
The IETF: A Decentralized Voluntary Standards Process

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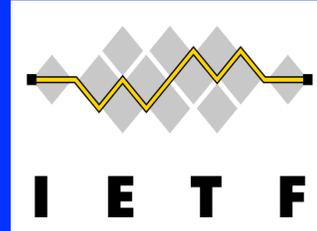
The IETF

- ◆ The Internet Engineering Task Force
- ◆ standards development for the Internet
- ◆ since 1986
- ◆ international
 - most recent meeting - Yokohama in July
- ◆ individuals not organizations
- ◆ no defined membership
- ◆ scale: about 2,000 attendees in Yokohama
 - thousands more on mailing lists (from 100s of companies)
- ◆ under umbrella of the Internet Society (ISOC)
 - no distinct legal entity

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An Engineering Organization

- ◆ vendors
- ◆ users
- ◆ network operators
- ◆ academics
- ◆ researchers
- ◆ all as individuals
- ◆ supported by meeting fees
ISOC supports some functions e.g., RFC Editor



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The IETF Structure

- ◆ most work done on mailing lists
plus 3 times a year face-to-face meetings
- ◆ individuals or groups request BOFs
exploratory meeting - may lead to working group
- ◆ working groups for specific projects
currently 135 working groups
restrictive charters with milestones
working groups closed when their work is done
- ◆ working groups gathered together into Areas
each area has 1 or 2 Area Directors (ADs) - area managers

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IESG

- ◆ Internet Engineering Steering Group
- ◆ ADs + IETF chair
- ◆ IETF consensus determination and standards approval body
 - process & technical review of proposals for RFCs

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IETF “Standards”

- ◆ standards only because people use them
- ◆ no formal recognition
- ◆ no submitting to “traditional” bodies
 - but people keep trying to help us get our standards “approved”
- ◆ “RFC” means “RFC” but does not mean “standard”
 - RFC is IETF publication series
 - many types of RFCs
 - standards track & BCP
 - Informational, Experimental, historic
 - technology, process, history, general information, jokes

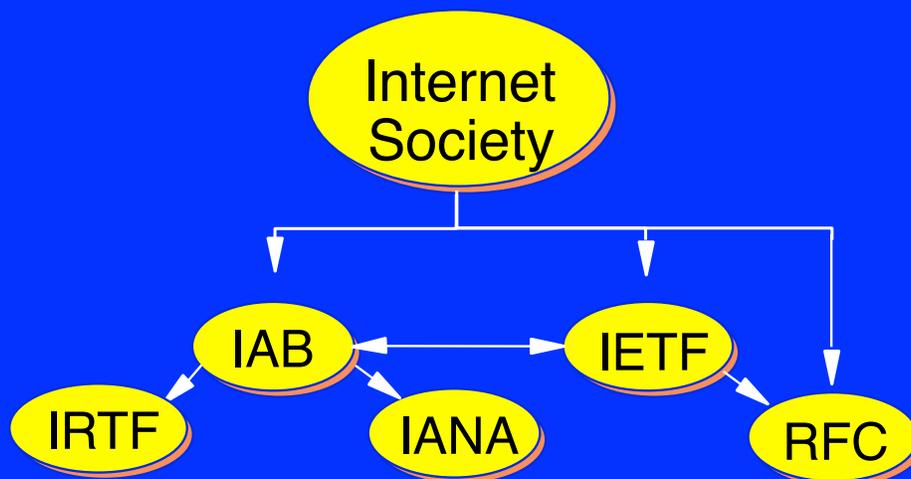
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Relationships:

- ◆ liaisons / representatives
ITU-T, ISO study groups, ATM Forum ...
- ◆ share people with other organizations
more effective than formal liaisons
but confuse other standards organizations
- ◆ growing area but culture clash
IETF is mostly bottoms up
competing architectural models
- ◆ new-work mailing list
to pre announce new working groups and BOFs
for representatives of other standards groups

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Top Level View



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Internet Research Task Force (IRTF)

- ◆ focused on long term problems in Internet
 - Authentication Authorization Accounting Architecture
 - Crypto Forum
 - End-to-End
 - Group Security
 - Internet Digital Rights Management
 - Interplanetary Internet
 - Network Management
 - Name Space
 - Reliable Multicast
 - Routing
 - Services Management

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Internet Architecture Board

- ◆ provides overall architectural advice
 - to IESG, IETF & ISOC
- ◆ appoints IRTF chair
 - approved IRTF research groups
- ◆ advises IESG on IETG working groups
- ◆ selects IETF-IANA
- ◆ oversees RFC Editor
- ◆ hosts workshops

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Internet Assigned Number Authority (IANA)

- ◆ assigns numbers and keeps them from colliding
 - protocol numbers
 - IP addresses
 - mostly delegated to IP Address registries
 - domain names
 - mostly delegated to DNS name registries
- ◆ functions split with the creation of ICANN
 - Internet Corporation for Assigned Names and Numbers
 - independent corporation to take over IANA functions
 - contract with US government

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RFC Editor

- ◆ was Jon Postel et al
 - now et al
- ◆ rfc-editor@rfc-editor.org
- ◆ funded by the Internet Society
- ◆ semi-independent
 - asks IESG for advice on publishing RFCs
 - but can exercise own discretion
 - presumption is to publish technically competent IDs
 - which can be a conflict with IESG/IETF

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IETF Secretariat

- ◆ located physically
 - Foretec - Reston Virginia
 - about 6 FTEs
- ◆ funded from IETF meeting fees
- ◆ runs
 - plenary meetings
 - mailing lists
 - Internet-Draft directory
 - IESG teleconferences
- ◆ coordinates
 - day to day work of IESG and working groups

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Selecting IETF Management

- ◆ IESG, IAB, & IETF Chair have 2-year terms
- ◆ picked by a nominations committee (nomcom)
 - nomcom chair appointed by ISOC president
- ◆ members selected randomly from list of volunteers
 - volunteers have to have been at 2 of last 3 IETF meetings
 - very** random selection process (RFC 2777)
- ◆ get list of jobs to fill from IETF chair
 - IETF chair, IESG & IAB members
- ◆ nominate one person for each job
 - IESG approved by IAB, IAB approved by ISOC BoT

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IETF Standards Process

- ◆ “rough consensus and running code”
 - rough consensus required not unanimity
 - interoperable implementations needed to advance standard
- ◆ multi-stage standards process
 - Proposed Standard: good idea, no known problems
 - Draft Standard: multiple interoperable implementations
 - Standard: market acceptance

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IETF Areas

- ◆ Applications Area
- ◆ General Area
- ◆ Internet Area
- ◆ Operations and Management Area
- ◆ Routing Area
- ◆ Security Area
- ◆ Sub-IP Area
- ◆ Transport Area

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A Distributed Process

- ◆ most IETF work is on mailing lists
 - face-to-face time is very small (a few hours per year)
- ◆ open subscription mailing lists
 - hundreds of subscribers on each list (thousands on some)
- ◆ unmoderated discussions
- ◆ editors/authors fold consensus points into working documents
 - called Internet Drafts
- ◆ chair(s) charged with determining consensus
 - note: “rough consensus”

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A Distributed Process, contd.

- ◆ Working Group consensus generally determined by issuing a “Working Group Last-Call”
 - a specific request to the working group email list for comments
- ◆ WG forwards consensus documents to IESG for review
- ◆ IESG first issues “IETF Last-Call”
 - a specific request to the IETF Announce list for comments
- ◆ i.e., aggressive attempt to ask community for input
 - but is the IETF “open”?

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Open?

- ◆ IETF (and other SDOs) often described as “open voluntary standards organizations”
 - open, in that anyone can join
 - in some SDOs you have to pay, but anyone can pay
 - voluntary, in that no one is forced to use the standards
- ◆ some disagreement on meaning of “open”
 - to some “open” means that potentially effected parties know about effort and can comment
 - IETF does not have a process to be sure that potentially effected parties are notified of IETF work in their area

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Public Policy Input

- ◆ design choices of technology can dictate usage
- ◆ standards organizations face many such design choices
 - e.g., support for strong end-to-end encryption
 - e.g., digital rights management
 - e.g., support for message modification between sender and receiver
 - e.g., support for “walled garden” architectures
 - e.g., support for wiretapping

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Lawful Interception

- ◆ IETF www.ietf.org/mailman/listinfo/raven

“raven” discussion in IETF resulted in a decision to not mandate intercept features
technical and logical reasons



- no consistent international definition
- no way to open a hole “just” for law enforcement
- IETF encourages end-to-end encryption

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Intellectual Property Rights

- ◆ IPR is a fact of life
 - some companies get > 1,000 patents a year
 - protection and barter
- ◆ IPR makes standards process much harder
 - what is a fair license?
- ◆ can not just standardize IPR-free technology
 - IPR can show up later
 - non-involved companies or submarine patents
- ◆ idealistic people in standards organizations are a problem
 - patents vs. good of the community

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IETF IPR Rules

- ◆ mostly disclosure-based
 - IPR holders (submitters or 3rd parties) must disclose relevant IPR or not take part in WG discussions
 - includes patent applications
- ◆ working group take IPR claims into account in selecting technology
- ◆ IETF currently looking at its IPR policies
 - new IPR Working Group
 - ipr-wg-request@ietf.org
 - archive at: www.ietf.org/mail-archive/working-groups/ipr-wg/current/maillist.html

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thank you for your attention

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