9 TO 5

Dolly Parton

Kenny Rogers

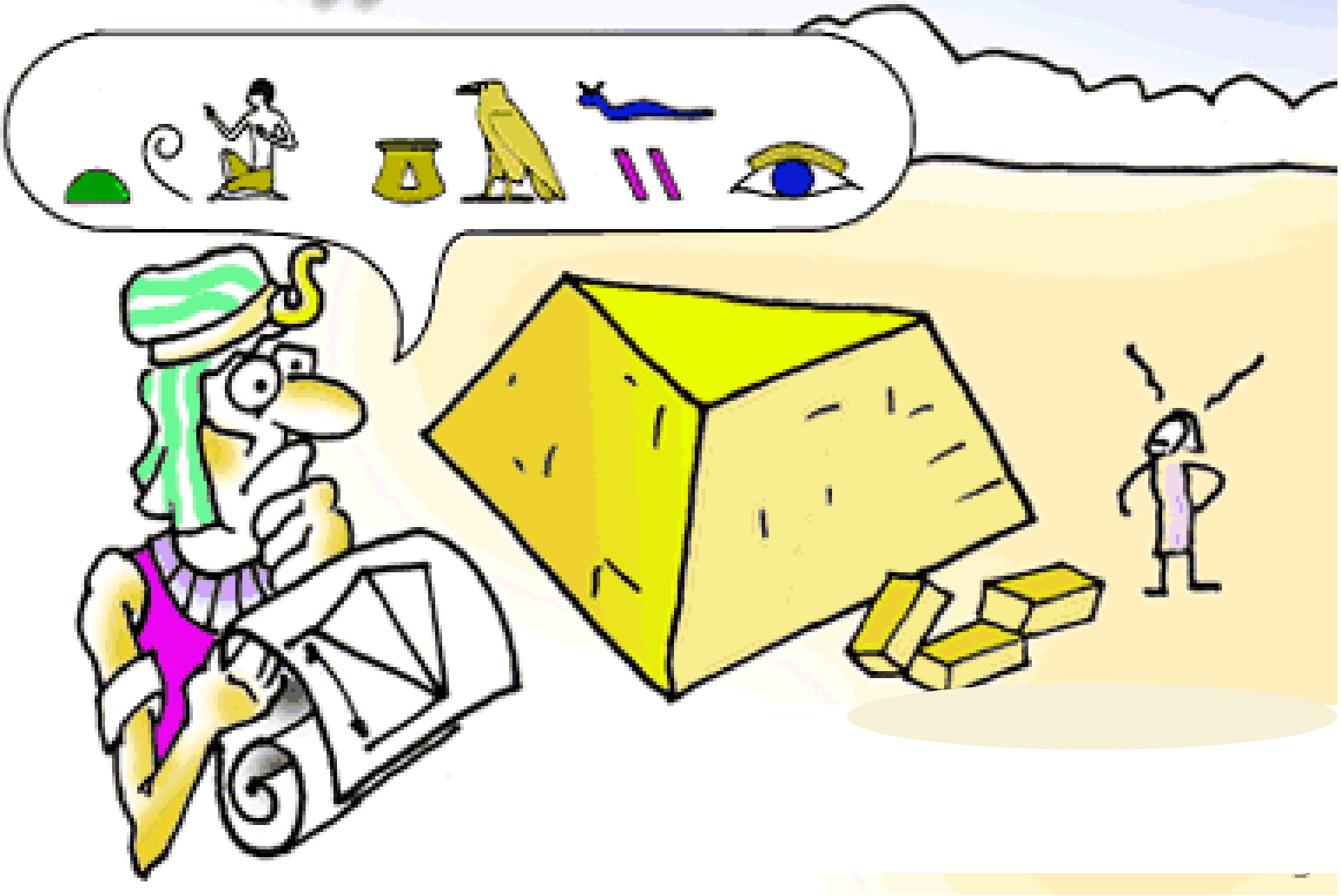
Lily Tomlin

From the Cave …

Well My Cave is wireless !

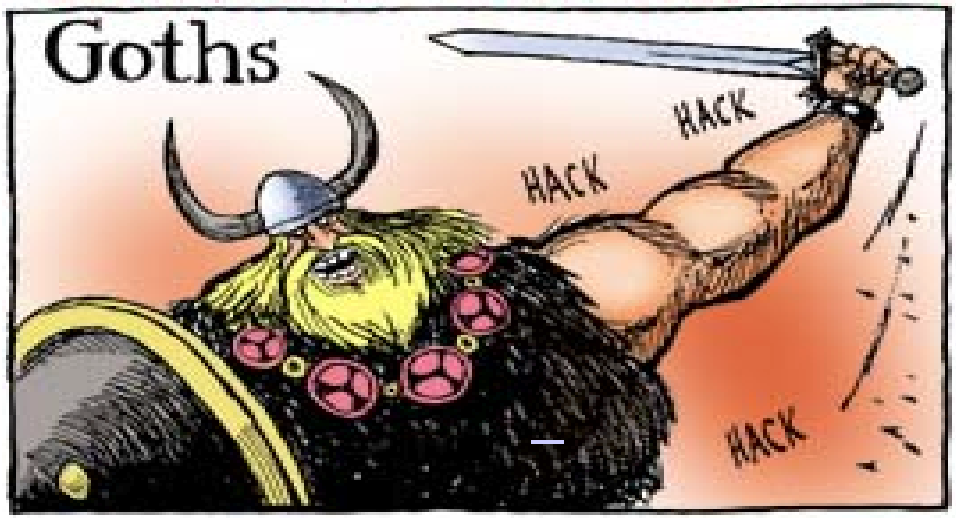
IPv6 FORUM

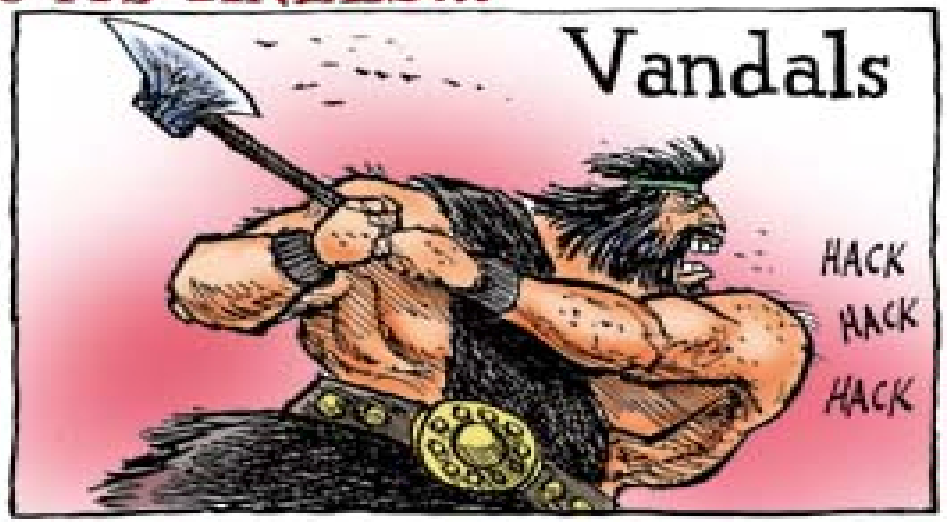
Real Planning Started in Egypt!



TAMING THE WORLD

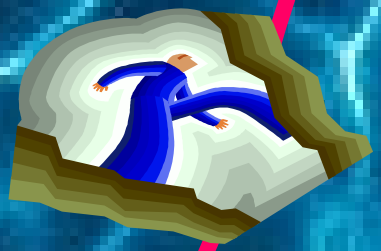
BRINGING CIVILIZATION TO ITS KNEES...

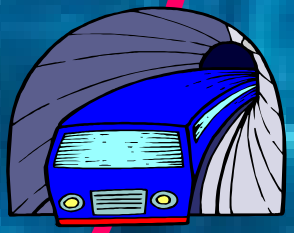


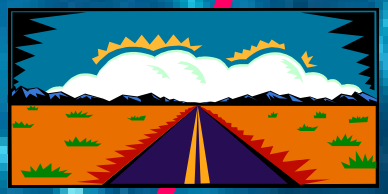


Technology & Progress Waves

Canals Railways Highways Telecommunications







1750 1800 1850 1900 1950 2000 2050

GOODS

PEOPLE

INFORMATION

IVO FORUM

Internet Generations

1G	2G	3G
10*4	10*9	10*38
Pioneers	Innovators	EveryOne,-thing
Email, FTP	WWW	Wireless, Streaming Media, Peer-2-Peer
DIAL-UP INTERNET		ALWAYS-ON
Gov. Internet	Public Internet	Global Internet

ARPANET INTERNET NEW INTERNET

Internet TimeLine

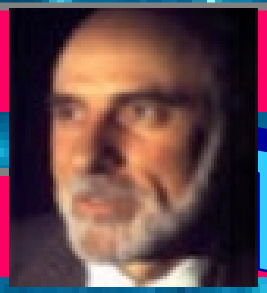
- NCP Conception
- NCP Roll-Out

1961 NCP 1969

1969 ARPANET 1982

IP Conception 1972

IPv4 Roll-Out 1983



IPV4 INTERNET

IPv6 Conception

IPv6 Roll-Out

1991

IPv6

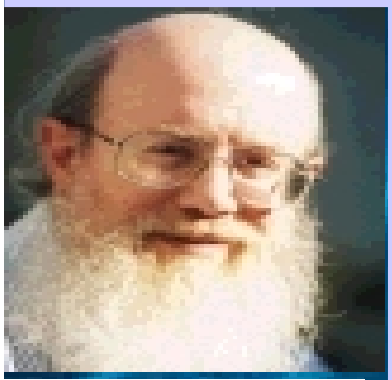
2000

NEW INTERNET

IPv6 FORUM

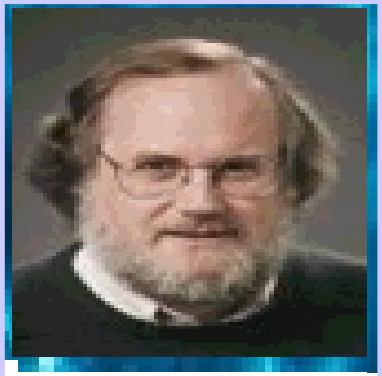
IPv6 Technical Directorate

Chair: Jim Bound



Scott Bradner

Brian Carpenter



Steve Deering

Christian Huitema

Allison Mankin

Yanick Pouffary

Charlie Perkins

Thomas Narten

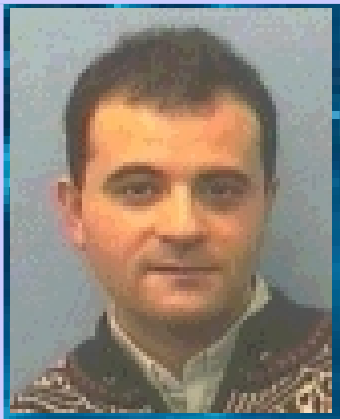
Erik Nordmark

Thomas Ecklund

IVO FORUM

IPv6 Technical Directorate

Francis Dupont



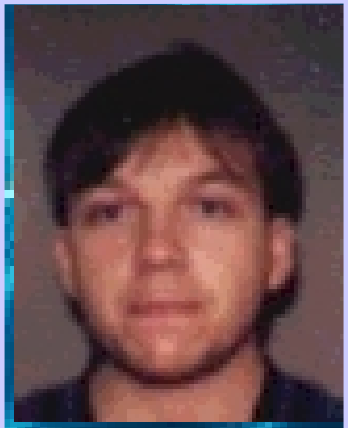
Alain Durand

Jack McCann

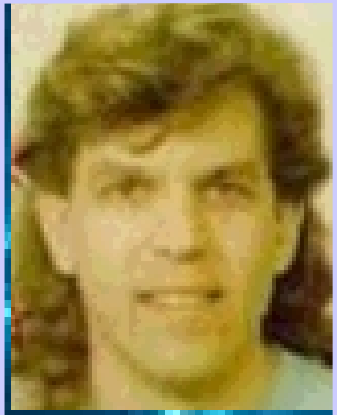
Henk Steenman

Stephen Hayes

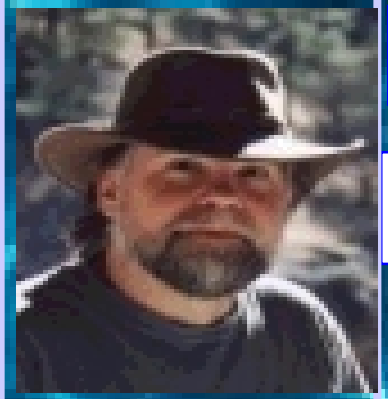
Stig Venas



Carl Williams



Brian Zill



Matt Crawford

Dale Finkelson

Cyndi Jung

Peter Tattam

Brian Haberman

IPv6 FORUM

Now
that's
FUNNY

Watch with a sense of humour
Some pictures can be shocking!

IPv6 FORUM

The Future of the Internet

The IETF was divided on

the Future of the Internet !

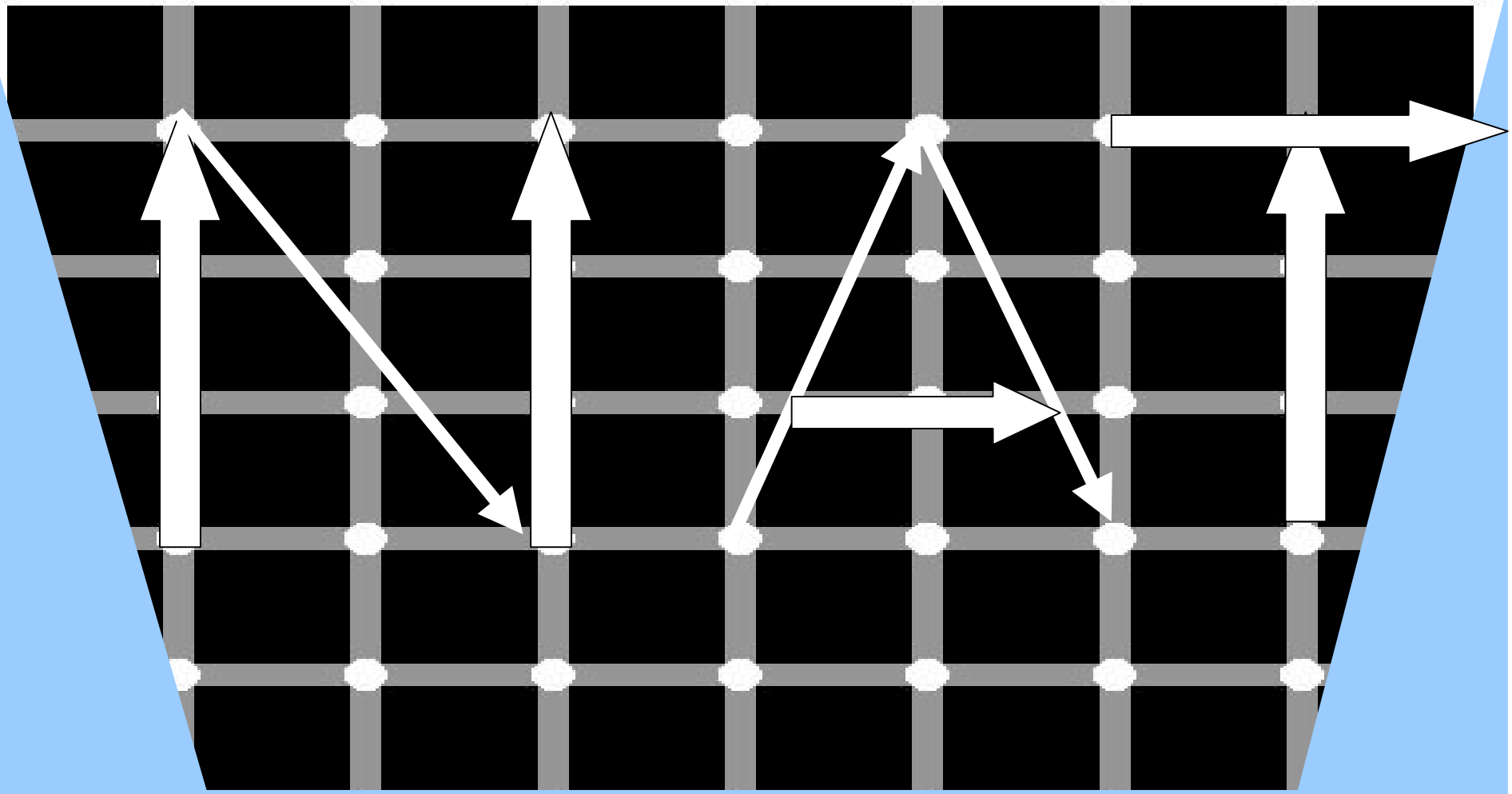
The Future of the Internet

The Future of the Internet

NATs: Peeping Holes

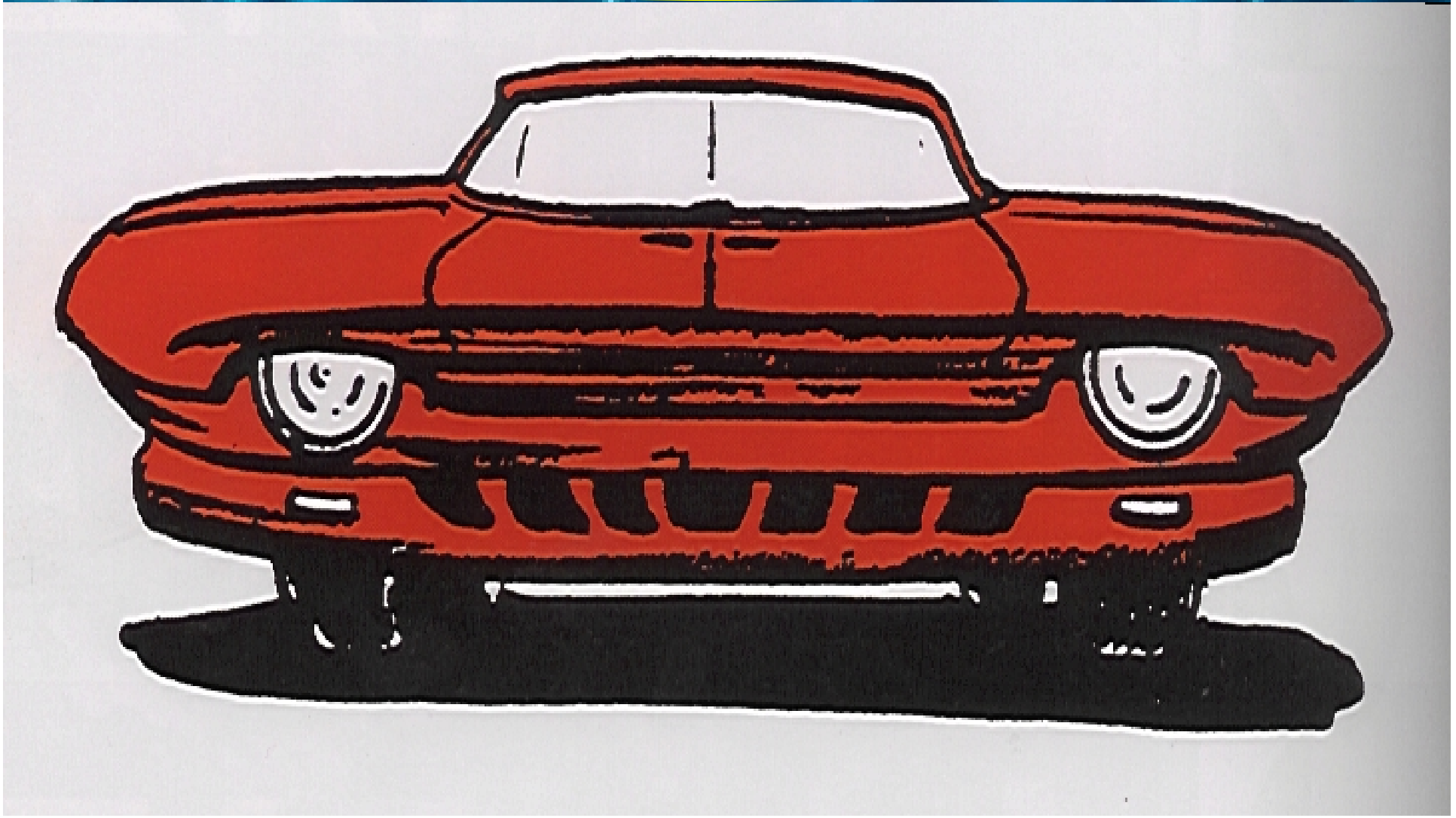
The Future of the Internet

NATs: Holes for Shipworm Culture



The Future of the Internet

NAT over NAT



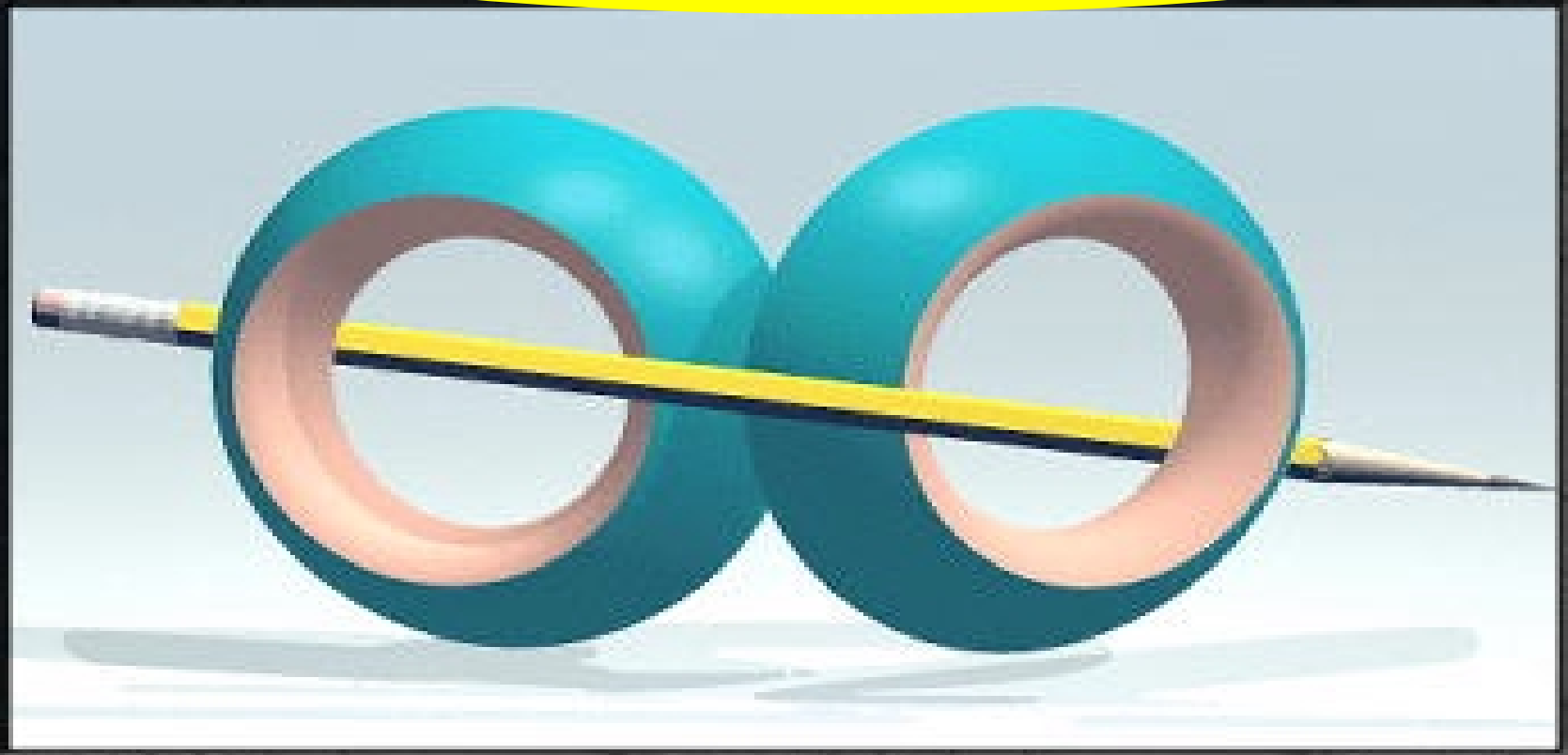
The Future of the Internet

Unique Addresses?

The Future of the Internet

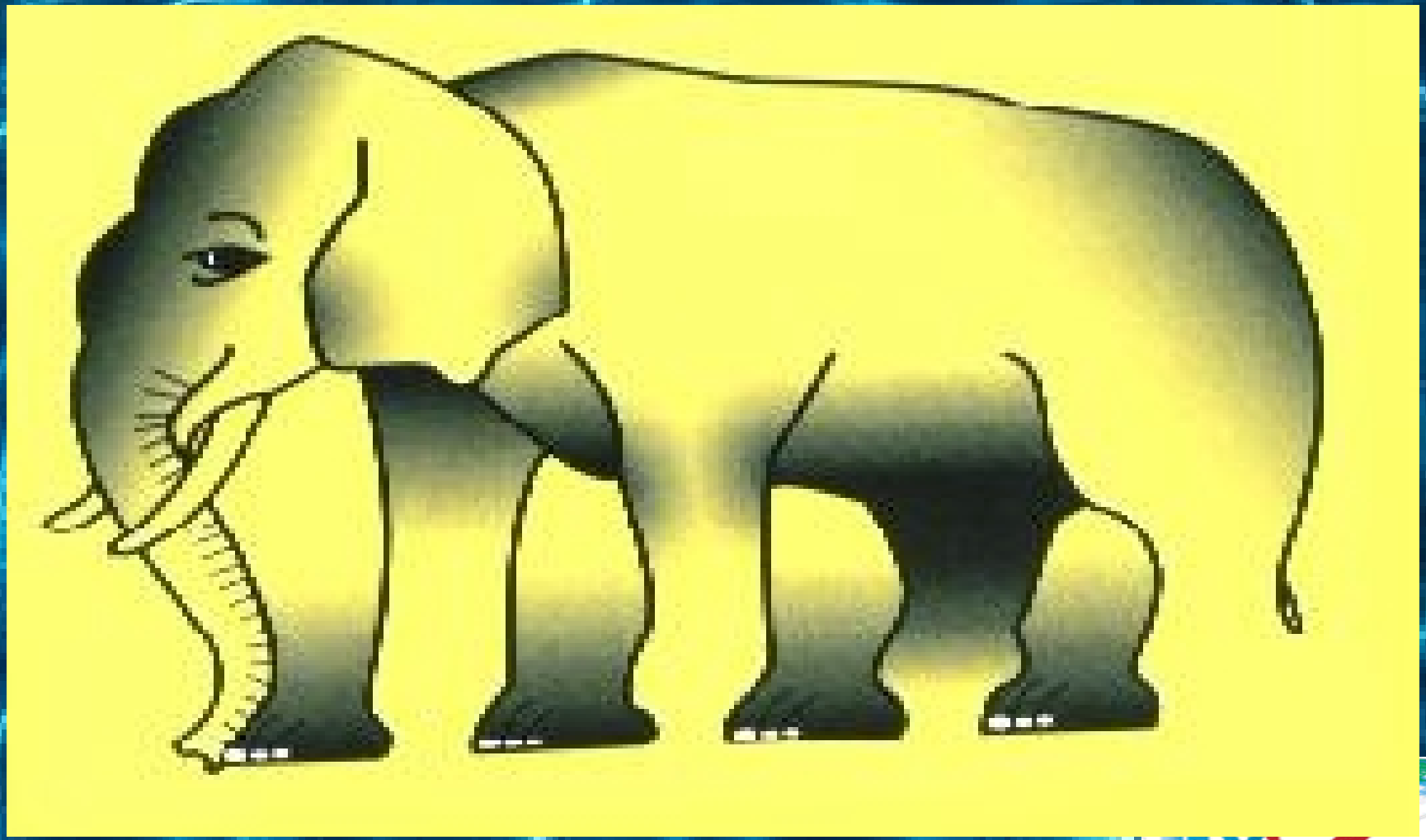
Peer-to-peer Model?

Peer-to-peer Traversal Model?



The Future of the Internet

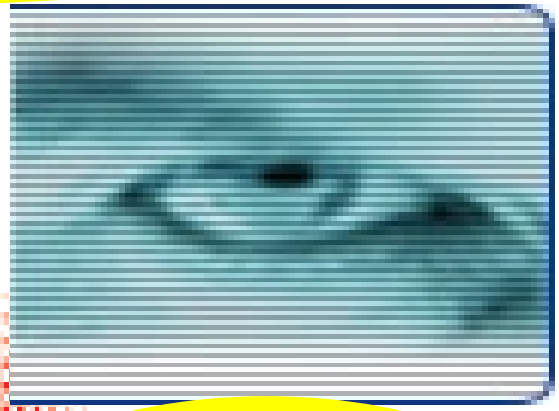
Always-On Service



The Future of the Internet

Is Internet Security Desired by Governments?

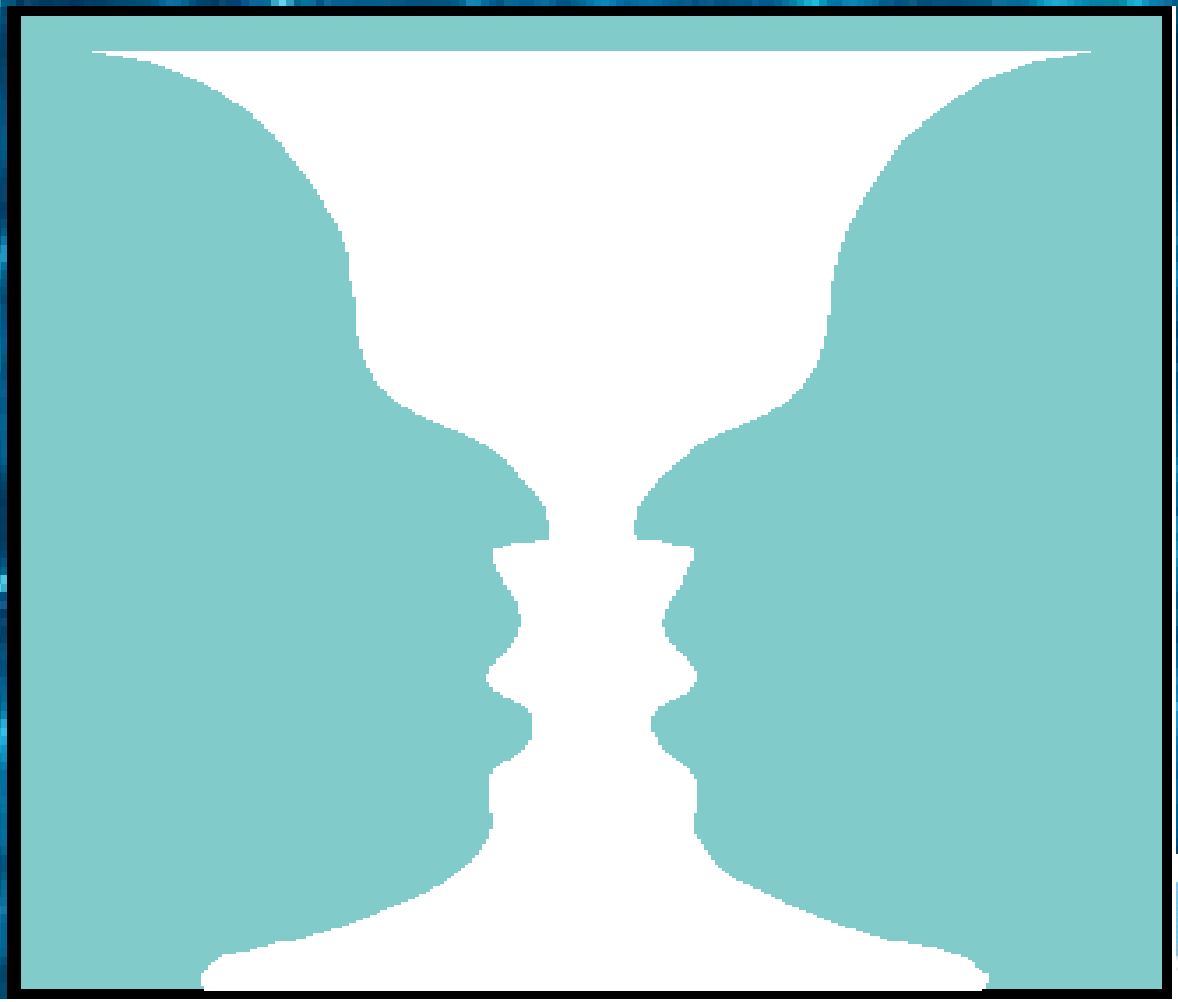
Big Brother Is WatchingYou!



Hackers Too!

The Future of the Internet

Deering ´s Peering Hitchcocks?



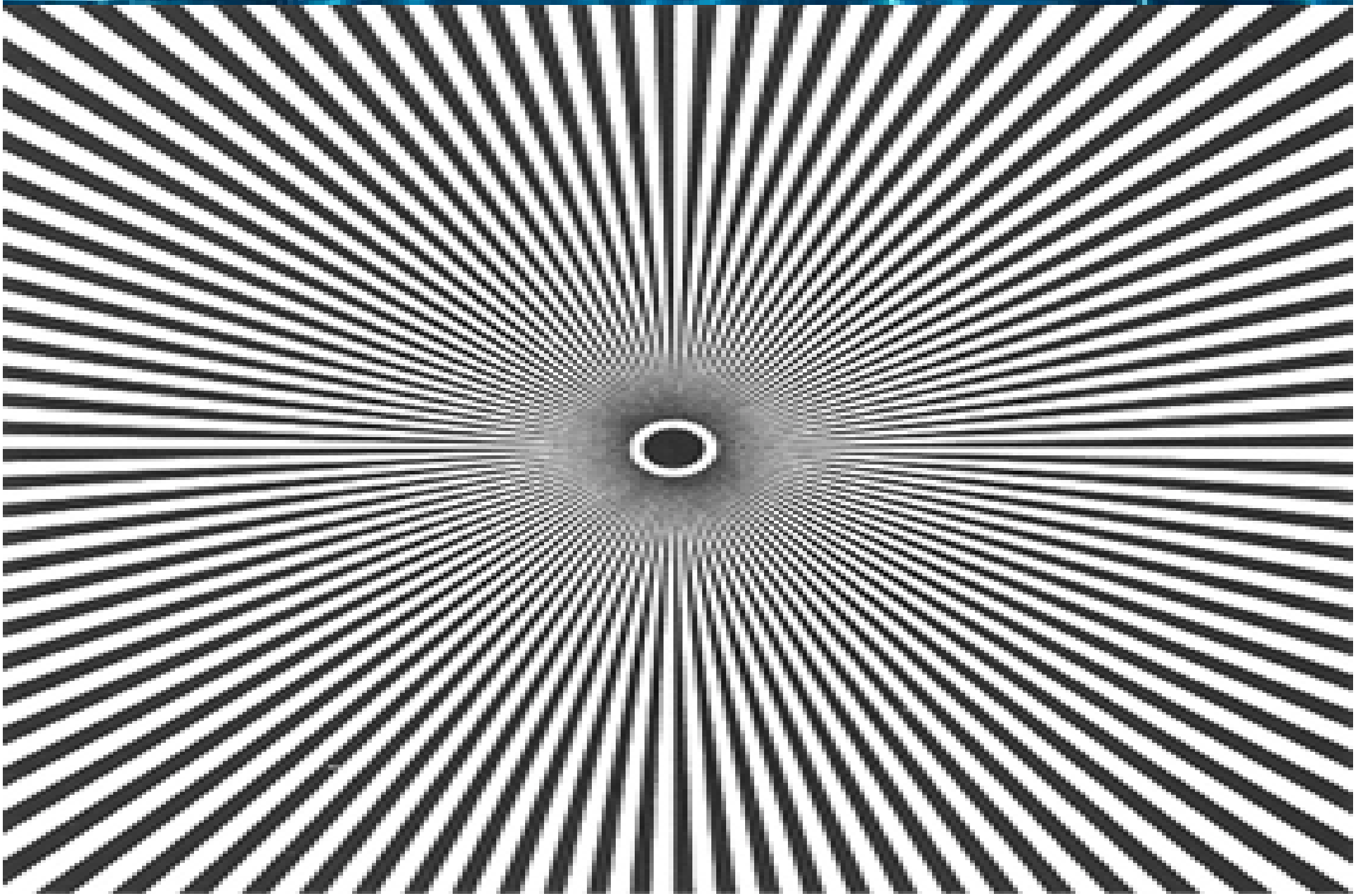
IPv6 FORUM

The Future of the Internet

Application Independence

Peer-2-Peer Species work better together!

IMAGINE !



Moving from InterNET to InterNAT !

Can you do 3 things in ONE GO?

- e2e Communication
- e2e Security
- Mobility

The Internet Has Met Its Enemy!

UNEVEN DIFFUSION OF TECHNOLOGY

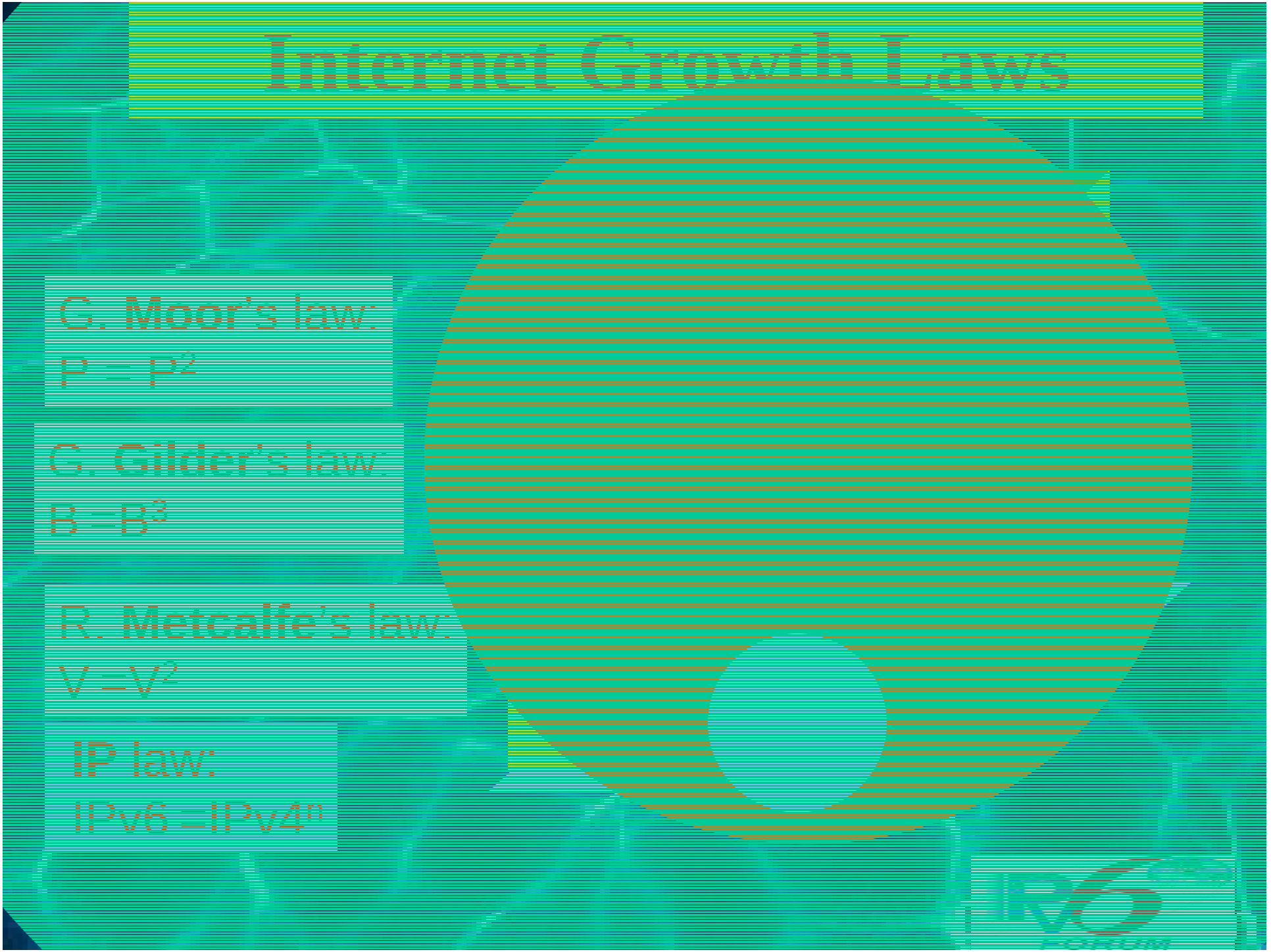
PHONE NETWORK: 1.2 Billion -> 20%

INTERNET USERS: 0.5 Billion -> 8%

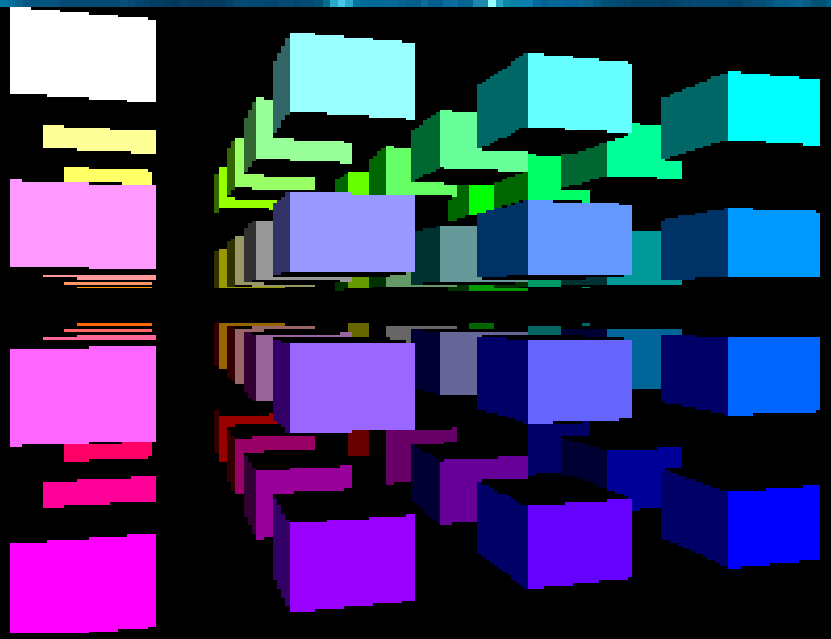
INTERNET HOSTS: 137 M Hosts -> 2%

NO e2e : NOBODY KNOWS !

Source: Human Development Report Office calculations based on data supplied by Nua Publish 2001 and UN 2001c.


G. Moor's law:
P=P²
G. Gilder's law:
B=B³
R. Metcalfe's law:
V=V²
IP law:
IPv6 = IPv4ⁿ

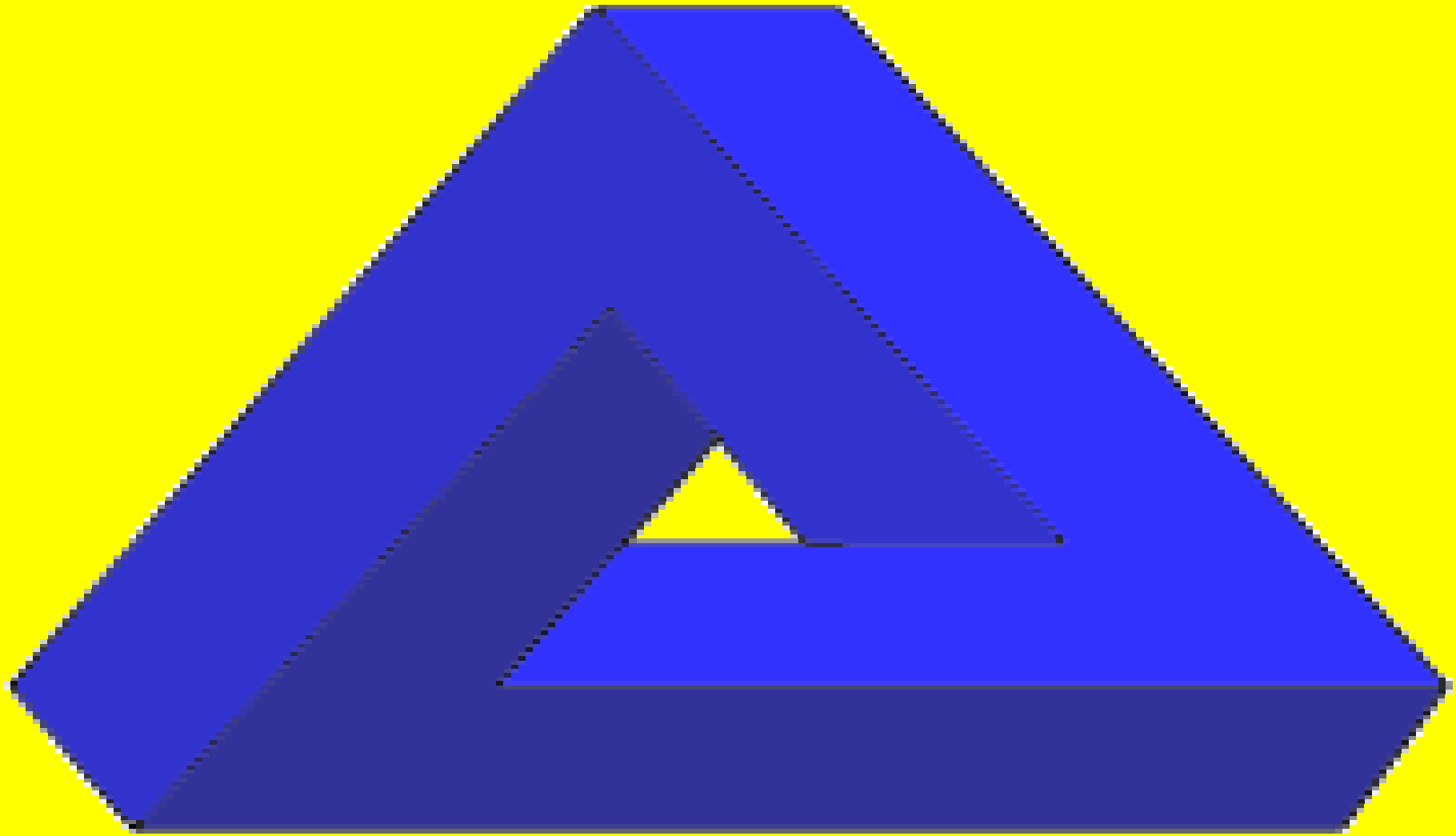
The Internet is falling apart



Future of the Internet

Chicken & Egg ?

Impossible Triangle ?



Rejuvenating the Decaying Internet

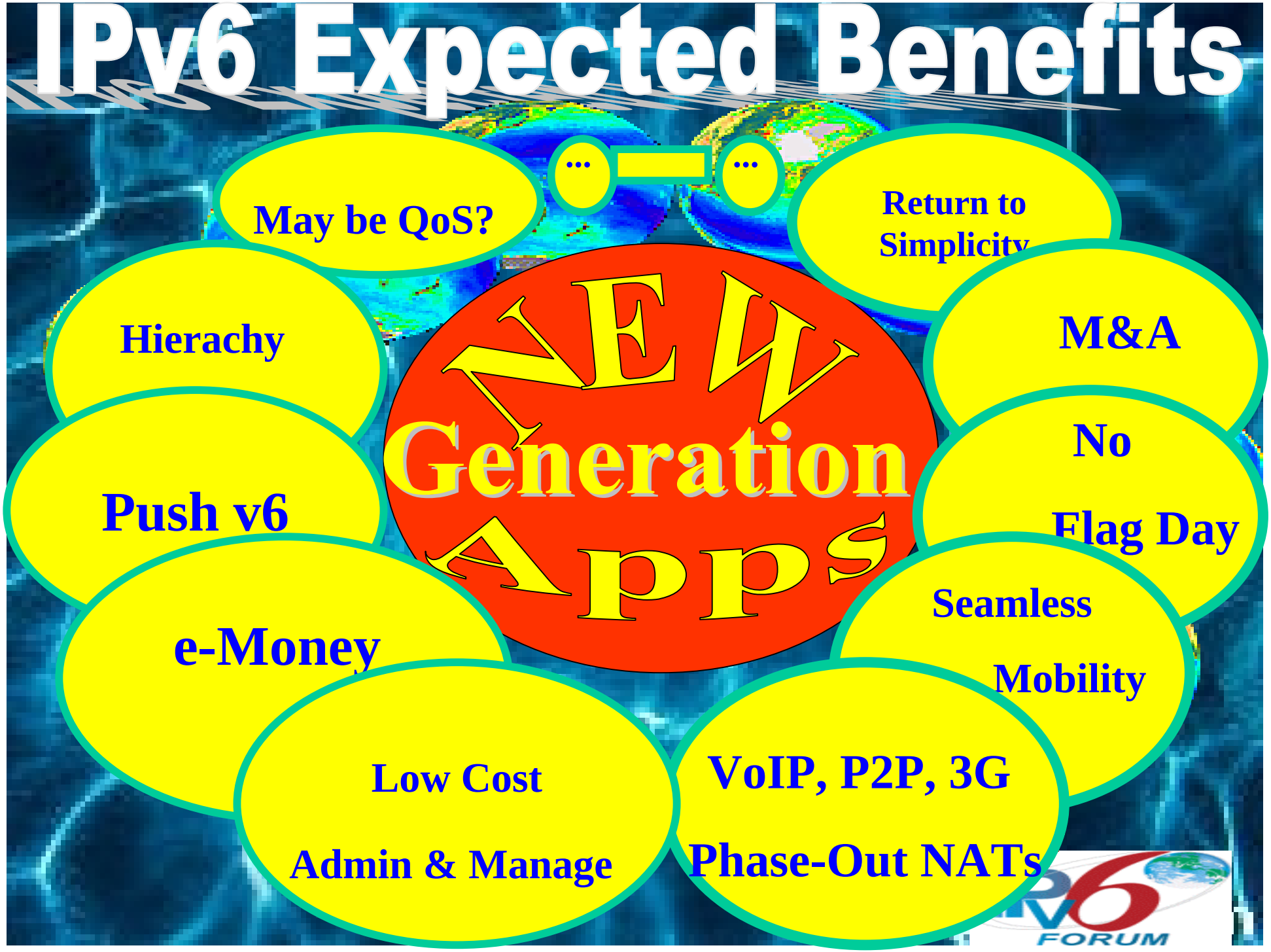
IPv6 is a young lady?

IPv6

IPv4

NAT

IPv6 Is Not Only Unlimited Address Space
QoS
Flow Bits?
...
...
Reliability
Simplicit
Dynamic Routing
STRING
of Technology
PERLS
Flexible
Renumbering
Multicast v6
Transition
Tool Box
e2e Security
Mobile IPv6
Autoconfiguration
Plug & Ping
End-2-end
Transparency
IPv6
FORUM


IPv6 Expected Benefits
May be QoS?
Return to Simplicity
Hierachy
M&A
NEW Generation Apps
Push v6
No Flag Day
e-Money
Seamless Mobility
Low Cost Admin & Manage
VoIP, P2P, 3G Phase-Out NATs
IPv6 FORUM

Homo-Computiens

Homo-Coms **Homo-Holes** **Homo-Ambiants**

Bell-Head

2G

NAT-Head

NET-Head

Legacy

3G

P2P/Push

100% IPv6 readiness by 2005

- **Prime Mister of Japan Yoshiro Mori**

- **Korean MIC followed Japan Feb 23, 2001**

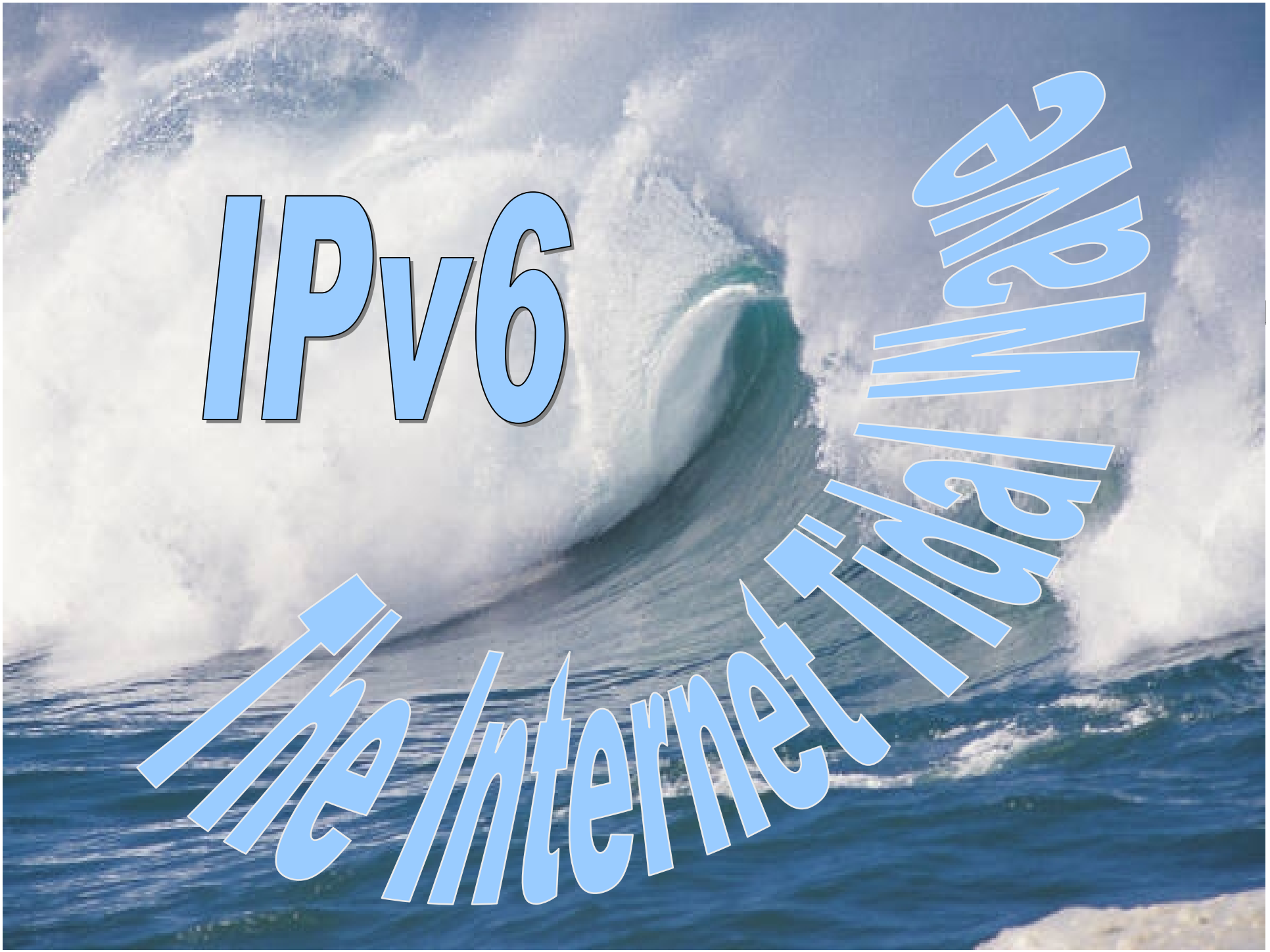
- **The 7th Japan-China Regular Bilateral Consultation Dec 2001**

The European Commission Formed an IPv6 Task Force in March 2001

- Commissioner
  Erkki Liikanen
- Recommendations
  Reports Jan 2002
  www.ipv6tf.org
- 6NET & Euro6IX
  Large.Scale Testbeds
  34 M€

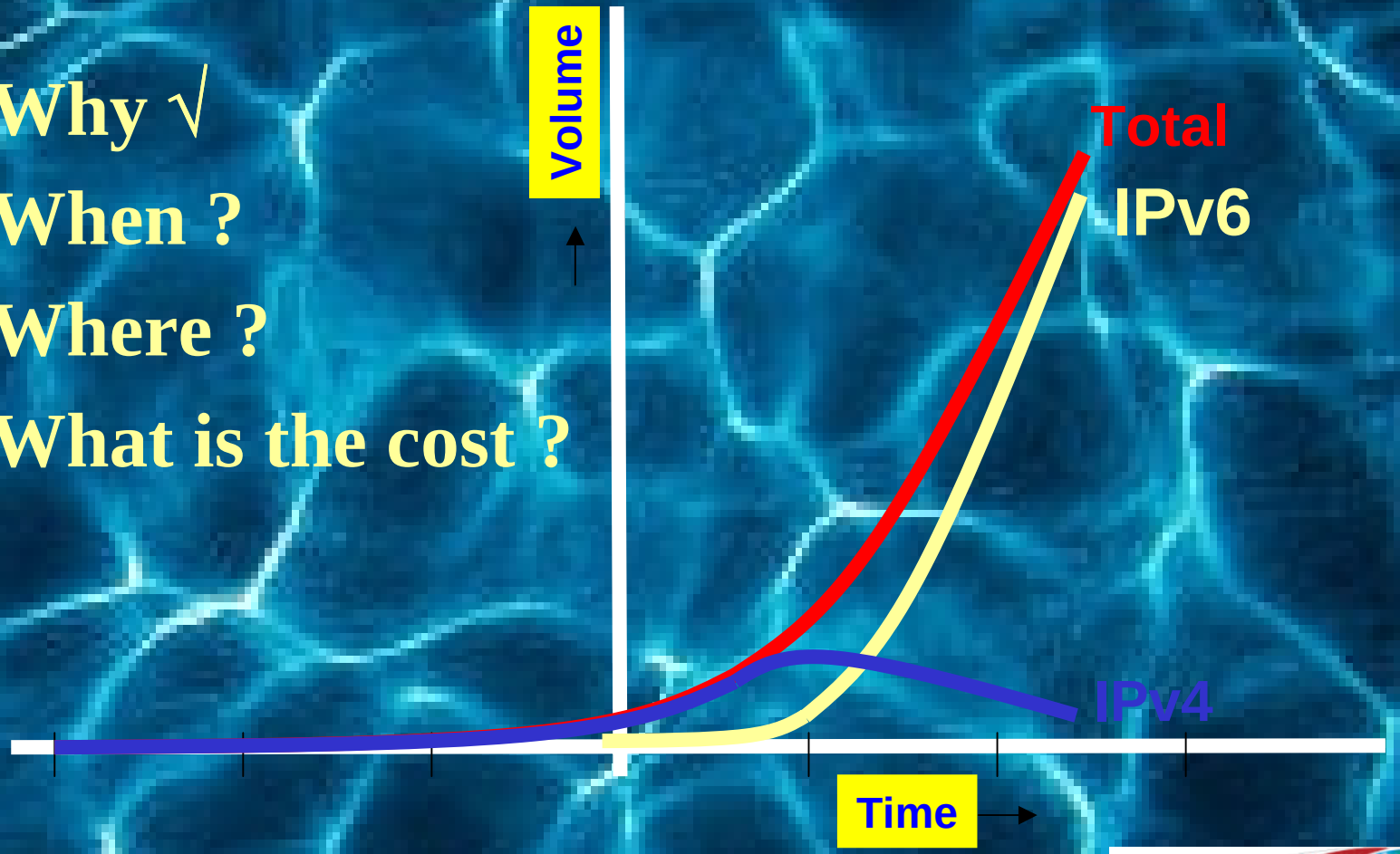
v6 Roadmap Scenaria

	Scenario 1	Scenario 2	
IPv6 Deployment	Successful	Complete Failure	
Address Transparency	Restored e-2-e	Recycling IP Addresses	Exhaustion NAT-over-NAT
IPsec	e-2-e works	Limited	Broken
FOG	Clears!	Noticeable Fog	Permanet Thick Fog
Issues	Intranet, Proxies & Firewalls may remain	Generalised use of NAPT, RSIP?	NATs between even ISPs


IPv6
the Internet Tidal Wave

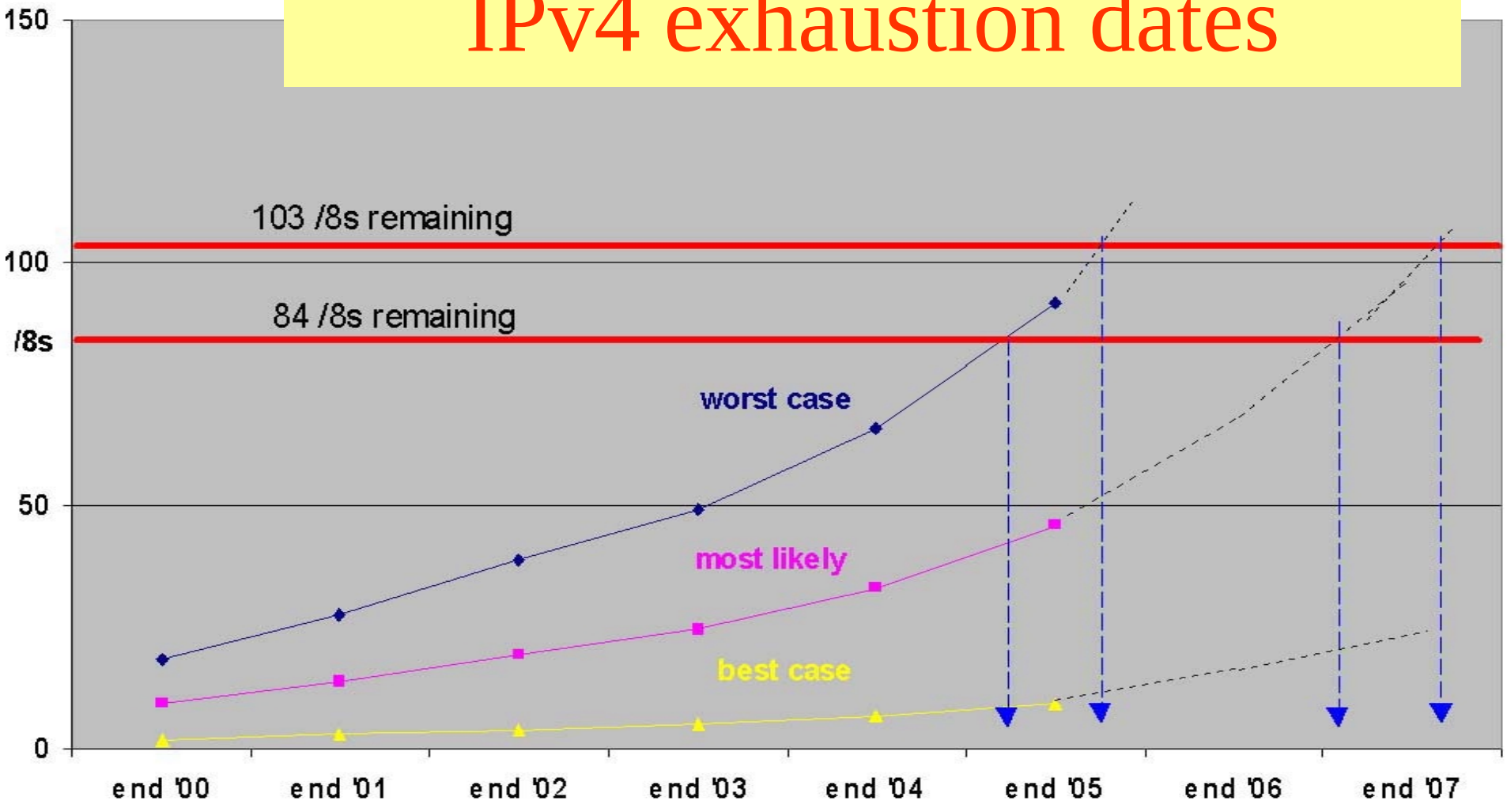
The BIG Questions!

- Why √
- When ?
- Where ?
- What is the cost ?



IPv6 should be in operation before 2004

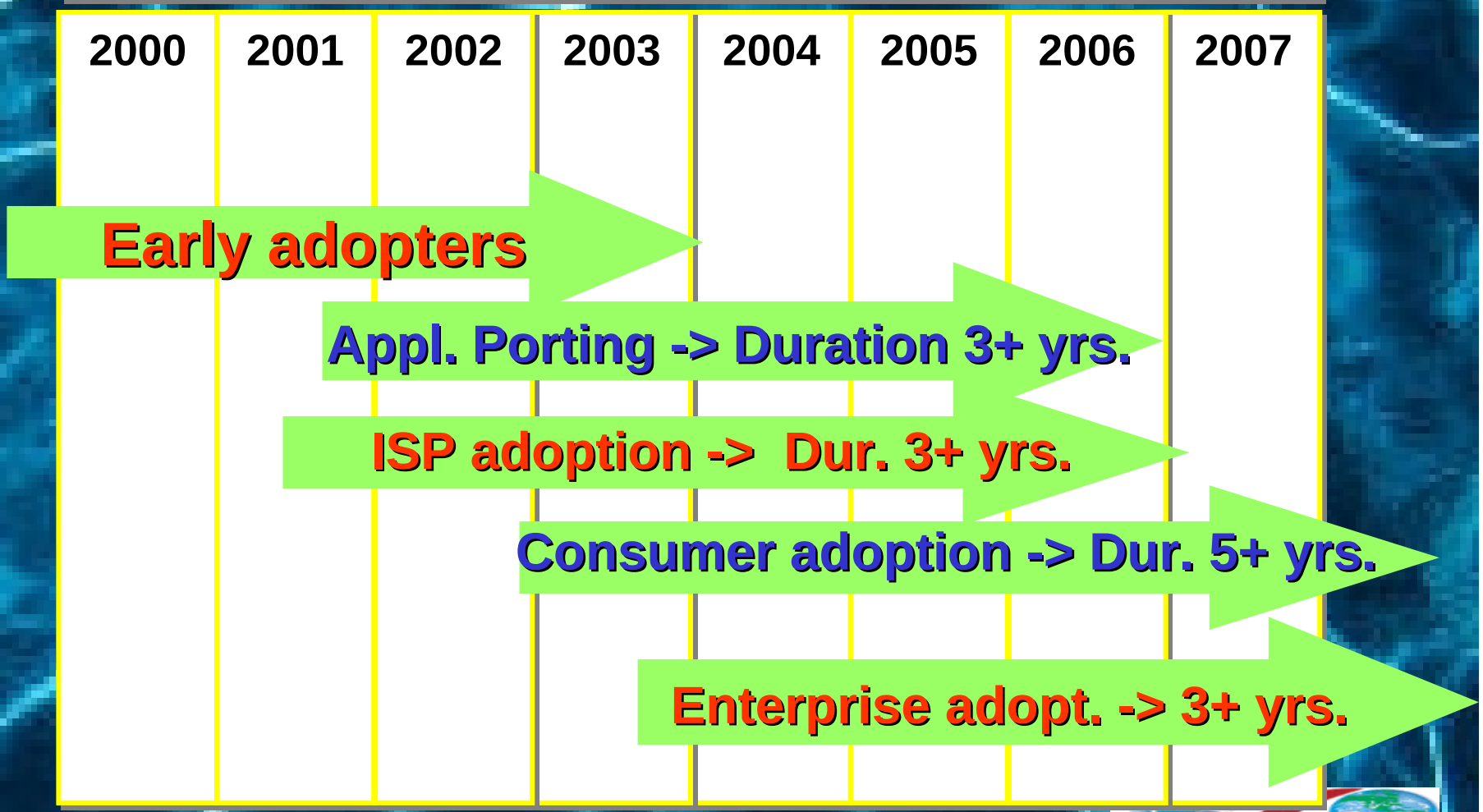
IPv4 exhaustion dates



Global demand for Cellular and ADSL/Cable modem - exhaustion dates (ICANNのAdhoc)

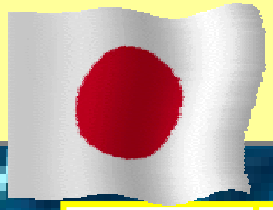
IPv6 AdoptionTimeline - WORLD

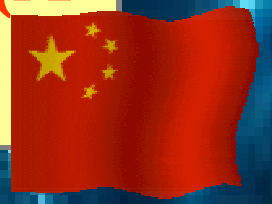
(A pragmatic projection)

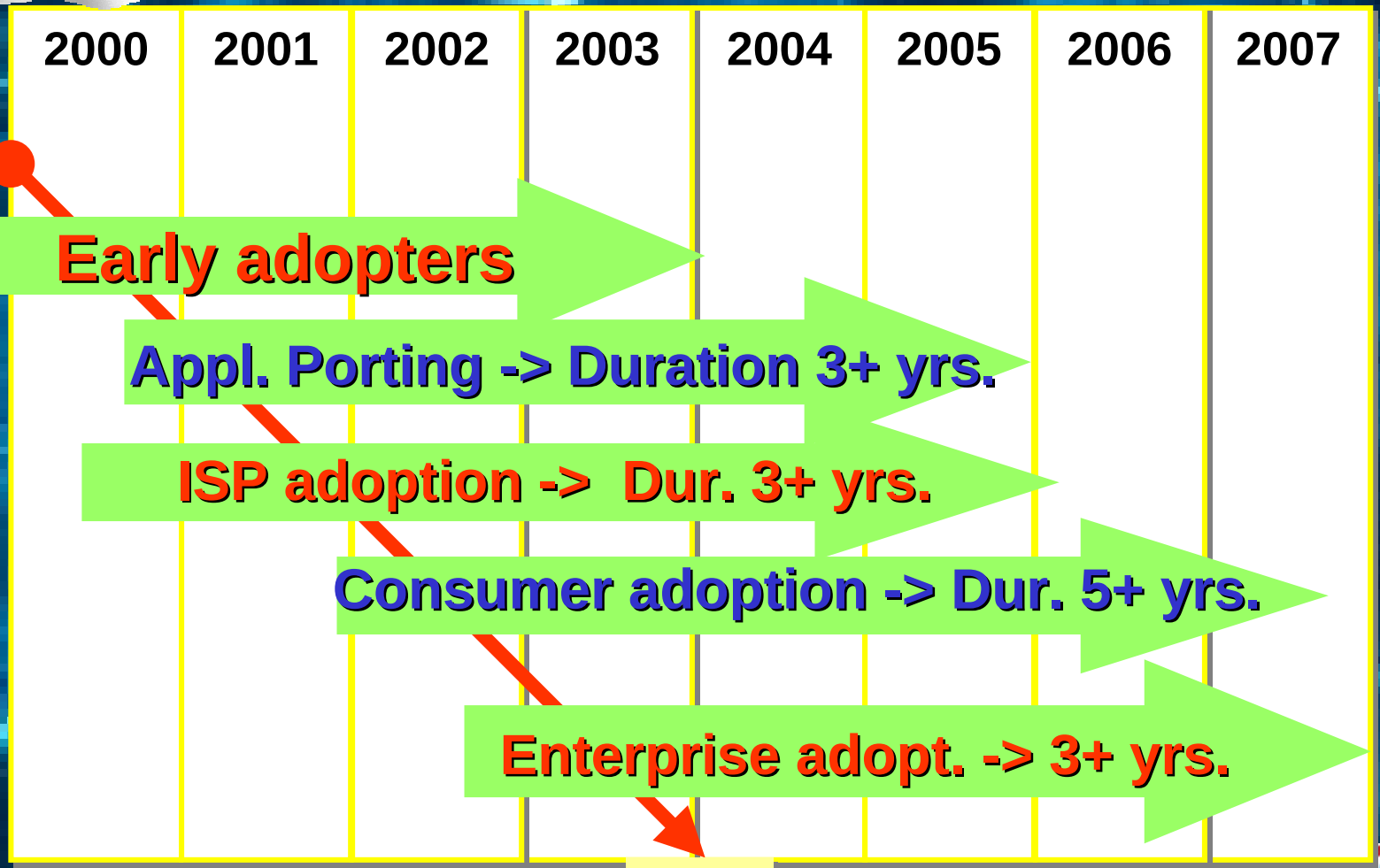


IPv6 FORUM

IPv6 AdoptionTimeline - ASIA(A pragmatic projection)







IPv6 FORUM

IPv6 Adoption Timeline - EUROPE

(A pragmatic projection)

2000 2001 2002 2003 2004 2005 2006 2007

Early adopters

Appl. Porting -> Duration 3+ yrs.

ISP adoption -> Dur. 3+ yrs.

Consumer adoption -> Dur. 5+ yrs.

Enterprise adopt. -> 3+ yrs.

Asia Europe

IPv6 FORUM

IPv6 Adoption Timeline - AMERICAS

(A pragmatic projection)

2000 2001 2002 2003 2004 2005 2006 2007

Early adopters

Appl. Porting -> Duration 3+ yrs.

ISP adoption -> Dur. 3+ yrs.

Consumer adoption -> Dur. 5+ yrs.

Enterprise adopt. -> 3+ yrs.

Asia Europe Americas

FORUM

The New Internet

1 billion +
Connected Devices

NCP

IPv4

IPv6

Email @

WWW

WWW

IP Evolution

100m

1969 1983 2000 2001 2002 2003 2004

IPv6 FORUM

Putting The Internet Back Together!