

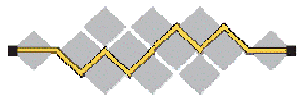
Introduction to the IETF and Its Standards Process

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San Salvador - 10 September 2012

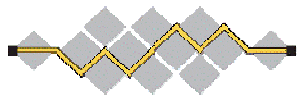
Internet Engineering Task Force

- “We make the net work”
- The mission of the IETF is to produce high quality, relevant technical and engineering documents that influence the way people design, use, and manage the Internet in such a way as to make the Internet work better. These documents include protocol standards, best current practices, and informational documents of various kinds. [RFC 3935]



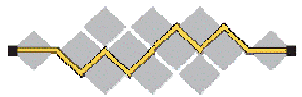
What Does the IETF Work On?

- “All things Internet ”
- The traditional building-blocks
 - IPv4, IPv6, TCP, SMTP, OSPF, IS-IS, BGP, HTTP, ...
- Later corner-stones
 - SIP, MPLS, Layer 2 & 3 VPNs, Internet Security, ...
- Future developments
 - RPL, Home Networking, Secure Inter-Domain Routing, ...
- In short, everything for IP and the Internet
- Obvious overlaps with other SDOs
 - Obvious lines of demarcation



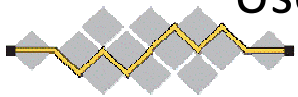
IETF History

- 1st meeting: Jan 16-17, 1986 (San Diego)
 - Simple charter
 - Work out short term engineering details (including protocols) for the Internet
 - Two days, 21 attendees
- Moved to meeting 4 times a year
 - More protocols to be discussed
 - Architecture became important
- Now 3 meetings each year
 - About 120 working groups
 - More than 1,000 people at each meeting



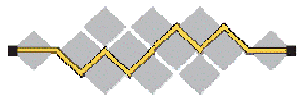
IETF – Not a Membership Organisation

- People, not companies
- Presence from all stakeholders
 - From equipment vendors
 - Development engineers
 - Product management
 - Standardisation departments
 - Network designers and operators
 - Test and research laboratories
 - Network planning departments
 - Real operators
 - Researchers
 - Government departments
 - Universities
 - Regulators
 - Increasing involvement
 - User groups and forums

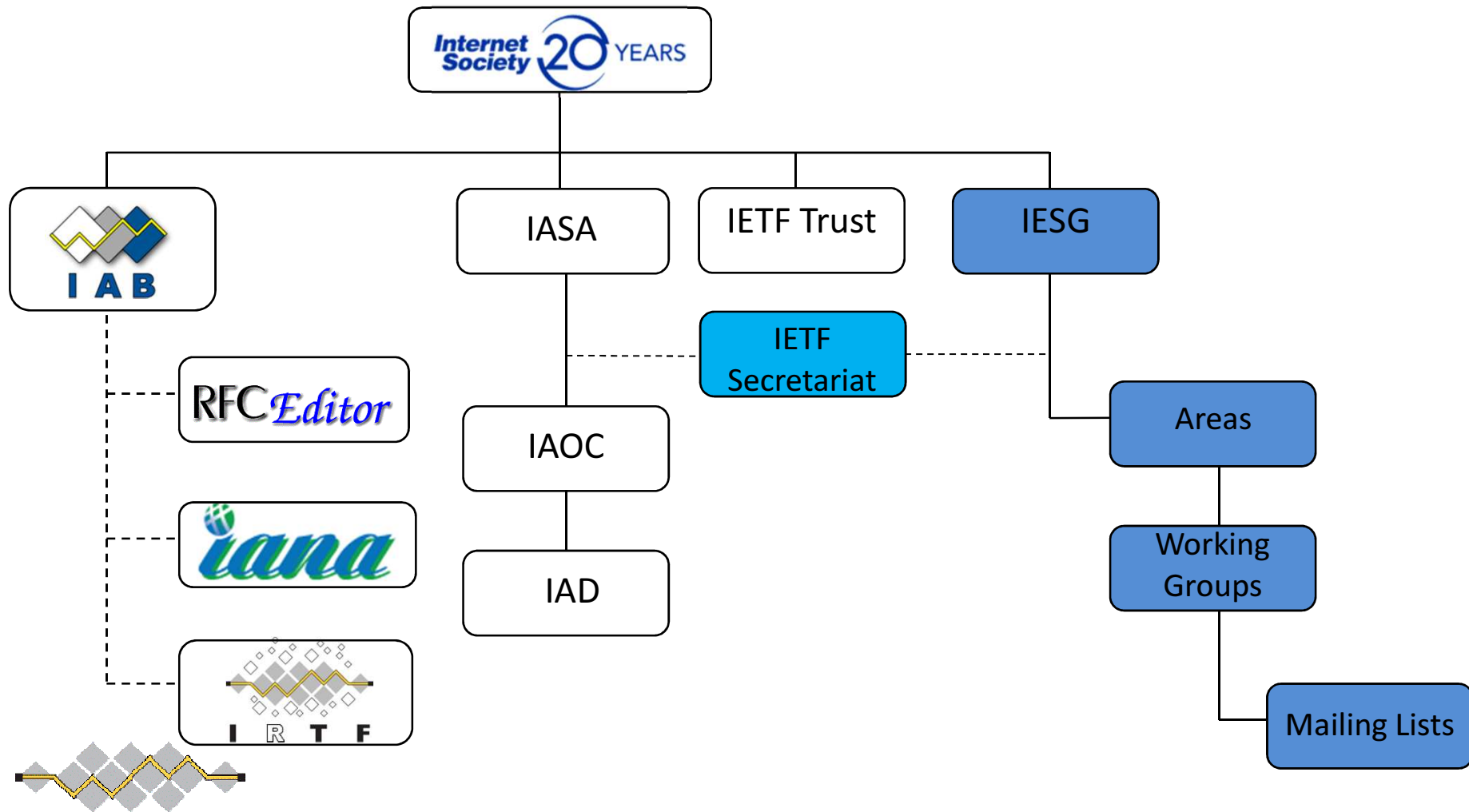


IETF Structure

- The IETF is not a legal entity
 - No members, participation as individuals
- 1000 to 1200 people at meetings 3 times per year
 - Many, many more people on mail lists
- 7 Areas, each lead by two Area Directors (ADs)
 - Except General Area is lead by IETF Chair
 - The 15 ADs constitute the Internet Engineering Steering Group (IESG)
- ~120 Working Groups (WGs)
 - Where the real work gets done
- IESG: Area management, standards approval
- IAB: architectural guidance, liaison, oversight
- IAOC: oversees budget, contracts, and IPR

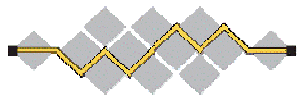


IETF Organisational Overview



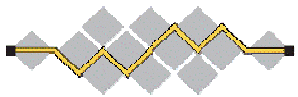
IETF Process

- Meetings are for discussions not decisions
 - Corridor meetings generate a lot of progress
- Work is done outside of the meetings (mailing lists)
- Wide open approach
 - Meeting open to all, no membership, no formal votes
 - Working documents are public, easy to find (ASCII)
 - Anyone can (and does) bring in proposals
 - Only language is English ☹
- IETF attracts broad set of experts
- Process allows for constructive clash / contrast of ideas
 - This is a great (and intense) education
- Every standards body attracts good and bad ideas ...
 - IETF process is good at separating these out
 - “Running code and rough consensus”



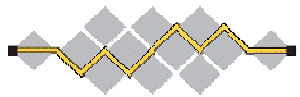
IETF Culture

- IETF is like nothing else
- “We reject kings, presidents and voting. We believe in rough consensus and running code.” Dave Clark (1992)
- Rough consensus
 - We don’t vote
 - We don’t require 100% agreement
 - We accept compromise decisions
 - Opinions in meetings often taken using a hum!
 - Decisions on mailing lists depend upon the experience and reputation of the speakers, and the technical merit of the argument
 - Implementation and deployment is a very strong argument
- The culture often feels very “American”
- Company names are not used (much)
- Intellectual property is very sensitive
 - Early disclosure
 - “I won’t, if you don’t” license terms

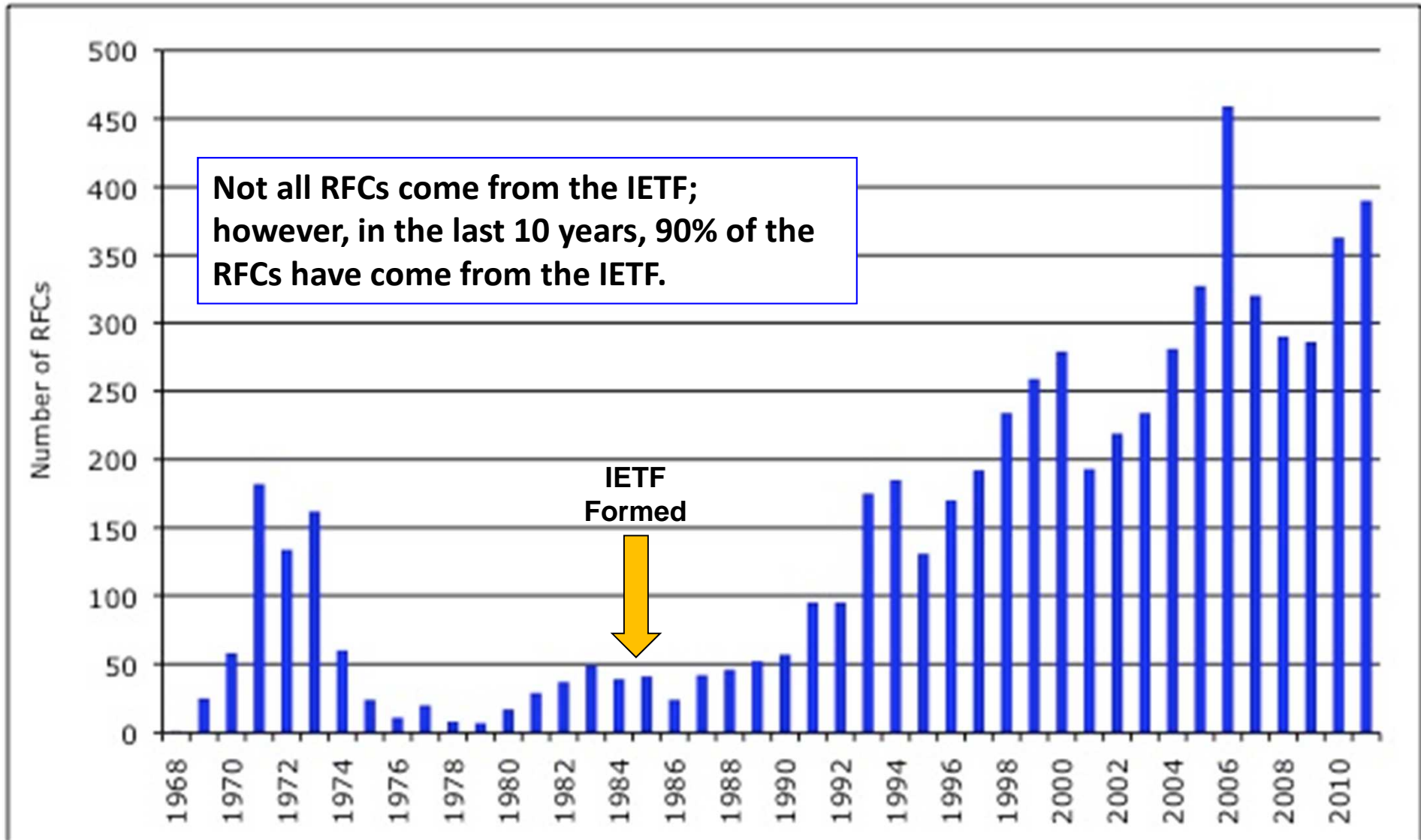


IETF Open Standards

- Technical specifications and informational statements are published as *Request For Comment* documents (RFCs)
- Working documents are called *Internet-Drafts* (I-Ds)
- Open participation
 - Anyone or group of individuals can post an I-D
 - Everyone can contribute through open mailing lists
 - All RFCs and I-Ds can be freely downloaded (in ASCII)
- No-one is “in charge” of the Internet
 - Many people cooperate to make it work
 - Each person brings a unique perspective
 - Diversity may make it hard to reach consensus, yet, when consensus is achieved, the outcome is better, clearer, and more strongly supported than the initial position of any participant

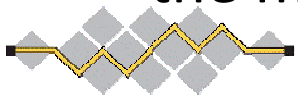


RFCs Published 1969 - 2011



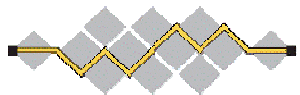
The Modern Paradigm for Standards

- www.open-stand.org
- **Cooperation** between participants and SDOs
- **Principles** of due process, broad consensus, transparency, balance, openness
- **Collective Empowerment** of all participants to produce standards chosen on technical merit, providing global interoperability, scalability, stability, and resiliency, enabling global competition, promoting innovation and to the benefit of humanity
- **Availability** of all standards to everyone, and implementation under fair terms
- **Voluntary Adoption** of standards with success defined by the market



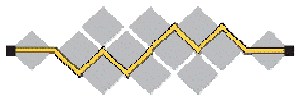
How to Participate in the IETF

- Technical cooperation
 - Most work has co-authors from competing companies
 - Constructive review on mailing lists
 - Implementation, interoperability, or deployment feedback
- New work
 - Write and submit an Internet-Draft
 - Important to be clear and readable
 - Readers **MUST** understand the requirements
 - Solution details (bits and bytes) are less important at the early stages
 - Discuss it on the mailing list
- Major new work
 - This is much less common
 - Leads to a new working group (fewer than 10 each year)
 - Process needs support from an Area Director



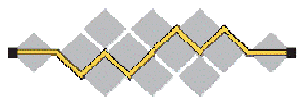
Work in the IETF

- IETF takes on new work when...
 - There is a problem that needs to be solved
 - The scope is well defined and understood
 - Agreement on specific deliverables
 - Reasonable probability of timely completion
 - There are people willing to do the work
- The IETF is the right place when...
 - The problem fits one of the IETF Areas
 - Work may span Areas
 - Work may span SDOs
 - Can take *significantly* more effort to be successful
 - Cultural and procedural differences create hurdles
- The IETF is successful when...
 - Participants care about solving the problem
 - Participants represent all stakeholders
 - Successful Internet protocols have come from top-down and bottom-up approaches
 - Bottom-up is more common today
 - Most things are incremental improvements



IETF Relationships with Other SDOs

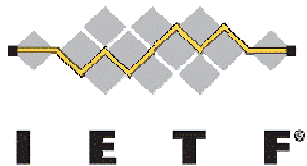
- IAB appoints individuals to serve as liaison managers with specific SDOs
 - Sometimes multiple, subject-specific liaison managers
- IAB has focus on strategic concerns, transparency, and architecture
- IESG has focus on tactical and technical concerns, and specific standards
- New-work mail list intended to highlight overlap between two SDOs early in the process
- Liaison statements are posted for all to see:
<https://datatracker.ietf.org/liaison/>



IETF Moto

“We reject kings, presidents and voting. We believe in rough consensus and running code.”

Dave Clark, MIT

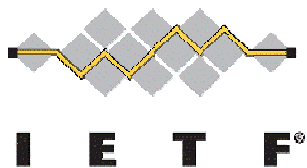


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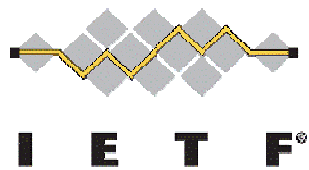
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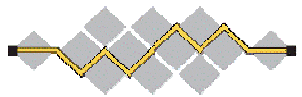


Supplementary Background on the IETF



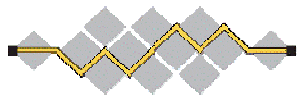
Ethos of the IETF

- IETF uses an open standards process
 - All interested people are invited to participate
 - Even if unable to attend the face-to-face meetings, join mail list discussions
 - All documents are online, available to everyone
- One Internet
 - Open standards for a global Internet
 - Maximum interoperability and scalability
 - Avoid specialized protocols in different places
 - Contributions are judged on their technical merits:
rough consensus and running code



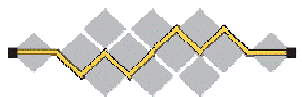
IETF Management

- **IETF Chair**
 - Chair of the IESG, AD for General Area, member of the IAB member, and IAOC member
 - Often seen as spokesman for the IETF
- **Area Directors (AD)**
 - Two ADs for each Area, except General Area
- **Internet Engineering Steering Group (IESG)**
 - ADs sitting as a body
- **Internet Architecture Board (IAB)**



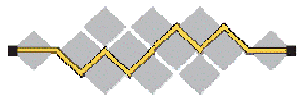
Area Directors

- Responsible for setting direction in the Area
- Responsible for managing process in the Area
 - Approve Birds of a Feather (BOF) sessions
 - Appoint working group chairs
 - Oversee working group charters
 - IESG and IAB involved in charter approval
- Review all working group documents prior to IESG evaluation
 - IESG approves all IETF RFCs



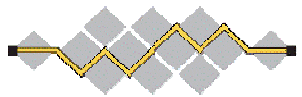
IETF Areas

- Applications
- Internet
- Operations and Management
- Real-time Applications and Infrastructure
- Routing
- Security
- Transport
- General Area
 - Mainly process and policy



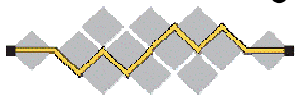
Working Groups

- WGs are primary mechanism for development of specifications and guidelines
- IESG approves WG charters with IAB input
 - Generally short-lived; address a specific problem or produce specific deliverables
 - Sometimes long-lived for protocol maintenance
- No formal membership; participation open to all
 - Every WG has a mail list
- WG Chair
 - Drives / encourages work to deliver on the charter
 - Sets agenda for meetings
 - Appoints document editors
 - Determines when rough consensus has been reached

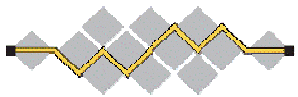
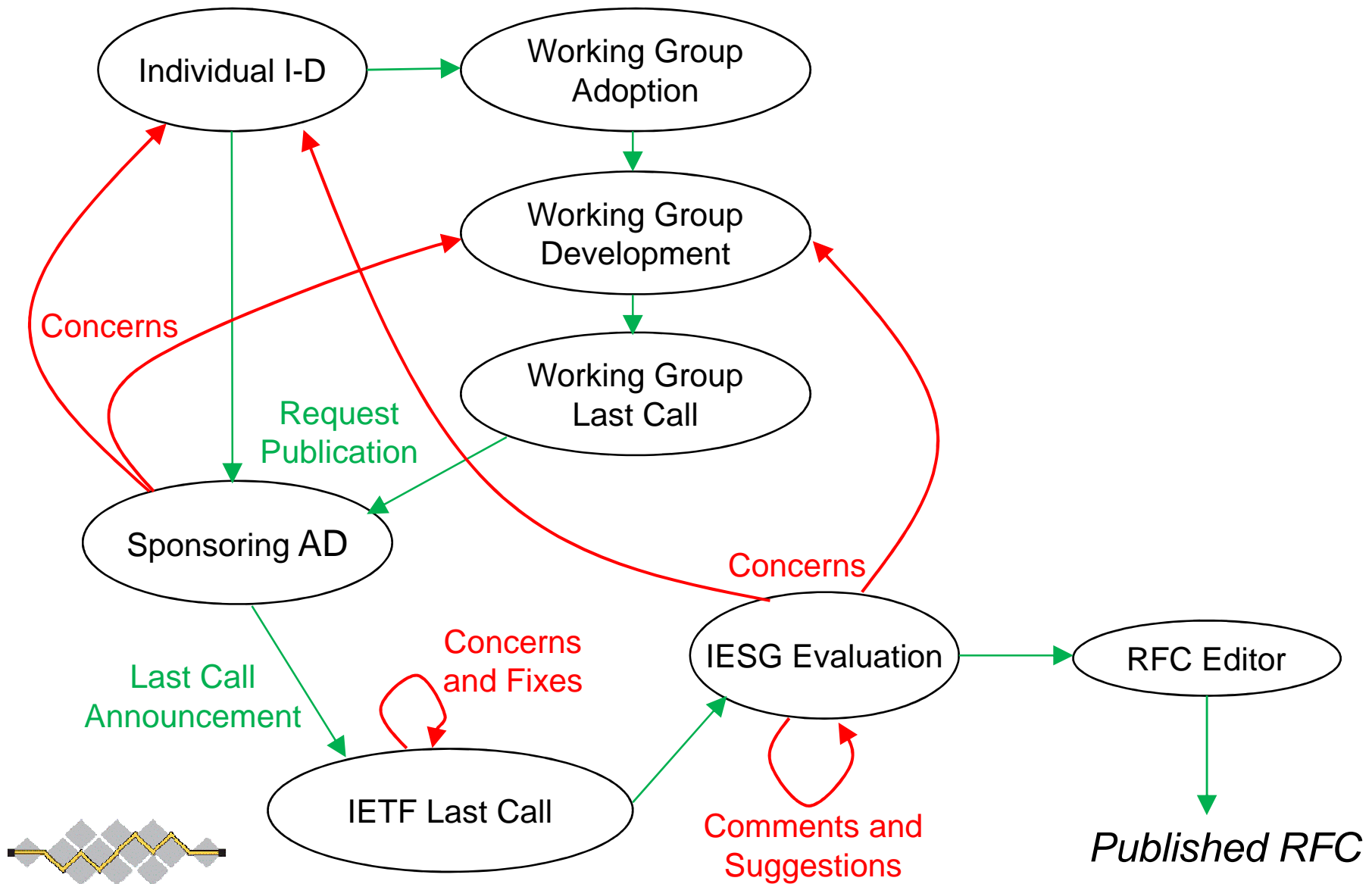


Working Group Creation

- Proposals usually supported by Internet-Drafts
- Birds of a Feather meetings (BoFs)
 - To investigate an idea
 - To judge support in the community
 - To agree a focus for work
- Working group chartered by an Area Director
 - Needs IESG review and support
 - Needs community review and (rough) consensus
 - Circulated to other SDOs for comment
 - On New Work mailing list



IETF RFC Approval and Publication



Appointments Process

- IETF Chair, ADs, IAB and 2 IAOC members are picked by a Nominations Committee
 - NomCom Chair appointed by ISOC president
- Volunteers serve as NomCom voting members
 - Must attend 3 of last 5 IETF meetings
 - Ten voting members randomly selected from the volunteer pool
 - No more than two from any one affiliation
- NomCom solicits candidates for open positions
- NomCom takes feedback and input from the community
- NomCom picks each person for a 2 year term
- Confirmation before names are announced
 - IETF Chair and ADs confirmed by IAB
 - IAB confirmed by ISOC Board of Trustees
 - IAOC confirmed by IESG

