



Telemedicine

sample script and specifications for
a demonstration of simple
medical diagnosis and treatment
using live two-way video on a computer network

This document is also available for download in Acrobat (PDF) format at
<http://www.mediasense.com/Greenstar/2scenario.pdf>

Please email comments to Michael North at mjnorth@ix.netcom.com.

Purpose:

To show, in a vivid and easily-understood way, how advanced technology can serve a vital human need: making direct, personal medical diagnosis and treatment available to anyone, anywhere.

Audience:

The general public; technical and medical authorities; diplomats and government representatives; the press and electronic media.

Basic Description:

A two-way live video conference over a local network is held between a patient and a doctor, discussing a simple medical condition of tendonitis; the patient receives diagnosis, treatment, prescription and followup.

Benefits:

People who will benefit from telemedicine include many around the world who do not have direct access to mainstream medicine. These include many people in small communities which have no regular source of electrical power or medical resources.

Medical facilities, clinics and hospitals benefit from having access to specialists, records and research available worldwide, broadening their resources to serve their patients.

Future Application:

Given a high-speed connection to the Internet, the consultation described below could take place today between a doctor and patient at any two points in the world without changing any hardware or software from that demonstrated. Such high-speed connections are now widely available through digital cellular networks, through cable and fiber, and soon through low-cost satellite networks worldwide.

This telemedicine conferencing system will be available as part of the Greenstar system, entirely powered by clean, renewable solar energy.

Resources:

Two high-speed computers, connected to each other over a local network, with video conferencing software and hardware; solar panels to power one of the workstations; engineers and technicians to set up and support the equipment; a large-screen video system showing the live interaction; explanatory literature and press releases; detailed timed script

Remarks:

This demonstration will show the general public and the press one of the most simple applications of telemedicine: a remote consultation between physician and patient.

In addition, a substantial database about other, more complex telemedicine applications, databases, imaging, artificial intelligence diagnostics, patient records and payment systems, etc. will be available on the touchscreen and online on the Web for professionals and technical press to examine.

The entire diagnostic dialog, and the screens which drive it, will be thoroughly edited and approved by top medical authorities for simplicity, clarity and medical accuracy. This program is not an attempt to reproduce any specific current professional telemedicine system; it is intended to provide a description, in principle, of how such systems operate and to communicate their significance to people's basic needs -- quickly, simply and in a universally-accessible way.

Interaction Summary:

After introductory remarks, the sample patient is seated at a touchscreen system; it shows a cycling series of graphics about medical care. The patient touches the screen, and immediately the image of a Palestinian doctor appears; the patient begins speaking to the doctor.



The doctor is seated at a similar workstation in another room in the conference facility, up to 200 ft. away. His workstation has two-way video and audio connected to the patient; they can see and hear each other on a large, color image comparable in quality to standard video, and can thus interact naturally.

The screen shows both people in adjacent windows simultaneously. See the demonstration image at left. The patient describes soreness, stiffness and pain in his wrist, and the doctor asks him questions about when it started, what kind of exertion he's been having, his history of similar pain, etc. He asks the patient to flex his hand and describe where the pain is.

The doctor diagnoses possible tendonitis, prescribes a pain medication and bracing bandage; he electronically sends a sample prescription, with details about exercise and other things he can do on his own; he copies the patient's physician by e-mail, and schedules a followup consultation in the future.

This one-page referral appears on the screen after their conversation is over, and is immediately printed on a color printer, and the patient is given a copy. The presentation ends, with comments and questions from technical and medical representatives. Written briefing materials describe the system in detail, how and where it can be implemented

Script:

Introductory remarks: Greenstar telemedicine spokesman; the need for medical care in remote communities

Introductory remarks: Medical consulting spokesman; the significance of telemedicine, bringing advanced technology to people in the cause of advancing peace and humanitarian aid; description of demo to come

Demonstration: the patient sits at the touchscreen workstation, accompanied by technical assistant

First screen: telemedicine theme screen, with animated graphic; the patient touches to begin

Second screen: A live doctor appears in a window on-screen, greets the patient, asks diagnostic questions, gets the patient to flex hand for him, move it, to describe the pain and when it occurs; doctor watches movement of the hand and makes possible tendonitis diagnosis.

He writes a prescription for painkiller and tendon relaxant (this is all pre-scripted), describes necessary bracing bandage and orders it.

Doctor sends sends email to a prescription center ordering medication (prescription dosage of acetaminophen); sends email to the patient's physician informing him of the treatment

orders; describes that the patient should do on his own (rest, elevation, warm compresses) then makes appointment for followup in two weeks; all the materials are pre-scripted, so this happens quickly.

While this is taking place, people on the scene can see what the patient is seeing, both on the touchscreen itself and on a large projection screen or monitor, in a dual-image display fed directly from the touchscreen behind the computer.

Third screen: An email of the prescription, a calendar of the appointment, and a copy of the email to patient's physician all appear on the patient' screen; he touches the Print button on the screen and the material is printed; he takes it, touches screen once more; consultation ends and returns to theme screen

Concluding Statements, Q&A

Timeline:

Assuming the demonstration event takes place at 1:00 pm. local time, here is a sample timeline:

Introductory Remarks, Greenstar spokesman:	1:00 - 1:05 pm.
Introductory Remarks, Medical introduction, description, Screens 1 and 2 (see above):	1:05 - 1:10 pm.
Prescription, followup dialog, Concluding Statement	1:10 - 1:18 pm.
Summary of the message	1:18 - 1:20 pm.; plus Q&A time

Technical Description:

Two Pentium II Hewlett-Packard 6370Z computers, 350 Mhz, 96 Mbytes RAM, 10 Gbyte disk, SVGA video, Windows 98; 100BaseT Fast Ethernet adapters; speakers

One computer (for the patient) has a MicroTouch 15" touch display, running Prosector Web-access touchscreen software and a color inkjet printer; the other (for the doctor) has a standard 15" color monitor, running video conferencing

Both computers have Intel ProShare video conferencing hardware and software, including camera, microphone

100BaseT insulated Ethernet cable, connected with a simple Ethernet hub, runs between the two workstations, delivering a high-speed link (150 Mbps) sufficient to support a 320x200 full-color video window, 30 frames-per-second, with concurrent audio; the two workstations may be 200 ft. apart

All major components are from U.S. manufacturers

A large NTSC video monitor (35") or rear-screen SVGA video projector (52") displays the image the patient sees on his touchscreen for onlookers, press. The computer used has both composite and RGB video out available; the press may access a live feed of the images for recording.

Equipment Layout: Greenstar Telemedicine Demonstration

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