

A. PROPOSED INTERNATIONAL TELE-HEALTH SYSTEM – AN AVENUE FOR APPLICATION OF BIOMEDICAL ENGINEERING

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Introduction

The concept of health delivery by telecommunications satellite is not a new concept and it has been demonstrated to be feasible technically in numerous limited experiments including the recent ATS-6 [Application Technology Satellite] experience [1] and current planned experiments for CTS (Communications technology satellite). A comparison of satellite and ground communications costs [2] indicates that considerable economic savings are to be expected by judiciously designing satellite links into an overall communications system. The relative cost figures are more favorable when considering remote areas where extensive ground-based communication links do not already exist and when considering the expected improvements in satellite capability. For example a major cost for a communication system with many users is the ground station cost. Sophisticated ground stations with large antenna required to detect signals from early (low power-5 watt) satellite transponders cost typically in excess of a quarter million dollars. As a comparison, CTS with its high power-200 watt transponder allows the use of smaller and less expensive earth stations (typically 10-50 thousand dollars). [3]

The potential market for satellite health, education and social services is recognized by the United States government [4] and by potential users of the services [5]. The recently formed [6] International Tele-Health Planning Group (ITHP) is a multi-national, multi-university, multi-industry group who share a common interest in the establishment of a tele-health delivery system. Further the group believes that this system should provide service on a real-time, as needed basis. The ITHP is unique when compared with other satellite user consortiums in that its formation came about primarily through the efforts of health professionals [7]. Additionally it has the full support of a major medical university plus strong interest and promised support from other medical institutions. This is particularly important from the point-of-view of ITHP which contends that health care delivery is the most pressing and desirable service for which telecommunications offers improvement.

The International Tele-Health Planning Group, within its membership, has brought together essential elements to implementation of a world

wide tele-health system. The elements may be grouped into three broad categories.

1. SERVICE - includes personnel, expertise and willingness to provide necessary services and consultation as inputs to the tele-health system.
2. TECHNOLOGY - includes feasibility and availability of hardware and software plus data management methods for a tele-health system.
3. APPLICATION - includes the need for and ability to use the tele-health system by personnel at remote sites.

The major task in implementation of the proposed system is to bring all these elements together in a way to provide optimum service at reasonable cost. The ITHP claims no monopoly in needed expertise and openly invites participation by interested parties [8].

Proposed System

An international tele-health system is proposed which will be unique from past satellite health care "demonstrations" in providing around the clock, as needed health service and in tailoring the service to best fit the needs of those persons responsible for rural health delivery at selected remote sites. The basic system would be designed to allow expansion in steps to the final goal of a responsive, world-wide, self-supporting tele-health system. Initially it is expected that support will come from government sources, possibly from user nations.

The system proposed by the International Tele-Health Planning Group is innovative and unique in the following ways:

- Real-time, twenty-four hour a day service is to be provided for medical emergency consultation and diagnosis;
- The proposed system has the full support of both medical and technically-oriented universities as well as industry.
- Emphasis is being placed on determination of specific user needs. A symposium on rural health, which will examine services needed by personnel in remote sites who are responsible for health care, is planned by ITHP.