ICANN: Structure and Issues

NASK DOMAIN Seminar

Warsaw, Poland

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ccTLD Liaison

Introduction

- Herbert Vitzthum
- Home base: Salzburg, Austria
- The former Manager for .at. Still working from Austria as ICANN Staff (Teleworker)
- ccTLD Liaison – the communication channel for ccTLD manager (Country Code Top Level Domains such as .pl, .de, .at …)

ICANN: The Basic Idea

ICANN =

An Experiment in

Technical Self-Management

by the global Internet community

ICANN: The Basic Bargain

ICANN =

Internationalization
of Policy Functions for DNS and IP Addressing systems

+

Private Sector
(non-governmental) Management

What does ICANN do?

Coordinates policies relating to the unique assignment of:

- Internet Domain Names
- Numerical IP Addresses
- Protocol Port and Parameter Numbers

Coordinates the DNS Root Server System

- through Root Server System Advisory Committee

Says *The Economist:*

- "ICANN is in many ways a completely new institutional animal."
- "It is a hybrid between an online community and a real-world governance structure, an untested combination."
- "It is also a new type of international organization: an industry trying to regulate part of itself, across the globe, with little or no input from national governments."

(10 June 2000)

Domain names & IP addresses

- Domain names are the familiar, easy-to-remember names for computers on the Internet
  - e.g., amazon.com, icann.org, nic.or.kr
- Domain names correlate to Internet Protocol numbers (IP numbers) (e.g. 192.168.5.130) that serve as routing addresses on the Internet
- The domain name system (DNS) translates domain names into IP numbers needed for routing packets of information over the Internet
  www.icann.org = 192.168.5.130

Types of Internet Domains

- Generic Top Level Domains (gTLDs)
  - <.com>, <.net>, <.org> open to all persons and entities on a global basis
  - <.int> for international treaty organizations
  - <.arpa> for Internet Infrastructure purposes
  - <.gov>, <.mil> for U.S. government, military
  - <.edu> for US universities

More Types of Internet Domains

- Country Code Top Level Domains (ccTLDs)
  - <.cn>, <.hk>,<.jp>, <.uk>, <.ca>, <.br>, <.de>, <.pl>, <.cc> . . .
  - Imprecise name: ccTLD includes *countries* and *geographically distinct territories*
  - Derived from ISO 3166-1 list
  - Registration requirements vary by domain
    - Residency requirement
    - Price (or no charge)
    - Ability to transfer
    - Dispute resolution policy

Basic DNS Registry Structure

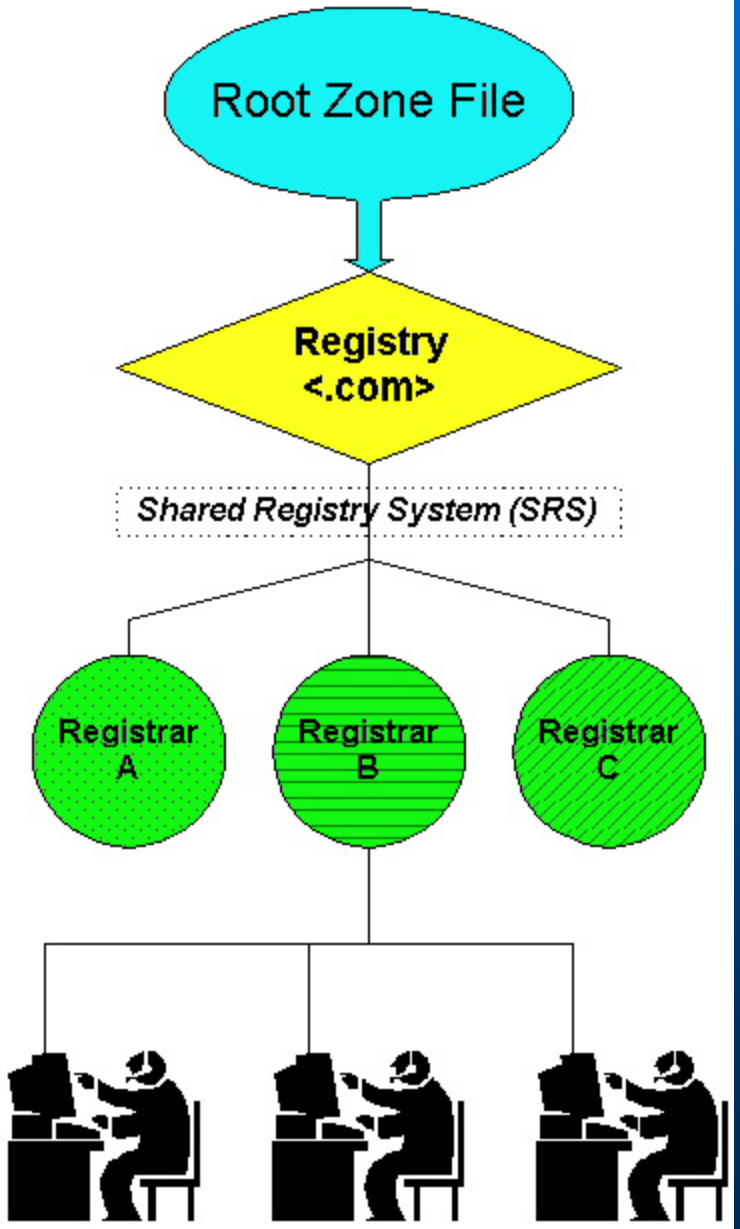
Example: <.com>

ICANN
(= overalll coordinator)

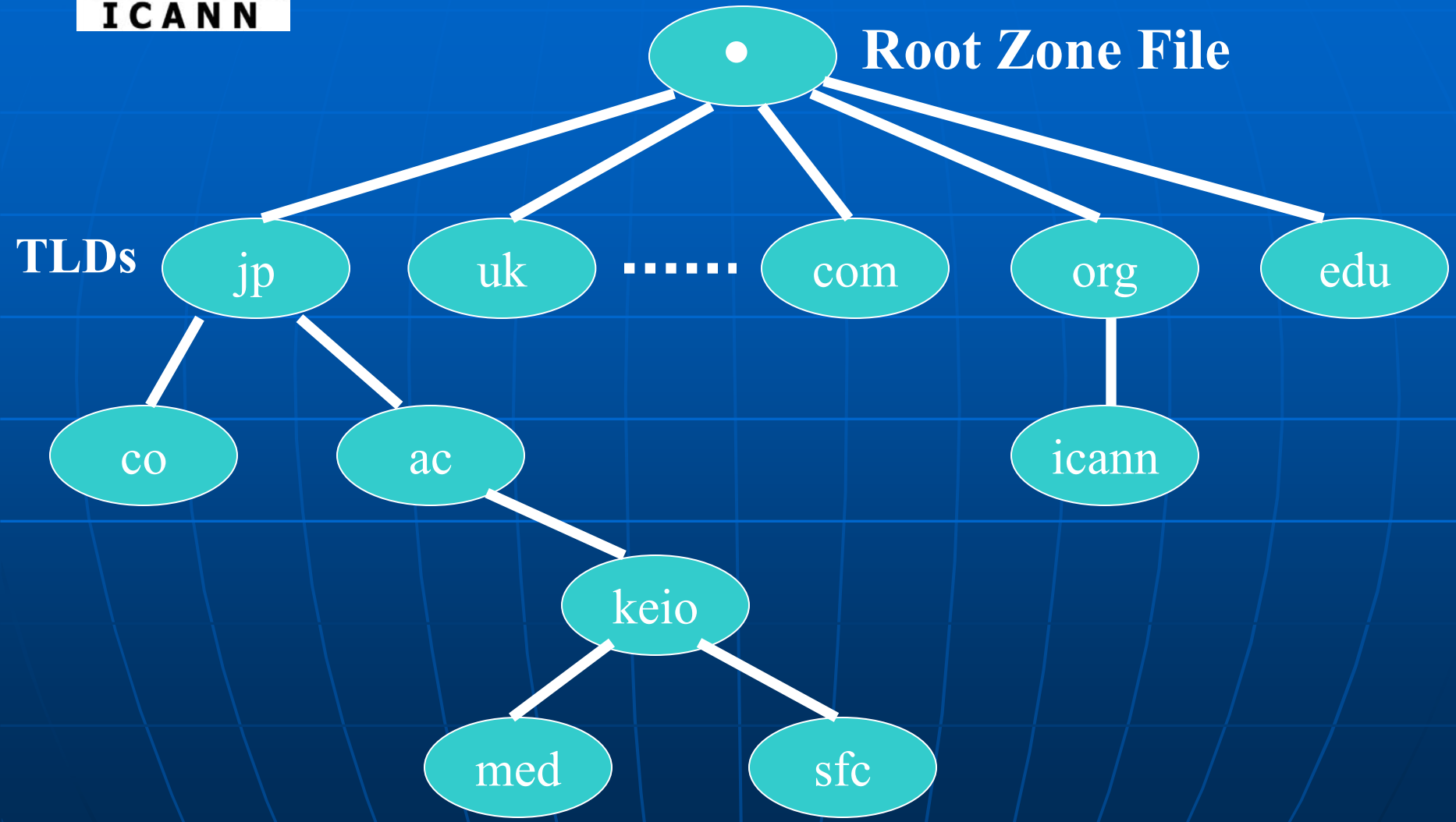
Registry
(= authoritative database of domain names and corresponding IP addresses)

Registrars
(= interact with customers/registrants; handle billing; place data in registry database; provide WHOIS service)

Registrants
(= domain name holders)



The DNS Tree



List of the Root Servers

name	org	city	type
a	NSI	Herndon,VA, US	com
b	USC-ISI	Marina del Rey,CA, US	edu
c	PSInet	Herndon,VA, US	com
d	U of Maryland	College Park,MD, US	edu
e	NASA	Mt View, CA, US	usg
f	Internet Software C.	Palo Alto, CA, US	com
g	DISA	Vienna, VA, US	usg
h	ARL	Aberdeen, MD, US	usg
i	NORDUnet	Stockholm, SE	int
j	NSI (TBD)	Herndon,VA, US	(com)
k	RIPE	London, UK	int
l	ICANN	Marina del Rey,CA, US	org
m	WIDE	Tokyo, JP	edu

Map of the Root Servers

Internet Addressing - IPv4

- IPv4 = 32 bits
  - Example: <192.34.0.64>
- Initially, 256 networks … then mix of:
  - Class A (128 with 16 M hosts)
  - Class B (16,384 with 65K hosts)
  - Class C (2M with 256 hosts)
- Now, Classless Inter-Domain addresses
  - Theoretically, up to 4 Billion hosts, hundreds of thousands of networks

Next Generation Internet - IPv6

- IPv6 = 128 bits of addressing
- Theoretically, 10^{38} hosts
- Significant transition effort needed
  - (Sort of like changing engines on the aircraft while in flight)
- IANA officially announced first allocations to RIRs (July 14, 1999)

Regional Internet Registries (RIR)

- **ARIN**
  - North America
  - Latin America
  - Caribbean Islands
  - Sub-Saharan Africa
- **RIPE NCC**
  - Europe
  - Middle East
  - North Africa
  - Parts of Asia
- **APNIC**
  - Most of Asia
  - Australia/New Zealand
  - Pacific Islands

Emerging RIRs

AfriNIC - Africa

LACNIC - Latin America/Caribbean

Status Quo Ante ICANN

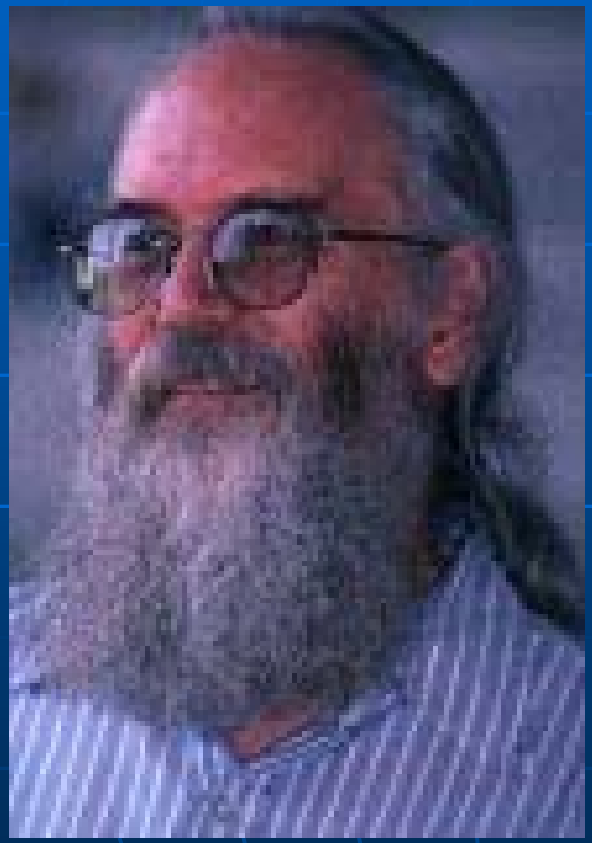
Most Internet DNS and IP Address coordination functions performed by, or on behalf of, the US government:

- **Defense Advanced Research Projects Agency (DARPA)**
  - Stanford Research Institute (SRI)
  - Information Sciences Institute (ISI) of University of Southern California
- **National Science Foundation (NSF)**
  - IBM, MCI, and Merit
  - AT&T, General Atomics, Network Solutions, Inc. (NSI)
- **National Aeronautics and Space Administration (NASA)**
- **US Department of Energy**

IANA

- "Internet Assigned Numbers Authority"
- A set of technical management functions (root management; IP address bloc allocations) previously performed by the Information Sciences Institute (ISI) at the University of Southern California, under a contract with the U.S. Government
- Includes protocol parameter and port number assignment functions defined by the Internet Engineering Task Force (IETF)
- Now a part of ICANN

IANA



Internet Assigned Numbers Authority

Jon Postel
1943-1998

Need for Change

- Globalization of Internet
- Commercialization of Internet
- Need for accountability
- Need for more formalized management structure
- Dissatisfaction with lack of competition
- Trademark/domain name conflicts

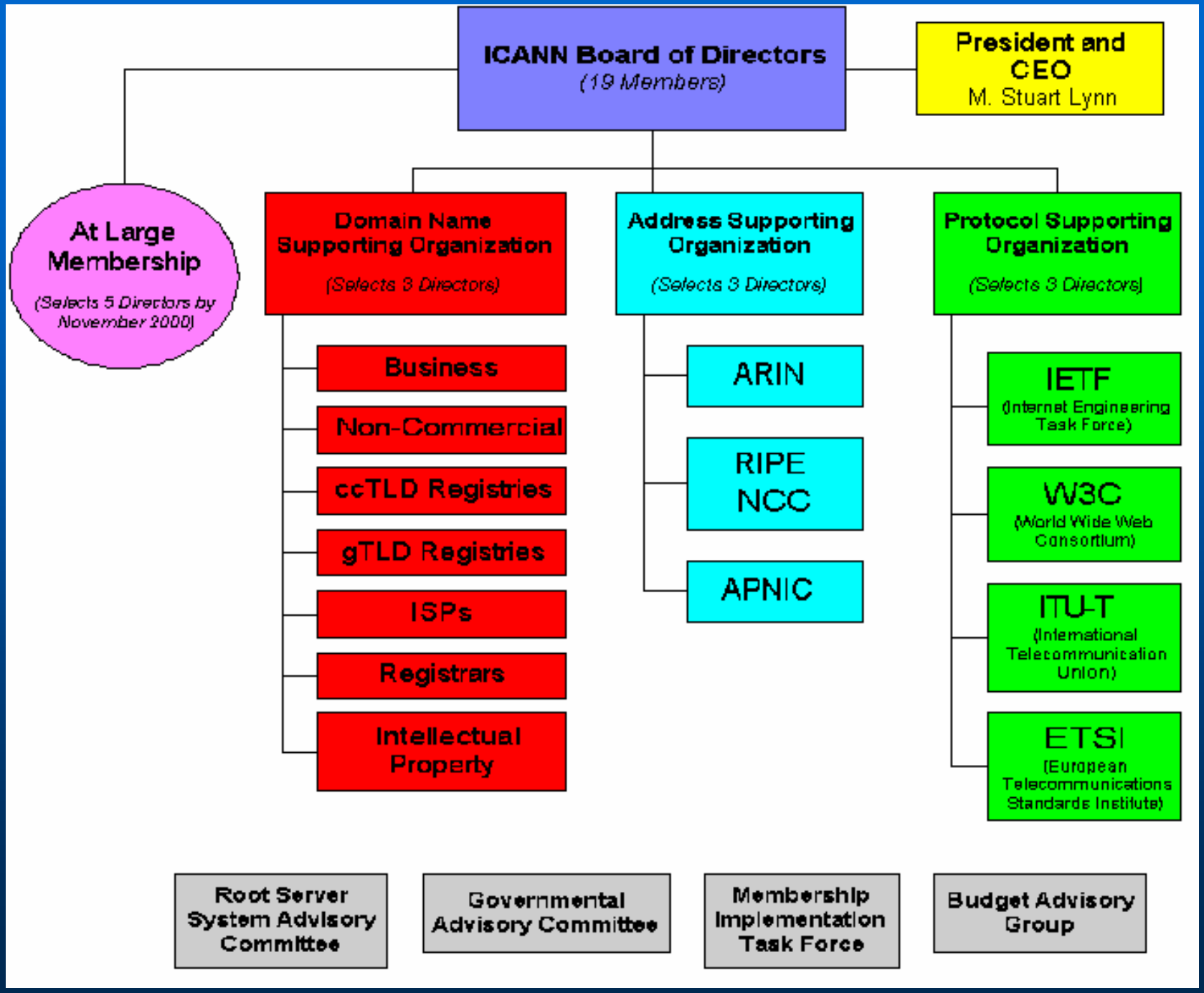
White Paper Principles

White Paper: new policy/management structure must promote 4 goals:

- Stability
- Competition
- Private, bottom-up coordination
- Representation

Status of Transition from US-Government

- 1998
  - November - ICANN recognized in MoU
- 1999
  - June - Cooperative agreement among ICANN, US Government, root server operators
  - November - ICANN and Network Solutions (NSI) sign gTLD registry and registrar agreements; USG transfers root authority over gTLDs to ICANN
- 2000
  - February - Contract with US Government to complete transfer of IANA functions
  - November- Selection of 7 new Top-Level Domains
- 2001
  - January - Transfer of InterNIC functions from NSI to ICANN


ICANN Board of Directors
(19 Members)
President and CEO
M. Stuart Lynn
At Large Membership
(Selects 5 Directors by November 2000)
Domain Name Supporting Organization
(Selects 3 Directors)
Address Supporting Organization
(Selects 3 Directors)
Protocol Supporting Organization
(Selects 3 Directors)
Business
Non-Commercial
ccTLD Registries
gTLD Registries
ISPs
Registrars
Intellectual Property
ARIN
RIPE NCC
APNIC
IETF
(Internet Engineering Task Force)
W3C
(World Wide Web Consortium)
ITU-T
(International Telecommunication Union)
ETSI
(European Telecommunications Standards Institute)
Root Server System Advisory Committee
Governmental Advisory Committee
Membership Implementation Task Force
Budget Advisory Group

ICANN Board of Directors

President and CEO

- M. Stuart Lynn

At Large Directors:

- Karl Auerbach (USA)
- Ivan Moura Campos (Brazil)
- Frank Fitzsimmons (USA)
- Masanobu Katoh (Japan)
- Hans Kraaijenbrink (Netherlands)
- Andy Mueller-Maguhn (Germany)
- Jun Murai (Japan)
- Nii Quaynor (Ghana)
- Linda S. Wilson (USA)

ASO Directors:

- Rob Blokzijl (Netherlands)
- Ken Fockler (Canada)
- Sang-Hyon Kyong (South Korea)

DNSO Directors:

- Amadeu Abril i Abril (Spain)
- Jonathan Cohen (Canada)
- Alejandro Pisanty (Mexico)

PSO Directors:

- Helmut Schink (Germany)
- Vint Cerf (USA) - *Chairman*
- Phil Davidson (U.K.)

What ICANN is NOT

- Technical Standard-Setting Body
- Internet Police Force
- Consumer Protection Agency
- Economic Development Agency
- Legislature or Court

ICANN and Global TLDs

- For the global TLDs (such as .com, .net, .org), ICANN serves as the vehicle for consensus policy development
- Examples of policies:
  - Competitive registrars
  - Uniform Dispute Resolution Policy

New Top-Level Domains

- First group chosen in November 2000
  - Global Open: <.info>, <.biz>
  - Individuals: <.name>, <.pro>
  - Specialized: <.museum>, <.aero>, <.coop>
- Proof of Concept - Launch with caution, observe carefully, learn from experience
- If successful, there will be future rounds
- Biggest challenge: Launch phase
  - *Intellectual Property & Cybersquatting fears*
  - *Opening day rush & Fairness to everyone*
- Danger: Sleazy pre-registration offers (see FTC Warning)

ICANN and Country TLDs

- Basic organizing principle: Local Internet communities make decisions about country code TLDs (ccTLDs)
- ICANN's role
  - Very hands-off on policy
  - Basic responsibility to delegate ccTLD so as to serve the interests of the local and global Internet communities
  - Maintain stable root server system
- ccTLD managers' role
  - Technically competent registry and nameserver operations
  - Commitment to administer as trustee for the local community (local laws, culture, customs, preferences, etc.)
- Local government's role
  - Depends on the local situation

Responsibilities of ccTLDs

- “TLD managers are trustees for the delegated domain, and have a duty to serve the community.”
- “Concerns about "rights" and "ownership" of domains are inappropriate. It is appropriate, however, to be concerned about "responsibilities" and "service" to the community.”

Basic Principles

- TLD managers are trustees for the delegated domain
- Fair Treatment & Non-discrimination
- Documented policies and procedures
- Technically competent operational capability

Principles for ICANN - ccTLD Relationship

- Use original Postel - IANA ccTLD concept:
  - ccTLD manager is trustee for local Internet community
  - competent operation of registry & nameservers
  - consensus efforts to resolve disputes
  - respect views of governments; but be neutral as far as possible
- Recognize ICANN as global consensus forum
- Use flexible agreement structure to accommodate varied circumstances:
  - different ccTLD registry models
  - different local needs
  - different governmental situations
- Complete MOU transition by reaching stable agreements with ccTLDs as soon as possible

Message to You:

(and to all Internet communities)

GET INVOLVED!!!

Consensus means you have to show up to be heard.

www.icann.org

Thank you very much!

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