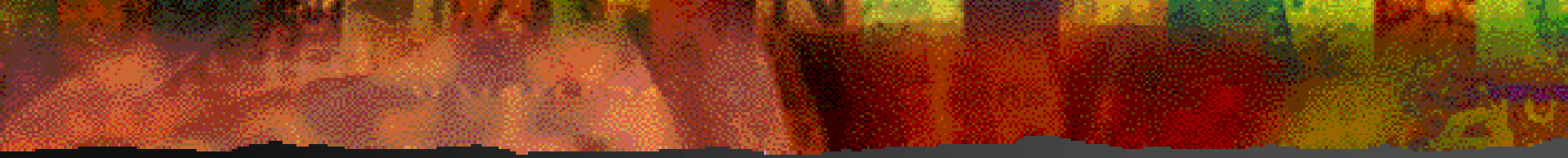


What is the IETF?

Keeping one Internet

Harald Alvestrand, IETF chair

Nordunet, Copenhagen, April 2002

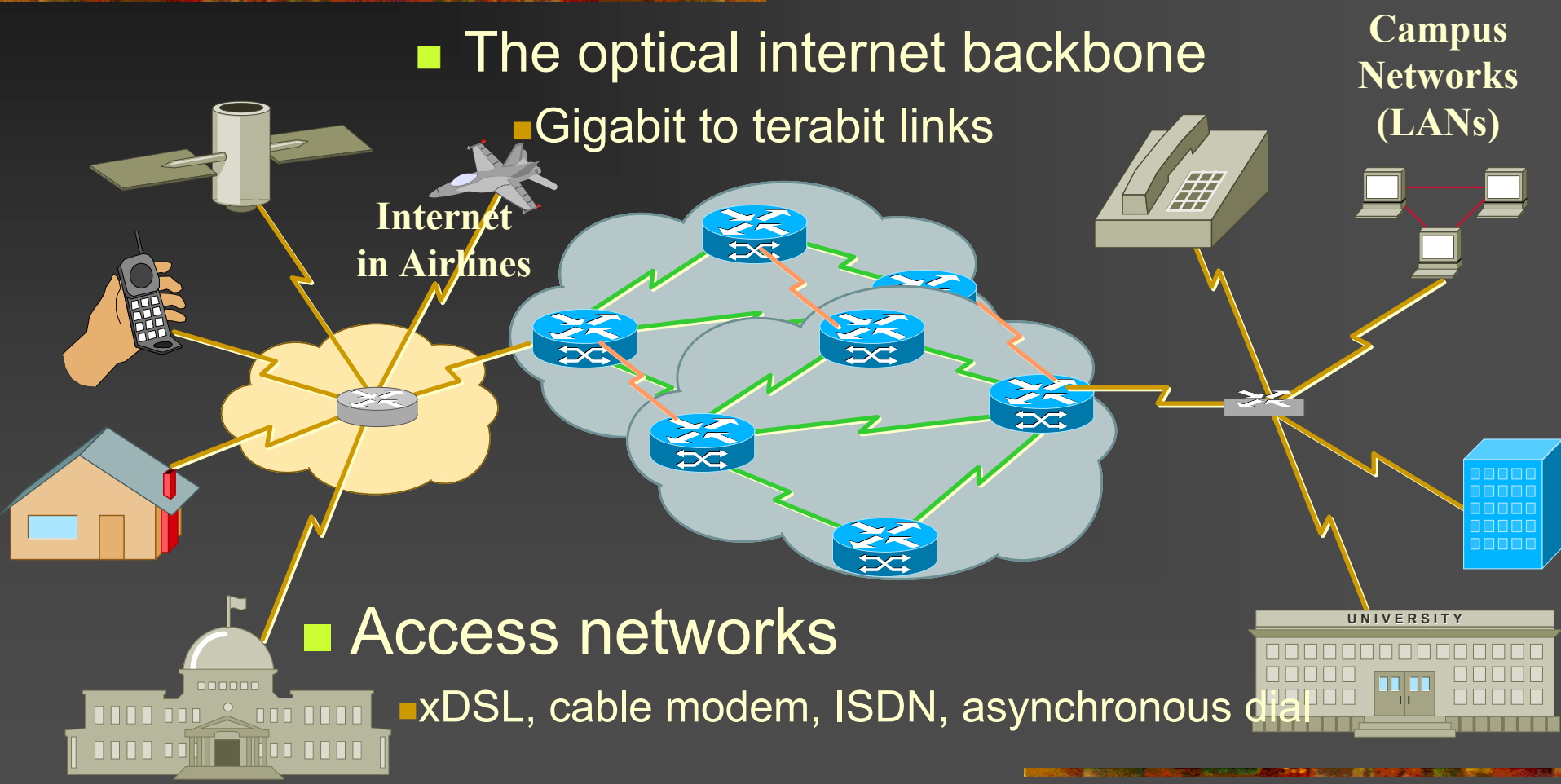
The IETF in review

- What is the Internet?
- What is the IETF?
- What does the IETF work on?
- What challenges do we face?

The Internet Tornado

The Internet today

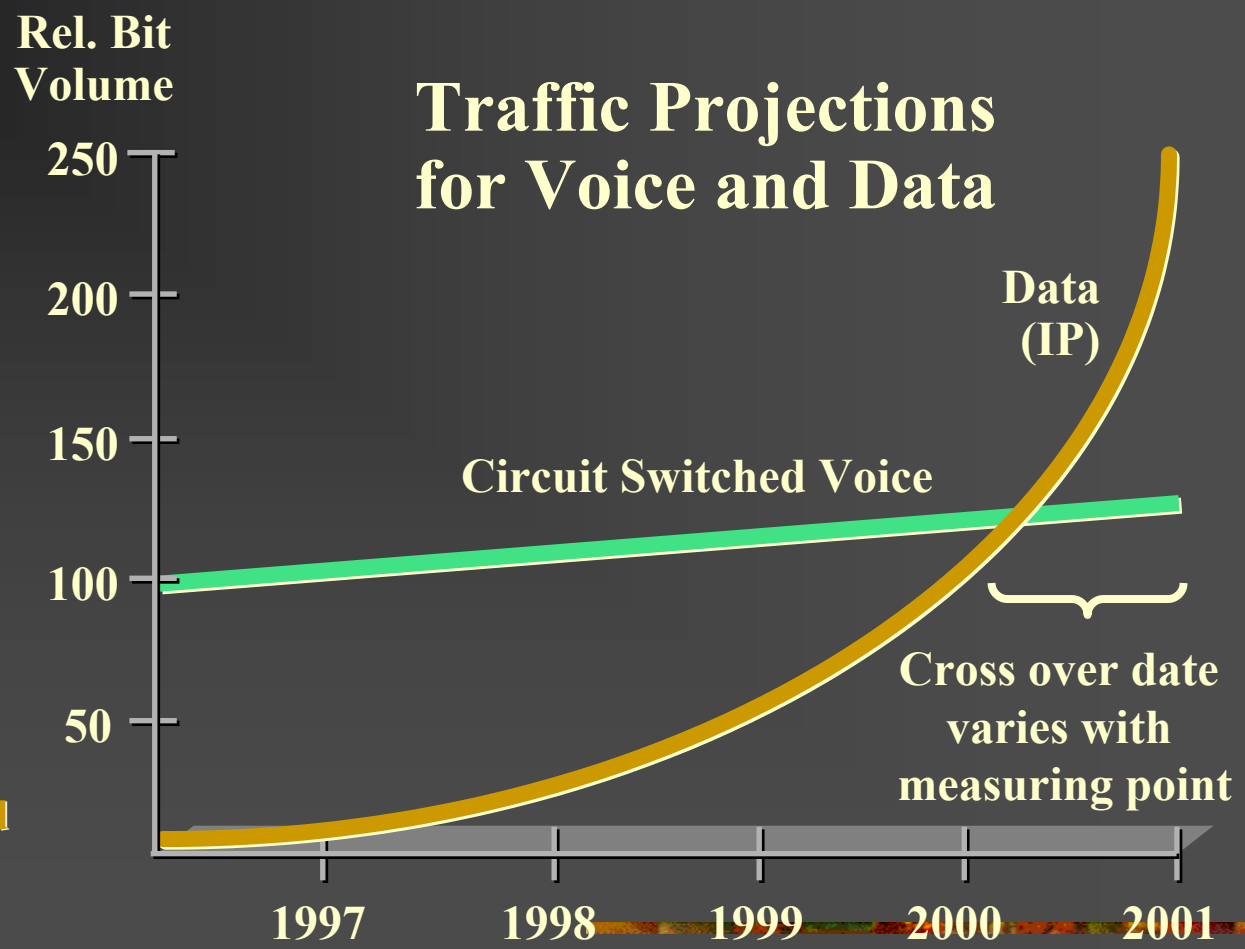
- The optical internet backbone
  - Gigabit to terabit links



- Access networks
  - xDSL, cable modem, ISDN, asynchronous dial

Growth of IP Traffic

- Email
- Information search/access
- Subscription services/“Push”
- Conferencing/ multimedia
- Video/imaging



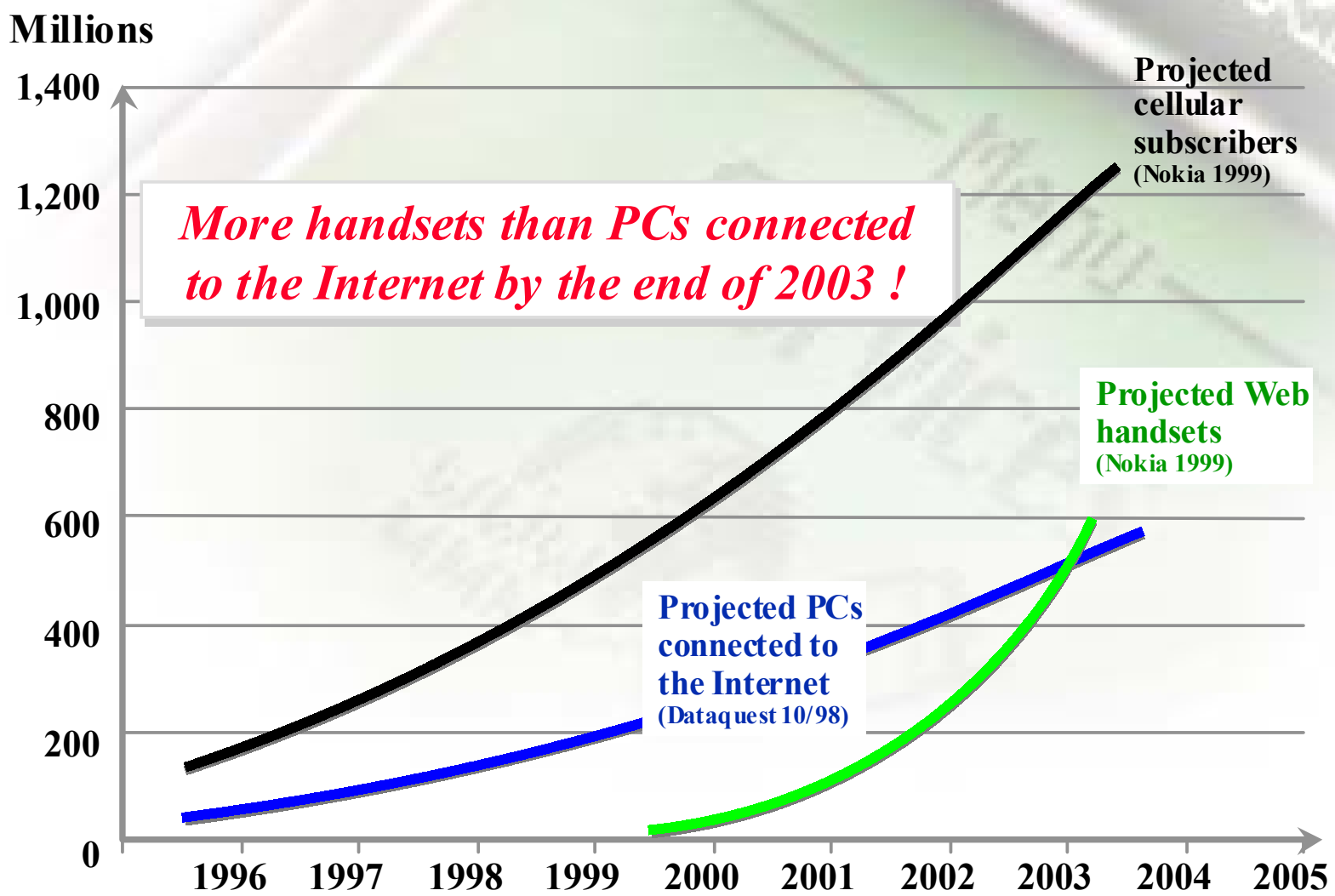
“From 2000 on, 80% of Service Provider Profits Will Be Derived from IP-Based Services.” Source: CIMI Corp.

Source: Multiple IXC Projections

Wireless Internet

- Internet—anytime, anywhere
- Internet to the masses
- Conquering the digital divide

Mobile Internet Outlook



NOKIA

Internet Engineering Task Force (IETF)

- Historical developer of Internet-related protocols
  - Http://www.ietf.org
- Consortium of individuals from
  - Research, Education, Network operators, and Internet vendors

Fundamental working principle

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

Dr. David C. Clark,
Massachusetts Institute of Technology

Copenhagen, April 2002

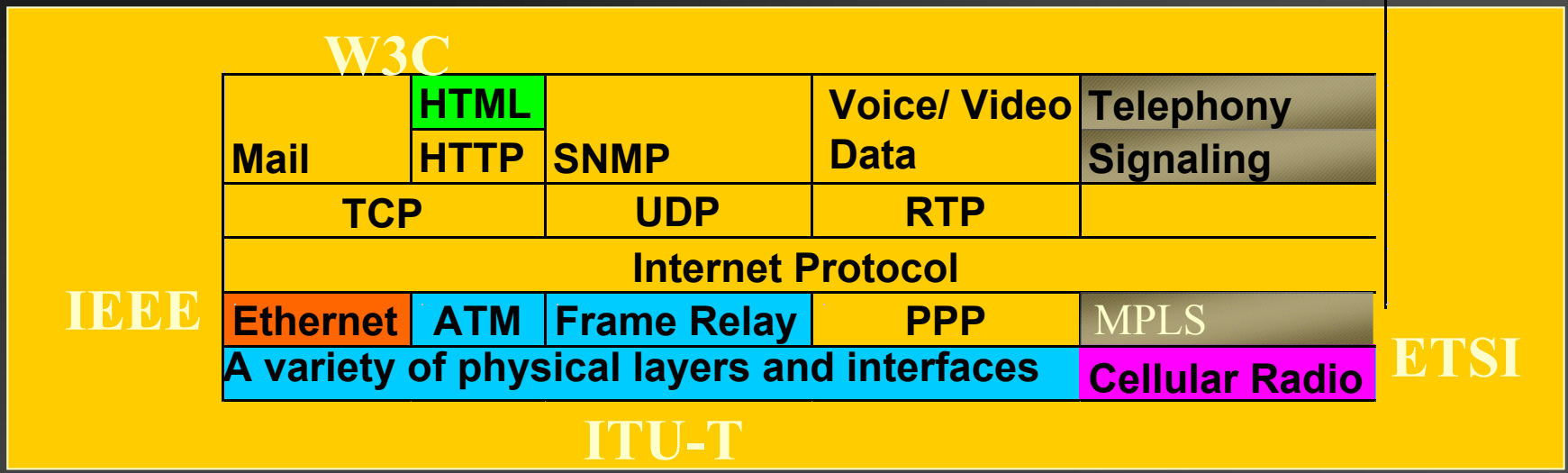
Fundamental perspective of enlightened self-interest

- There is no one organization or company which has a corner on intelligence or expertise
  - Good ideas that help our users come from everywhere and anywhere
- Therefore, our separate markets grow interdependently-
  - For many functions, the value grows with the number of nodes connected – sometimes dramatically.

Ask the real question

- Real life requirements
- Real life challenges
- A good deal of imagination is required
- The one who can use the Internet most effectively will be the one who succeeds

How IETF sees work divided



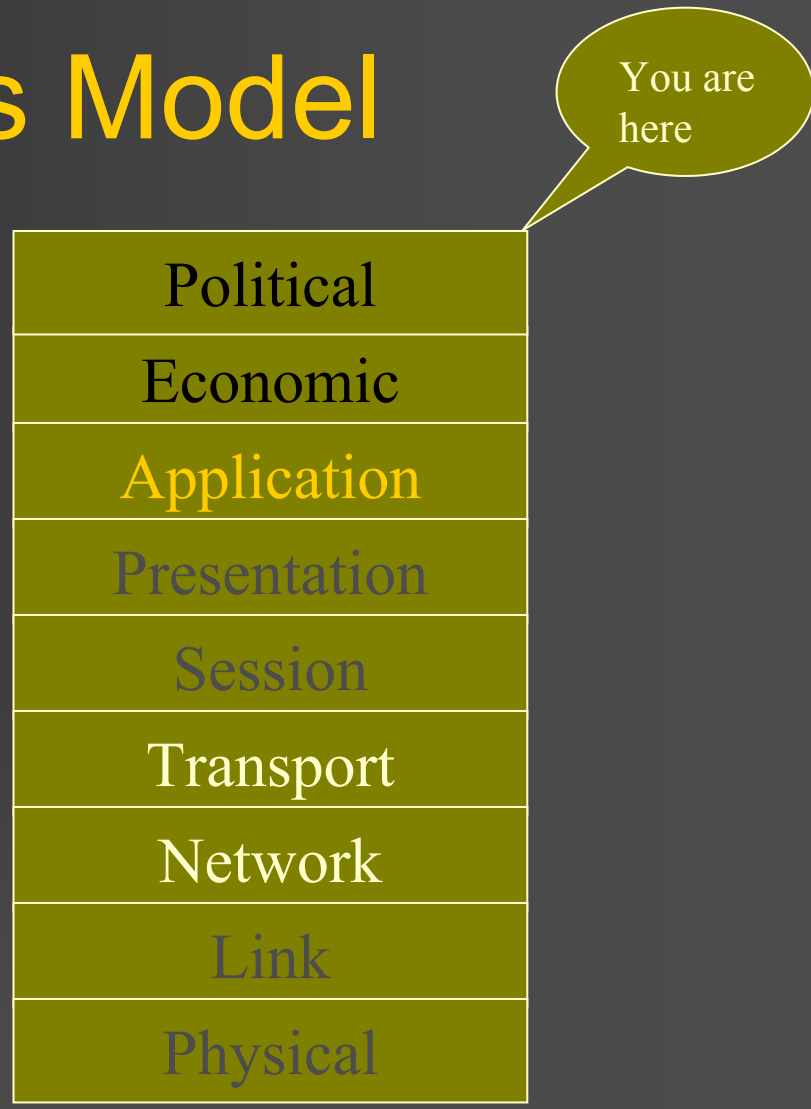
- IETF wants to make the Internet work

IETF: infrastructure applications

- SNMP management
- SMTP mail
- DNS name services
- LDAP directory services
- Telnet virtual terminal protocol
- FTP file transfer
- HTTP web transfer
- And more...

The Network Layers Model

- IETF is middle layers
- HOW, not WHY
- However....
  - Technology influences policy
  - All participants are policy actors TOO
- Not an easy balance!

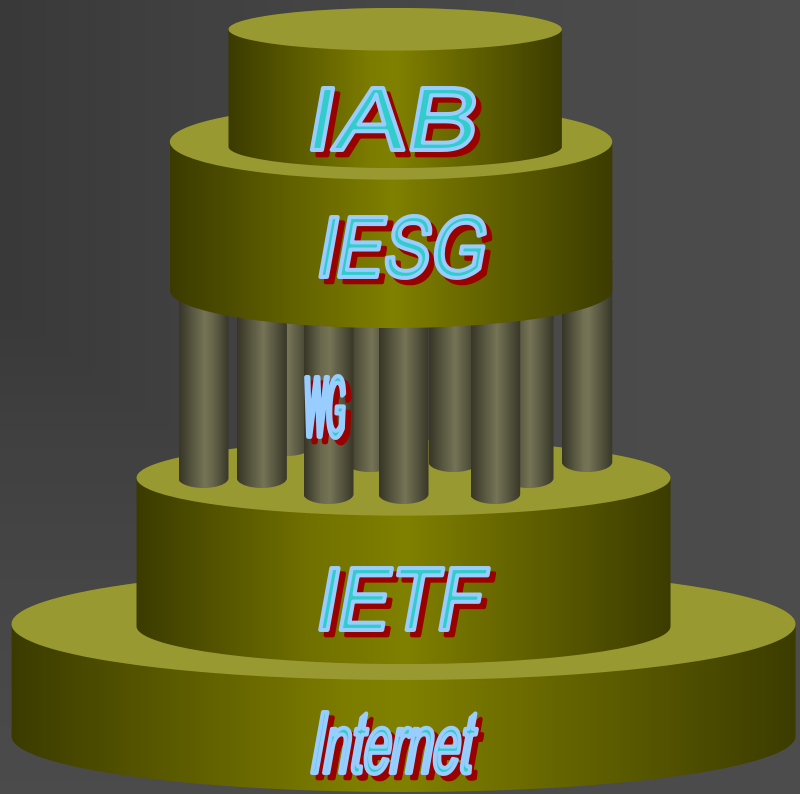


IETF vision for the future

- Provider view
  - Internet as interconnected competing service providers
  - Standards provide interfaces
- User view
  - Internet as universal interconnect
  - Standards provide services
- The harmony is not obvious to all

The IETF - How

- IETF – a collection of individuals
- Working groups in 8 areas
- Internet Engineering Steering Group (IESG)
- Internet architecture Board (IAB)



Internet Architecture Board (IAB)

- Mission
  - Oversight of IETF, IRTF, IANA, liaisons
  - Think tank for future Internet activities
- Recent activities
  - Really worried right now about
    - End to End models
    - The prevalence of quick fixes

Internet Engineering Steering Group (IESG)

- Mission
  - Assure openness and adherence to process
  - Working group chartering and management
  - “Quality assurance” on specifications
- Activities and trends
  - Make sure the issues get addressed
  - Have to make the basic functions work

Working groups in eight areas

Internet
Routing
Transport
Applications
(Sub-IP)

Security
Network operations and management
General
(User Services)

Working group summary

- We have 150 working groups (Jan 2002)
  - Not all currently active
- Make technology available for the Internet
- Standardize the things we have to agree on

Two types of documents

- Internet drafts
- RFC - “request for comments”

Internet drafts

- Work-in-progress documents
  - Not necessarily work items
  - Half of all Internet drafts are simply documents people have chosen to post
  - One out of 10 I-Ds gets turned into an RFC
- Types of drafts
  - Working group documents
  - Submissions to working groups
  - Individual submissions

RFCs

- Historical archive
- Many kinds of documents
  - Informational
  - Historical
  - Experimental
  - Standards
  - Jokes
- Standards
  - Proposed, draft, full
  - Best current practice

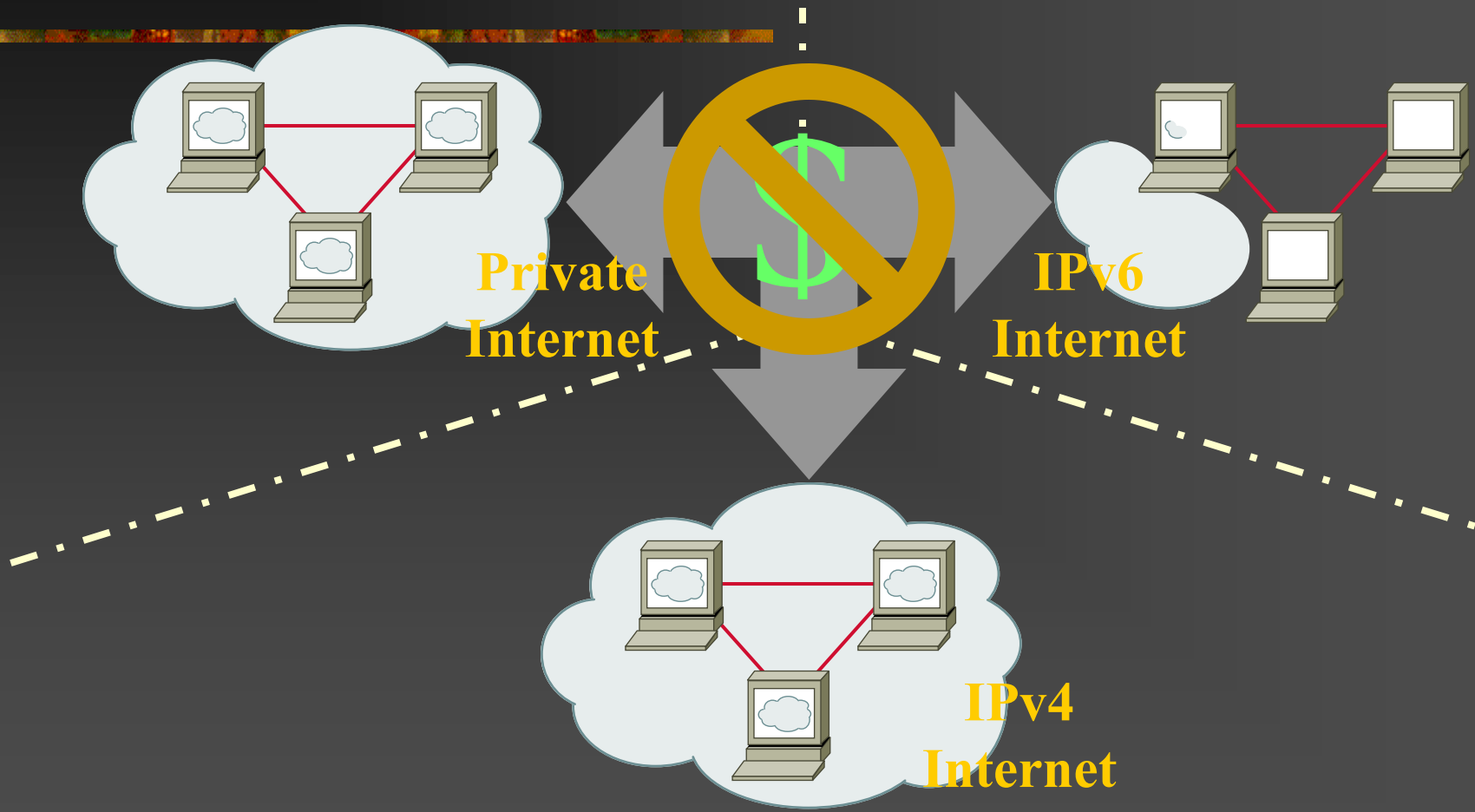
Development process

- Bottom-up
  - Working Group charters developed to support work people want to do
- Development process
  - Working groups develop
  - IESG reviews
  - RFC editor publishes

Threat to growth

- Balkanization:
  - Names that can’t be used by all
  - Formats that can’t be used by all
  - Networks that can’t be used by all
- We need one Internet!

One Protocol: IPv4 and IPv6

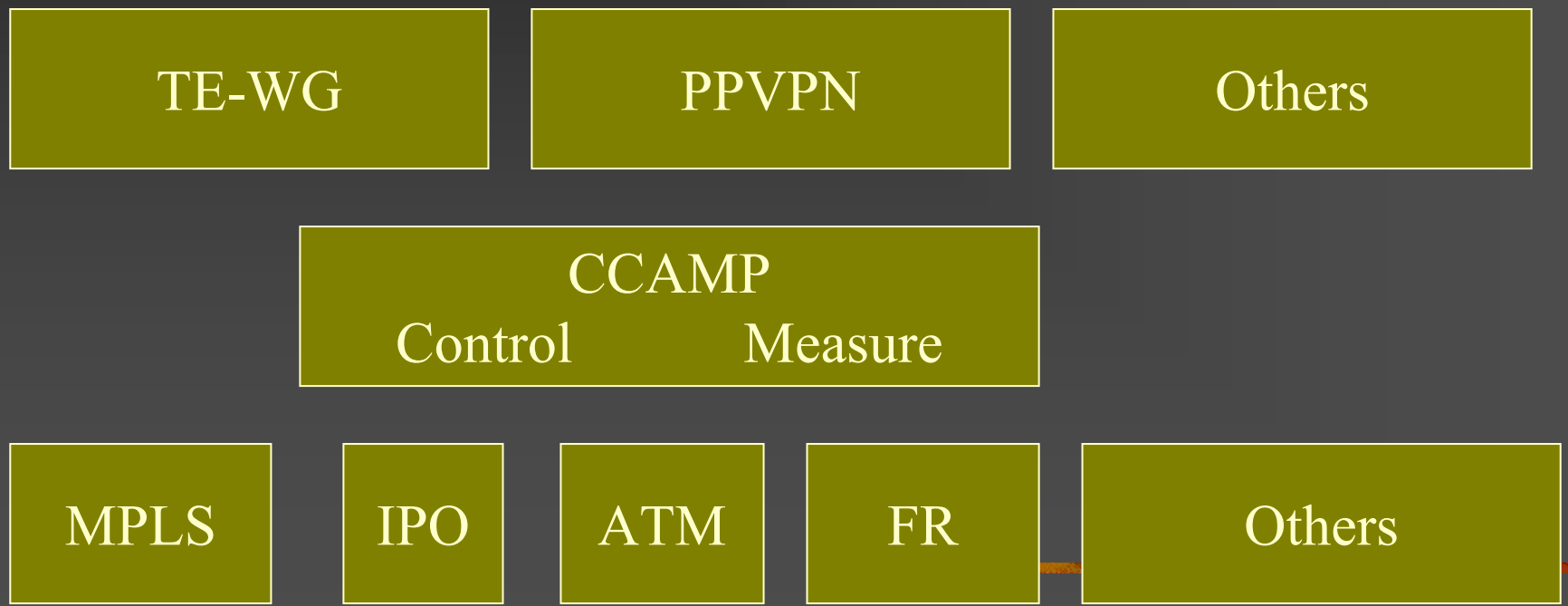


V6 and interworking

- V6 is deploying (at last)
- A plethora of interworking options
- A lack of solid experience with usage
- Some DNS details recently worked out
  - Forget A6 and bitstrings. AAAA rules.
- Go Build Networks!

One spaghetti: Layer 2 1/2

- MPLS, L2TP, ATM, All-over-All
- Sub-IP Temporary Area

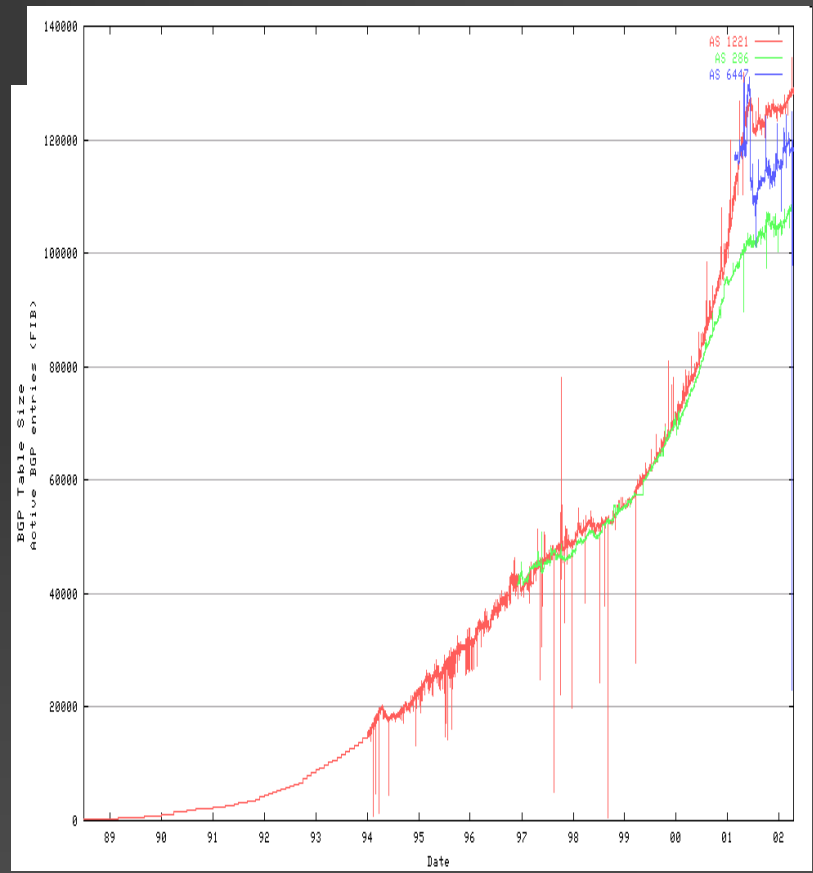


State of Sub-IP

- Converging close to one model, one control plane (GMPLS – *not* related to MPLS!)
- Working in close cooperation with the ITU to ensure consistent and non-overlapping standards
- Area will probably close down this year

One Routing Domain

- 100.000 routes
- Probably greatest short term challenge
- Exponential growth
- Real requirements driving growth
- Rethink required



Source: Geoff Huston, TELSTRA

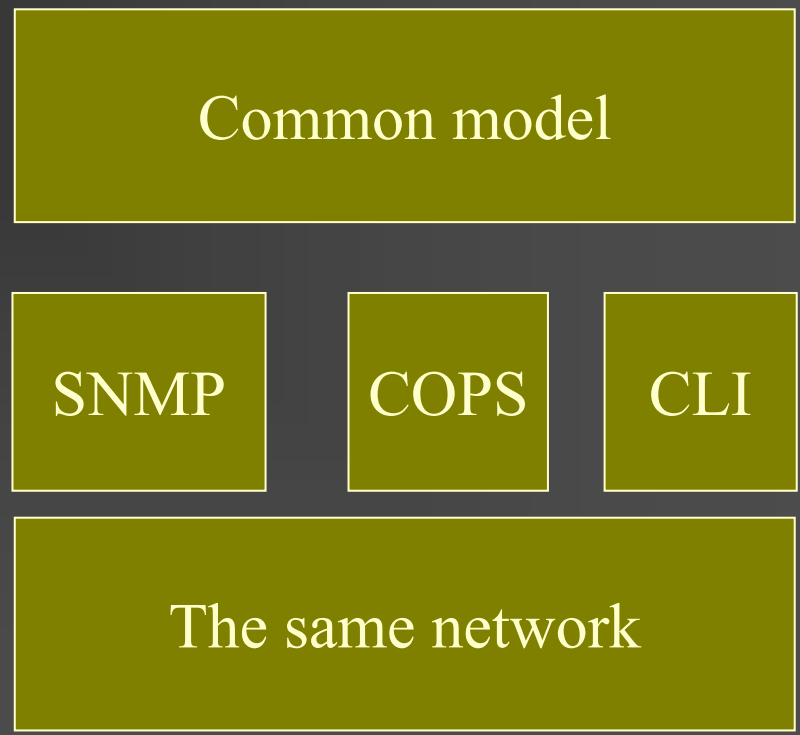
One Domain Name System

- I18N challenges are more than technical
- Identifiers are not names
- Getting names into the DNS is the easy part
- Patents are a pain
- True internationalization lies elsewhere

Courtesy of i-dns.net

One management framework

- SNMP monitoring is well deployed
- Configuration is still a vendor specific hack
- Intelligent management requires humans to do what they are good at



One sphere of ownership

- The dream of a patent owner is to collect ten dollars per Internet node
- The nightmare of a technologist is having to pay it
- IETF does not require technology to be ”free”
- Development is much easier when it is
- Being international makes a hard task worse
- No easy fixes!

Thinking further

- The Mobile Internet
- The Ubiquitous Internet
- The Server-Only Internet?
- The Copy-Protected Internet?
- The Big Brother Internet?

Why involve YOU in this?

- You know what you care about
- You have an unique perspective
- If not you, who?
- If not now, when?

We Want One Internet

- Filled with opportunities
  - Global communication enhances business, trade, research
- All opportunities come with challenges
  - IPv6 for more addresses
  - Internationalization for global reach
  - Scaling routing to a new level
- Ours to be responsible with
- Those who speak will be heard.
- Those who keep silent will not.

Questions?