E-Health and Telemedicine
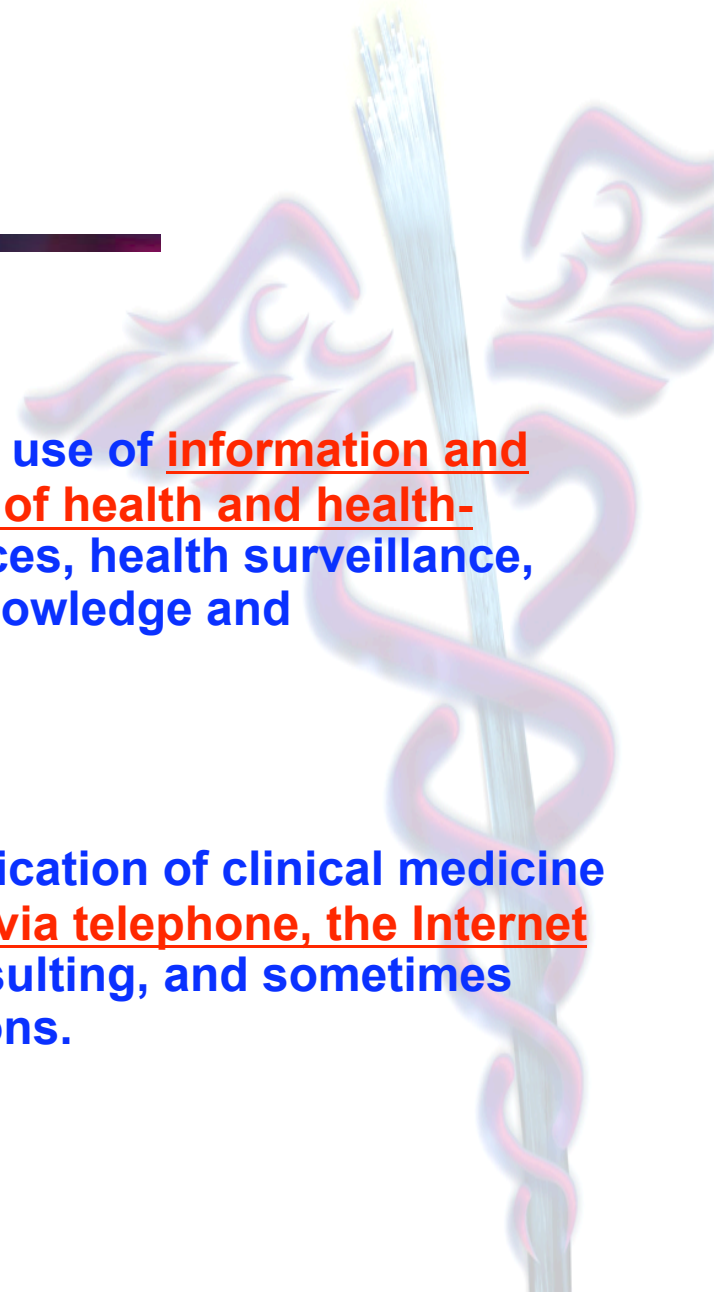## HINF 1100

E-Health & Telemedicine

❖ **Health Informatics (The logic of healthcare)**

  ❖ E-health

    ❖ **"E-Health is the cost-effective and secure use of information and communications technologies in support of health and health-related fields, including health-care services, health surveillance, health literature, and health education, knowledge and research" (WHO)**

  ❖ Tele-medicine

    ❖ **Telemedicine is a rapidly developing application of clinical medicine where medical information is transferred via telephone, the Internet or other networks for the purpose of consulting, and sometimes remote medical procedures or examinations.**

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E-Health & Telemedicine

- ❖ **Health Informatics (The logic of healthcare)**
  - ❖ E-Health
    - ❖ **Hospital Information Networks**
    - ❖ **Electronic medical records**
    - ❖ **Consumer health informatics (patient health portals, PHR)**
    - ❖ **Mobile health**
    - ❖ **Evidence based medicine**

  - ❖ Tele-medicine
    - ❖ **Tele-consultation**
    - ❖ **Tele-radiology**
    - ❖ **Tele-monitoring**
    - ❖ **Tele-diagnosis**

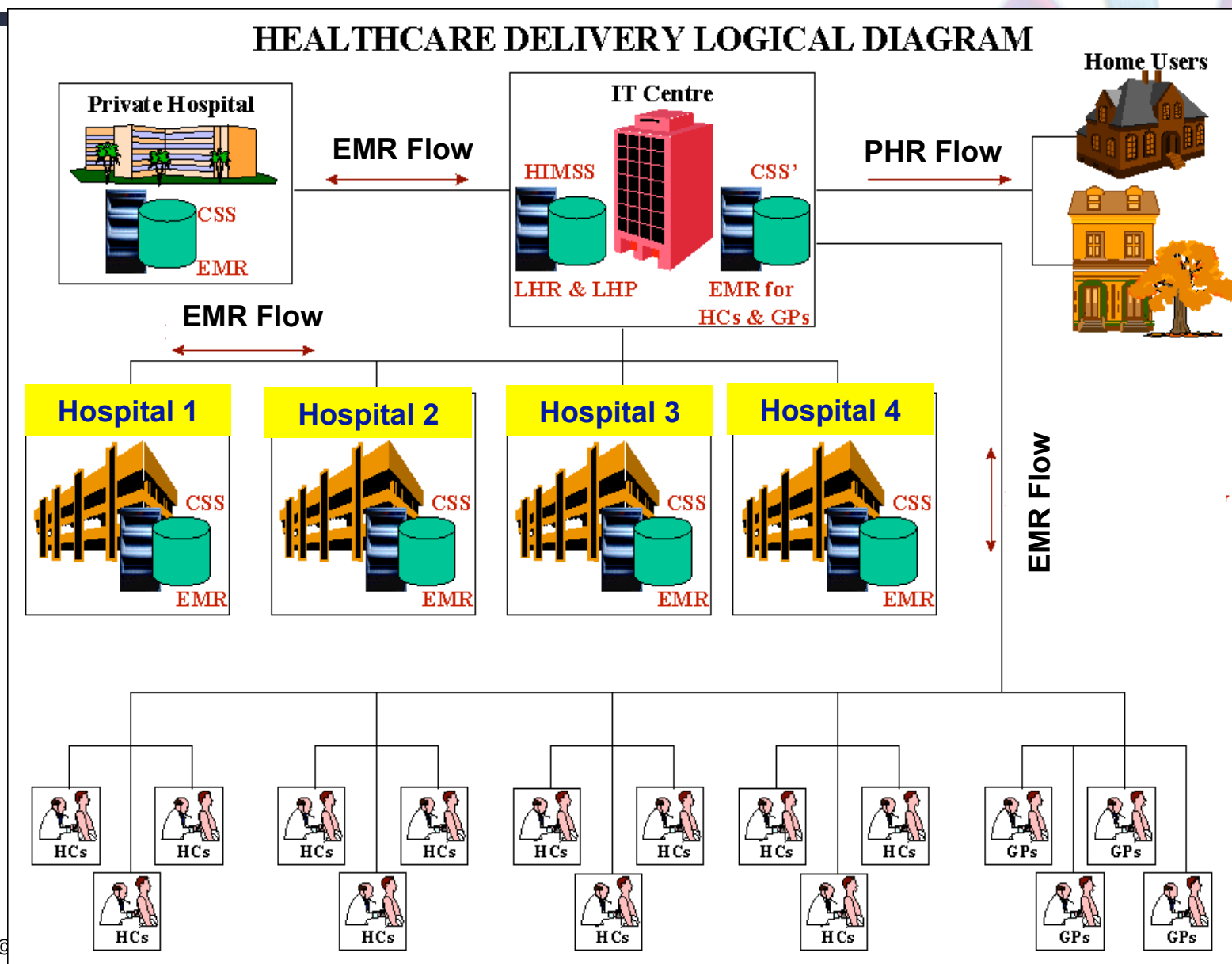DALHOUSIE UNIVERSITY
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E-Health Definitions

"the use of modern <u>information and communication technologies</u> to meet needs of citizens, patients, healthcare professionals, healthcare providers, as well as policy makers"
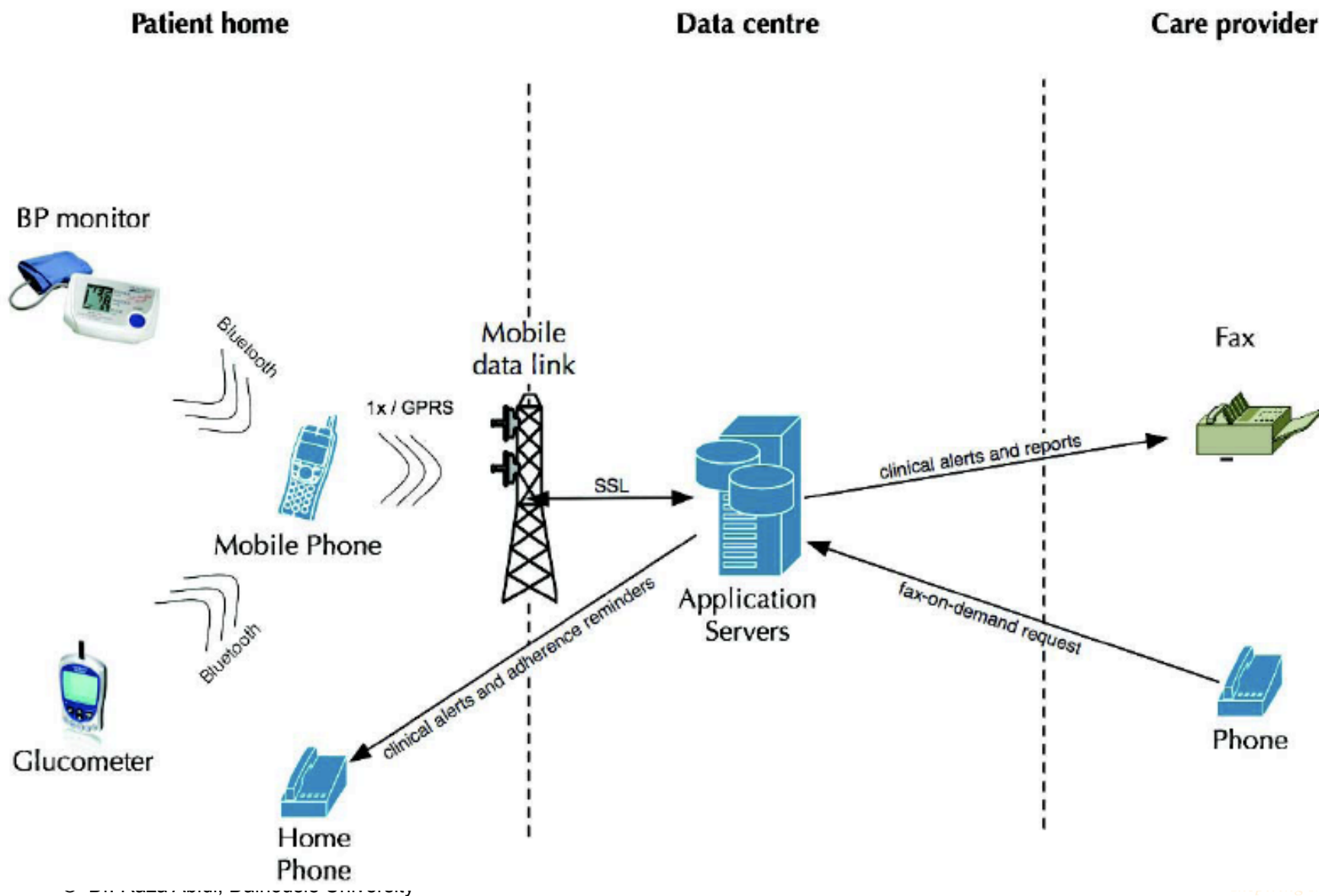
[European Commission]

E-health is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the <u>Internet</u> and related technologies.
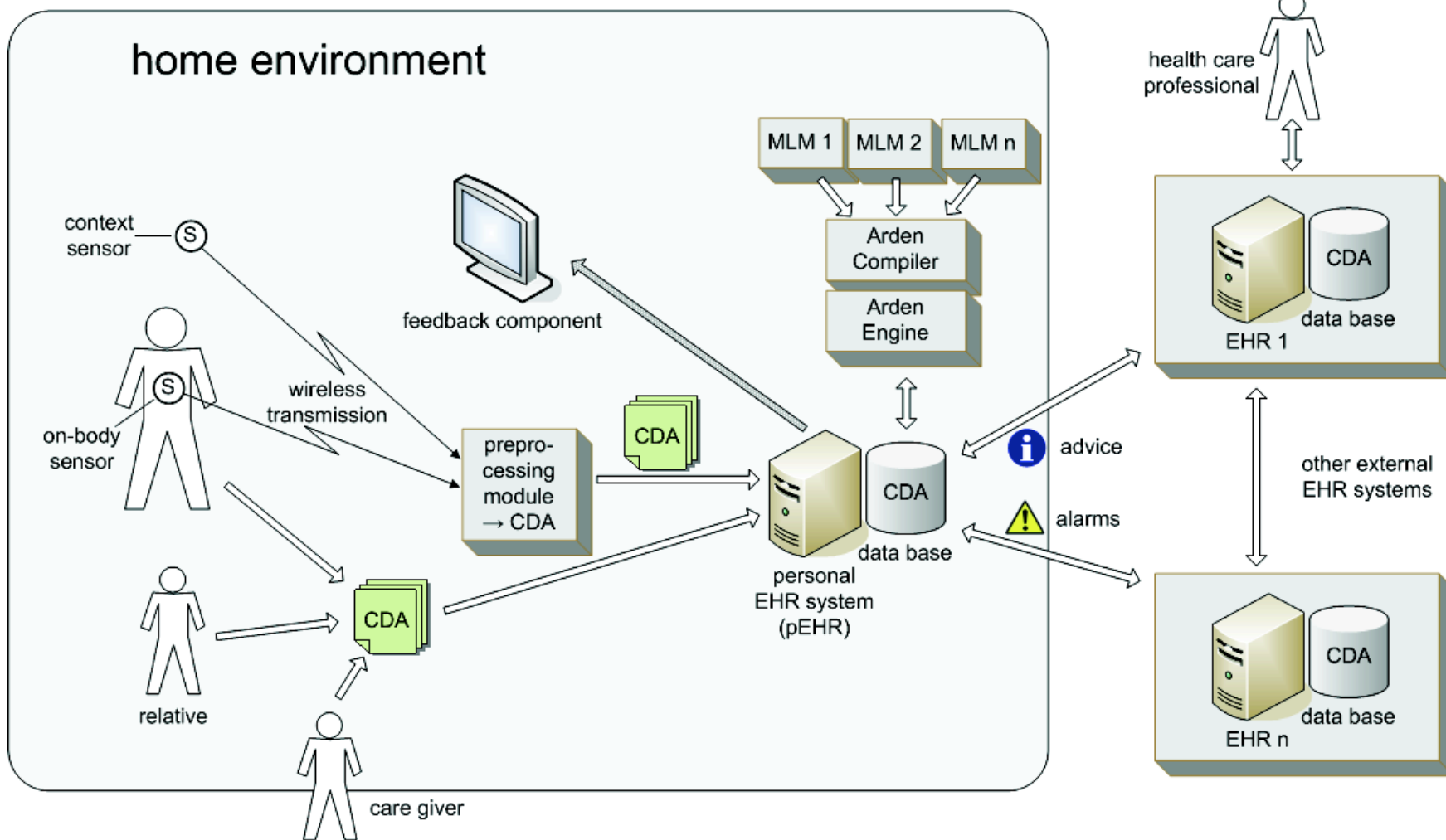
Gunther Eysenbach (2001)

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Hospital Information Networks

HEALTHCARE DELIVERY LOGICAL DIAGRAM

Mobile Health

Patient home | Data centre | Care provider

BP monitor

Bluetooth

Mobile Phone

1x / GPRS

Mobile data link

SSL

Glucometer

Bluetooth

Home Phone

clinical alerts and adherence reminders

Application Servers

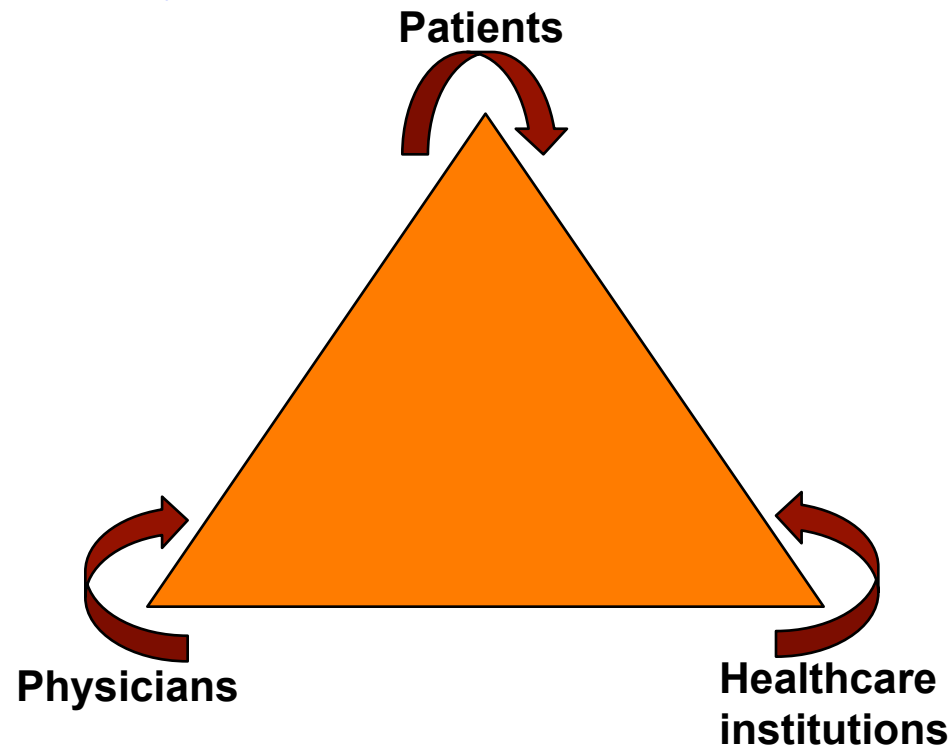clinical alerts and reports

Fax

fax-on-demand request

Phone

Home-Based Healthcare

Communication needs in healthcare

❖ **Three main communication parties**

  ❖ Physicians

  ❖ Patients

  ❖ Healthcare institutions

    ❖ Hospitals, clinics, community care, etc

Patients

Physicians

Healthcare institutions
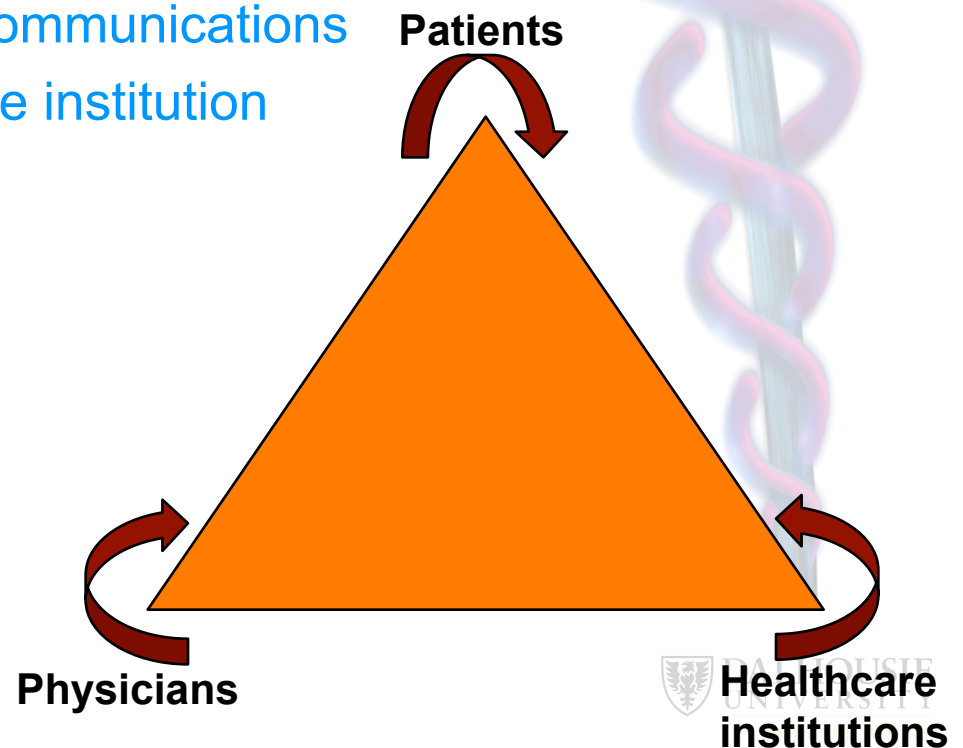
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Communication needs in healthcare
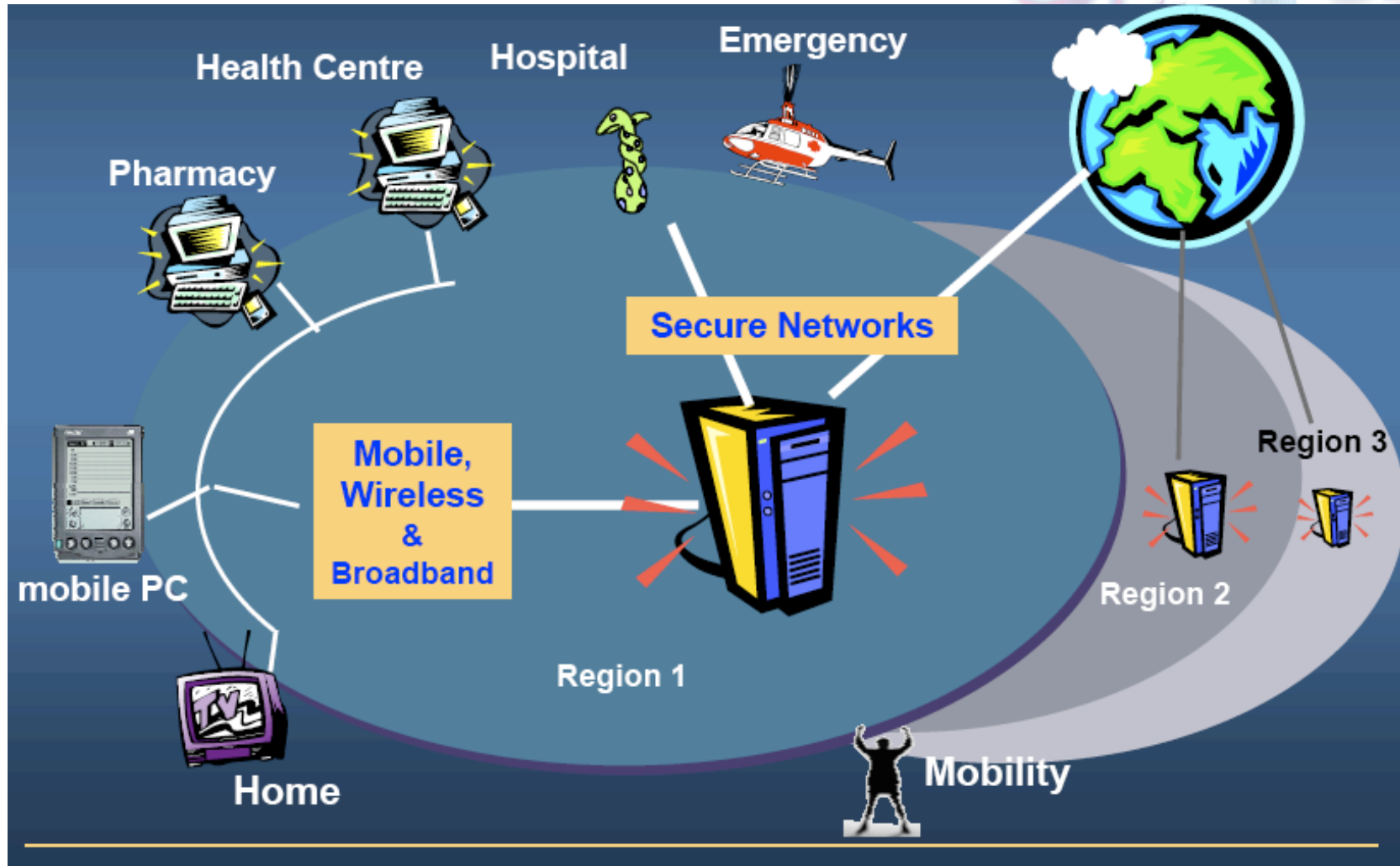
❖ **Three main communication parties**

  ❖ Physician – Physician communications

  ❖ Physician – Healthcare institution communications

  ❖ Physician – Patient Communications

  ❖ Patient – Patient Communications

  ❖ Patient – Healthcare institution Communications

  ❖ Healthcare institution – Healthcare institution Communications

    ❖ Intra-institution/organization

    ❖ Inter-institution/organization

Patients

Physicians

Healthcare institutions

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What is Telemedicine?

❖ *Telemedicine* is an umbrella term that encompasses any medical activity involving an element of distance.

  ❖ A synergy of *Telecommunications*, *Computer Technologies* and *Medicine* to provide remote healthcare delivery via the Internet, using a combination of audio, video and externally-acquired images.

❖ Why telemedicine?

  ❖ To get a geographically independent healthcare delivery system that reaches out to remote patients to deliver sophisticated healthcare without the typical to face-to-face consultation between doctor and patients.
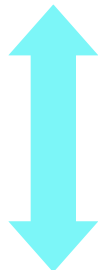
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Telemedicine: Physicians-Physicians-Patients
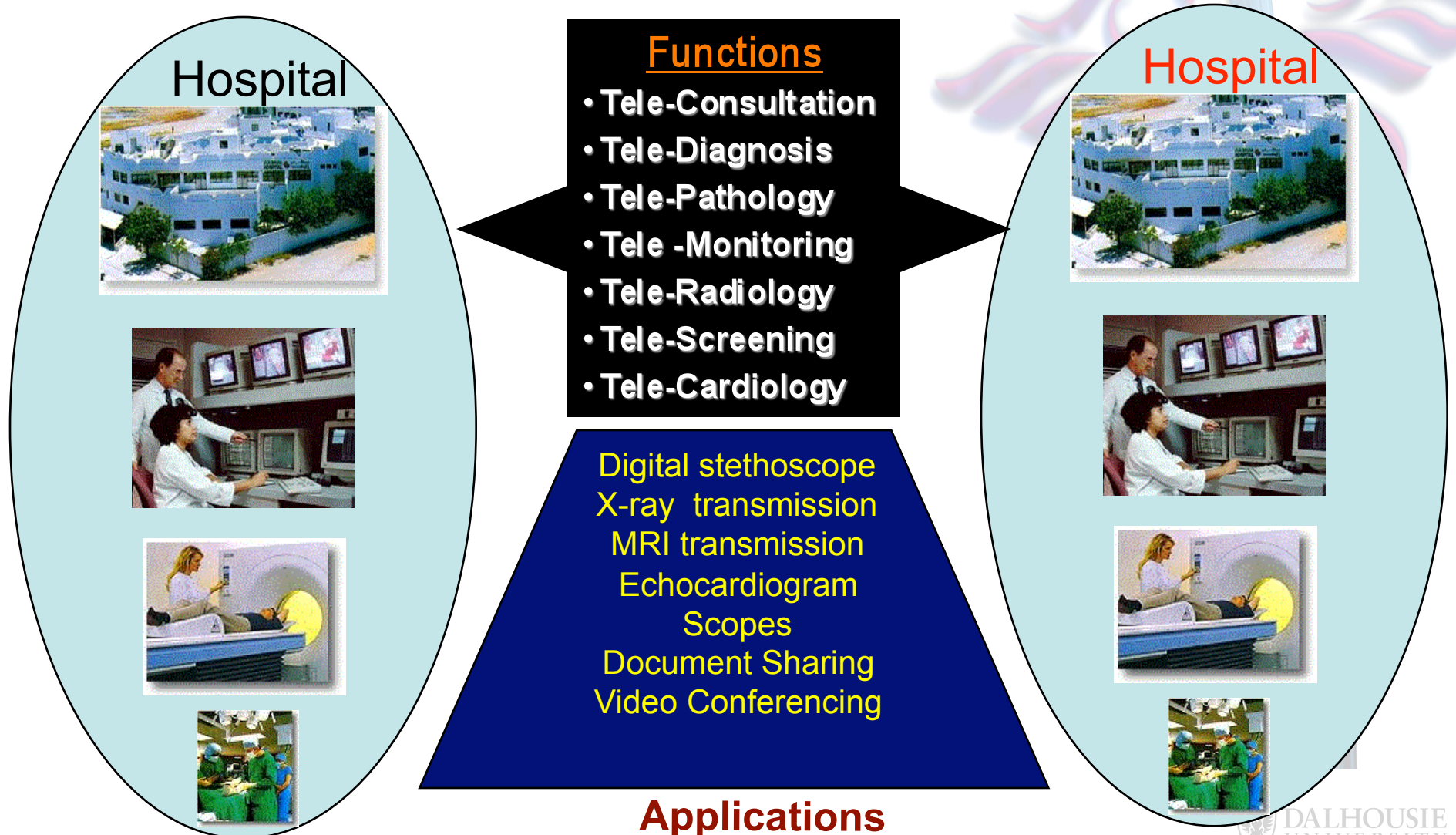
Health Clinic

Home

Hospital

Benefits

- Consultations without geographic limitations

- Improved economics for local health care facility

- Decreased professional isolation

- Increased availability of diagnostics resources

- Support training & Education

- Reduced costs of travel

Telemedicine: Hospital – Hospital Scenario

Hospital

Hospital

Functions

- **Tele-Consultation**
- **Tele-Diagnosis**
- **Tele-Pathology**
- **Tele -Monitoring**
- **Tele-Radiology**
- **Tele-Screening**
- **Tele-Cardiology**

Digital stethoscope
X-ray transmission
MRI transmission
Echocardiogram
Scopes
Document Sharing
Video Conferencing

Applications

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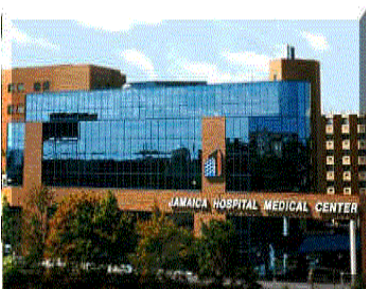# Telemedicine: Patient – Hospital Scenario

Home

Health Clinic

Hospital

Services

- Illness Consultancy
- Preliminary Diagnosis
- Diagnostic Support
- Prescription Support
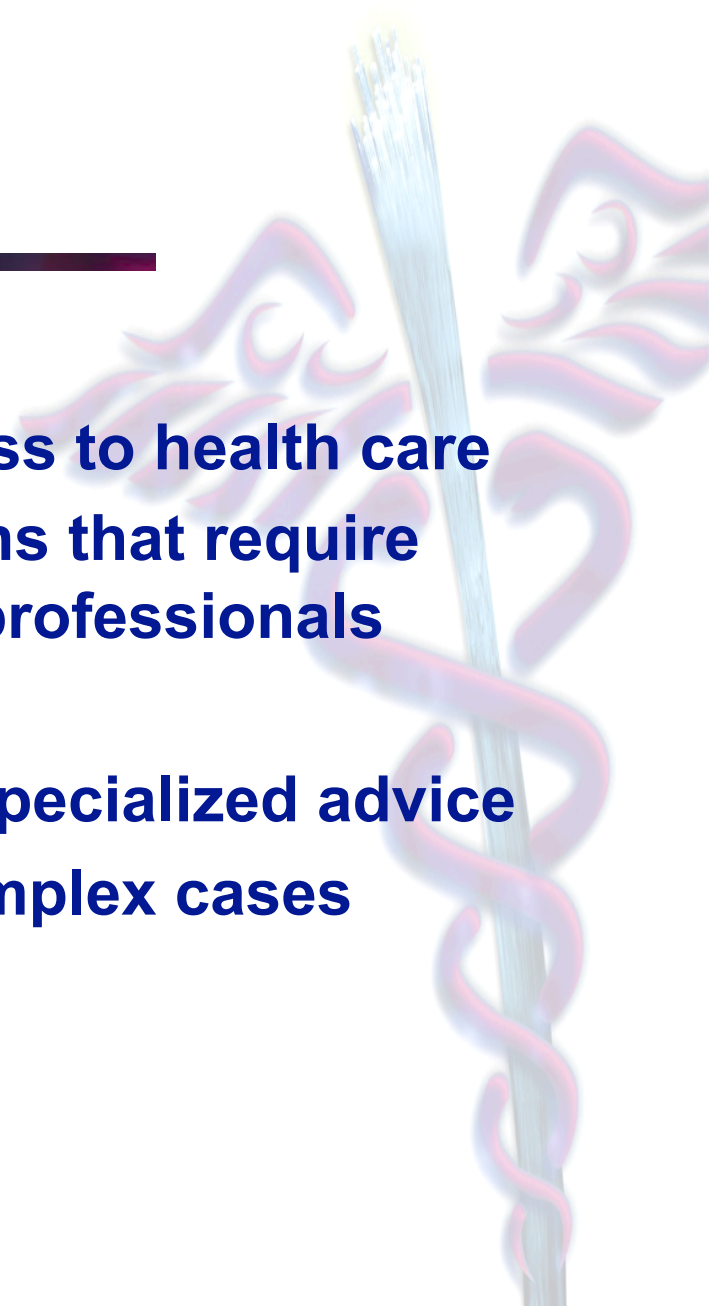- Case Management
- Rehabilitation
- Wellness Consultancy

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Who needs Telemedicine?

- ❖ **Patients who do not have easy access to health care**
- ❖ **Patients who have medical conditions that require consultations from different health professionals**

- ❖ **Doctors in remote areas who need specialized advice**
- ❖ **Doctors who need experience of complex cases**

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Why Telemedicine?

- ❖ **Equitable access to quality health care services**
- ❖ **People at remote and rural areas will receive better treatment**

- ❖ **Reduce professional isolation among doctors and other health care staff located remote and rural areas**
- ❖ **Provide an advanced medical services in emergencies**

- ❖ **Organization of epidemiological surveillance groups**
- ❖ **Creation of specialized Regional and National databases**

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Developing Countries & Telemedicine

- ❖ **Due to the poor quality of life, developing countries are facing the lack of proper health care and sanitation.**

- ❖ **In least developed countries only 54% of population has access to health services.**

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THE END