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<th>The internet : taking it to the next step</th>
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<td>Author(s)</td>
<td>Sadowsky, George</td>
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Presentation Outline

- The Internet Society
- Nature and growth of the Internet
- Infrastructure developments
- Information storage and retrieval issues
- Development implications
- Challenges for the Internet
- Concluding remarks
The Internet Society

- An international professional organization
- 8,000 individual members in 150+ countries
- 100++ organizational members
- INET '97 in Kuala Lumpur, 24-27 June
- Major training for developing countries
- Secretariat in Reston, VA USA
- Information located at http://www.isoc.org/
Internet Society Mission Statement

"To assure the beneficial, open evolution of the global Internet and its related internetworking technologies through leadership in standards, issues, and education."
Nature and growth of the Internet

- The Internet is a network of interoperable networks
- Networks agree to use common protocols
- No one manages the Internet; management is inherently decentralized
- Growing at 50-100% per year, connecting almost all countries and territories
(Maps and graphs presented here in sequence)

- Maps are provided by courtesy of Larry Landweber and the Internet Society
- Charts are provided by courtesy of Tony Rutkowski at General Magic, Inc., and by Mark Lottor at Network Wizards, Inc.
Implications for information storage and retrieval

- Movement of content to World Wide Web
- Web content is unmoderated and unreferreed
- Full text retrieval possible across entire web, almost distance-independent
- Growth of meta-information providers, with immediate access to information
- New paradigm of iteration between on-line content and on-line expertise
New modalities for development assistance

- Nature of relationship between experts and country projects can be continuous
- Access to web based information can be simple and nearly immediate
- Countries can publish own content easily
- Importance of meta-information intermediaries
- Internet culture is consistent with and will support technical assistance objectives
Challenges to the Internet Globalization

- Technical challenges
- Economic challenges
- Organization and policy challenges
- Challenges often overlap these domains
- A potentially important factor: Cultural clash between the PTTs and the Internet
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INET '97: Kuala Lumpur, 24-27 June
Putra World Trade Center

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Some technical challenges

- Internet (IP) address scarcity and migration to larger address space (IPv6)
- Congestion and quality of service (QoS); Internet-2 research effort starting in U.S.
- Scaling problems with Internet core routing
- Enabling secure network based sales of information: micro and macro transactions
- Viable "last mile" technology
Some economic challenges

♦ Reducing costs of long haul routes

♦ Pricing models to produce efficient investment
  - current Internet badly instrumented, lack of sharing of statistics, performance
  - need pricing policies that channel investment funds to where the demand is
  - Flat fee pricing model poor; tiered pricing emerging

♦ Viable settlement policies and cost models
  - Movement away from U.S.-centric attachment policies needed, will occur as content becomes more distributed
Some organizational and policy challenges

Resolution of domain name space issues

What is the Internet? A broadcast medium?

Something else? How to regulate, if at all?

Government interests vs. data confidentiality

Content policy and content regulation

Data confidentiality, integrity, encryption

Access and content censorship - varies across international boundaries
PTTs vs. the Internet (1 of 2)

Diametrically opposed in major ways

- Roots in: consumer service vs. research and academic worlds
- Pricing: by unit of service vs. culture of free good to end user
- Organization: top down vs. bottom up
- Standards: ISO, countries vs. IETF, individuals
- Cost of information: buy it vs. you must take it free
Constraints on more rapid Internet growth

- Poor understanding by governments (FUD)
- Attempt to control communication and/or content being accessed
- Monopoly and revenue protection by PTTs
- Inadequate funds to modernize telecommunications infrastructure
- Insufficient number of trained people
PTTs vs. the Internet (1 of 2)

- Diametrically opposed in major ways
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  - Pricing: by unit of service vs. culture of free good to end user
  - Organization: top down vs. bottom up
  - Standards: ISO, countries vs. IETF, individuals
  - Cost of information: buy it vs. you must take it free
PTTs vs. Internet (2 of 2)

Diametrically opposed in major ways (cont.)

- Style: Businesslike, structured vs. amateur, experimental, flexible
- Pace: long time horizon for investment vs. rapid obsolescence and no respect for prior investment
- Medium: Very physical, durable, vs. very malleable (software and protocols)

Both cultures require change to survive
Concluding remarks

- Internet is a major tool to support effectively development and assistance activities
- Private sector empowerment has been most effective way to create Internet infrastructure
- A critical mass of trained people is essential for success
- Investment in Internet infrastructure and use by aid agencies is essential and yields high returns