

# PROGRESS REPORT

“e-Solutions for Community using Low-cost Wi-Fi”



Presented By: Prof. Dr. Sajjad Mohsin



PresentationPoint  
PresentationPoint

# BACKGROUND

**Meeting of COMSATS' thematic research group on information and communication technologies (ICTs).**

Organized By: Commission on Science and Technology

Held On: April 19-20, 2011,

## Participant

- COMSATS Institute of Information Technology (CIIT), Pakistan (Lead Centre)
- *Mr. Oladejo Olutunji* Principal Programmer, National Mathematical Centre (NMC), Nigeria
- *Mr. Shadi Al-Asfeh* Systems Analyst Royal Scientific Society (RSS), Jordan
- *Dr. Abdul Hanan bin Abdullah* Dean Faculty of Computer Science & Information System, Universiti Teknologi Malaysia (UTM), Malaysia





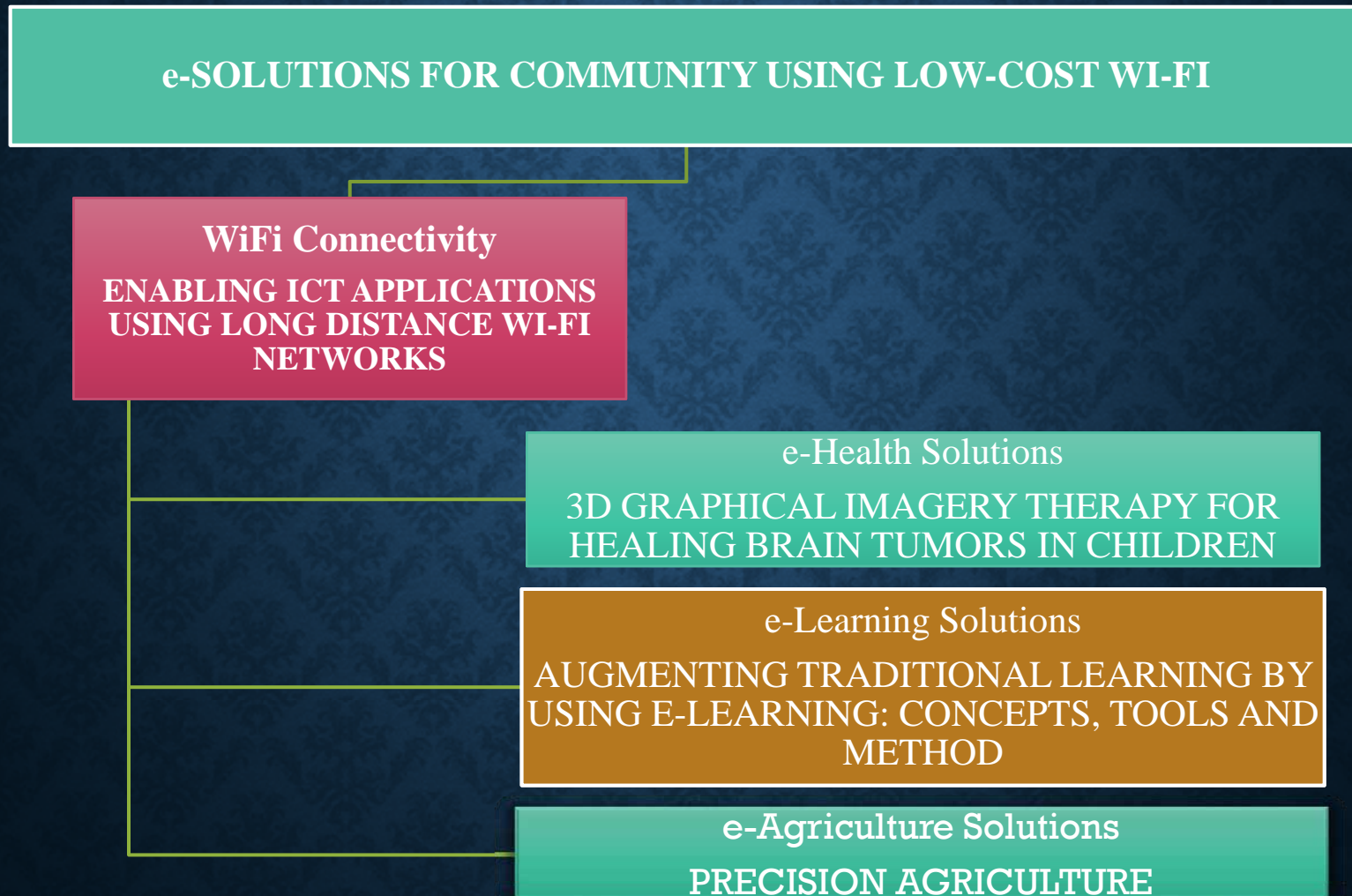
# BACKGROUND

## Research Theme

- Participants selected a main research theme to be undertaken by the Group, titled **‘e-Solutions for Community using Low-cost Wi-Fi’**.
- Under the theme group has initially targeted establishment off Wi-Fi connectivity and e-Health solutions.
- Whereas the group also agree to work on e-Learning and e-Agriculture.



# FLOWCHART OF THE THEME



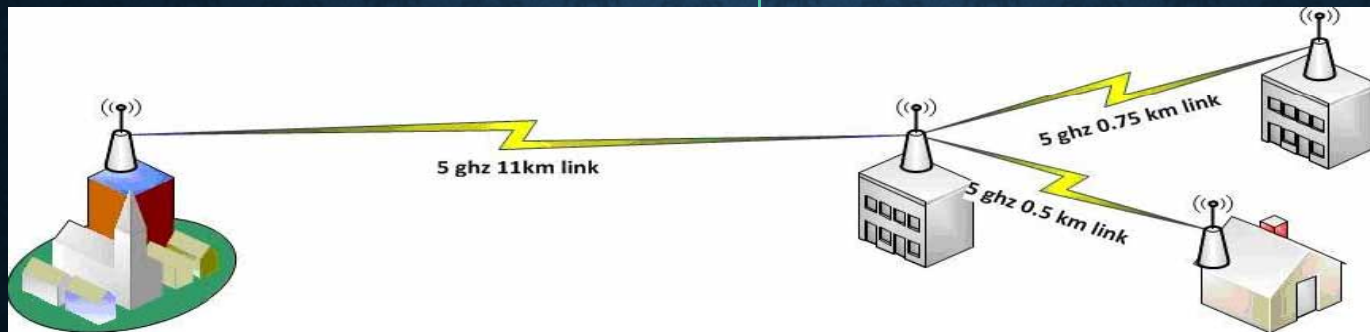




## WiFi Conectivity

### Enabling ICT Applications Using Long Distance Wi-Fi Networks

- **Idea:** Solutions for challenging rural and underserved environments through building affordable, robust and reliable ICT systems.
- By providing cheap connectivity between developed and remote areas, illiteracy, health problems and poverty can be alleviated.
- Wi-Fi is the most suitable option:
  - Affordable costs
  - Easier reach to far flung rural areas
  - Desirable data rates
  - Less maintenance overheads



5



## WiFi Conectivity

### Enabling ICT Applications Using Long Distance Wi-Fi Networks

#### Progress

- Project titled “Utilizing long distance WiFi to enable ICT applications (e-health) for rural communities” has been submitted for funding of \$10,000 to ISESCO-COMSTECH.
- Current prototype deployment is made by deploying the stations at an aerial distance of 2.2 Km. Next Phase is to increase the distance between the deployed stations up to 22 Km (maximum range of the equipment currently in use). For this purpose we have selected CIIT Vehari Campus. The campus is situated at an ideal location as it is surrounded by many (small villages) which lack basic education and health care facilities. Our idea is to use campus as a central hub for the provision of these services in the surroundings .





# WiFi Conectivity

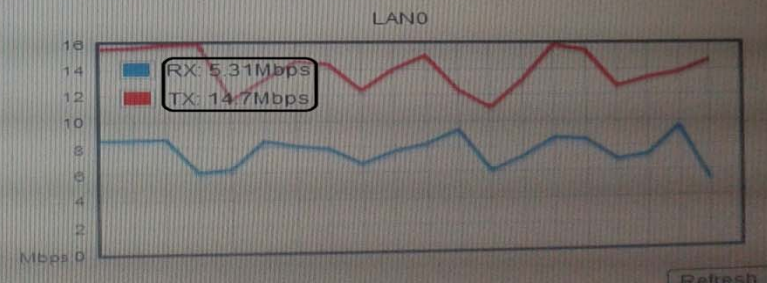
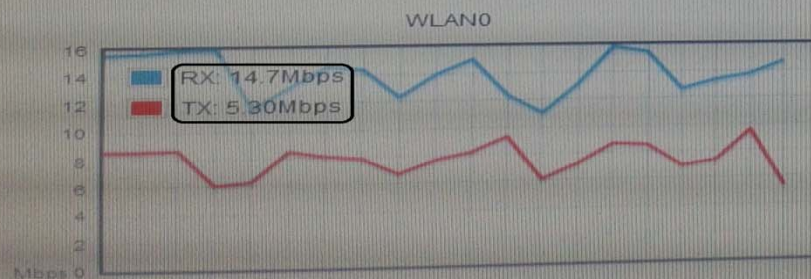
## Enabling ICT Applications Using Long Distance Wi-Fi Networks

Network Mode: Bridge  
Wireless Mode: Access Point WDS  
SSID: CIIT-E-Services  
Security: WPA-TKIP  
Version: v5.5  
Uptime: 00:59:23  
Date: 2012-04-06 15:54:19  
Channel/Frequency: 151 / 5755 MHz  
Channel Width: 40 MHz (Lower)  
Distance: 1.3 miles (2.1 km)  
TX/RX Chains: 2X2  
Antenna: 400  
WLAN0 MAC: 00:27:22:64:97:32  
LAN0 MAC: 00:27:22:65:97:32  
LAN0: 100Mbps-Full

AP MAC: 00:27:22:64:97:32  
Connections: 1  
Noise Floor: -93 dBm  
Transmit CCQ: 98.3 %  
airMAX: Enabled  
airMAX Quality: 56 %  
airMAX Capacity: 40 %  
airSelect: Disabled

### Monitor

[Throughput](#) | [Stations](#) | [Interfaces](#) | [ARP Table](#) | [Bridge Table](#) | [Routes](#) | [Log](#)

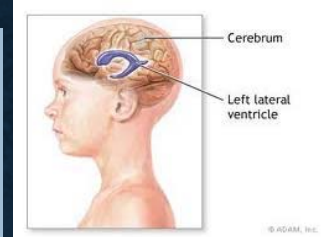


Refresh

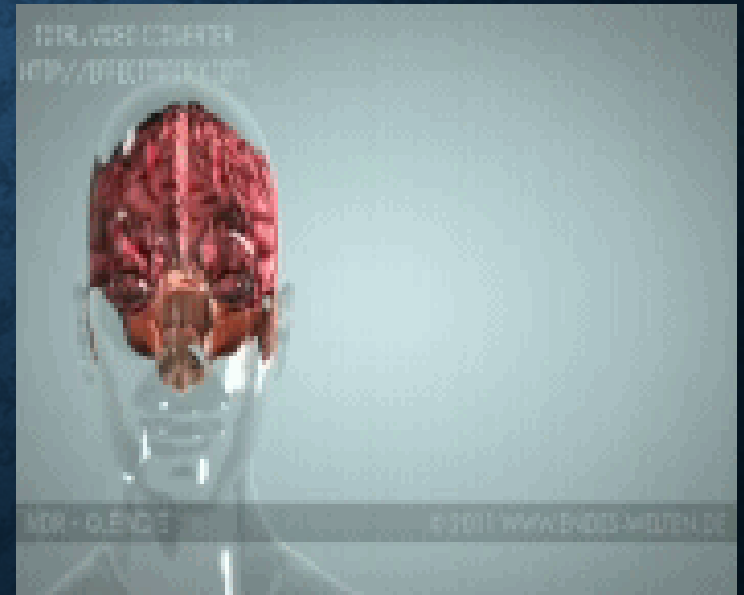
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## e-Health Solutions

### 3D Graphical Imagery Therapy For Healing Brain Tumors In Children



- **Idea:** Curing brain tumor in children by Image Therapy/Psychological Therapy through video games.
- Three dimensional animated graphical representation is a tool which can be used to facilitate the guided imagery sessions in children with brain tumors.
- 3D animated imagination in form of PC game for children with brain tumors will provide the explanation of - how the tumors can be attacked by the immune system within their bodies.
- Immune cells are used as the weapons against tumors.





## e-Health Solutions

### 3D Graphical Imagery Therapy For Healing Brain Tumors In Children

#### Progress

- The project is funded by ICT R&D Funds, Ministry of IT Government of PAKISTAN
- The final version of the game is near to completion till end of the May, 2013.
- This game will now be tested for its acceptability, improvement etc. in different Cancer Hospitals.
- Several countries has shown interest in this project.

A 3D  
GRAPHICAL IMAGERY  
THERAPY

## *e-Health Solutions Contd.*

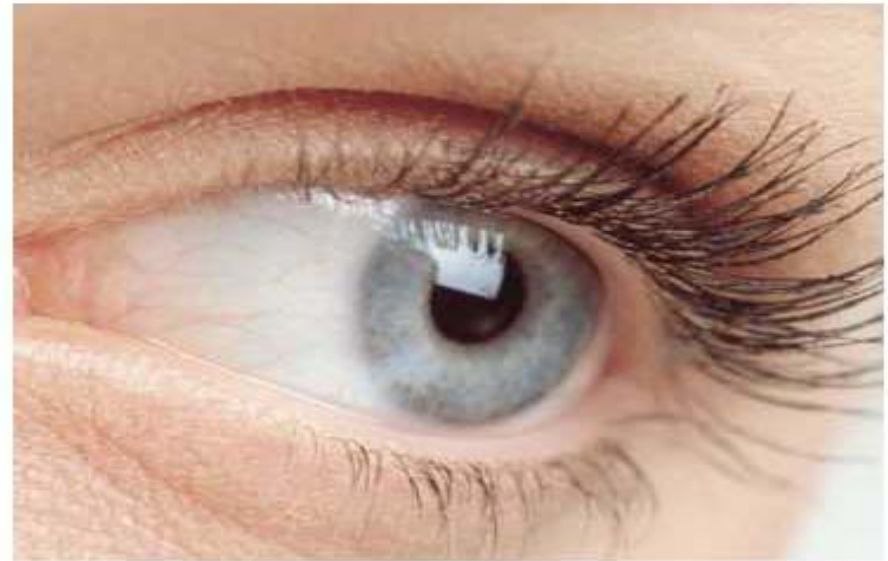
### DERMATOSCOPE

Digital Microscope



### IRISCOPE

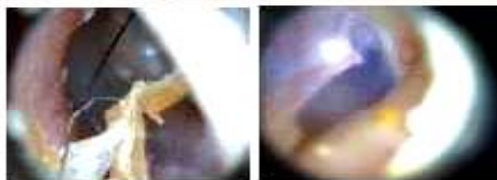
Digital Microscope





# OTOSCOPE

Digital Microscope



PC output



# DENTISTSCOPE

Digital Microscope



PC output



# ELECTRONIC MEDICAL RECORD

Electronic Medical Record System - Telecare

Current Screen: Registration > Modify

IKRAM ULLAH KHAN  
[Sign out](#)

Registration

Patient Information

Services Information

Partner and Corp

MIS

EMR Number	1110-001-01-0000017	Package Type	Gold
Name	Atif	Gender	Male
Birth Date	31/03/1980	CNIC	123456789
Marital Status	Married	Religion	Islam
Membership Date	31/03/2011	Membership Type	Family
Res. Address 1	test	Office Name	ZRG
Res. Address 2	test	Office Address 1	PECHS 1
Res. Address 3	Gulshan 3	Office Address 2	PECHS 2
Area/ Location	Gulshan	Office Address 3	PECHS 3
City	Karachi	Area/ Location	PECHS
Country	Pakistan	City	Karachi
Language	English	Country	Pakistan

Contact Information

Next of KIN

Alerts/Access

Financial Information

Enable Alert

☒ SMS

03002177997

☒ Email

ikram.iti@hotmail.com

Enable Access

☒ Mobile

03002177997

☐ Web

Update



# PDA APPLICATION



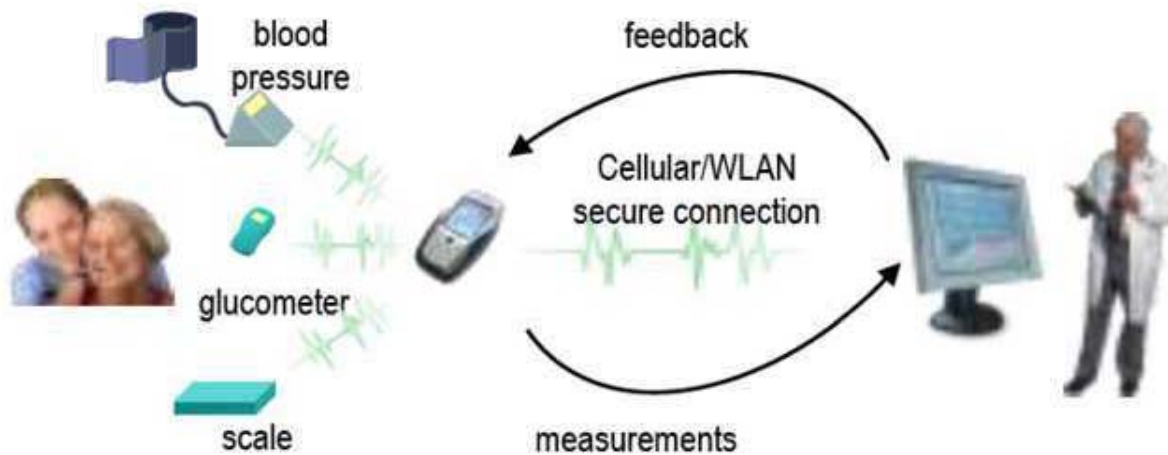
**LHW  
Application**



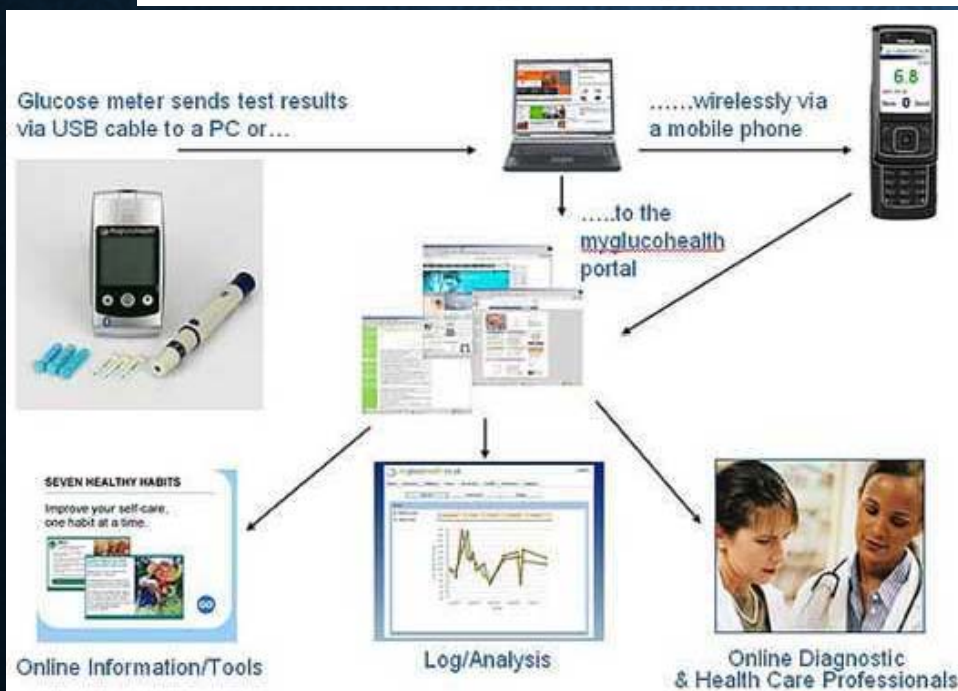
**Doctor's  
Application**



PresentationPoint



Use of Health Gateway Diabetes management solution to register key information in diabetes care





## e-Learning Solutions

### Augmenting Traditional Learning by Using e-Learning



- **Idea:** Making best possible use of existing specialized faculty in the developing countries through developing e-Learning framework for low-cost specialized knowledge dissemination.
- Develop and assess effectiveness of courses.
- The project components include:
  - IT augmented learning material
  - lecture efficacy monitoring
  - Artificial Intelligence techniques
  - video conferencing
  - online examinations



## e-Learning Solutions

### Augmenting Traditional Learning by Using e-Learning

#### Progress

- Recently one of our faculty member has joined us after completing his PhD in e-Learning and he will spearhead this project.
- We have been in negotiation with few private entities and will jointly start this project with them.
- Options is open for all the participating countries to work on development of computer-assisted learning environments for adult basic education keeping in view the theoretical foundation of learning processes.





## e-Agriculture Solutions Precision Agriculture



- **Idea:** Farmers' low access to appropriate technologies and state of the art research and innovation is the key challenge to the developing countries agriculture sectors.
- Precision Agriculture as optimizing crop production.
- Wireless Sensor Networks (WSNs)
  - Better spatial and temporal resolution of data
  - cheaper costs

## e-Agriculture Solutions Precision Agriculture

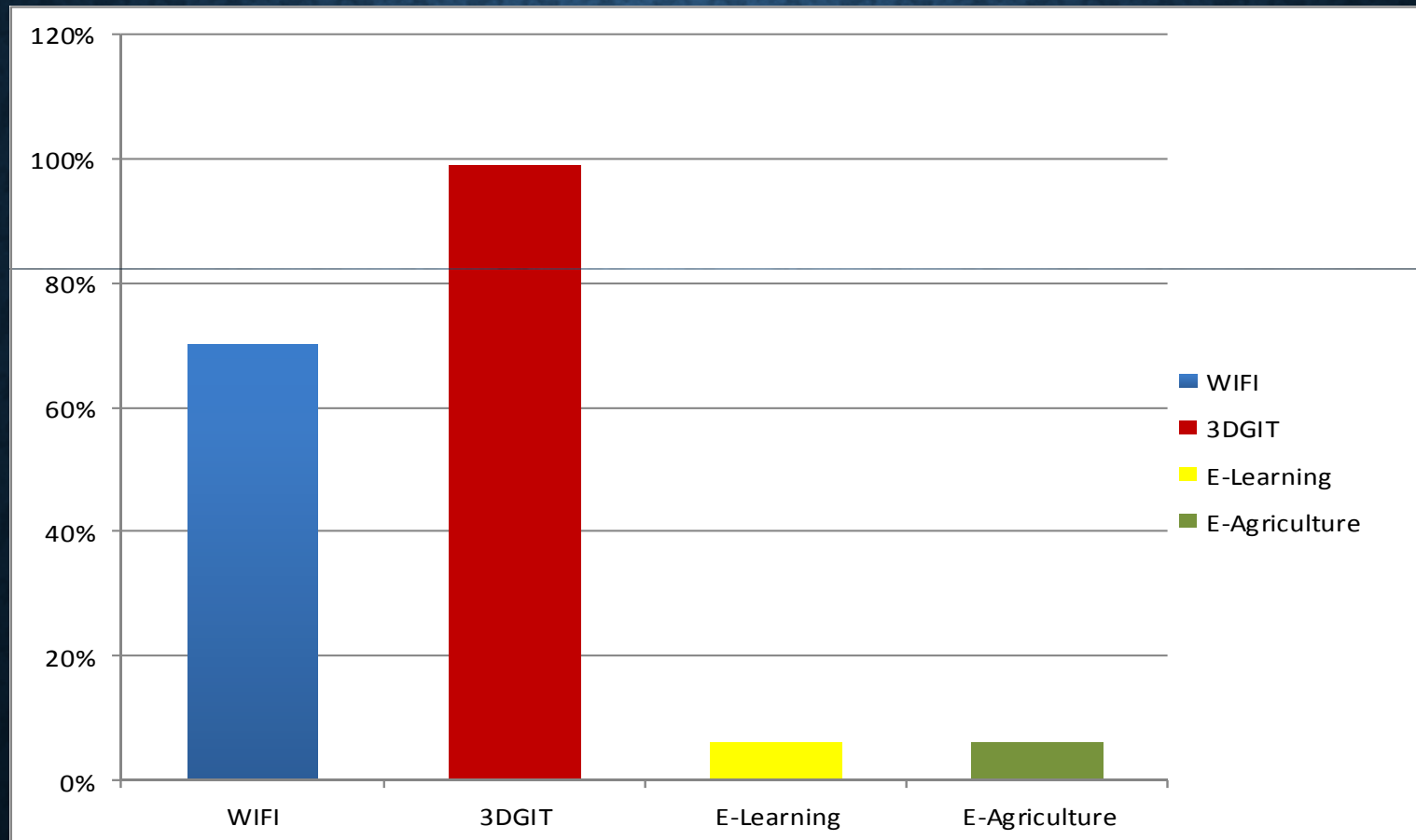
### Progress

- The progress is slow of this project as the priority was not given to it. The TRG-ICT is in need of active collaboration in this project.





# GRAPHICAL OVERVIEW OF PROJECTS



# INTERNATIONAL CONFERENCE FRONTIERS OF INFORMATION TECHNOLOGY

- Every year it is held in December at Islamabad. In collaboration with IEEE & ACM.
- This year it will be held on 17<sup>th</sup>-19<sup>th</sup> December
- <http://www.fit.edu.pk>
- Researchers from COMSATS member countries are welcome to participate.



# Thank You

