Sub-Regional Symposium on ICTs for Development in Pacific island Developing Countries

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The Applications Infrastructure for ICTs

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- *Some 5 years ago, carriers were rolling high capacity optical fibre worth more than USD 3 million Dollars per day. In less than 3 years, more than 110,000 miles of optical fibre was in place in some 50 European cities.*
- *Nearly 10 years ago, Global Mobile Personal Communication by Satellite (GMPCS) systems were said to be the solution for any-where anytime voice connectivity.*
- *Even before the full take-off of 3G Mobile, some mobile manufacturers are already working on 4G handsets and infrastructure.*

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…your infrastructure roll-out plan needs to have Internet Protocol as the main network transport, …

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Agenda

- The Internet - Is it a *New* phenomenon?
- What *Drives* the Internet revolution?
- What are the main *Trends*?
- Are there *Opportunities* for this sub-region?
- What *Challenges* must be addressed?

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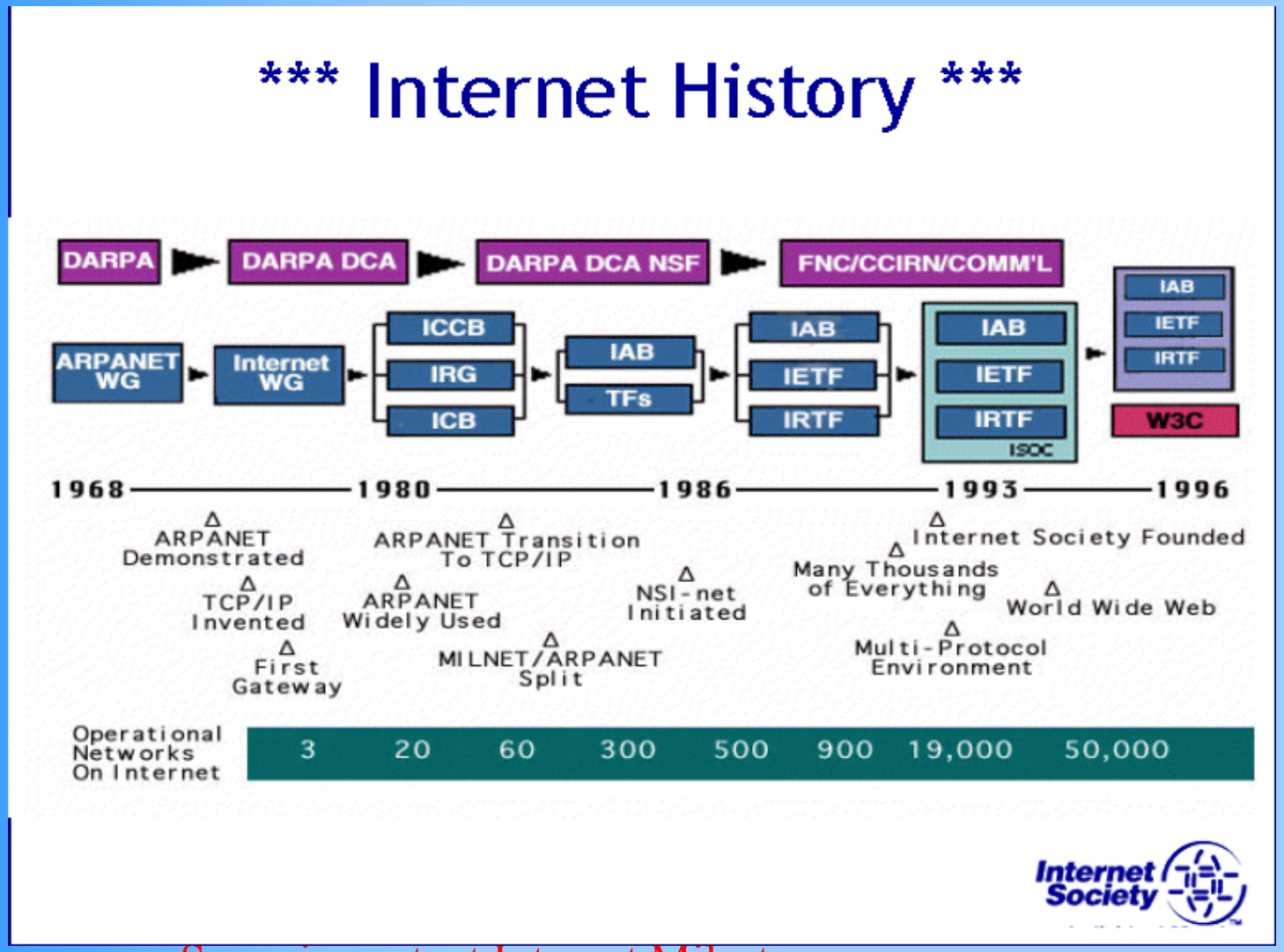
Internet – Is it a New Phenomenon?



Some important Internet Milestones

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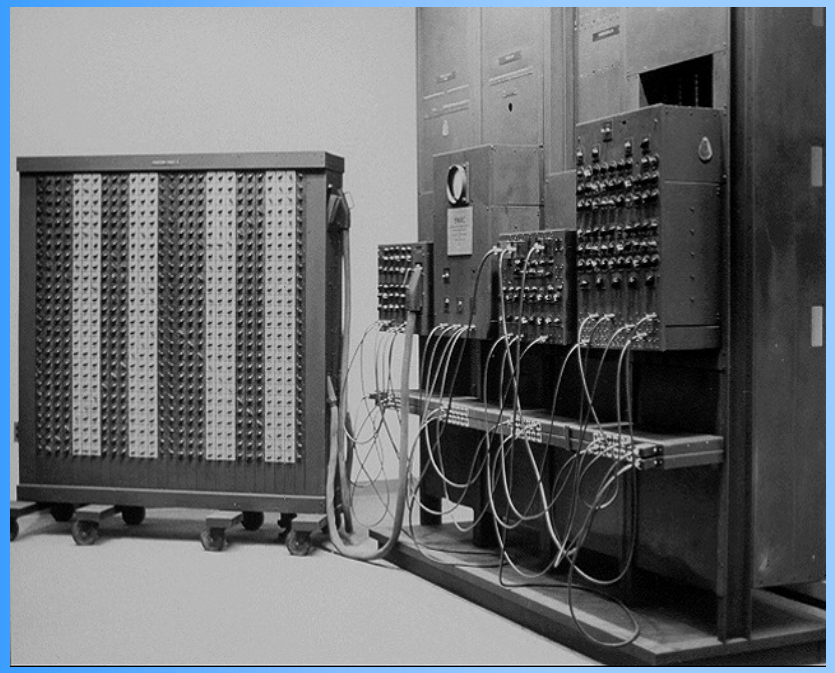
Internet and the IT Revolution

50 years ago! Electrical Numerical Integrator and Computer (ENIAC) - Part of an ENIAC computer!

An IBM Pentium 4 Laptop today!



18,000 vacuum tubes, 30,000 kg, 170 square meters, 200Kilo watts of electricity, 1milion US dollars and takes 20 seconds to perform one floating point operation! A Pentium 4, today costs USD 1000 and performs about 150,000 FLOPs

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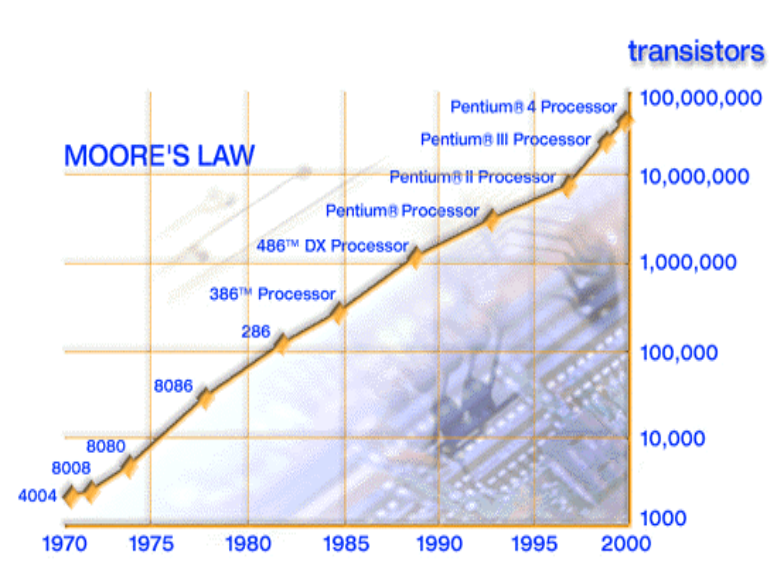
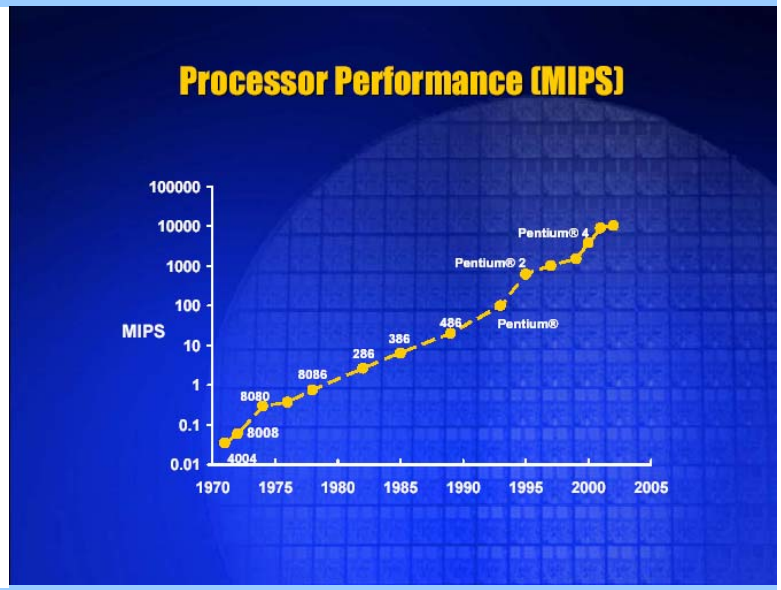
Internet Drivers - Technology

- Intel Co-founder- Gordon Moore's Law: The performance of micro-processors (computing power) doubles every 18 months.
- This results in cheaper, faster and perpetuates the process of convergence.





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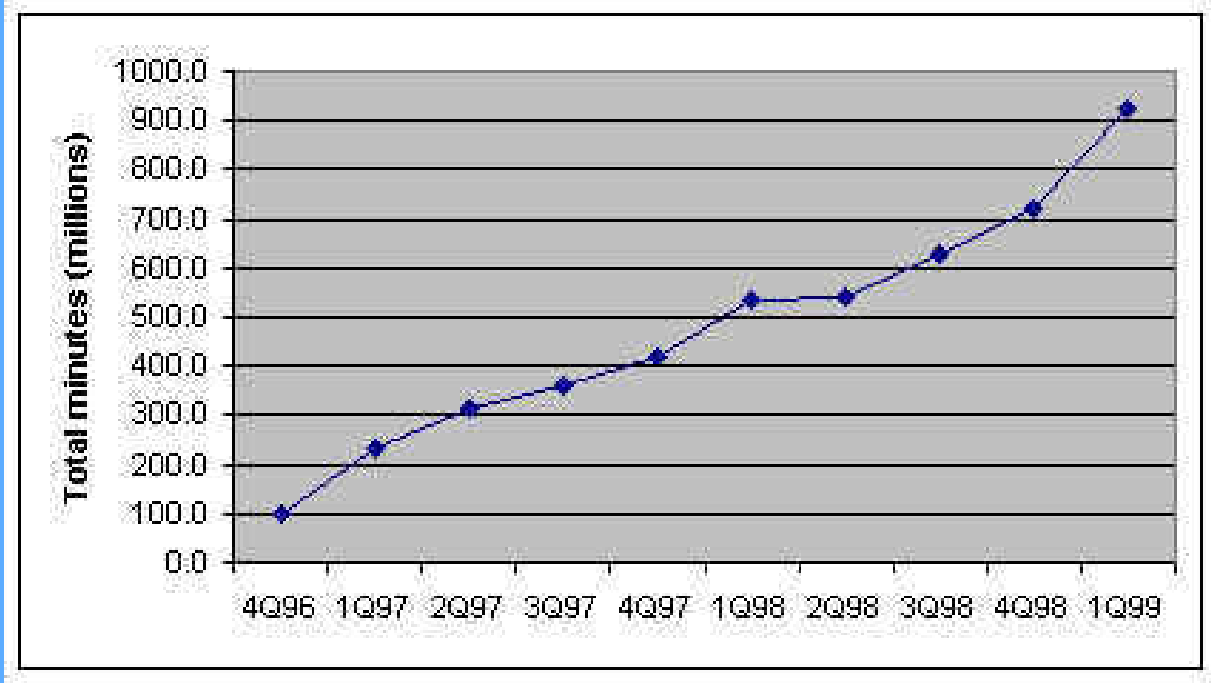
Internet Drivers – Network Effect

- Ethernet designer - Robert Metcalfe's Law of Connectivity: The value of a network increase with the number of nodes.
- *The growth of the Internet is one of its main drivers.*



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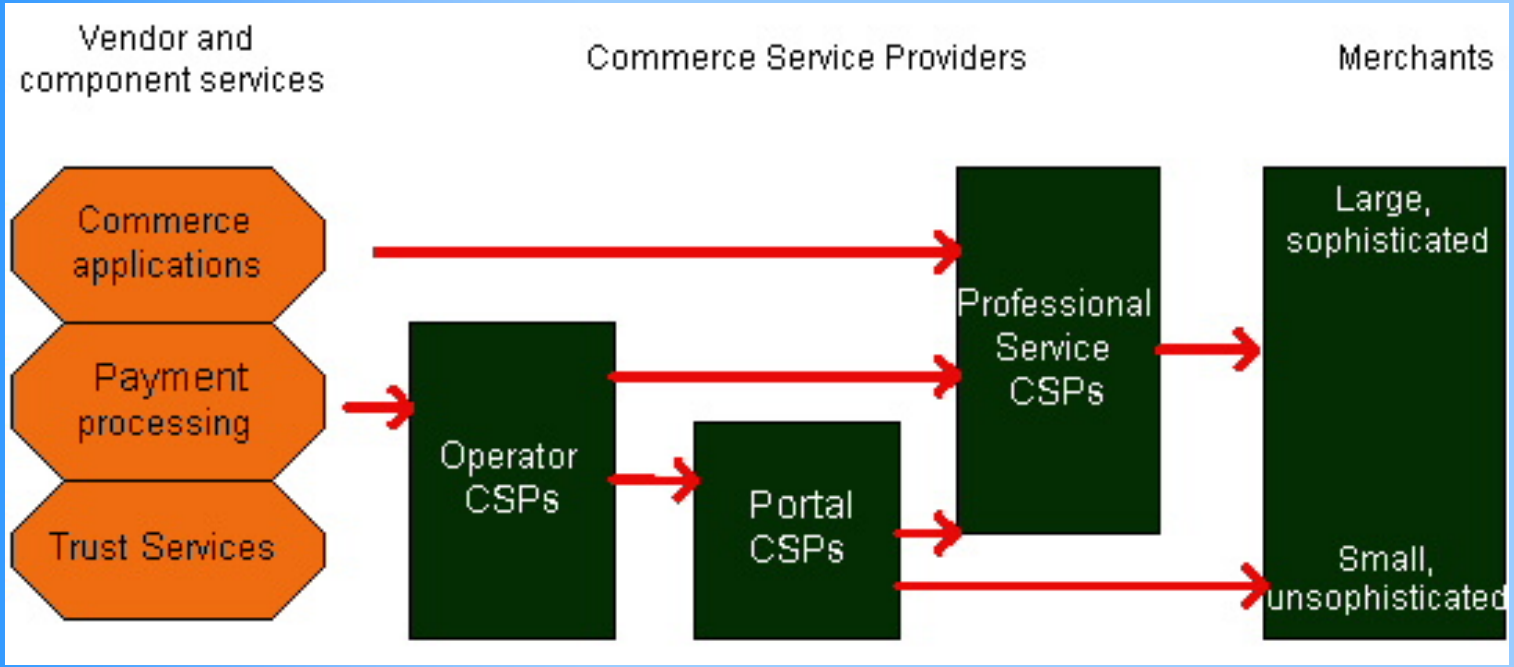
Internet Drivers - Business

- Search for New Revenue Streams as companies strive to extend markets, create new relationships, increase efficiencies and move up the value-chain.



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Internet Trends

Rapid Evolution in Several Platforms

- Broadcasting and Networks (Radio and TV)
- Fixed Networks (dial-up, ISDN, Satellite, leased line)
- Digital Mobile Data Services (GSM WAP, 3G, 4G)
- Streaming Media (WebTV, DVB, VoIP, Cable Modems)
- Household Appliances (TVs, Microwaves, Refrigerators)
- Wireless Access (PDA + Mobile), WiFi
- Broadband (xDSL, UWA, Millimeter Wave, 3G-IMT2000)
- Power Line Technology For Internet Access
- Fixed Mobile Convergence (FMC)

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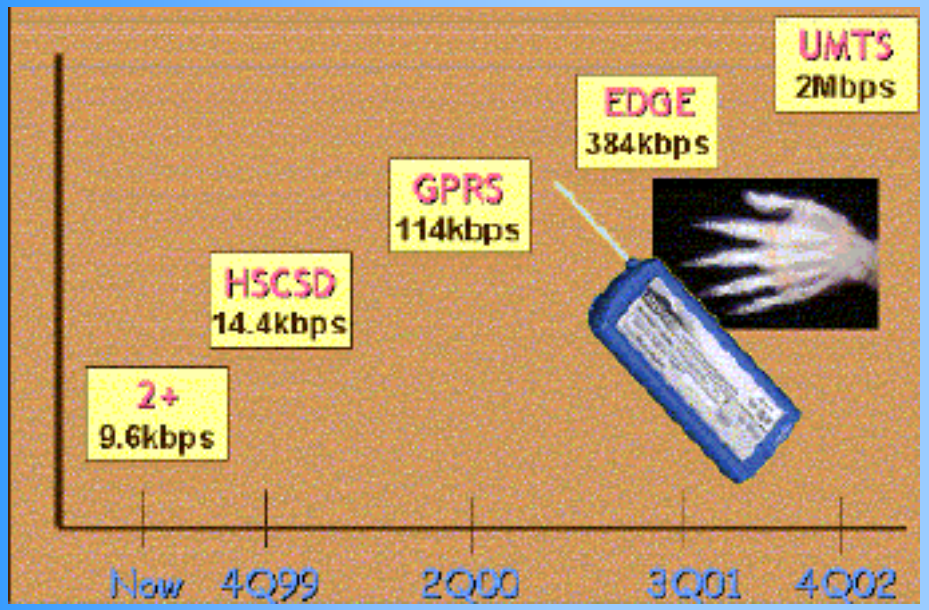
Internet Trends – Mobile Growth



Rapid evolution towards Mobile Internet as high speed digital mobile services become widely available. Operators in Europe and Asia are already providing 3G Mobile with speeds of 384Kilo bit/sec for IP-based multimedia services/applications .

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Internet Trends

Phenomenal Growth in all Regions.

New Types of Alliances and Partners.

New Business Models & Revenue Streams.

Core Platform for Convergent Services.

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As countries embark on elaborating national ICT policies, some general Internet issues must be addressed

1. Low Cost Reliable and Universal Access
2. High Speed Internet Access and Services
3. Content and Cultural Issues (Censorship etc)
4. Regulatory Framework for Service Providers
5. Intellectual Property for Domain Names
6. Security and Trust for Network Services
7. IP Telephony (Telecom or Value Added Service?)
8. Creation of Pacific Sub-Regional IP Backbone
9. Management of Public Internet Resources
10. Content Diversity - Multilingualism and Internationalization.

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Breaking Industry and Service Barriers

Broadcasting Companies --> Voice and Network Services

Telecom Operators --> Data network and financial services

Computing Companies --> Broadcasting (TV services)

Financial Institutions --> Data network access Services

Voice Services provided over data networks (VoIP)

Data Services over broadcasting networks (DVB)

Broadcasting services over data networks (WebTV, Radio)

Voice and Data Services over electrical power lines

TV Stations Using Web as another Distribution Channel - *MMXI estimated 400% growth in access to TV Web sites*

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Internet Regulatory Issues

Domain Names and Intellectual Property

- ccTLD Ownership and Management
- IPR and Copyright issues (MP3 Sites/content)
- Hijacking and Cyber-squatting of popular DNs

Framework for Electronic Transactions

- Issuing and Managing Digital Certificates
- Accreditation of Certification Authorities
- Compliance to Technology Specifications
- Recognition and Creation of Digital Signatures
- Jurisdiction for Cross-border Transactions

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Internet Regulatory Issues

Convergent Services – e.g., VoIP and DVB

- Not regulated in some countries
- For TELCOS, VoIP is a telecom service
- VoIP providers, it a value-added service
- *For Regulators, it's all very confusing!*

Internet Service and Content Providers

- Liabilities of Internet Service Providers
- Yahoo and French Government
  CompuServe and Bavaria
  Unsolicited Emails and Fraud – Spam, Spim and Phishing
- Data Confidentiality and Protection
- Tariff Models for Internet Access
- Licensing of ISPs (Cable, Fixed and Mobile)

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Internet Issues – NG IP Network

Competition in Local Access Networks

- Impact of WLL Unbundling on Network Access
- Business Case for Isolated Residential Users

Broadband IP Services for Fixed/Wireless

- Education, Health, News
- VoD (Voice over DSL)
- Wireless Broadband (2.5G, 3G, MMDS, Millimeter Wave)

Broadband Access Strategies

- Optical Fibre, xDSL, Millimeter Wave Technology
- 3G Mobile, Ultra Wide Access (UWA)
- Digital Cable/Satellite TV

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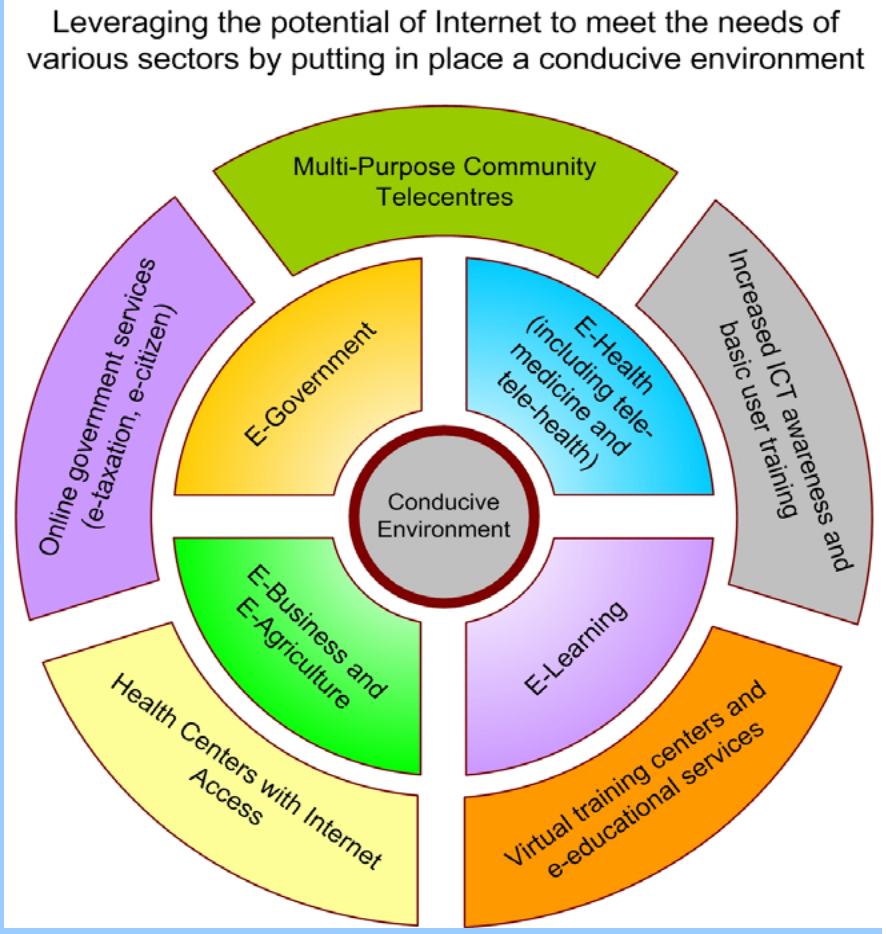
What can governments do?

Non-exhaustive List

1. Policies to promote investments, partnerships development and use of the Internet.
2. Put in place an environment for developing and retaining skilled human capacity and basic Internet skills.
3. Strategies for the establishment of a sub-regional IP backbone and the management of public Internet resources.
4. Appropriate policies and legislation to address security and trust concerns.
5. Use the Internet to enhance services to citizens (e-government, e-health)



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Thank You for Your Attention

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