

Telemedicine@Shriners

Jana Lindsey, RN

Shriners Hospitals for Children,
Honolulu

Shriners Hospitals For Children



Conditions Treated

- Orthopaedic Disorders
 - Clubfoot
 - Scoliosis
 - Limb Length Discrepancies
 - Rickets
 - Hip, Hand, & Back problems
 - Burn Rehab Care
- Ortho Problems Assoc. w/
 - Spina Bifida
 - Polio
 - Cerebral Palsy
 - Juvenile Rheumatoid Arthritis



Outreach

- Neighboring Hawaiian Islands
- Micronesia and Polynesia







- Isolated
- Limited Resource
- Shortage of Trained Healthcare Professionals

Cost/Time Savings

Location	Location	Flights	Cost	Distance	Time Zones
Hawaii	California	Daily	\$350 - \$550	2,550	2 to 3
Hawaii	American Samoa	2/week	\$580 - \$930	2,550	1
Hawaii	Guam	Daily	\$940+	3,801	4 Plus a day
Hawaii	Yap/Palau via Guam	2/week	\$1,300	4,400	5 Plus a day
Hawaii	Circle Micronesia	2/week	\$940+	3,801	1-4 Plus a day



Telemedicine

“The use of medical information exchanged from one site to another via electronic communications for the health and education of the patient or health care provider and for the purpose of improving patient care, treatment, and services .”

-American Telemedicine Association

Moving Data versus People



Clinical Benefits

- **Enhanced Access**
- **Timely & Cost Effective**
- **Triage & Preventative Care**
- **Communication & Interdisciplinary Coordination**
- **Collegial Support**
- **Pt/Family Understanding & Support**

Educational Benefits

- **Access/Opportunities**
- **Dynamic Learning**
- **Efficient Staff Utilization**
- **Cost Efficiency**

Administrative Benefits

- **Cost Efficiency**
- **Efficient Staff Utilization**
- **Recruitment & Retention**
- **Public Relations & Visibility**
- **Community Services**

Our Beginnings....

- **1998 Harry and Jeanette Weinberg Foundation**



Video Conferencing Systems



Document Camera

- **Meetings**
 - Overheads
 - Handouts
- **Consultations**
 - X-rays



General Handheld Exam Camera

- Aux Camera
- Mobile or mounted
- Wide or Telefocal
- Polarized
- Still Snap shots
- X-rays/Gait Panning



Electronic Scopes

- **Otoscope**
- **Dermoscope**
- **Ophthalmoscope**
- **Stethoscope**



Digital Camera/Camcorder

- **Store & Forward**
 - Stills
 - Videos
- **Aux Camera**



Real Time vs Store & Forward



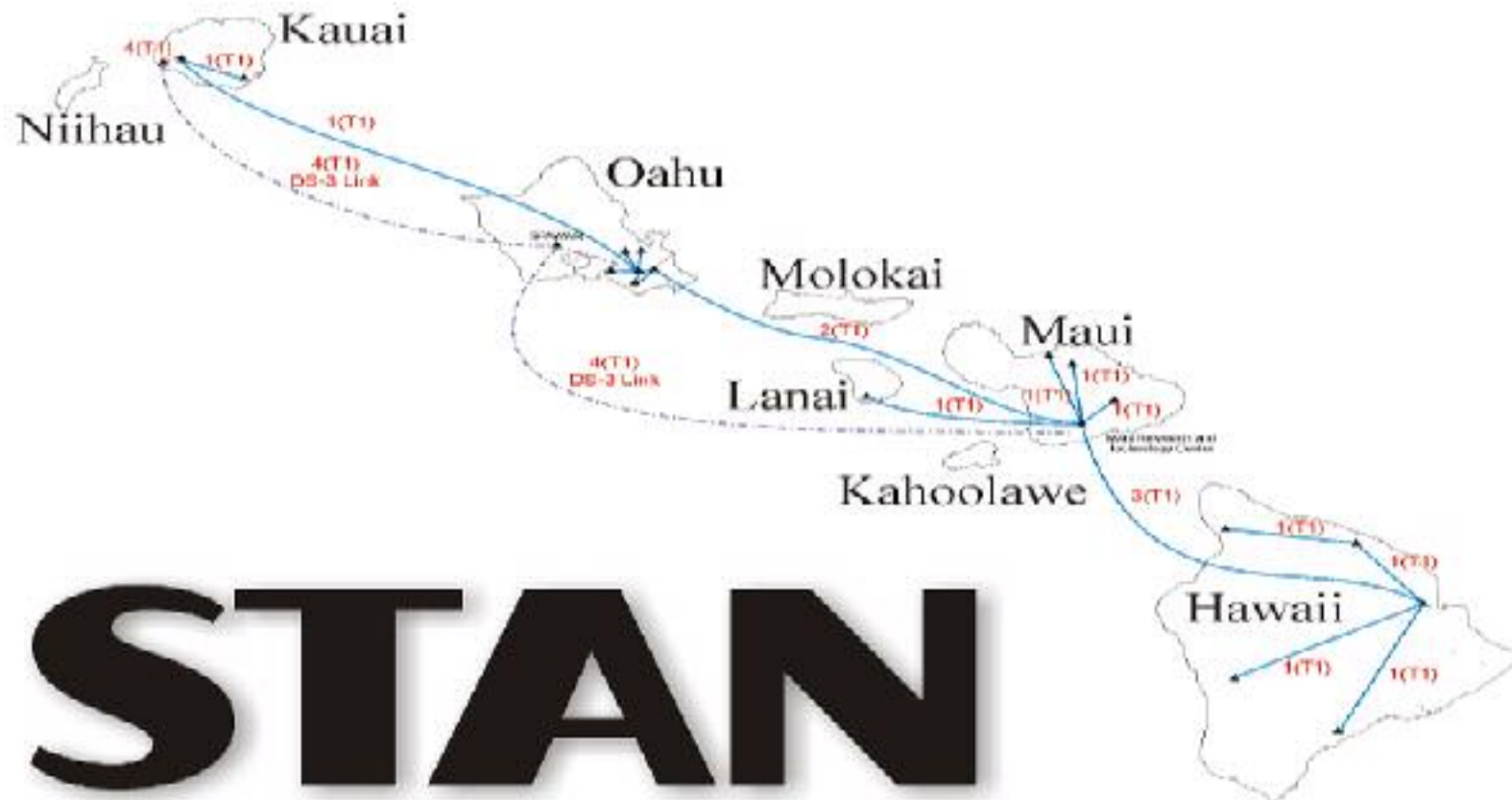
Modes of Transmission

- Cable
- Satellite
- Microwave
- Internet



STAN

State Telehealth Access Network

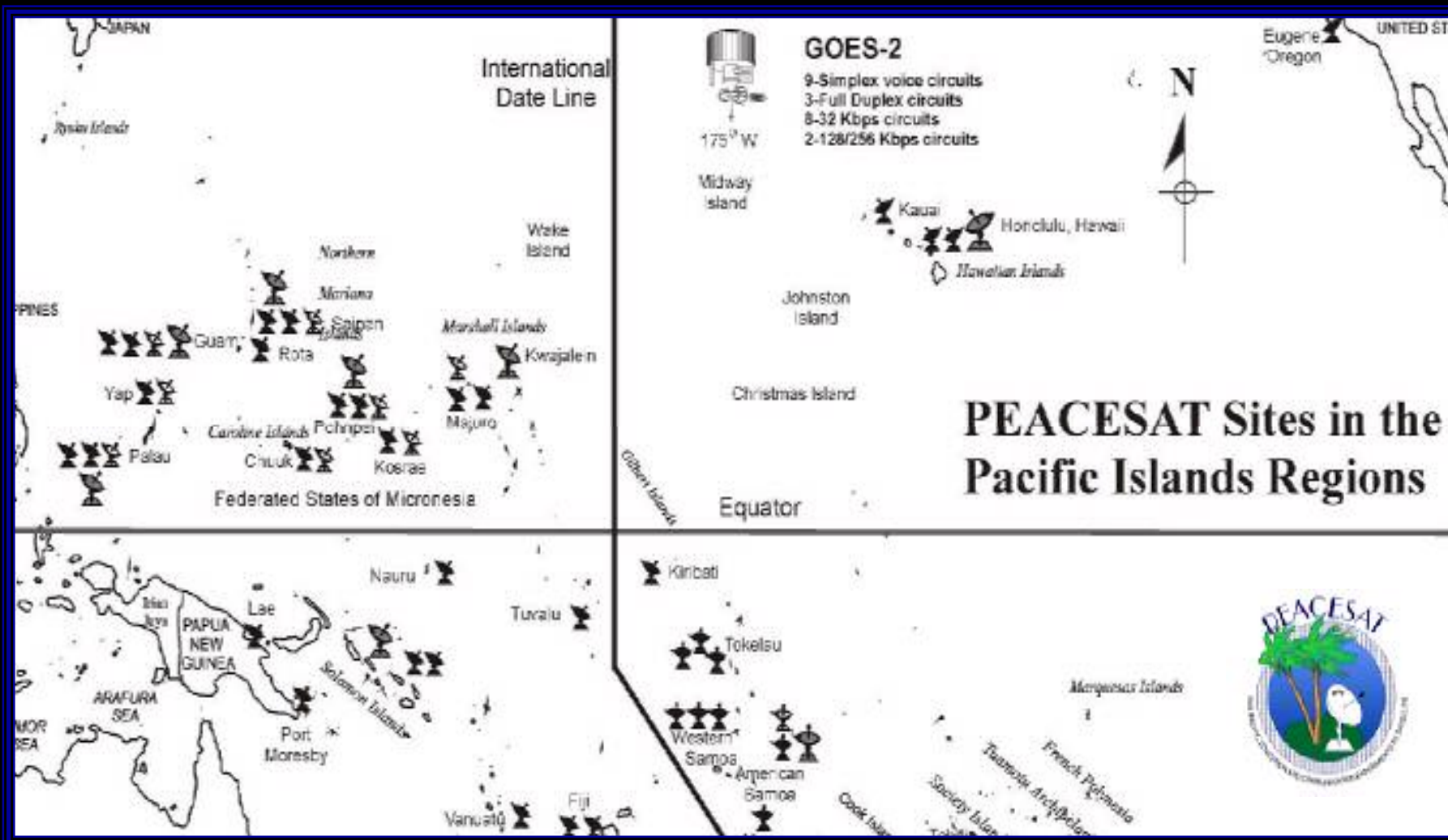


STAN

State of Hawaii Telehealth Access Network

PEACESAT

Pan-Pacific Education & Communication Experiments by Satellite





HAWAII HEALTH SYSTEMS
CORPORATION
"Touching Lives Everyday"

OAHU

- Leahi Hospital
- Maluhia

BIG ISLAND

- Hilo Medical Center
- Hale Ho'ola Hamakua
- Kau Hospital
- Kohala Hospital
- Kona Community Hospital

KAUAI

- Kauai Veterans Memorial Hospital
- Samuel Mahelona Memorial Hospital

LANAI

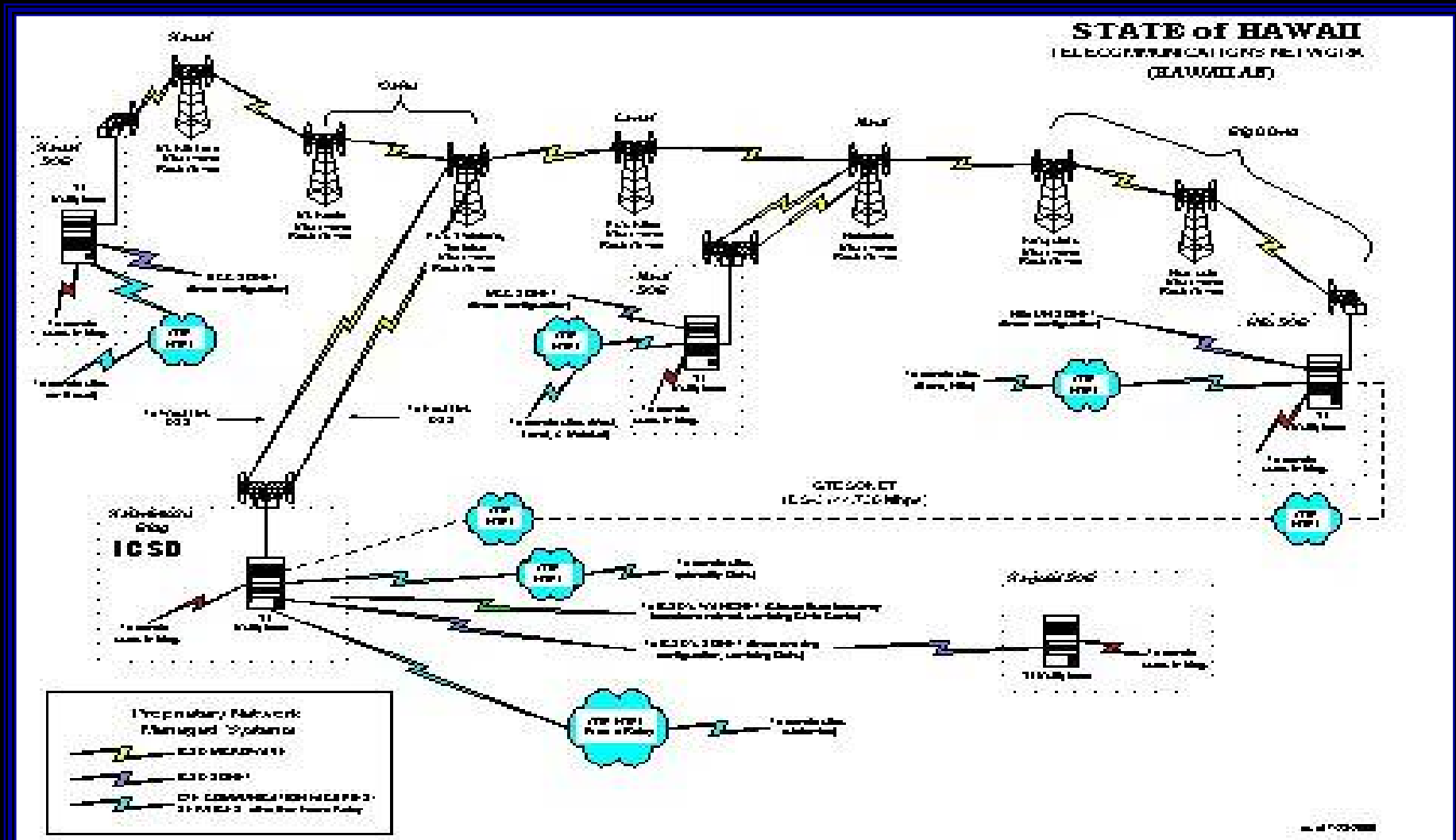
- Lanai Community Hospital

MAUI

- Maui Memorial Medical Center
- Kula Hospital

ICSD

Information and Communication Services Division



"Applying Technology to Improve State Services"

Telecommunications

e-Government

Computer Applications

Information Resource

ICSD

Information & Communication Services Division

OAHU

- Kalanimoku Bldg.
- Capitol Center Bldg.
- Kapolei State Office Bldg.
- Kapuaiwa Bldg. (coming soon)

BIG ISLAND

- Hilo State Office Bldg.

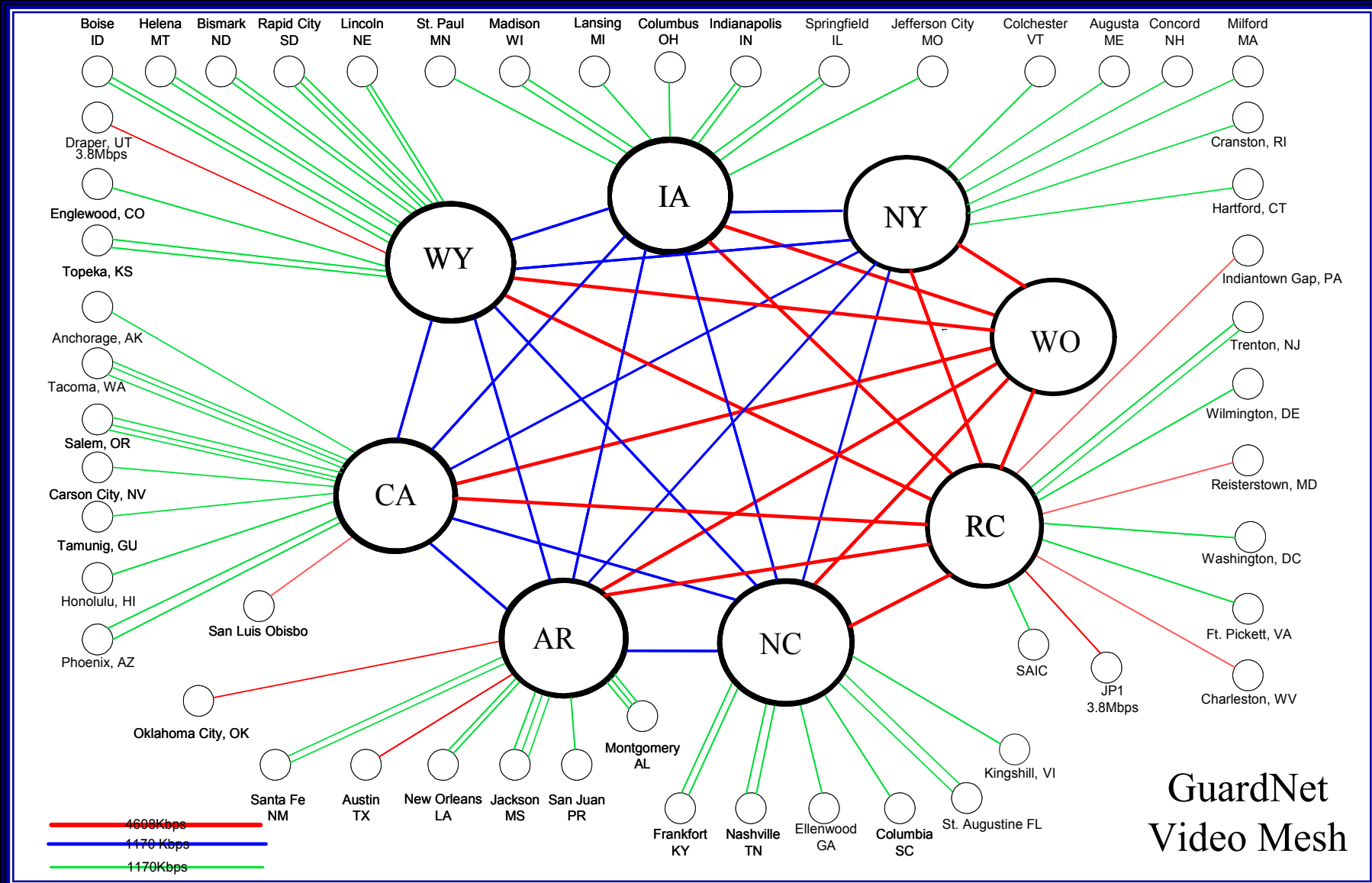
KAUAI

- Lihue State Office Bldg.

MAUI

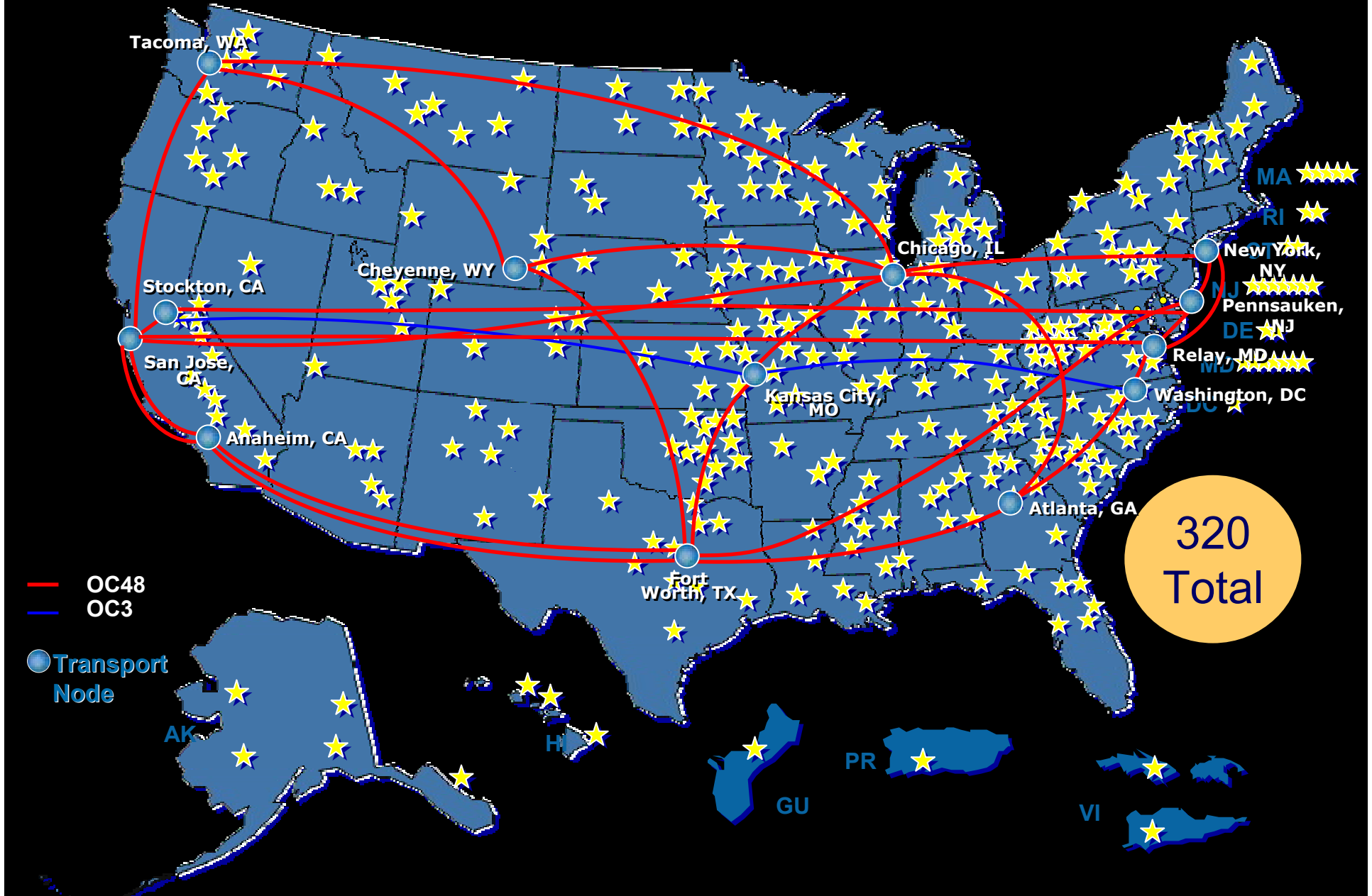
- Wailuku State Judiciary Bldg.

GuardNet XXI





Networked Classroom Locations





Hawaii Pacific Health

- **Sites:**
 - Kapiolani Medical Center for Women & Children
 - Pali Momi
 - Straub Hospital & Clinic
 - Wilcox General Hospital
- **Bridge Certified with the CDC**



Hawai'i
Primary Care
Association

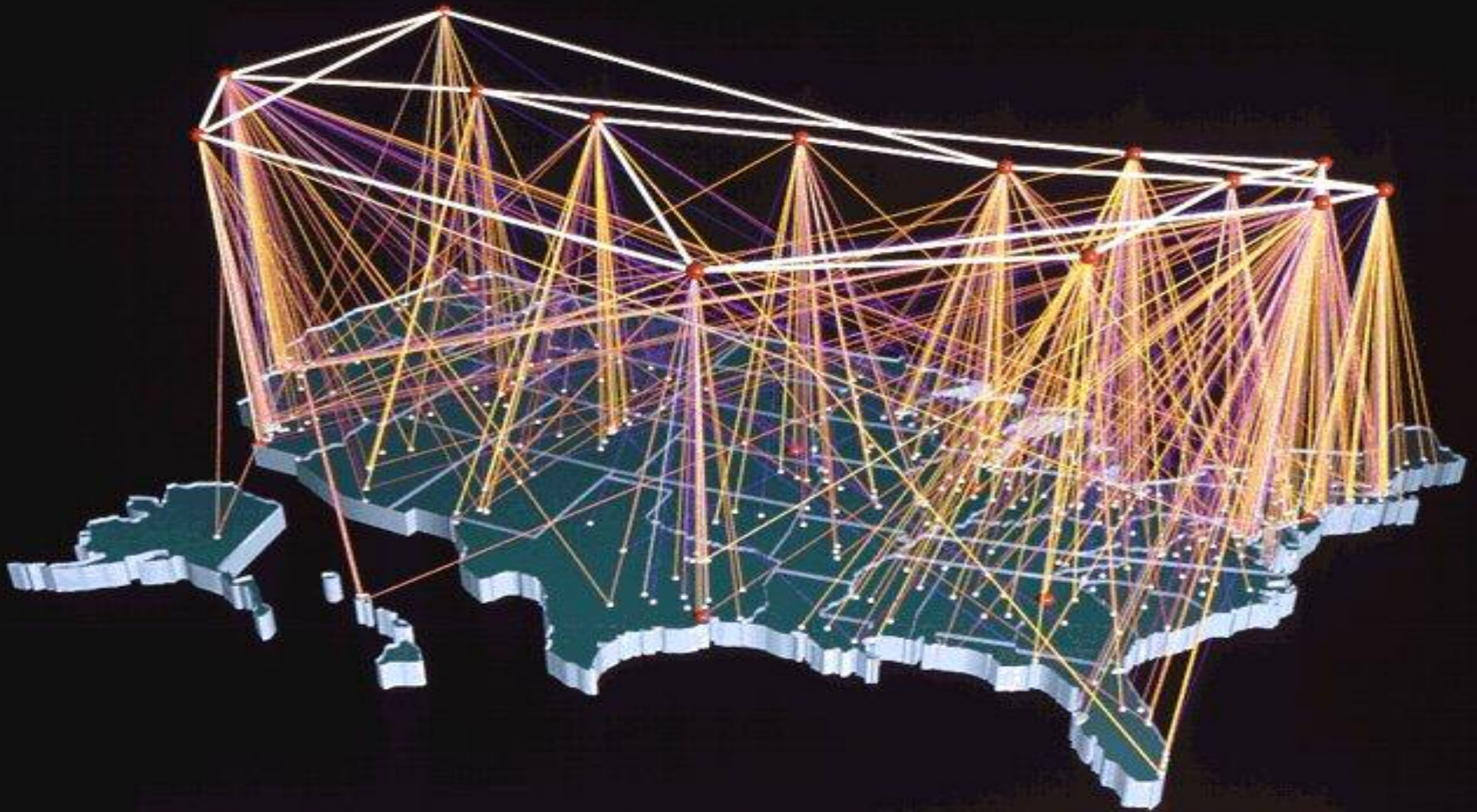
Hawai'i Primary Care Association

● Sites

- Bay Clinic
- Community Clinic of Maui
- Hamakua Health Center
- Ho'ola Lahui Hawaii
- Kalihi-Palama Health Center
- Kokua Kalihi Valley
- Waianae Coast Comprehensive
- Waikiki Health Center
- Waimanalo Health Center

<http://www.hawaiipca.net/>

Connecting the Dots



Honolulu's Network

- Area Health Education Center
- Castle Medical Center
- Department of Education (Pacific)
- Department of Health (Pacific Basin)
- Guam National Guard
- Hawaii Health Systems Corporation
- Hawaii Pacific Health
- Hawaii Primary Care Association
- Hawaii State Rural Health Assoc.
- Hilo Medical Center
- Kamehameha Schools
- Kapiolani Medical Center
- Kaiser Permanente
- Kauai Veteran's Memorial Hosp.
- LBJ Tropical Medical Center
- Molokai General Hospital
- National Guard Bureau
- Office of the Regional Health Administrator
- Pacific Islanders In Communication
- Pacific Islands Health Officers Assoc.
- Pacific Resources in Education and Learning
- Pacific Telehealth & Technology Hui
- Pan-Pacific Distance Learning Association
- PEACESAT/STAN/Tip-G
- Queen's Medical Center
- Sprint Hawaii
- Straub Hospital and Clinic
- St. Francis Medical Center/HMC
- Tandberg
- Tripler Army Medical Center
- University of Guam
- University of Hawaii JABSOM
- World Health Organization

Tele-Applications

Clinical



Educational



Administrative (meetings)



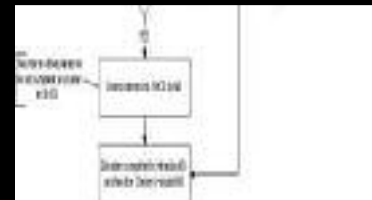
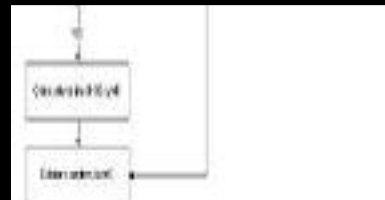
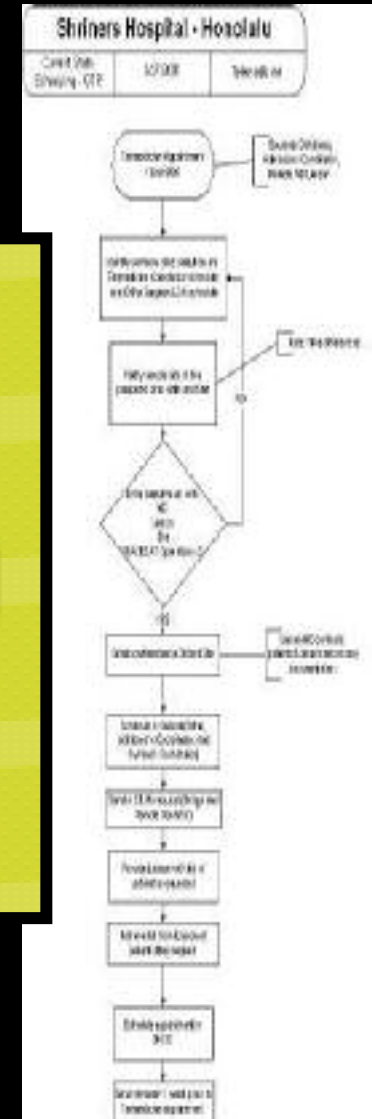
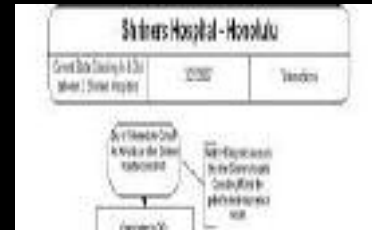
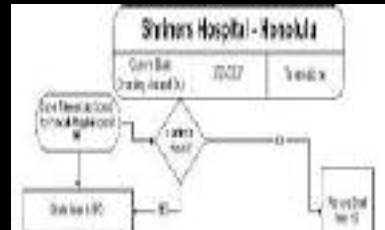
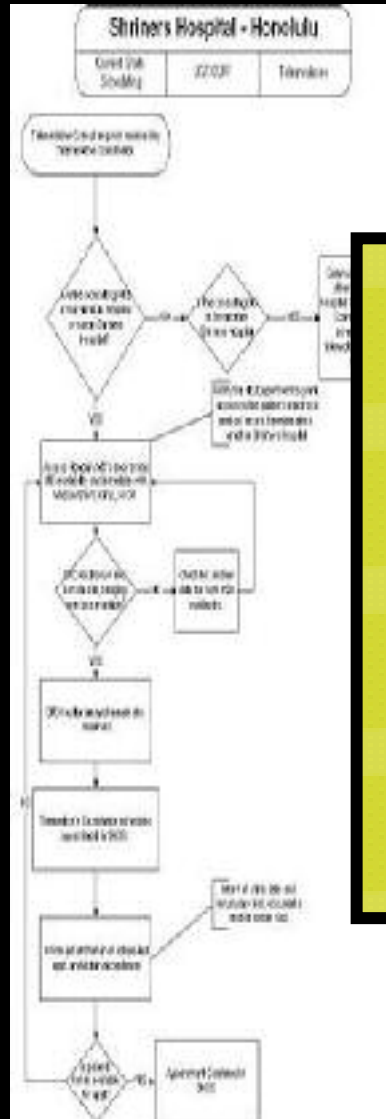
Hawaii Telehealth Activities

- Radiology
- Fetal Ultrasound
- Dermatology
- Mental Health
- Neuro-Trauma
- Orthopaedic
- Rheumatology
- Genetics
- Nutrition
- Grand Rounds
- Continuing Education
- Simulation

SHC Clinical Consultations

- State of Hawaii
- Continental US
 - Shriners Northern California
- American Samoa
- FSM (Chuuk, Yap, Pohnpei, Kosrae)
- Guam
- Republic of the Marshall Islands
- Saipan

Coordination



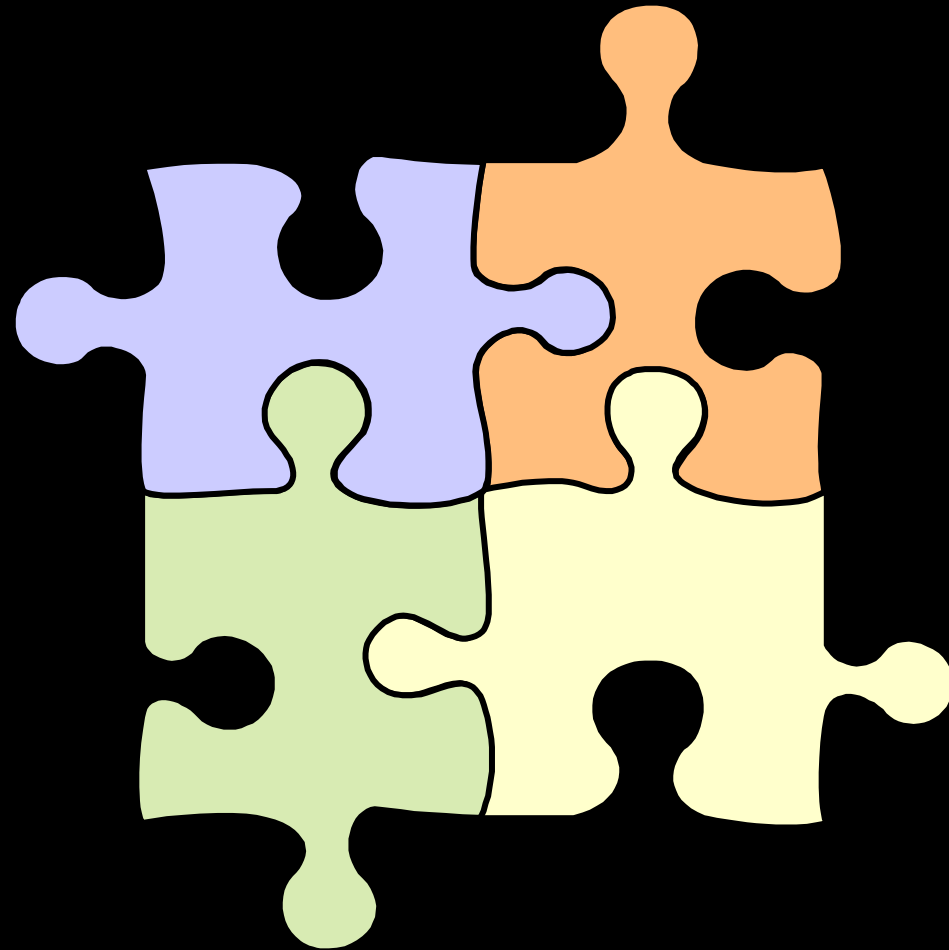
Administrative Issues

- **HIPAA**
- **Licensure**
- **JCAHO**
- **Privileging & Credentialing**
- **Corporate Contract/Agreements**
- **Malpractice Issues**
- **Funding & Reimbursement**

Coordinating Challenges

- Time Zone Differences
- Clinicians Availability/Timing
- Coordination of Dual Sites
- Patient Notification
- Cultural/Language Barriers
- Set-up/Implementation
- Documentation
 - EMR integration

Telemedicine Puzzle



Equation

$$\text{Equipment}^2 + \text{Site}^2 + \text{Network}^2 + \text{Clinician}^2 + \text{Pt}$$

Technical Difficulties



Consulting Challenges

- **Facilitated by far-side provider, interpreter**
 - **Quality dependent upon the far-side provider**
 - **“Observational” Physical Examination**
- **Age specific limitations**
- **Reading body language**
- **Human interaction factors**
- **Patient Privacy Issues**
- **Cultural Barriers**

OUR SOLAR SYSTEM



MERCURY
Mercury is the smallest planet in our solar system and the closest to the Sun. It has a very thin atmosphere and is covered in dark spots of iron-rich rock.

VENUS
Venus is the second planet from the Sun. It is often called Earth's twin because of its similar size and composition, but it has a very hot and acidic atmosphere.

MARS
Mars is the fourth planet from the Sun. It is a rocky planet with a thin atmosphere and is known for its reddish-orange color.

EARTH
Earth is the third planet from the Sun and the only one known to support life. It has a blue and white atmosphere and a large body of water.

JUPITER
Jupiter is the fifth planet from the Sun and the largest in our solar system. It is a gas giant with a prominent band of clouds.

SUN
The Sun is the central star of our solar system. It is a yellow dwarf star that provides the energy and heat for the planets.

NEPTUNE
Neptune is the eighth planet from the Sun and the farthest in our solar system. It is a gas giant with a deep blue color.

SATURN
Saturn is the sixth planet from the Sun and is known for its prominent ring system. It is a gas giant with a yellowish color.

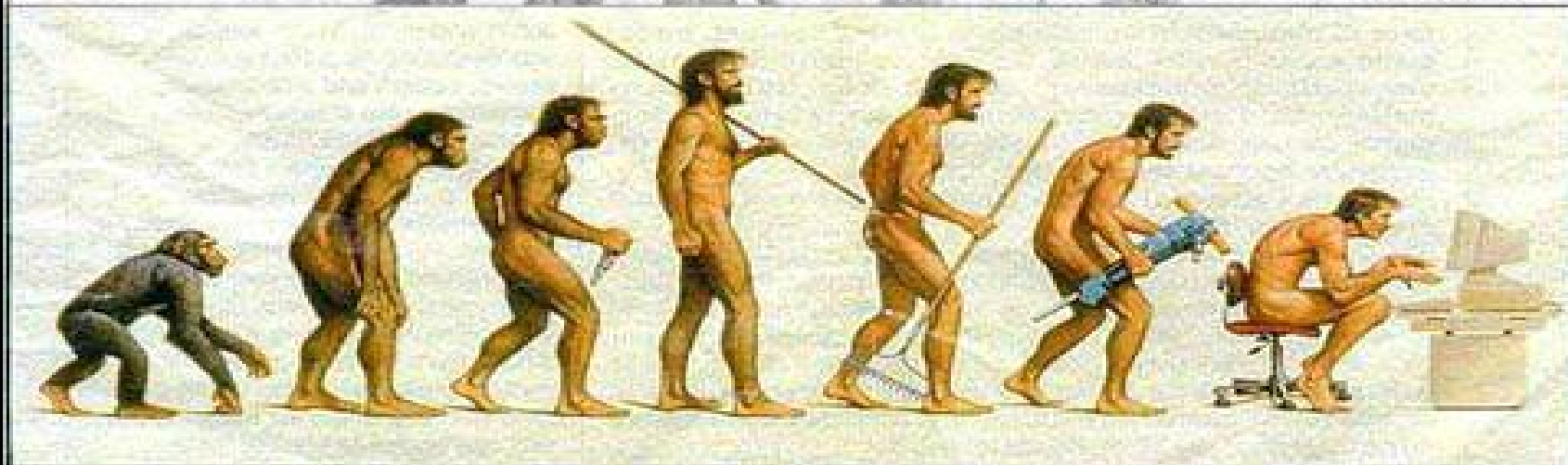
THE SOLAR SYSTEM
The solar system consists of the Sun, the eight planets, and numerous smaller objects. The planets are divided into two groups: the inner rocky planets and the outer gas giants. The Kuiper Belt is a region of space beyond the orbit of Neptune that contains many small icy bodies.



Trends

<http://go.to/funpic>

EVOLUTION



Advances in Technology



Expansion of Environment

Telemedicine

Eliminates the physical barriers

Expansion of Treatment

Telemedicine

can be used to supplement and enhance the
delivery of care

Expansion of Focus

- **Disease**
- **Individual**
- **Family and Support Systems**
- **Community**
- **Behavioral & Lifestyles Changes**

Expansion of Responsibility

- Healthcare Provider
- Inclusive of the Patient/Family
- Community
- Government

Global Expansion

“Today, the majority of the world’s population is suffering from poverty and is denied adequate, safe and reliable access to the solutions that health technologies can offer.”

~~~WHO



Telemedicine



Key Aspects to Success

- **Justifiable Need**
- **Common Vision with Goals**
- **Executive Champion**
- **Interdisciplinary Teamwork**
- **Commitment/Dedication**
- **Administrative Support**
- **Sensitivity & Compassion**

Mahalo



Discussion

