ICT as an Enabler

of Socio-Economic Development

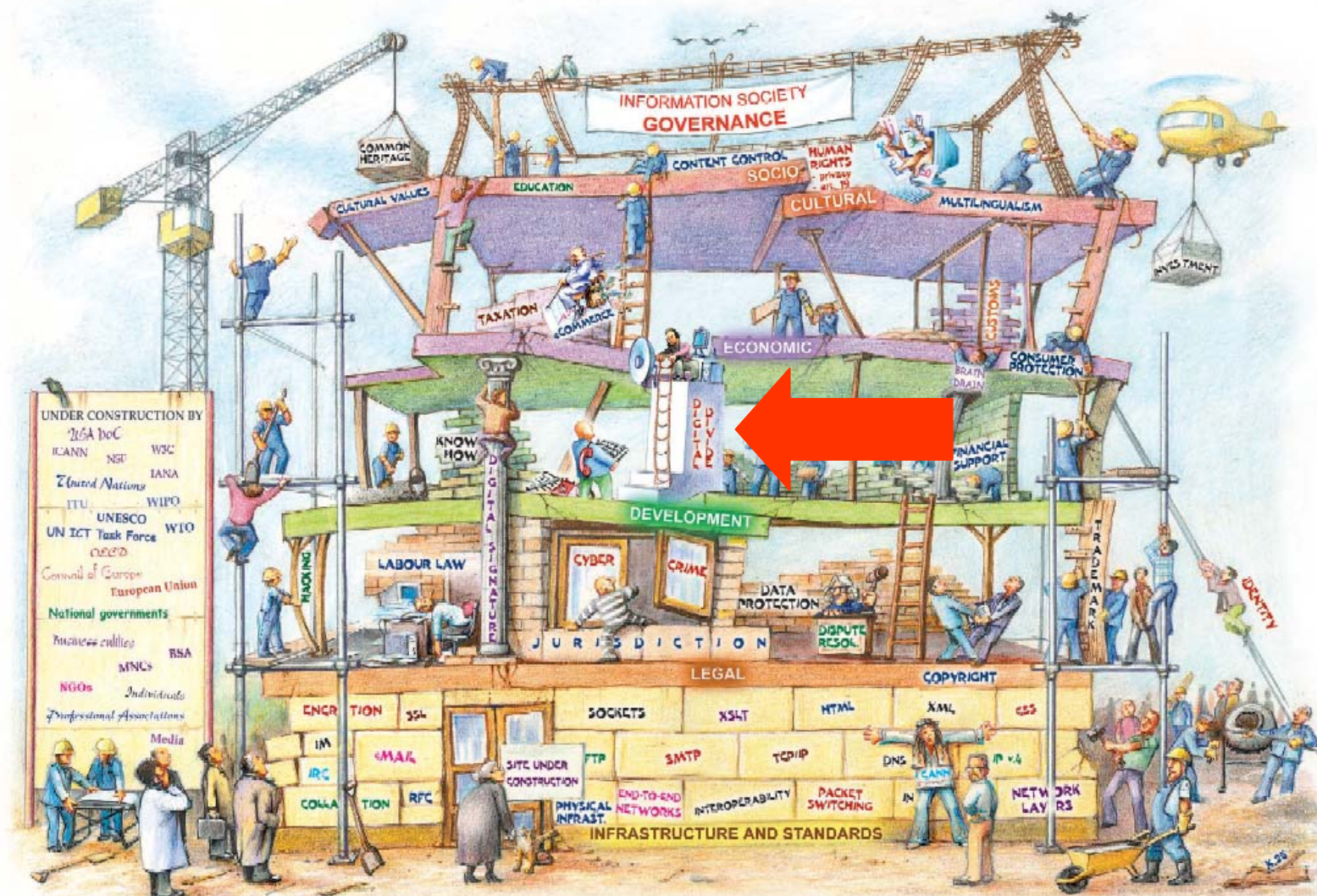Tahir Hameed
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This talk covers…

1. Perspectives on ICT for Development
2. IT & Telecom Industry of Pakistan
3. e-Readiness
4. International Cooperation in ICT
5. Case Studies
5. Conclusion

Towards
Information Society...

Why the digital divide is most hyped about?

- Contributes negatively to many other divides…

- Digital Opportunity/ICT is an enabler for all spheres of development…

  - More than computers and telephony
  - Roughly 6.6% of World's GDP.
  - Studies (ITU, WB and other) prove and suggest how ICT can help achieve the 18 targets set under the 8 MDGs.*

*Views referred from:

R. Tongia, E.Subrahmanian, V. Arunachalam, *Information and Communication Technology for Sustainable Development , Defining a global research agenda*, Bangalore, 2005, p.18-19

National Competitive Advantage today...

- No comparative labor advantage for developing countries any more.
  - " The competitive advantage that now counts is the application of knowledge." [1]

- Global Positioning of the Economy will matter only
  - ICT therefore becomes a powerful catalyst, for comprehensive cross sector strategies to stimulate and facilitate a "*wider economic process, and enhance global positioning*." [2]

1. Drucker (1994)
2. ICT for Development, Poverty Reduction, Disaster Recovery, and Initiatives to Enhance Human Development by Denis Gilhooly Senior Adviser to the Administrator, Director ICT for Development, UNDP.
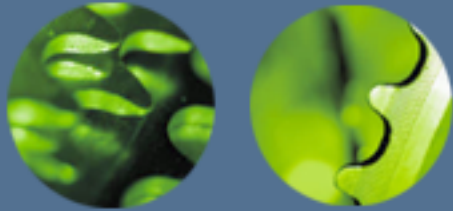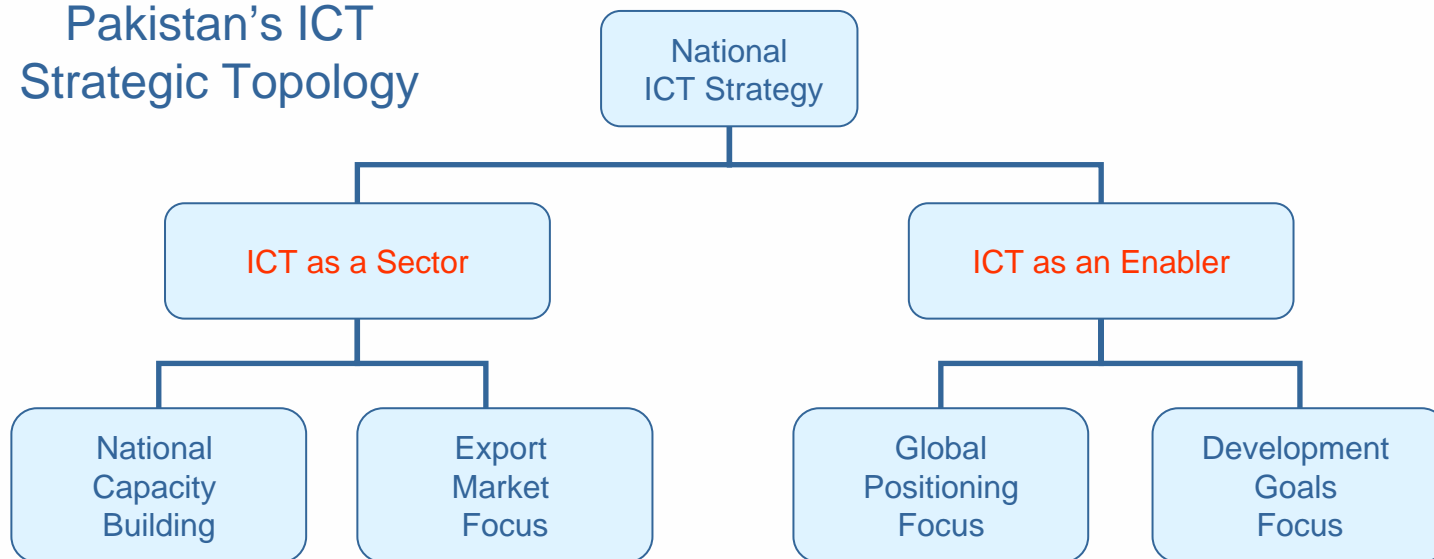
Many views; Two approaches..

- ICT Growth, ICT for Production Sector, Sector Approach, Short-Term,

- ICT Diffusion, ICT for Development, Integrated Approach, Long Term

Pakistan's ICT Strategic Topology

National ICT Strategy

ICT as a Sector

ICT as an Enabler

National Capacity Building

Export Market Focus

Global Positioning Focus

Development Goals Focus

Source: Mujahid, Y.H, *Digital Opportunity Initiative for Pakistan* , The Electronic Journal on Information Systems in Developing Countries, EJISDC (2002) 8, 6, 1-14. Paper also available at http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN005832.pdf

Conclusions about Development...

- an **integrated approach** to ICT development and deployment is most likely to yield success in human, social and economic development over the longer term. [1]

- to achieve IT induced development, developing countries will have to wait until they **cross** the hub of **per capita income growth** and **human development**. [2]

1. Accenture, Markle Foundation and UNDP, *Creating a Development Dynamic*, *Final Report of the Digital Opportunities Initiative*, New York, 2001.
2. K.J. Joseph, *Growth of ICT and ICT for Development*, United Nations University, Discussion Paper No. 2002/78, August 2002
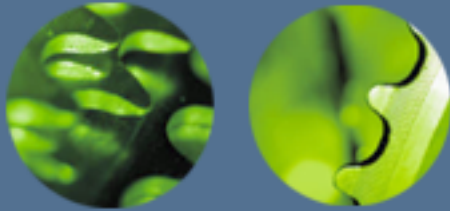
Pakistan
the land of pure

- Area: 803,940 sq. km
- Population: ~150 million
- Literacy: 42.7% (English Literacy ~ 20%)
- GDP Per Capita: US$ 680
- GDP-Growth Rate: >6.3% (for last two years)
- Exports: 2004-05 US$ $14.4bn;
- Imports: 2004-05 US$ $20.6bn;
- Telecom Industry: US$ 2 billion
- SW Exports: US$ 48 million (2004-05 through SBP)
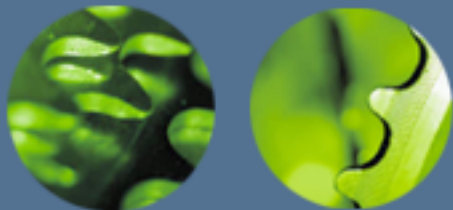
Map from CIA Fact Book

Most significant IT & Telecom Policies

- Pakistan Telecom Reorganization Act 1996
- IT Policy & Action Plan 2000
- De-Regulation Policy July 2003 (fixed and mobile)
- Mobile Cellular Phone Policy in January 2004
- Broadband Policy 2004 approved and issued
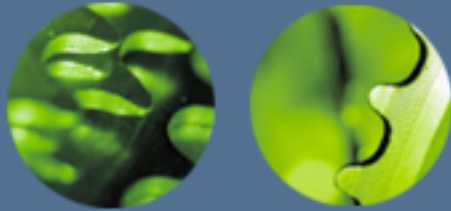- Universal Service Fund (USF) in place

IT Industry

Number of IT companies working in Pakistan	**700**
IT and ITeS Exports during 2004-2005	**US$ 48.50 million (through SBP)**
Percent growth in Exports	**45% over Fiscal Year 2002-2003**
Export target for the fiscal year 2005-2006	**US$ 72 million (through SBP)**
Annual Software Industry Turnover	**Around US$ 70-80 million**
Number of IT graduates produced per year	**About 5,500**
Number of Universities offering IT / CS programs	**45**
Number of IT professionals employed in the country	**95,000**
Annual IT Market size	**> US$ 800 million growth rate 30%**

Source: Data compiled from Pakistan Software Export Board, www.pseb.gov.pk

Telecom Industry

- One of the fastest growing telecom markets in Asia
- Incumbent state-owned PTCL privatized
- 6 Cellular Operators
- First phase of de-regulation completed
- Mixed/Regulated Competition to Mature Competition between many players
- 2G, 2.5 & some 3G services widely in use,
- 4G Wi-Max roll-out planned in Dec 2006
- **Total Tele-density near 30%**

Impact of Liberalization
reaching the grass roots...

Teledensity

Legend:
- Fixed Line Density
- WLL Density
- Total Fixed Tele density
- Total Mobile Density
- Total Teledensity

e-Readiness

ITU's ICT Diffusion Index 1997-2004

Norway	1	2	4	6	9	13	14	14
Oman	102	103	110	112	98	100	100	107
Pakistan	152	152	153	154	163	163	165	165
Panama	95	95	91	91	84	87	88	91
Papua New Guinea	170	173	173	176	149	150	150	151

Universal Internet
Access Plan
2000+
towns connected
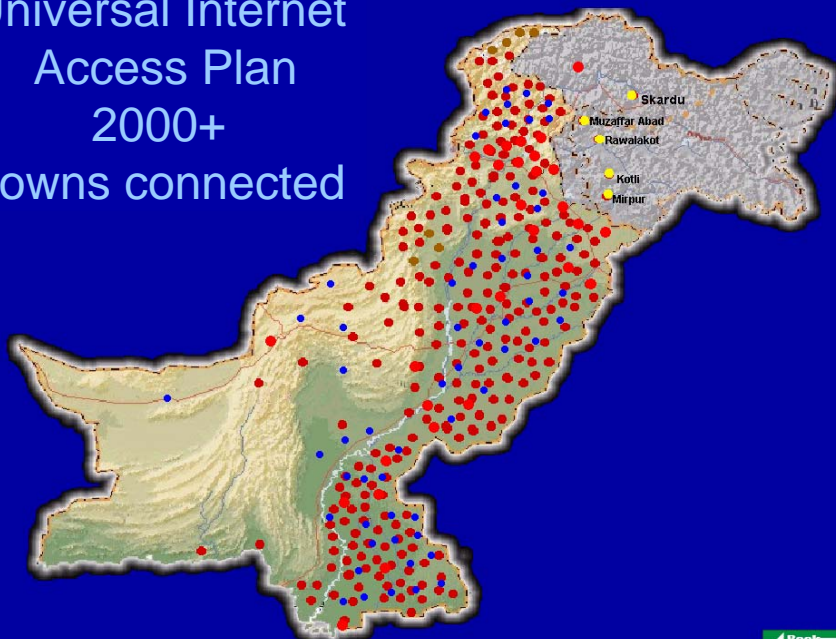
- DAI 2003 – Pakistan 0.24
- Low Access

- More than 10 million internet users
- Current Status ?

Skardu
Muzaffar Abad
Rawalakot
Kotli
Mirpur

Back

International Cooperation in ICT

- **Why is it important?**
  - Funds & financing, resources
  - Start higher on the learning curve; Avoid Pitfalls
  - Collaboration & knowledge retention
  - Better project ,management & tracking
- **Most common issues encountered:**
  - Conflicts on projects involving policy
  - Private sector sometimes want direct benefits
  - Lack of local expertise in project management
  - Lack of local research & content
  - Social & cultural settings

Pakistan: International Cooperation in ICT

1. Between Governments.
2. Donor Agencies and International Organizations:
   - UN: SDNPK, UNESCO, APDIP, UNCTAD
   - USAID, WB, APT, PAN< ITU
3. Country-Based Development Organizations:
   - IDRC, Canada (PAN Projects)
   - KIPA, KADO, Korea
   - SDC/SWISS CONTACT, Switzerland:
4. Private Sector Organizations or NGOs:
   - Development Gateway Foundation, CISCO, Oracle, IBM, Microsoft

Pakistan: Cooperation with Republic of Korea

- Total Annual Trade Volume :> US$1 billion,2005.[1]
- First Motorway in Pakistan M1 constructed by Daewoo Corporation, mid 90s
- Samsung, LG, Cell Phones & Electronics as well as Hyundai and Daewoo automobiles widely used
- KIPA-PSEB cooperation for Industry Development & Promotion
- KIPA-EGD: e-Government systems, Advisory and Consultancy Services on e-Procurement System
- KADO, KOICA, : Training, KIV, KOIL

www.sdnpk.org

- Sustainable Development Networking Programme of UN in Pakistan

- Probably the first formal cooperation in ICT after the internet emergence

- Among the pioneers in email and networking services in capital city in Islamabad since early 1990s.

- Trained hundreds of organizations and individuals in IT, Networking and computer usage

- **ISP project started in late 1990s by IDRC**

- **Developed into a full-fledged ICT4D project during 2004**

- **Partners: COMSATS, KADO, AKRSP and Baltistan Health and Education Fund**

- **to promote use of ICTS for poverty alleviation and sustainable livelihood of locals through access and education about economic opportunities.**

Sources: PAN Website, IDRC Website, KADO's Annual Reports

Achievements...

Sustainable Livelihood and Community-Based Development by using ICT

- KADONET: ISP, Awareness, Trainin
- 2 Schools are networked as community resource centers

- E-Village under implementation
- Fully functional Tele-health centre was established in Skardu
- Girls now have access to their school results immediately through the Internet
- Search for better education opportunities at national and international level

www.threadnethunza.com.pk

– transformed local crafts into global marketable products,
– generate work & income for about 2000 women producers
– KHDP: sale of Rs 3.48 million threadnet in 2004 (1US$ = 60 PKR)
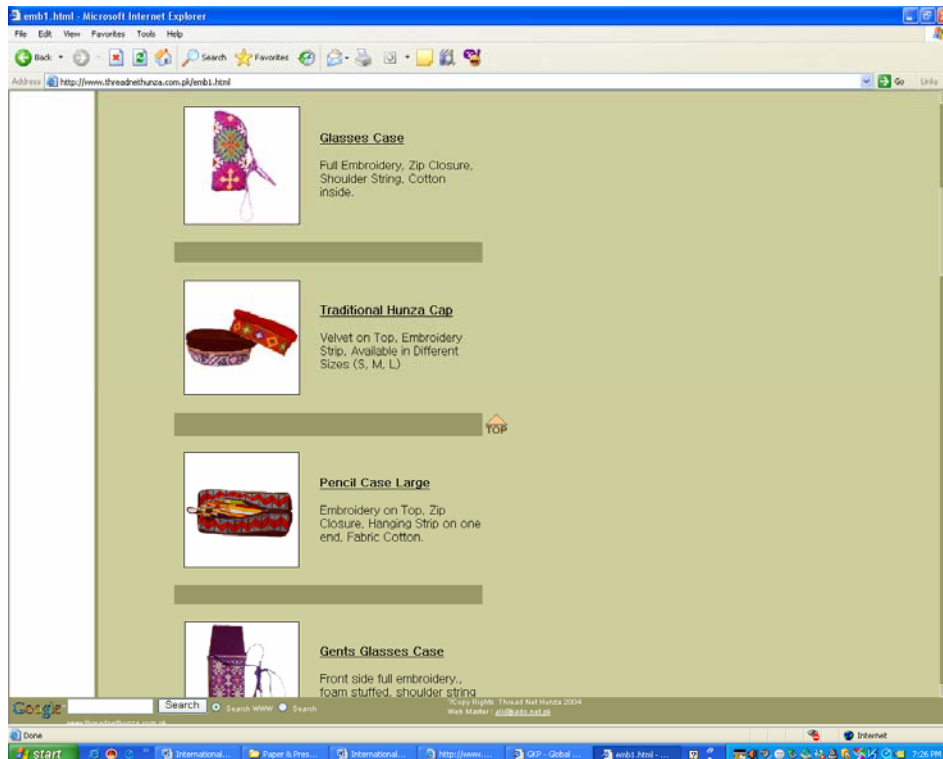
- Successfully developed **Urdu lexicon, speech recognition system and fonts**

- Partial support by **PAN Localization project** which is a regional initiative to develop Local Language Computing Capacity in Asia.

- Now, the **PAN Localization project** is being coordinated for seven Asian languages from CRULP

- **Microsoft Localization R&D Grant** by Microsoft Pakistan, 2002-2003 utilized for extending the Nafees Naskh font for Aerabs (diacritics)

Source: http://www.panl10n.net/

EGD-KIPA cooperation on GePS

- PPS Korea; the **world's best e-Procurement practice** declared by UN.
- **MoU signed in Feb 2005** between EGD & KIPA,
- May 2005 Korean experts developed the feasibility study for a **GePS** with the objectives:
  - To minimize corruption through transparency
  - Implement the best practices and ICT in Public Procurement to increase efficiency and waste of resources
  - Part of ICT in Good Governance initiatives
- **Financing & Technical proposals** by South Korea are **under consideration** of GoP

ESRA — EDUCATION SECTOR REFORM ASSISTANCE

- USAID project (2003-06) worth US$ 72 million

- Objectives
  - to increase productivity, efficiency and effectiveness of the mgmt. system
  - an enabler to reduce the digital gap between the haves and have-nots.
  - teaching and learning tool, as part of a subject, and as a subject by itself.

- Partial Components (**ICT in Education)**
  - Developing a National Strategy incorporating ICTs in education system
  - Direct access to information and EMIS
  - School Improvement program

- **Political Commitment for ICT in Education:** Government stands committed for developing a comprehensive ICT policy for education integrated within National IT Policy, good governance and poverty reduction strategy

- **Reality:** "You are talking about putting computers in schools that don't even have ceilings"

ESRA; Progress

- National ICT Strategy for Education finalized awaiting approval of the cabinet

- EMIS; major part in operation, Reliable and Timely data available

- More than 50 schools provided computers and connectivity around Islamabad , 2 resource centers with full multimedia capability developed.

- Curriculum Revision & Improvements.

- Computer Education being made compulsory during elementary school. Recommendations for change in curriculum presented to the PM

- **PAN funded project** **based in Pakistan with more than 12 partners in 9 countries executing 10 projects for** **Distance learning and networking Distance Learning Technology Engines for Research**

- Training workshops,

- Annual forums

- More than 10 research publications

- New multi-media based tools and technologies are nearing completion for effective DLT.

- Above all, it has brought many institutions in the region closer sharing there visions, problems and methodologies.

Pakistan Educational Research Network (PERN)

- Two parts:
  - Infrastructure (PERN) ← Indigenous
  - Services
    - Inter-University Video Lecturing/Streaming
    - Digital Library
    - Collaboration between researchers ← Int'l Cooperation
- Using Technology to overcome
  - Faculty Shortage
  - Cost of Travel
  - Access to Remote Areas
- Expanded to all 59 Public Sector Universities
- IP-based Video Conferencing facilities at 19 universities for lectures from prestigious foreign institutions launched
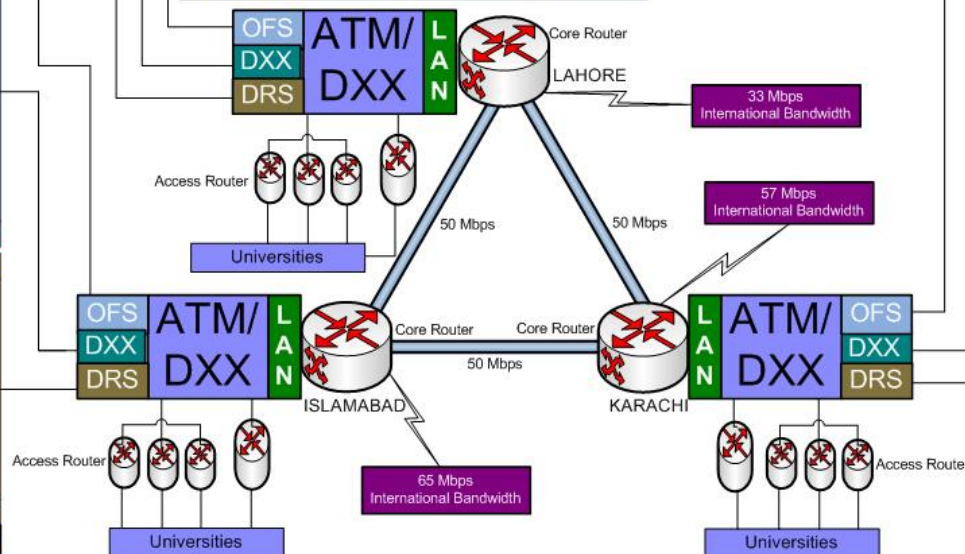
Sources: www.hec.gov.pk , www.pern.edu.pk

CONNECTION SUMMARY

(PERN PROJECT)

OFS (Lahore top)

Bahauddin Zakariya University	
Government College University	
Lahore University of Management Sciences	
University of the Punjab	
University of Engineering Technology	
Total	**5**

DXX

Lahore College for Women University	
National College of Arts	
National University of Computer & Emerging Science (FAST)	
Pakistan Administrative staff College	
University of Agriculture	
Total	**5**

DRS

Islamia University	
Lahore School of Economics	
Total	**2**
Grand Total	**12**

OFS (left)

Allma Iqbal Open University	
Quaid-e-Azam University	
Peshawar University	
University of Engineering & Technology	
Total	**4**

DXX

Air University	
Bahria University, Islamabad	
College of Aeronautical Engineering	
COMSATS Institute of Information Technology	
COMSATS Institute of Information Technology, Wah Cantt:	
Fatima Jinnah Women University	
Ghullam Ishaq Khan Institute of ES & Tech	
International Islamic University	
National University of Computer & Emerging Sciences (FAST)	
National University of Modren Languages	
National University of Science & Technology	
NWFP University of Agriculture	
Total	**12**

DRS/VSAT

Gomal University	
Higher Education Commission	
International Institute of Space Technology	
National Defense College	
Pakistan Institute of Engineering & Applied Sciences	
Pakistan Military Academy	
University of Arid Agriculture	
University of Azad Jammu Kashmir	
University of Engineering & Technology	
University of Engineering & Technology	
Total	**10**
Grand Total	**26**

OFS (right)

Agha Khan University, Karachi	
Liaquat University of Health & Medical Sciences	
Mehran University of Engineering Technology	
NED University of Engineering Technology	
Sindh Agriculture University	
University of Balochistan	
University of Karachi	
University of Sindh	
Total	**8**

DXX

College of Physicians & Surgeons Pakistan	
Karachi Institute of Information Technology	
Quaid-e-Awam University of Engineering & Technology	
Sir Syed University of Engineering Technology	
SZABIST	
Total	**5**

DRS

| BUITMS	
Command Staff College	
Hamdard University	
HEJ Institute of Chemistry	
Institute of Business Administration	
National University of Computer & Emerging Science (FAST)	
Pak Naval Academy	
Shah Abdul Latif University	
Total	**8**
Grand Total	**21**

Core Router LAHORE

33 Mbps International Bandwidth

57 Mbps International Bandwidth

50 Mbps — 50 Mbps

OFS DXX DRS ATM/DXX LAN

Access Router

Universities

Core Router ISLAMABAD — 50 Mbps — Core Router KARACHI

OFS DXX DRS ATM/DXX LAN

Access Router

Universities

65 Mbps International Bandwidth

LAN ATM/DXX OFS DXX DRS

Access Router

Universities

BATCH	OFS	DXX	DRS	VSAT	GRAND TOTAL
TOTAL	17	22	19	01	59
INSTALLED	17	22	19	01	59
ONLINE	17	22	19	01	59

Digital Library

Higher Education Commission Pakistan

- Programme initiated in February 2004, **INASP negotiated licenses and access** with the publishers
- Cost of resources related to GDP of Pakistan
  - Results : approx. **87% discount from list price**
- 250 participating institutions
- Over 30 databases
- **Over 20,000 full text journals** from the world's leading publishers
- **Over 1 million downloads during 2005**
- 150 million items available through British Library Document Delivery Service
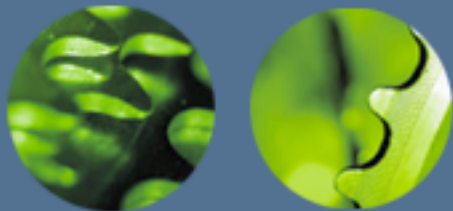
UNDP: ICTD in Governance and Poverty Reduction

- Social Audit Systems
- NARIMS
- MIS & GIS for Public monitoring of public services delivery
- District Citizen Information Centers in NWFP
- ICT for PRSP and MDG monitoring
- **WACT** :Women Access to Capital and Technology

ICT in Environment

- **Wetland Project** by UNDP with WWF Pakistan has produced a detailed GIS with cartographic maps, satellite images and GPS based field observations for better management of natural resources

- UNDP Projects:
  - **Fauna Information System** of Pakistan (FISP) : GIS containing all species of mammals and birds in Pakistan
  - **Eco-zoning** and land use GIS database in high altitude mountain ecosystems
  - **Land quality GIS** database for saline and waterlogged lands

Summing it up…

- We are improving in all areas:
  - Access, Education, Research & Development, Attractive multimedia based curricula, pedagogy, local content , Efficient production and business processes, delivery of public services, Reliability of data collected and disseminated in all sectors for better planning

- Faster because of the **International Cooperation** and **Collaboration in ICT**

For Developing Countries…

- **Goal:** Economic Prosperity, Development & Global Positioning in the Knowledge Economy
- **Scope: (Challenge)** Scarce resources for the growing population
- **Target Value: (Solution)** Knowledge Organizations & Workers
- **Core Competency:** ICT (Faster Access & Enhanced Productivity)
- **Tool:** Collaboration (International Cooperation)
- **Synergy:** Integrated Cross-Cutting Plans & Strategies
- **Timelines:** Shorter (sharing lessons learned globally)
- **Key to success:** Sustainability (Innovate & Adapt)
- **Primary Stakeholders:** Public, firms and direct beneficiaries

Thank you very much!