform commercial transactions, with or without manual help.**

- . All the involved parties are **EQUAL**
- . No master/slave relation.

- . The only allowed non-symmetry is:
- . The customer is always right.

- . **All the communication is electronic.**
 - . Online
 - . Offline

- . **Offline communication via any electronic mail system, such as:**
 - . ARPAmail
 - . TELEX
 - . MCIImail
 - . TELEmail
 - . COMP+
 - . .
 - . .
 - . .
 - . .

- . **A case study: The MOSIS system (The right approach).**

- . Every year ARPA and several R&D labs of DoD need to procure a few hundred different kinds of integrated circuits (ICs) for prototyping. Each kind is needed in quantities of 5-100.

- . The cost of 10 IC's is about:

Masks: \$15,000

Wafers: 30,000

Packaging: 150

Total \$45,150

- . The typical delay from the completion of a design to receiving the chips is:

6-9-12 months!!

(at HP, IBM, Intel, AMI, TI, National, ...)

The DARPA approach:

- . ISI's MOSIS, a central computerized "Broker" (Not a silicon foundry!)

Typical MOSIS performance:

- . about 4 to 6 weeks.

- . about \$500 per prototype project.

(compared with 6-12 months and \$45,000)

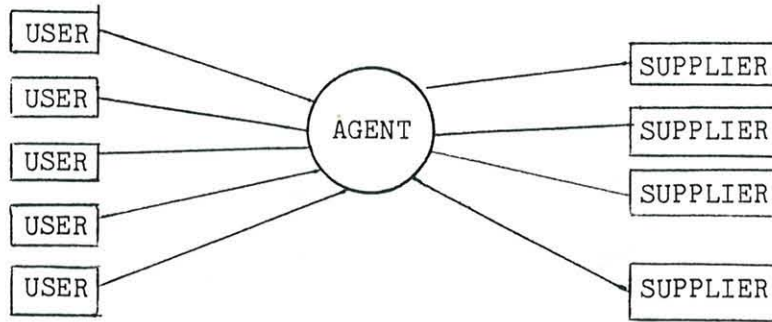
- . MOSIS reduces the fabrication time by streamlining all the interfaces.

- . MOSIS reduces the cost by aggregation: it uses multi-project chips and multi-chip wafers (even with different die-size).

- . All the communication between users and MOSIS is electronic: over military, government, and commercial computer networks.

(On-line, 24 hours, 365 days).

- . MOSIS is a great success, as evident from the growth of its user community and its acceptance by industry.



Value added by the Agent:

- . Quality Assurance (QA)
- . Cost saving
- . Time saving
- . Responsiveness

Value added by the Agent:

- . Access to wide vendor base
- . Streamlined interfaces
- . Corporate memory
- . Knowledge depot
- . A big Agent can afford an expensive QA operation for all of its users.

Information Transactions:

- . Inquiries
- . RFP's/RFQ's
- . Knowledge dissemination

Purchasing Transactions:

- . Authorization/Authentication
- . Specifications (what, how,...)
- . Regulations, special-requests

Communications and Protocols:

- . All the communication is computerized (over DDN, ARPAnet, TELEX, MCI mail, ...)
- . All processes are computerized, manual, or hybrid of.
- . There is no distinction between Users, Agents, and Suppliers.

Protocols:

- . Symmetric ("among equals")
- . Environment independence
- . Not "Question/Answer" mode
- . Support negotiation/bargaining
- . Extensible ("open-system")

Problems:

- . Authentication
- . Verification
- . Complete EFT
- . Authentication may be done by the use of encryption.
 - . (Public-keys are very useful for this application.)

Conclusion:

- . It can be done.
- . It will be done.
- . It will have many enemies, but it will eventually win.

DISCUSSION

Professor Atkinson observed that if one had many supplier/agents there was the problem of identifying honest ones.

Professor Cohen replied that experience would enable one to identify the responsible ones and that, further, it would not be in the interests of suppliers reliant on further business to leak designs.

Professor Zimmerman asked how charges are assessed for the use of MOSIS?

Professor Cohen replied that MOSIS is a Government scheme but that if outsiders used the scheme, they would be charged as if the scheme were being run commercially with the charge being proportional to the size of the design.

Professor Randell remarked that in many cases MOSIS connects application systems to each other. He asked to what extent the problems of linking such systems were similar to those of linking mailing systems.

Professor Cohen answered by saying that:

- a) all messages in the system are produced either by programs or manually by human users and that it was not possible to tell the difference these two forms;
- b) communications are via packets which if too big must be fragmented;
- c) normal error control mechanisms are used, e.g. checksums.

Professor Randell noted that MOSIS involved linking a heterogeneous collection of systems together, but not using OSI protocols. He wondered whether the implication was that (i) this had necessitated a great deal of programming effort, or (ii) that the problems had not been particularly significant.

Professor Cohen suggested that this would be a good point to move into general discussion and hoped the answer to Professor Randell's question would emerge out of the general debate.