

Introduction to the Internet Engineering Task Force



I E T F[®]

Russ Housley

21 June 2015

Vigil
Security
LLC

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]

IETF Participants

The Internet Engineering Task Force is a loosely self-organized group of people who contribute to the engineering and evolution of Internet technologies. It is the principal body engaged in the development of new Internet standard specifications.

[RFC4677]

- Everyone is invited to participate
- An open and international community
- Interested individuals, not companies
- Goal: rough consensus – no voting

Open Standards

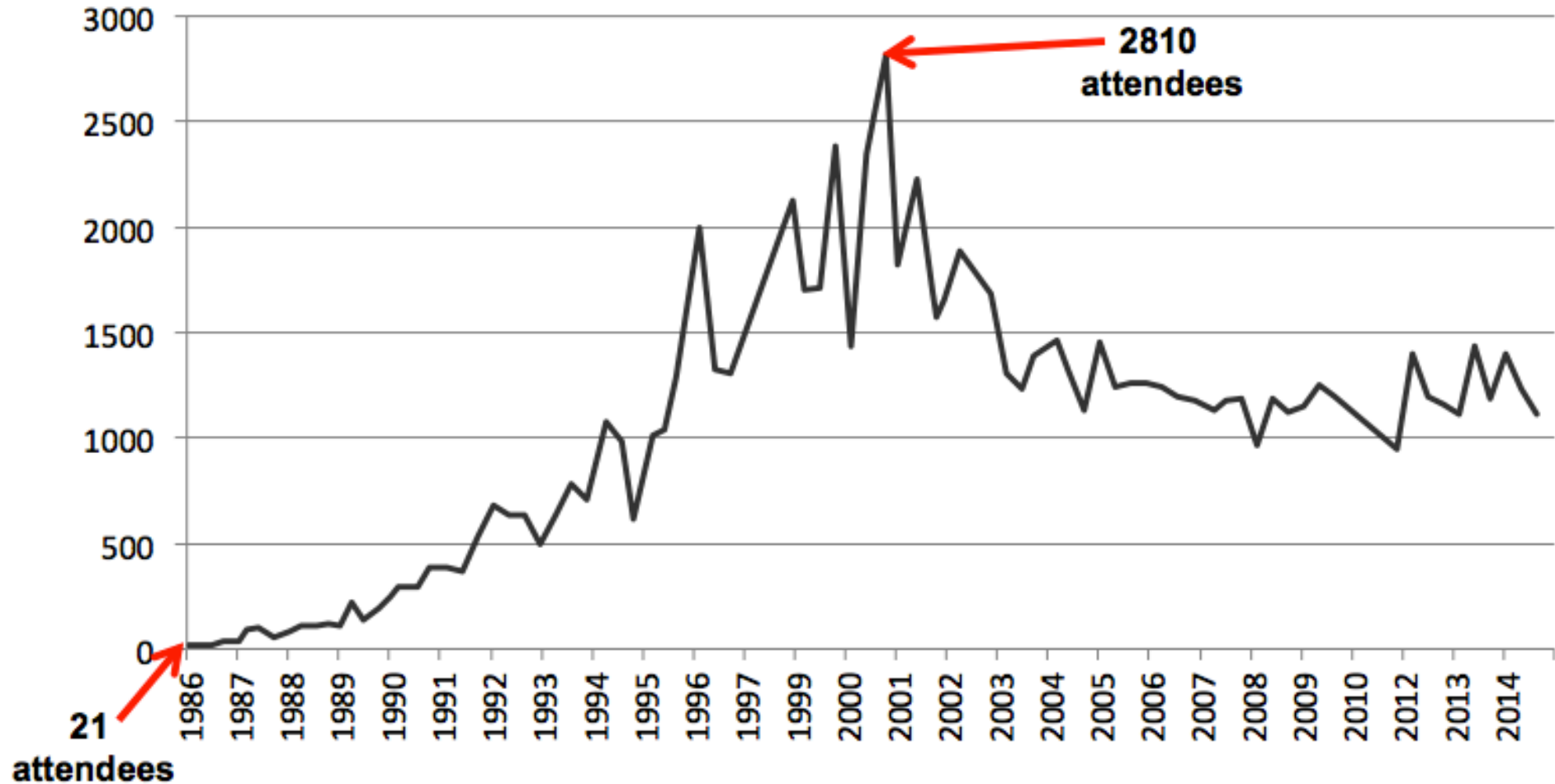
The mission of the IETF is to make the Internet work better. However, no one is “in charge” of the Internet. Instead, many people cooperate to make it work. Each person brings a unique perspective of the Internet, and this diversity sometimes makes it difficult to reach consensus. Yet, when consensus is achieved, the outcome is better, clearer, and more strongly supported than the initial position of any participant.

IETF Motto

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

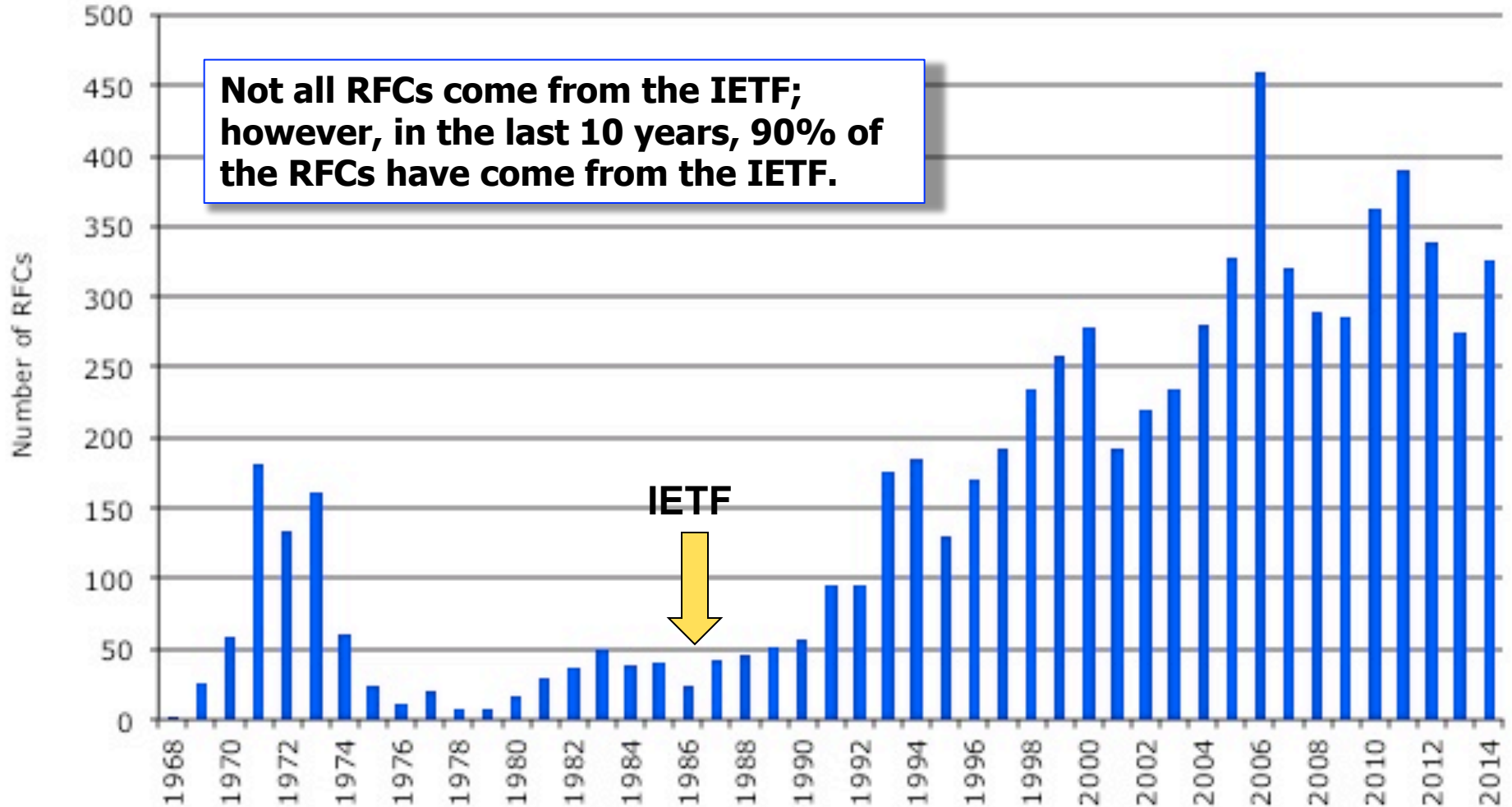
Dave Clark, MIT

IETF Meeting Attendance



RFCs Published

**Not all RFCs come from the IETF;
however, in the last 10 years, 90% of
the RFCs have come from the IETF.**



IETF Document Format

- English is the official language of the IETF
 - Blanket permission is given to translate any IETF document to other languages
- ASCII is used today
- Moving to XML for authoritative format soon
 - Produce plain text, HTML, and PDF
- After 44 years, everyone can still read the RFCs
 - See RFC 20

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 merits:
rough consensus and running code

IETF takes on work when ...

- The problem needs to be solved
 - Avoid specialized protocols in different places
 - Research complete; engineering work needed
- The scope is well defined and understood
- Agreement on specific deliverables
- Reasonable probability of timely completion
- People willing to do the work

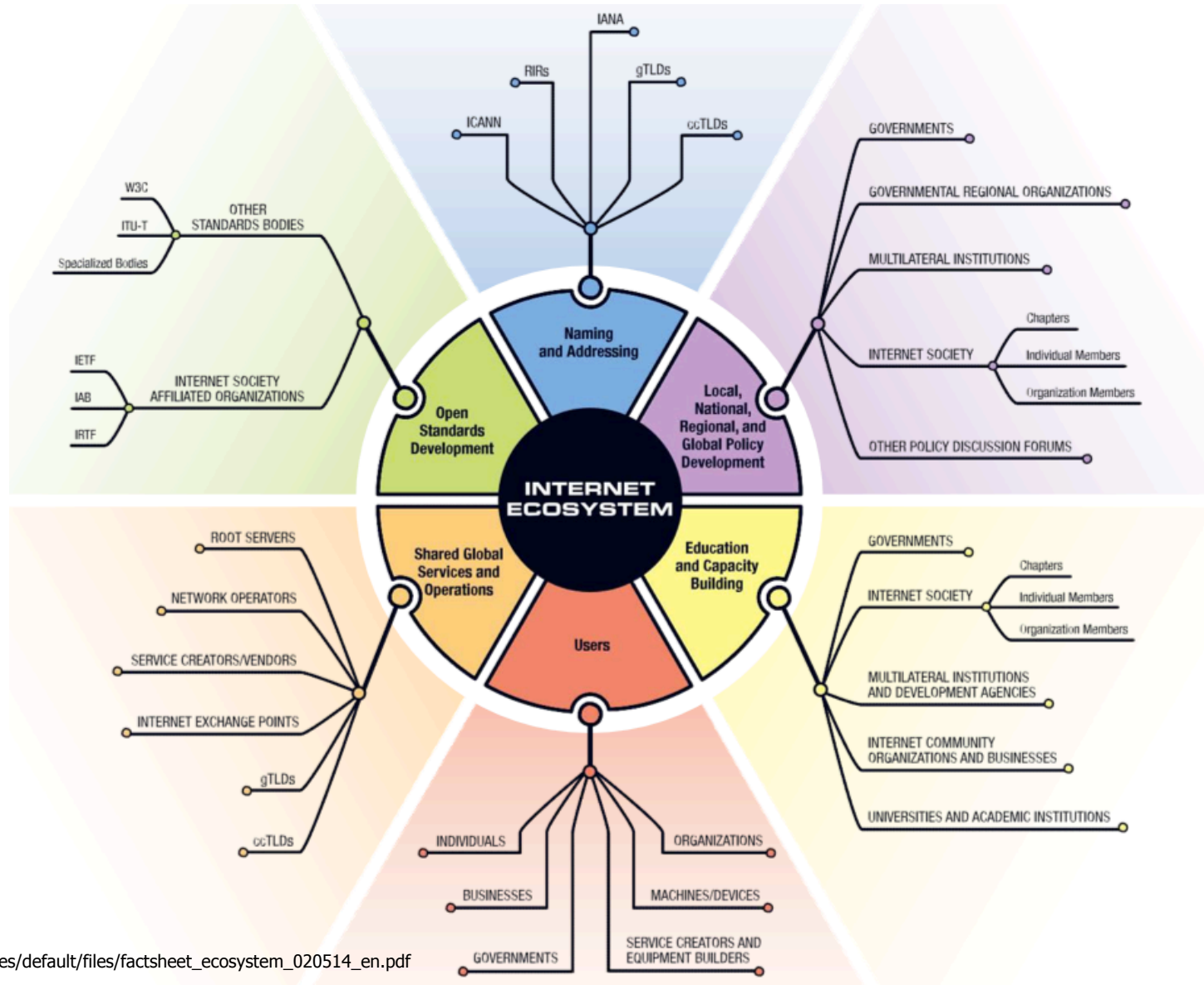
IETF is most successful when ...

- Participants care about solving the problem
- Participants represent all stakeholders

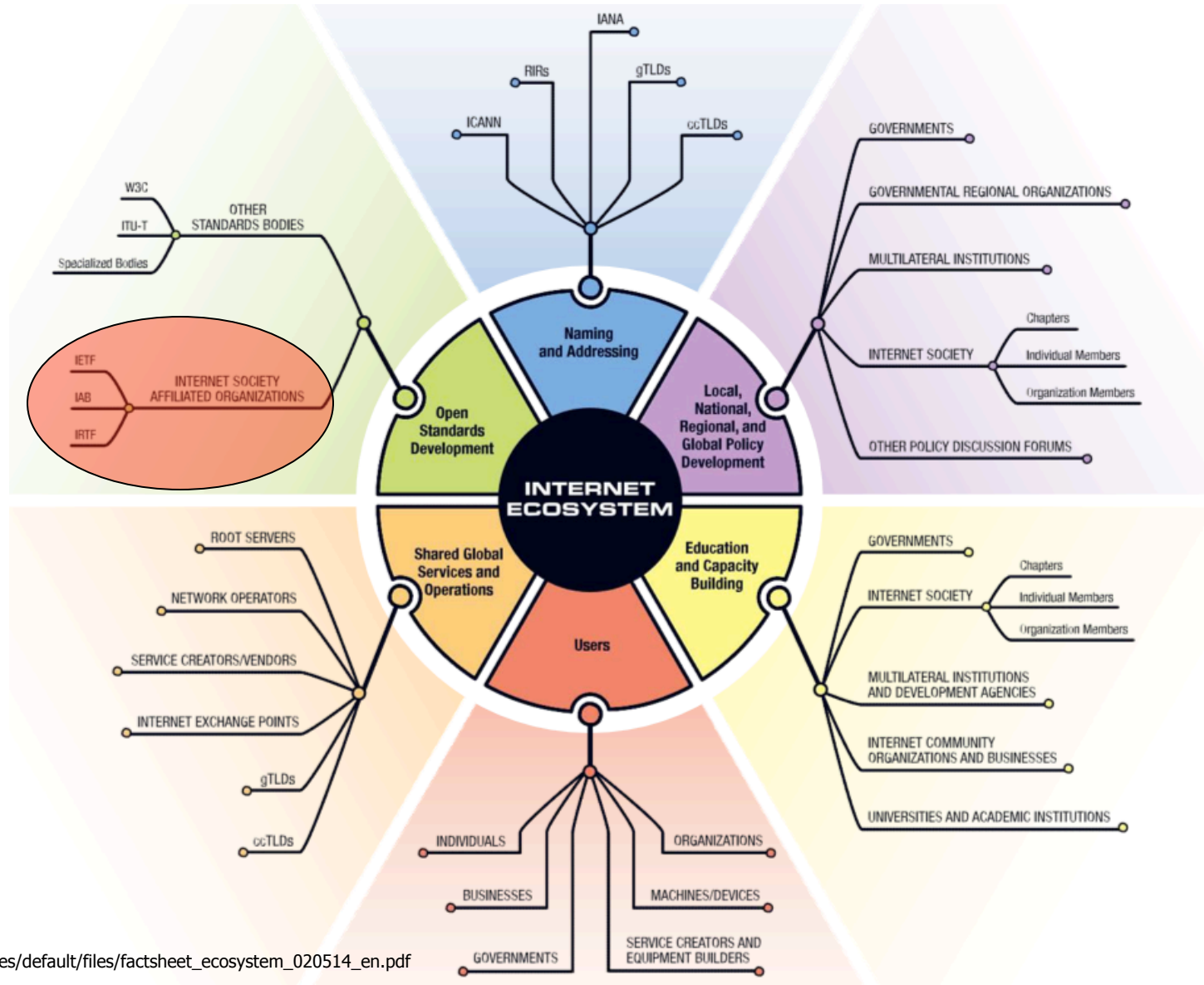
However,

- Have had bad experiences with problems that span Standards Development Organizations (SDOs)
 - Must be vitally important topic to do it again
 - Note: WEBrtc and RTCweb seems to be working very well between IETF and W3C

The Internet Ecosystem



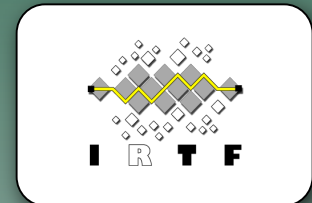
Internet Engineering Task Force



IETF Structure Overview

- The IETF is not a legal entity – no members
- 1000 to 1200 people at 3 meetings each year
 - Many more people on mail lists
- About 120 Working Groups (WGs)
 - Where the real work gets done
- Six Areas, each lead by two or three Area Directors
 - Except General Area is lead by IETF Chair
- IESG: Area management, standards approval
- IAB: architectural guidance, liaison, oversight
- IAOC: oversee budget, contracts, and IPR

IETF Organizational Overview



IETF Secretariat

RFC Editor



Internet Society (ISOC)

- Administrative “home” for the IETF and the IAB
 - Neither the IETF nor the IAB are legal entities
 - ISOC was formed when the NSF stopped funding the IETF Secretariat
 - IETF Administrative Director (IAD) is an ISOC employee and manages all of the contracts that support the IETF
 - ◆ The only person that “works for” the IETF
- President of ISOC appoints the IETF Nominations Committee Chair, kicking off the process to select IETF leaders

Internet Architecture Board (IAB)

- Provides overall Internet architecture *advice*
- Provides technical advice to the Internet Society
- Manages external liaison relationships for IETF
- Appoints the RFC Editor and oversees RFC series
- Selects IANA registry operator for protocol parameters and oversees their operation
- Confirming body for the IESG membership
- Appeals
 - IAB is the final step for all technical appeals
 - ISOC Board is the final step for process appeals

IETF Areas

- **Areas** are led by Area Directors (ADs)
 - **GEN** – General – led by IETF Chair
 - **ART** – Applications and Real Time – 3 ADs
 - **INT** – Internet – 2 ADs
 - **OPS** – Operations & Management – 2 ADs
 - **RTG** – Routing – 3 ADs
 - **SEC** – Security – 2 ADs
 - **TSV** – Transport and Services – 2 ADs

Area Directors (ADs)

- Each Area has two or three ADs, except General Area
- Responsible for guiding direction in Area
- Responsible for managing process in Area
 - Appoint Working Group (WG) Chairs
 - Close WGs when work is complete or focus is lost
- Review WG documents for sound technical solution as well as proper process

Internet Engineering Steering Group (IESG)

- **Fifteen ADs**, includes IETF Chair for General Area
- Process management and IETF RFC approval body
- Approves Working Group creation and charter
- Reviews technical solution and process
 - Multi-disciplinary technical review
- Approves publication of all IETF documents
 - Ensures that non-IETF RFCs are not an “end run” around Internet standards process

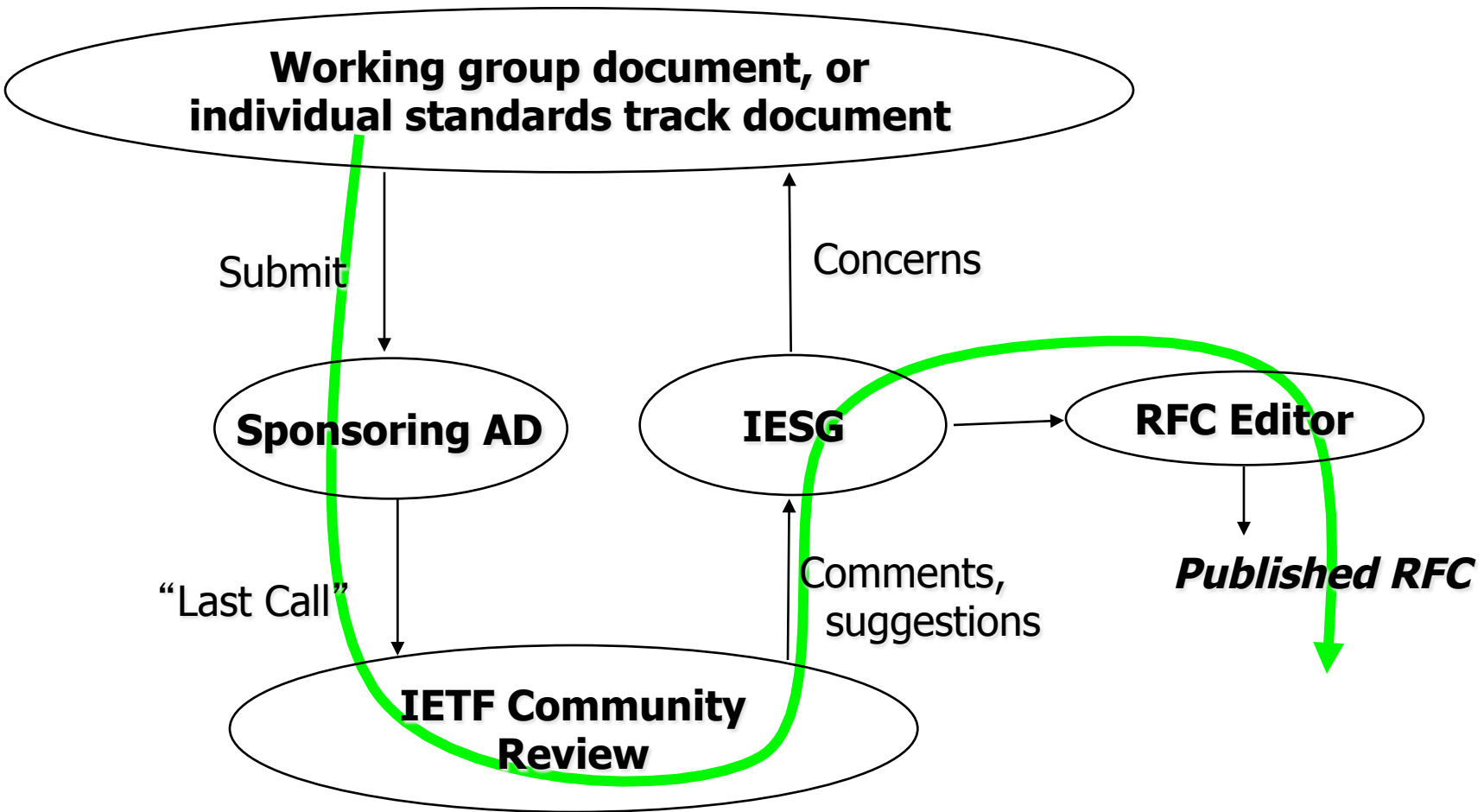
Working Groups

- 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
- No formal membership; participation open to all
 - ◆ Every WG has a mail list
- WG Chair
 - Sets agenda for meetings
 - Appoints document editors and optional WG secretary
 - Determines when rough consensus has been reached

Rough Consensus

- No defined IETF membership; just participants
We believe in rough consensus and running code
- Does not require unanimity
- Without constituency, no formal voting
 - Sense of room often gauged by hum
- Disputes are resolved by discussion
- Decisions verified on mail list
 - Ensures that people that are not present at a face-to-face meeting have their say

IETF Standards Approval



IETF Standards Process (1 of 2)

- **Identify Need**
 - Birds of a Feather (BOF) Session often used to demonstrate the need, show there is a constituency, and identify people willing to do the work
 - Compose a draft charter for the Working Group
- **Organize Working Group**
 - Working Group charter approved by the IESG
 - Open mail list discussions and open meetings
- **Develop Draft**
 - Internet-Draft documents are public
 - Small Design Team often tackles a technical issue

IETF Standards Process (2 of 2)

- **Formal Review**
 - Working Group Last Call is optional
 - Area Director review
 - IETF-wide Last Call
- **Approve Standard**
 - IESG evaluates and approves document
- **Publish Approved Standard**
 - RFC available for free download
 - IETF Trust and the authors hold copyright

Nominations Committee

- IETF Chair, ADs, IAB and 2 of the IAOC members are picked by Nominations Committee (NomCom)
 - NomCom Chair appointed by ISOC President
- Volunteers serve as NomCom voting members
 - Volunteers must attend 3 of last 5 IETF meetings
 - Ten voting members are randomly selected from the volunteer pool
- NomCom picks one 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

IANA Protocol Parameter Registries

- Registries of parameter values used in Internet protocols are stored and maintained by the IANA, subject to policy in RFCs
- For a number of years, this IANA function has been provided by ICANN, formalized through MoU signed 2000 [RFC 2860]
- Over time, processes and role definitions have evolved, and have been documented in supplemental agreements, often called the Service Level Agreement (SLA).

IANA Stewardship Transition

- ICANN has contract with the US NTIA
- In March 2014, NTIA announced intention to transition out of IANA stewardship role
- NTIA requested a transition proposal and provided evaluation criteria

IETF IANAPLAN WG (1)

- The IANAPLAN WG is in the General Area
- Produce an IETF consensus on expected interaction between the IETF and the operator of protocol parameters registries
- Address the implications NTIA moving out of its current role with respect to the protocol parameters registries
- Focus on continuation of current arrangements
- Minimal change in oversight is preferred

IETF IANAPLAN WG (2)

- WG is chartered solely for planning needed for the IANA stewardship transition
- WG will request IAB and IAOC to produce any needed documentation or agreements
- WG may also review proposals made by other communities regarding the transition of other IANA functions, especially the impact on the protocol parameter registries

Protocol Parameter Registry Transition Proposal

- IANA WG proposal was delivered to the IANA Stewardship Transition Coordination Group (ICG) in January 2015
- <https://www.ietf.org/id/draft-ietf-ianaplan-icg-response-09.txt>

IETF Summary

- **The Internet works on IETF standards!**
- IETF uses an open standards process
 - Everyone is invited to participate
 - All documents available to public for free
 - Join mail list discussions, and face-to-face meetings if able
- One Internet
 - Open standards for a global Internet
 - Maximum interoperability and scalability
 - Avoid specialized protocols in different places

IETF Summary – IETF Movie

http://www.youtube.com/watch?v=tqc8vd_jPpg

Questions?

Russ Housley

Phone: +1 703 435 1775

Email: housley@vigilsec.com



Engineering the Internet's Future for 25 years.

IETF

Internet Engineering Task Force

www.ietf.org