# The Internet
# How it works, Why it works, Who makes it work?

WSIS - 9 December 2003

# Internet Society (ISOC)

# &

# Internet Standards (IETF)

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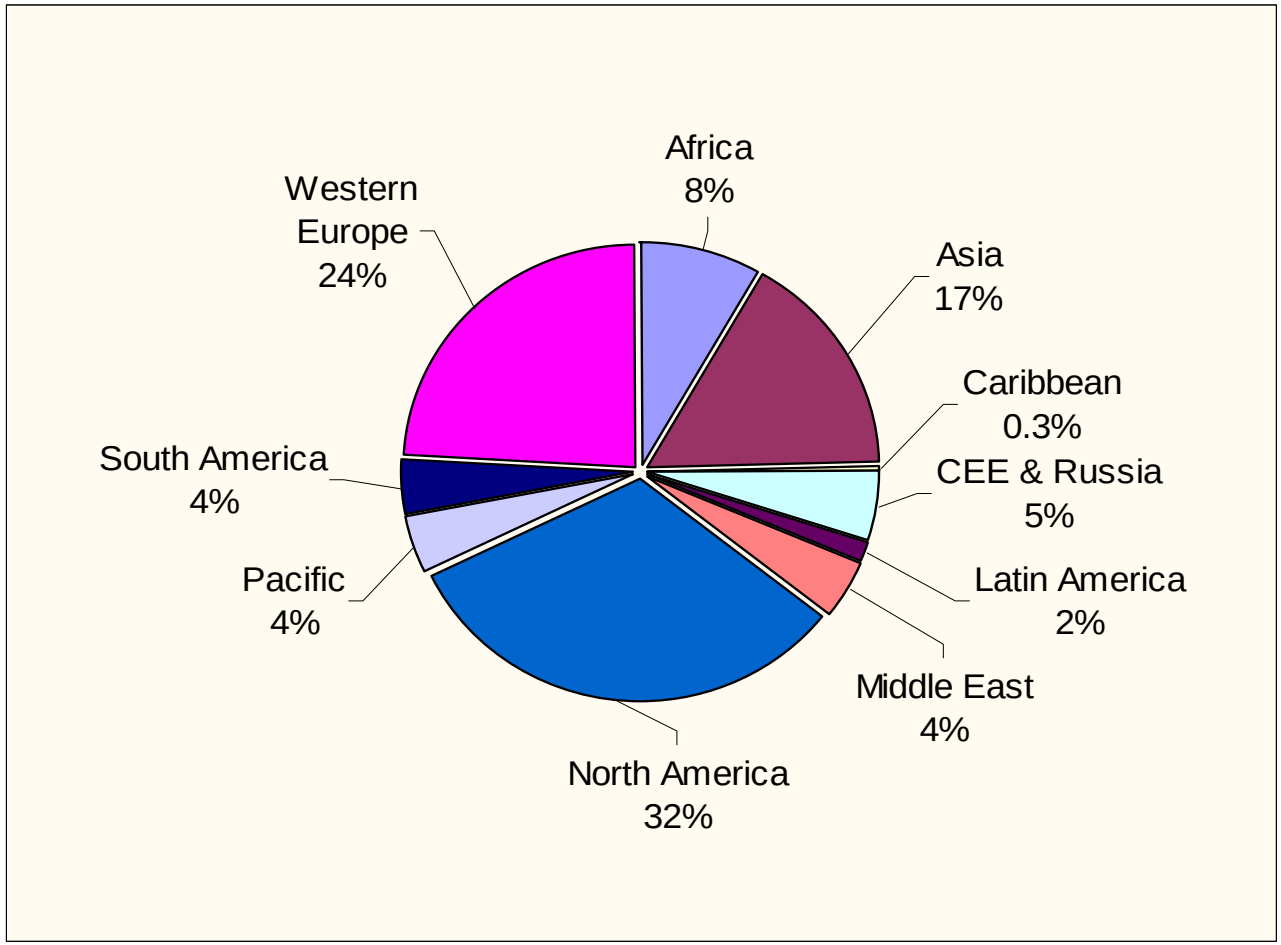
# Internet Society - Who we are (www.isoc.org)

- Founded 1991 by Internet Pioneers
- Not for Profit 501(c)(3) corporation
- Professional International Membership Society
- 150+ organization members
- 17,000 + individual members
- 80+ Chapters, 50+ Chapters forming
- Organization members fund activities in: Standards, Education, and Public Policy

# ISOC Global Members



# Internet Society (ISOC)

## *Mission Statement*

*"To assure the open development, evolution and use of the Internet for the benefit of all people throughout the world."*

# ISOC's Purposes: Charitable, Educational & Scientific

- Support continuing tech. evolution of Internet as a research, education and communication infrastructure
- Provide education re; technology, use and application of the Internet
- Promote educational apps. of I'net tech.
- Provide a forum to stimulate collaboration to facilitate effective use of the Internet

# Internet Society Guiding Principles

- Open, unencumbered, beneficial use of the I'Net
- Self-regulated content providers
- On-line unrestricted free expression
- Open development of I'Net standards & technology
- No discrimination in use of the Internet
- Personal information on I'Net not to be misused
- Encrypted communication without restriction
- Encouragement of cooperation between networks

# ISOC - Areas of Focus

- Support for Standards (IETF)
- Transfer of technical knowledge
- Education in technologically emerging countries
- Internet Policy Education to decision makers - all kinds - (rooted in technical principles)
- Building active global community of knowledgeable members & chapters
- Recently, manage a subsidiary that runs .ORG

# ISOC and Public Interest Registry (PIR) (www.pir.org)

- ISOC won bid to manage .ORG TLD
- Open registry focused on non-commercial entities
- Created PIR to be an exemplary registry
- PIR is not-for-profit
- Surpluses go to programs in support of the Internet & its development

# Internet Standards Process

# and

# Internet Engineering Task Force (IETF) Structure

# What is the Internet?

- The Internet  is a modern distributed communications medium.
- The global Internet consists of tens of thousands of autonomous but interconnected networks run by ISP's, individual companies, universities, Governments, etc.
- These may be global, regional or local in scope.
- Because of the structure of the Internet hundreds of different organisations and thousands of different companies make decisions every year that contribute to how the Internet develops.

# What is at the Internet's Core?

- Enabling technologies (protocols) that describe methods for information exchange and are defined by open Standards.
- Tens of thousands of autonomous networks interconnect via implementations of these standards.
- Enabling seamless interoperation between these networks, allows services to be implemented across the entire network.
- It's a tribute to the quality of the protocols, and the processes that engineer them, that this architecture has managed to cope with the exponential growth and the unforeseen demands placed on it.

# The IETF (www.ietf.org)

- Internet Engineering Task Force
- Formed 1986 - 17 years ago
- Produces Standards
- Cooperates with other standards groups
- Individuals not companies or governments
- *Runs on: "rough consensus and running code"*

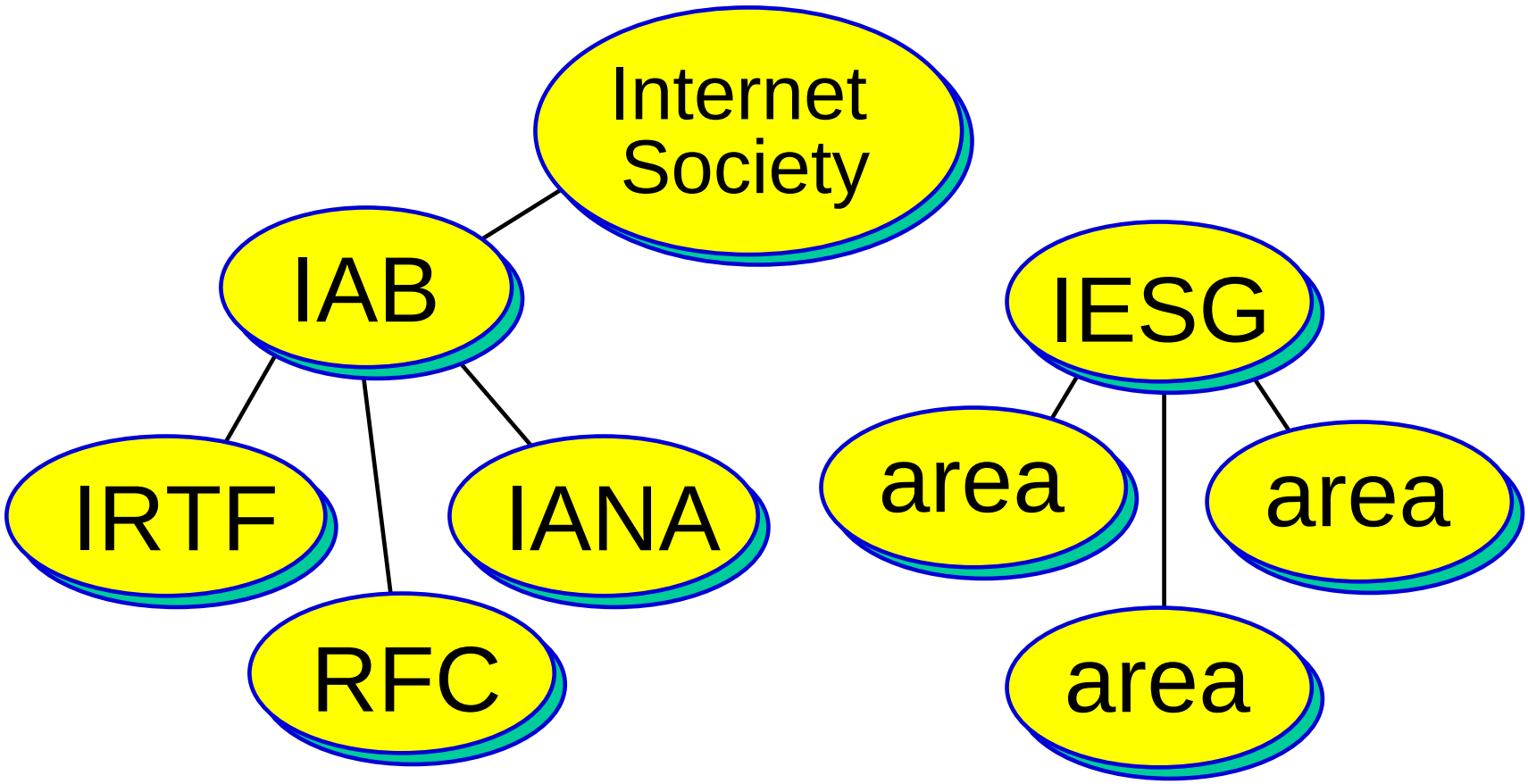
# ISOC and Internet Standards

- ISOC is the organizational home of the Internet Engineering Task Force (IETF)
- ISOC provides funding for the RFC Editor function, etc.
- ISOC holds copyrights on RFC's
- Standards process open to all
- Standards documents (RFCs) are free!

# IETF: Next Level

- **130+** working groups (WG's) at any one time
- **8** areas (for organizational convenience) with Area directors (AD's)
  - APS, GEN, INT, O&M, RTG, SEC, SUB, TSV
- No "members", no explicit voting
- 1.5K - 2K at 3/year meetings, 1,000's mail lists
- Mgmt: IESG (ADs, chosen by comm'y)
- Architectural guidance & liaisons**:** IAB
- Internet Research Task Force: IRTF

# Organization of the IETF



# IETF - Liaisons

- Liaisons with:
  - *ITU-T*
  - *ISO*
  - *ATM Forum*
  - *W3C*
  - *3GPP*
  - *Global Grid Forum*
  - *IEEE*
- Informal co-operation with many other organisations

# Internet Architecture Board (IAB) (www.iab.org)

- Provides overall architectural advice
  - to IESG, IETF & ISOC
- Advises IESG on IETF WG formation
- Deals with IETF external liaisons
- Appoints IRTF chair
- Selects IETF-IANA
- Oversees RFC Editor
- Hosts workshops
- Chartered & funded by ISOC

# Internet Research Task Force (IRTF) (www.irtf.org)

- **focused on long term problems in Internet**
  - **Anti-Spam**
  - **Authentication Authorization Accounting Architecture**
  - **Crypto Forum**
  - **Delay-Tolerant Networking**
  - **End-to-End**
  - **Group Security**
  - **Internet Measurement**
  - **Network Management**
  - **NameSpace**
  - **Peer-to-Peer**
  - **Routing**
  - **Searchable Internet Resource Names**
  - **Services Management**

# Internet Assigned Number Authority (www.iana.org)

- Assigns parameters
  - Protocol numbers
  - IP addresses
    - mostly delegated to IP Address registries
  - Domain names
    - delegated to DNS name registries
- Functions based at ICANN
  - independent corporation appt'd. to take over IANA functions

# Internet Engineering Steering Group (www.iesg.org)

- IETF process management & approval body
- Composed of AD's + IETF Chair
- Approve creation of WG's
- Review & approve publication of IETF documents
  - reviews and comments on non-IETF submissions
- Multi-disciplinary technical review group

# IETF Working Groups (www.ietf.org)

- Where the IETF primarily gets its work done
- WG focused by charter agreed between chair and area director (AD)
  - restrictive charters with milestones
  - working groups closed when their work is done
- charter approved by IESG with IAB advice
- AD with IESG has final say on charter & chair(s)

# IETF Working Groups
## (continued)

- "Rough consensus **and running code..."**
  - **no formal voting**
  - **can do show of hands or hum - but no count**
  - **does not require unanimity**
  - **disputes resolved by discussion**
  - **mailing list and face-to-face meetings**
  - **final decisions must be verified on mailing list taking into account face-to-face discussion**

# IETF Documents/RFC's (www.rfc-editor.org)

- All open & freely available on web
- Internet-Drafts
  - anyone can submit - "expire" in 6 months
- 'RFC' used to stand for Request for Comments
  - now just stands for RFC's (as in just a name)
- RFC 1 *Host Software* - Apr 7 1969
- Now over 3400 RFCs
  - different types: (not all RFCs are standards!)
    - informational, experimental, BCP, standards track, historic
- Interoperability not conformance

# Standards Track RFCs:

- Best Current Practices (BCP)
  - generally policies or procedures (best way we know how)
- Proposed Standard (PS)
  - good idea, no known problems
- Draft Standard (DS)
  - stable
  - multiple interoperable implementations
  - note IPR restriction
- Internet Standard (STD)
  - wide use

# Internet

# Coordination Process

# What is the Internet?

- The Internet  is a modern distributed communications medium.
- The global Internet consists of tens of thousands of autonomous, interconnected networks.
- All connected via implementations of open standards and with a need for some resources to be allocated.
- The networks may be global, regional or local in scope.

# ISOC and Internet Coordination

- Internet is not a single entity to manage
- Reflexive pressure on governments to regulate

- ISOC dedicated to ensure open development, evolution and use of the Internet
- Internet evolution depends on consensus-based, open, accessible coordination processes
- ISOC has a history of participation in similar debates and is well positioned to reach out to Industry, Governments and Individuals

# Internet Coordination Processes

- Coordination required at three main levels:
  - Agreement on Internet standards
    - *IETF, W3C, ITU-T, IEEE, etc.*
  - Allocation of Internet resources
    - *ICANN, RIRs, Root Servers, TLD registries etc.*
  - Policies & Technology preventing misuse
    - *all of the above, with Governments & policy makers*

# Internet Coordination Processes must be built on Expertise & Experience

- Many of the communities exist today:
  - Internet resources – ICANN, Regional Internet Registries
  - Internet standards – IETF, W3C, IEEE
  - Internet infrastructure – Root server operators
  - Open processes/Education – Internet Society

And we'll be hearing from them shortly…..

# What works well today

- Technical aspects of Internet
  - Standards evolution
- Bottom-up, open, inclusive, international consensus-based processes
- Good coordination across Internet Community
- Innovation in services

# What needs more attention

- However, a number of areas need more attention and this requires cooperation with other parties such as Gov't, civil society, not only technical bodies
  - *Cybercrime*
  - *Digital Divide issues*
  - *Intellectual Property Issues*
  - *Privacy*
  - *Security*
  - *Spam*

# What needs less ‘air-time’: the phrase “Internet Governance”

- Much misunderstanding
- Even more misrepresentation of the term
- Does not reflect how the Internet operates or is developed
- Internet is not a single entity

- ***Internet Governance is a MISNOMER***

# Where Are We?

- Organisations such as the RIRs, TLD registries, ICANN and the IETF have very specific roles. It is neither within their charters, nor entirely within their capabilities, to take on responsibility for ALL areas of Internet Coordination - particularly that of preventing inappropriate use of the Internet.
- Many of these areas require coordinated global attention by lawmakers as well as the Technical community.

# The Way Forward

- Existing organisations and their consensus-based processes have given us the Internet and its phenomenal growth.
- They constantly balance needs and stability with future demands and sometimes limited resources.
- However, an open debate is now needed to move towards common, globally acceptable policies, processes and technologies to prevent misuse of the Internet.
- Governments have a vital role to play as a concerted effort on the part of the Internet community, NGO's, Civil Society and Governments can help strengthen and extend today's successful coordination processes.

# Cooperative Internet Coordination

- We must apply the same principles that have helped the Internet develop to ALL areas of Internet Coordination
- Consensus-based processes are strengthened through cooperation
- Cooperation extends beyond today's Internet community to include Governments, Civil Society, etc
- New models of cooperation will complement, not replace, current processes
- ISOC calls for continued debate in open working groups and applauds the progress made in WSIS

# In Summary

- No single body can oversee all aspects of the Internet - *requires coordination & expertise of many*
- Open consensus-based processes proven successful
  - *phenomenal growth and stability*
- Future cooperation models must be based on expertise and experience
- Open debate involving all parties needed
- ISOC cautions against applying yesterday's models and mechanisms to today's and tomorrow's Internet

# ISOC's Role

- ISOC remains dedicated to providing information and orientation about Internet structures and processes and we encourage broad participation in the activities of each of the organisations involved in Internet coordination.
- ISOC is well positioned to facilitate much of this dialogue and to providing forums for continued discussion
  - *Traditional activities such as Briefings*
  - *Conferences & workshops*
    - *NDSS 2004 & 2005*
    - *INET 2004 & 2005*

# Invitation to continue dialogue

- INET/IGC 2004: ISOC – IGC (Internet Global Congress, Spain) joint conference
  - ISOC's 13th annual conference
  - Barcelona, Spain 10 - 14 May 2004
- Separate forum on Internet Coordination to be organized in parallel
- Over 2,000 attendees expected

**www.isoc.org/inet04/**

# END