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PRELIMINARY REPORT

ON

FEASIBILITY STUDY FOR DATA COMMUNICATION FACILITY

IN SUPPORT OF THE HANDPUMP PROJECT

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Prepared for IDRC by:
Ir. P. Sritharan
Telecoms Dept., Malaysia

1. General

- 1.1 This preliminary report outlines the findings of the feasibility study which was undertaken by Ir. P. Sritharan, consultant to IDRC, together with the proposed solution.
- 1.2 The study entailed visits to the participating organisations in Malaysia, Indonesia, Thailand and Philippines during the period 8-30th Sept. 1986.
- 1.3 A more detailed report will be submitted to IDRC shortly.

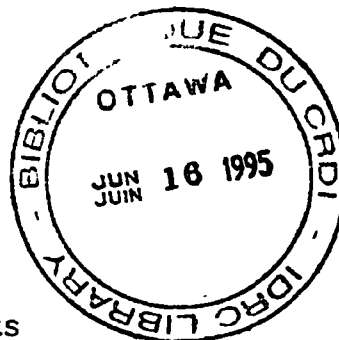
2. Data Communications Requirements

- 2.1 From the discussions held with the participating organisations, the following data communication requirements were identified:-
- a) Messaging and text communications for purposes of requesting for information, raising and obtaining answers to queries and sharing of knowledge among the participants.
 - b) Data transmission of graphic information to exchange detailed design drawings and specifications among the participants.
 - c) Capability to access suitable databases for research material.
- 2.2 It would be preferable that a single workstation at each of the participating organisations handle all of the above needs.

3. Proposed Hardware And Software Configuration

- 3.1 It is noted that all the participating organisations are currently using microcomputers (both IBM PC and Apple-based personal computers) in their daily activities and have personnel with the necessary expertise in using microcomputers.
- 3.2 The proposed workstation configuration is therefore built around the IBM PC/XT or a compatible. The workstation would comprise:-
- a) Option I (premium)

- i) IBM PC/XT
 - CPU (4.77 MHz)
 - co-processor
 - 640 KB RAM
 - 1x 360 KB Floppy Disk Drive
 - 1x 20 MB Hard Disk Drive
 - Monochrome Display
 - Graphics Card/Adapter
 - Communications and Parallel Ports
 - DOS 3.1



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- ii) Digitizer Tablet (12"x18")
- iii) Plotter (A1 size)
 - single pen, 16 in/sec.
- iv) Printer
 - 160 cps, NLQ, 132 col

b) Option II (normal)

- i) IBM PC/XT compatible
 - CPU (8MHz)
 - co-processor
 - 512 KB RAM
 - 1x 360 KB Floppy Disk Drive
 - 1x 20 MB Hard Disk Drive
 - Monochrome Display
 - Graphics Card/ Adapter
 - Communications and Parallel Ports
 - MS DOS
- ii) Digitizer Tablet (12"x12")
- iii) Plotter (A3/A4 size)
 - single pen, 12 in/s
- iv) Printer
 - 140cps, NLQ, 80 col.

3.3 For purposes of computer-aided drafting (CAD), a package called AUTOCAD would be used. The package would also enable the transformation of a drawing file to a text file and vice-versa for the purposes of data transmission.

3.4 The cost of the proposed hardware and software varies from country to country. The detailed costs will be provided in the final report. However, an estimate of the costs are as follows:

- a) Option I = US\$ 12,500.00
- b) Option II = US\$ 6,000.00
- c) AUTOCAD = US\$ 2,000.00

3.5 Generally, the hardware is covered by a 1 year warranty. After this period, a maintenance agreement could be signed at approximately 10% of the hardware costs per annum.

4. Networking

- 4.1 The proposed solution calls for the use of data networks to ensure cost-effectiveness and reliability.
- 4.2 The countries involved, namely Malaysia, Indonesia, Thailand and Philippines have either a Packet Switched Public Data Network (PSPDN) or a multiplexer/concentrator to access data networks in the USA and other developed countries.
- 4.3 Unfortunately, the data networks and multiplexers in the participating countries have not yet been linked together and is not expected within the next year.
- 4.4 Therefore the proposed solution is to use a commercial service from General Electric Information Service Company (GEISCO) called QUIKCOM, which is an electronic mailbox service. This service is accessible from all four participating countries through their respective PSPDN or multiplexer/concentrator.
- 4.5 The QUIKCOM service will be used together with the proposed hardware and software to send and receive messages and files of graphic data in a store and retrieve manner.
- 4.6 The messages or files destined for a particular recipient will be stored in his mailbox on the General Electric (GE) host computer. The message or file can then be retrieved by the recipient at his leisure by accessing the GE host.
- 4.7 The proposed network configuration is shown in Annex A.

5. Communication Costs

- 5.1 The following assumptions are made in estimating the communication costs:-
 - a) Two messages of 2000 characters (bytes) each are generated per location per week.
 - b) One file containing 20,000 bytes of graphic data is generated per location per week.
 - c) Every message or file is sent to the recipient and copied to all other participants.
 - d) Two (2) messages and one (1) file are retrieved at each access three times a week, thus retrieving a total of six (6) messages and three (3) files per week from each location.
 - e) Communications is achieved using a transmission speed of 1200 bps in asynchronous mode.

5.2 The communication costs involved vary from country to country depending on the prevailing tariff and this will be addressed in the final report. However, the typical costs would be as follows :-

a) Fixed Costs For PSPDN Access (per annum)

- i) Deposit and Connection Fee (one time) = US\$ 500.00
- ii) Rental (including modems) = US\$ 700.00

b) Variable Costs (per annum)

- i) Accessing GE Host for sending messages and files = US\$ 250.00
- ii) Accessing GE Host for retrieving messages and files = US\$ 700.00
- iii) GE Host usage charges = US\$ 2900.00

5.3 The total operational costs including communication charges and hardware maintenance charges (after first year) would be approximately US\$5800.00 per annum per location.

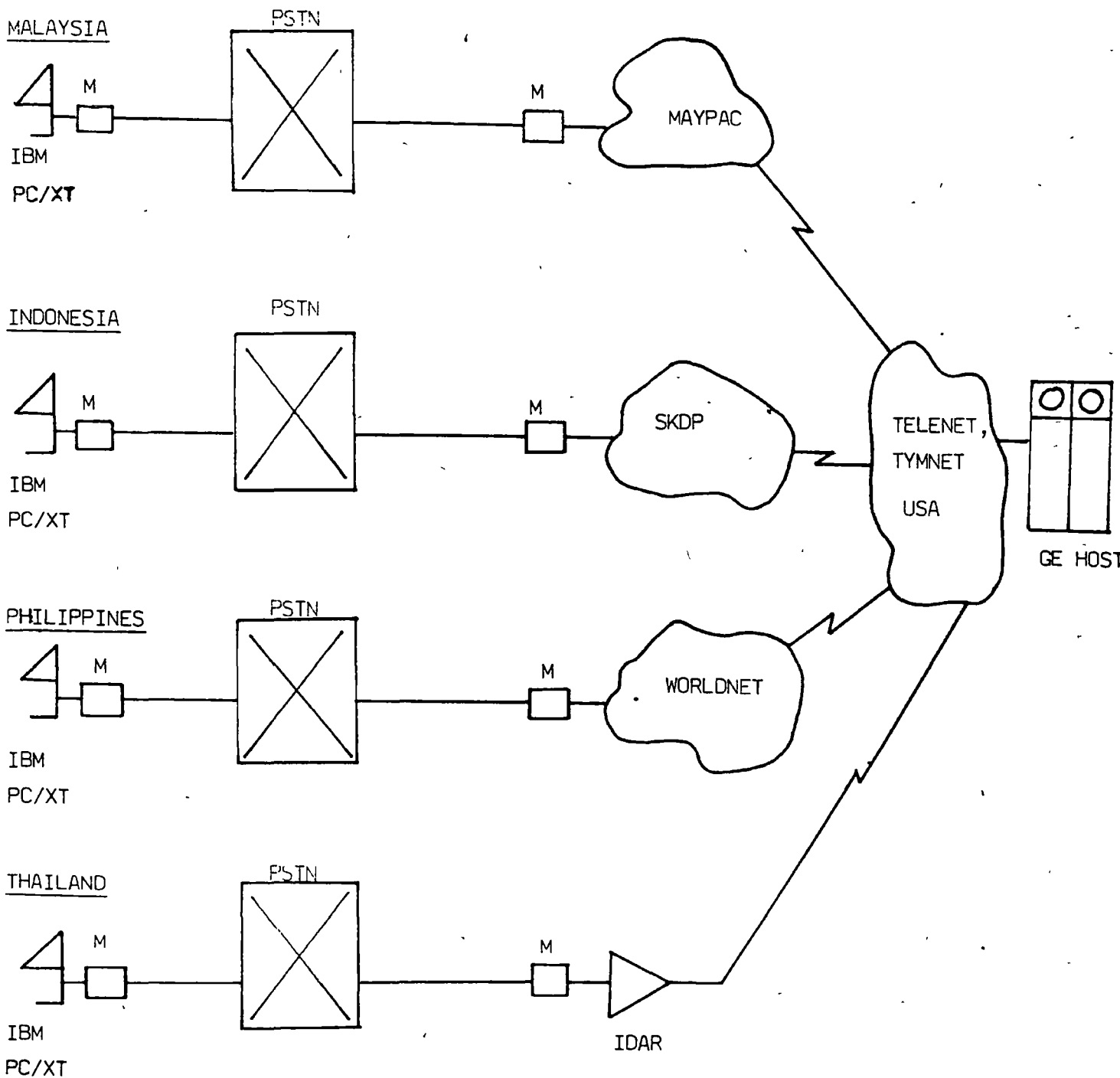
6. Conclusion

6.1 The proposed solution for a data communication facility to link the four participating organisations is feasible. The solution would be cost-effective and provide reliable, accurate and timely support when compared with other traditional means such as mail, facsimile, telex and courier service.

6.2 Furthermore, the proposed solution would enable other organisations to be linked easily as and when they become active participants, without any additional costs being incurred by existing members.

6.3 The participating organisations using the same hardware can by subscription access databases and other host computers.

PROPOSED NETWORK CONFIGURATION



Legend:-

M - Modem at 1200bps.

PSTN - Public Switched Telephone Network