Introduction to ICANN, IANA, and the DNS

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ICANN Video

Introduction to ICANN

ICANN

+ To reach another person on the Internet you have to type an address into your computer - a name or a number

+ ICANN coordinates these unique identifiers across the world

+ ICANN promotes competition and develops policy on the Internet's unique identifiers

+ ICANN does not control content, it cannot stop spam, and it does not deal with access to the Internet

ICANN

… cont. (ICANN)

+ Has hub offices in Los Angeles, Istanbul, and Singapore

+ Has engagement centers in Montevideo, Washington DC, Brussels, Geneva, Beijing, Seoul, and soon Tokyo

+ Website at http://www.icann.org/

ICANN's Mission

+ To coordinate, overall, the global Internet's system of unique identifiers, and to ensure stable and secure operation of the Internet's unique identifier systems. In particular, ICANN coordinates:

  1. Allocation and assignment of the three sets of unique identifiers for the Internet:

     - Domain names (forming a system called the DNS)

     - Internet Protocol (IP) addresses and Autonomous System (AS) numbers

     - Protocol port and parameter numbers

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… cont. (ICANN's Mission)

2. Operation and evolution of the DNS root name server system

3. Policy development reasonably and appropriately related to these technical functions

The Formation of ICANN

+ A result of a consultation process during 1997-1998 (Green and White Papers)

+ A Memorandum of Understanding (MoU) signed between ICANN and US Department of Commerce in Nov 1998

   + "Parties would jointly design, develop, and test the mechanisms, methods, and procedures to carry out the following DNS management functions:

      a. Establishment of policy for and direction of the allocation of IP number blocks;

      b. Oversight of the operation of the authoritative root server system;

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… cont. (The Formation of ICANN)

c. Oversight of the policy for determining the circumstances under which new top level domains would be added to the root system;

d. Coordination of the assignment of other Internet technical parameters as needed to maintain universal connectivity on the Internet; and

e. Other activities necessary to coordinate the specified DNS management functions, as agreed by the Parties;"

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Domain Name System (DNS)

+ As the 'network' continued to grow, it was obvious that another system is needed

+ The concept of Internet Name Domains was laid down in RFC 799

    + *"In the long run, it will not be practicable for every Internet host to include all internet hosts in its name-address"*

+ The structure of the DNS was more detailed in RFC 819

+ RFC 882 (later made obsolete by RFC 1034) outlined elements and protocols used to implement domain name facilities

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… cont. (Domain Name System (DNS))

+ RFC 883 (later made obsolete by RFC 1035) included the complete specifications of the domain name system

+ RFC 920 outlined the initial top-level domains that would be added to the DNS

  + .com, .net, .org, .edu, .gov, .mil, and .arpa

  + County codes using ISO 3166

  + TLDs for multi-organizations (later became .int)

Root Servers

+ Publish the root zone file to other DNS servers and clients on the Internet

+ The root zone file describes where the authoritative servers for the DNS TLDs are located

+ The root name server operators publish the root zone file as received from the IANA

Root Server Operators

+ There are currently 12 organizations:

> + A - VeriSign Global Registry Services
>
> + B - University of Southern California - Information Sciences Institute
>
> + C - Cogent Communications
>
> + D - University of Maryland
>
> + E - NASA Ames Research Center
>
> + F - Internet Systems Consortium, Inc.
>
> + G - U.S. DOD Network Information Center
>
> + H - U.S. Army Research Lab
>
> + I - Autonomica/NORDUnet
>
> + J - VeriSign Global Registry Services
>
> + K - RIPE NCC
>
> + L – ICANN
>
> + M - WIDE Project

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Root Servers Around the World (500+)
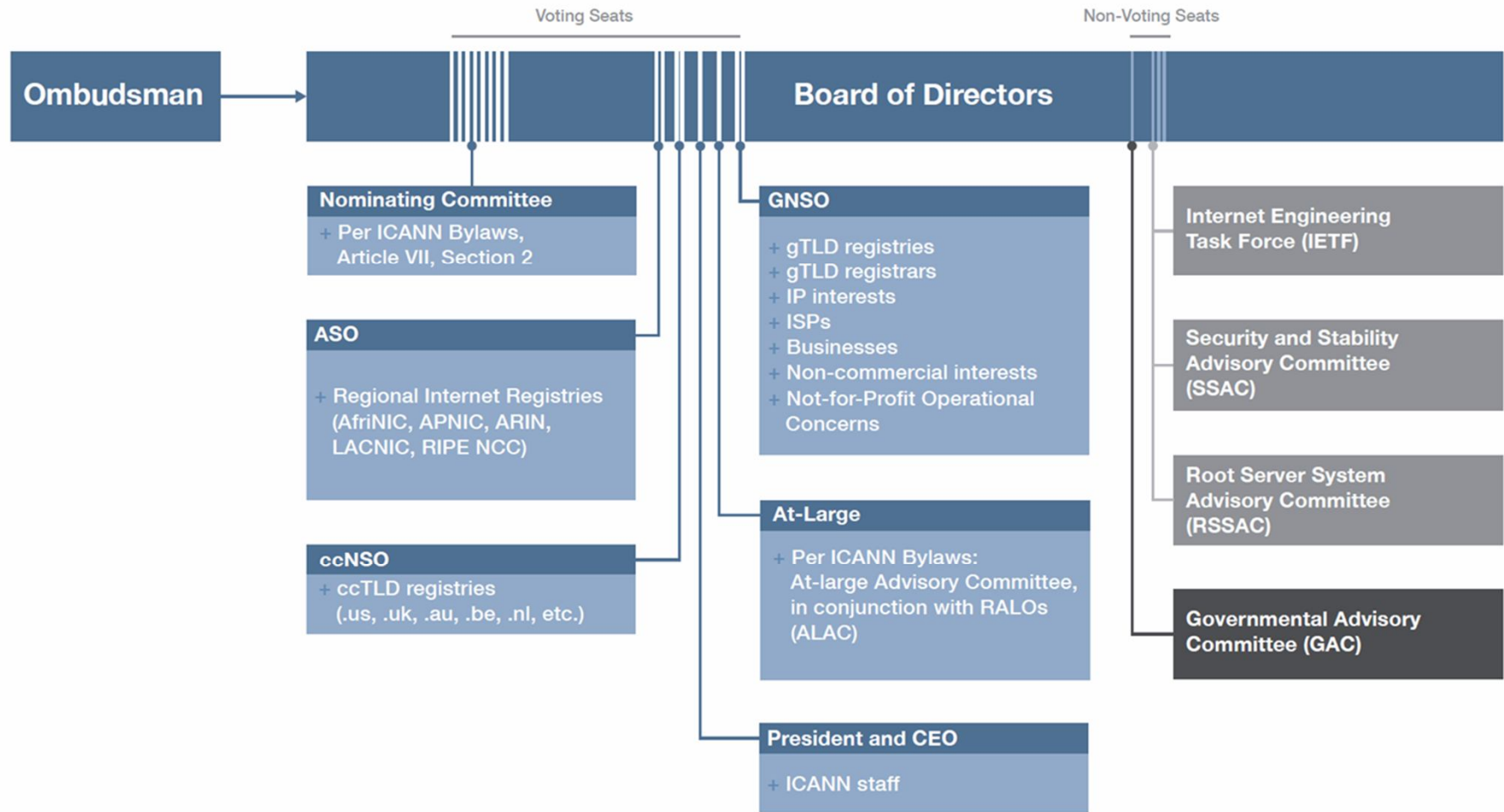

Source at http://root-servers.org/

Regional Internet Registries

Source at http://www.ripe.net/internet-coordination/internet-governance/internet-technical-community/the-rir-system

ICANN's Structure

Voting Seats

Non-Voting Seats

Ombudsman

Board of Directors

Nominating Committee
+ Per ICANN Bylaws, Article VII, Section 2

ASO
+ Regional Internet Registries (AfriNIC, APNIC, ARIN, LACNIC, RIPE NCC)

ccNSO
+ ccTLD registries (.us, .uk, .au, .be, .nl, etc.)

GNSO
+ gTLD registries
+ gTLD registrars
+ IP interests
+ ISPs
+ Businesses
+ Non-commercial interests
+ Not-for-Profit Operational Concerns

At-Large
+ Per ICANN Bylaws: At-large Advisory Committee, in conjunction with RALOs (ALAC)

President and CEO
+ ICANN staff

Internet Engineering Task Force (IETF)

Security and Stability Advisory Committee (SSAC)

Root Server System Advisory Committee (RSSAC)

Governmental Advisory Committee (GAC)

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Supporting Organizations and Advisory Committees (SOs/ACs)

+ **ASO:** Address Supporting Organization

+ **ccNSO:** Country Code Name Supporting Organization

+ **GNSO:** Generic Name Supporting Organization

+ **ALAC:** At-Large Advisory Committee

+ **GAC:** Governmental Advisory Committee

+ **RSSAC:** Root Server System Advisory Committee

+ **SSAC:** Security and Stability Advisory Committee

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Address Supporting Organization

+ Formed in October 1999

+ One of the supporting organizations that was formed through community consensus

+ Their purpose is to review and develop recommendations on Internet Protocol (IP) address policy

+ More at http://aso.icann.org/

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Country Code Name Supporting Organization

+ Formed in 2003

+ A body within the ICANN structure created for and by ccTLD managers

+ Has to date 150 ccTLDs as members

+ More at http://ccnso.icann.org/

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Generic Name Supporting Organization

+ Fashions policies for generic Top-Level Domains (e.g., .com, .org, .biz)

+ Strives to keep gTLDs operating in a fair, orderly fashion across one global Internet, while promoting innovation and competition

+ More at http://gnso.icann.org/en/

At-Large Advisory Committee

+ Is a community of individual Internet users who participate in the policy development work of ICANN

+ Views are represented via groups called "At-Large Structures (ALS)"

    + To-date, 200 ALSs are part of the At-Large

+ Website at http://atlarge.icann.org/en/

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Governmental Advisory Committee

+ Its key role is to provide advice to ICANN on issues of public policy, and especially where there may be an interaction between ICANN's activities or policies and national laws or international agreements

+ Usually meets three times a year in conjunction with ICANN meetings

+ Has more than 150 governments as members

+ More at https://gacweb.icann.org/

Root Server System Advisory Committee

+ Is responsible for advising the ICANN community and Board on matters relating to the operation, administration, security, and integrity of the Internet's Root Server System

+ The RSSAC Executive Committee holds periodic teleconferences and meets in person at IETF meetings and ICANN meetings

+ More at http://rssac.icann.org/

Security and Stability Advisory Committee

+ Advises the ICANN community and Board on matters relating to the security and integrity of the Internet's naming and address allocation systems

+ They produce Reports, Advisories, and Comments on a range of topics

+ More at http://ssac.icann.org/

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Participation in ICANN

+ Participation in ICANN is open to all who have an interest in ICANN's mission, and is free of charge

+ Bottom-up policy-making and decision-making

+ Public meetings held three times a year

    + Last meeting was in Singapore (23-27 March 2014, http://singapore49.icann.org/)

    + Next meeting will be in London (22-26 June 2014, http://london50.icann.org/)

+ Online meetings site: http://meetings.icann.org/

+ Online public comments: https://www.icann.org/public-comments

Fellowship Program

+ The program aims at providing financial scholarships to individuals from developing countries to facilitate participation in ICANN meetings

+ Fellowships Committee is responsible for qualifying and selecting applicants and is advising ICANN staff on how the program could be improved

+ Funds 40-45 travelers for every ICANN meeting

+ More can be found at https://www.icann.org/resources/pages/fellowships-2012-02-25-en

ICANN Learn

+ An online learning platform built for the global community

+ Designed to be an effective way to maintain institutional knowledge, connect peers, and unlock a new level of understanding

+ Like to take a course? Please visit http://learn.icann.org/

ICANN's Relationship with the U.S. Government

+ Six amendments to the original MOU

    + Last one signed in Sep 2003 with a 3-year term

+ In all MOUs, ICANN to accomplish certain tasks within certain timeframes

+ A Joint Project Agreement signed in September 2006

    + Processes to improve transparency and accountability

    + Excellence in operations, structure reviews, and measures to maintain organization stability

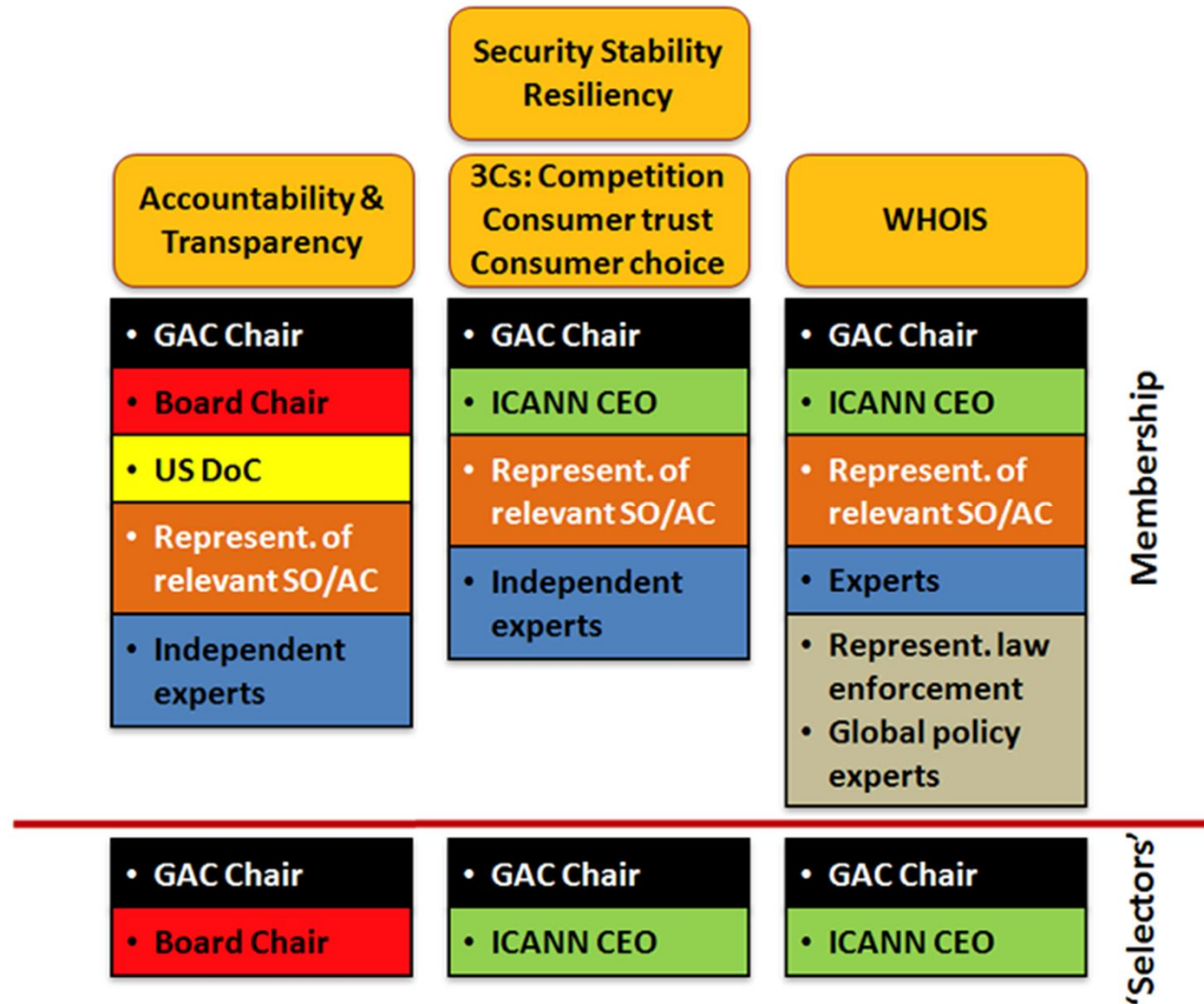   + Appropriate mechanisms to foster participation by global Internet stakeholders

2009: The Model Works

+ Evolution of the multi-stakeholder model reflected in ICANN

+ Established more than 15 years ago, with an original MOU using the word "Test" – a test whether ICANN could perform the function

+ Organization evolved, taking steps to better internationalize

+ A permanent recognition of the organization, its mission, and its public trust responsibilities in what is referred to as the Affirmation of Commitments (AoC)

Affirmation of Commitments

+ Conclude the MoU processes

+ Recognition of the private multi-stakeholder led organization, not-for-profit, and acting in the public interest

+ Undertake 'Commitment reviews' by the community and including governments

+ JPA at http://www.icann.org/en/general/JPA-29sep06.pdf

+ AoC   at http://www.icann.org/en/announcements/announcement-30sep09-en.htm#affirmation

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Commitment Reviews

Introduction to IANA

A Bit of History

Prior to the establishment of ICANN, IANA was administrated primarily by *Jon Postel* at the Information Sciences Institute (ISI), at the University of Southern California (USC), under a contract USC/ISI had with the US Department of Defense, until ICANN was created to assume the responsibility under a contract with US Department of Commerce

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What is IANA?

+ **I**nternet **A**ssigned **N**umbers **A**uthority

+ Responsible for global Internet unique identifier systems

    + Domain names, number resources, and protocol assignments

+ Founded in 1988 though its function has existed since 1972

    + The first reference to the name "IANA" in the RFC series was in RFC 1060 published in 1990, but the function and the term was established well before that

    + RFC 1060 lists a series of earlier editions of itself starting with RFC 349 which was published in 1972
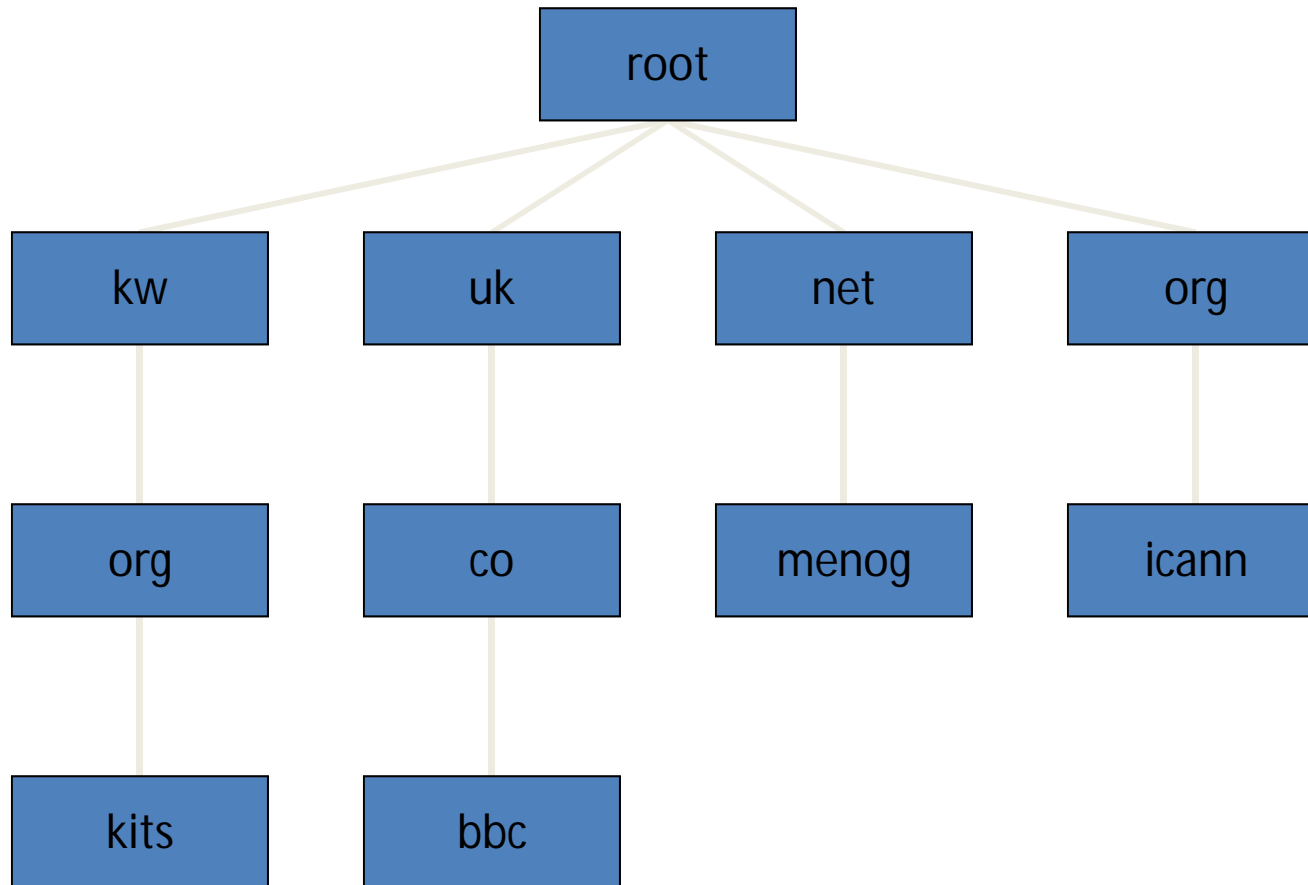
+ Website at http://www.iana.org/

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Why Does IANA Exist?

+ If computers did not use the same system of identifiers to talk to one another, the system would not interoperate

+ IANA coordinates the numbering systems needed to ensure the Internet interoperates globally

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IANA Services

+ Domain names

+ Number resources

+ Protocol assignments

Domain Names

The Root Zone

+ Delegates top-level domains

+ Root zone database is like a regular domain registry, albeit with different policy

+ Top-Level Domain operators maintain their registration records with IANA

+ gTLD delegations governed by ICANN contracts

+ ccTLD delegations governed by local Internet community principles

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How IANA Manages the Root Zone

+ Maintain data for the DNS root

  + Technical data (i.e. resource records)

  + Social data (admin and technical contacts, sponsoring organizations, WHOIS, Registration URLs)

+ Two types of changes

  + Routine

    - Confirm authenticity, check for technical problems, implement as appropriate

  + Re-delegations

    - Perform evaluation, submit to ICANN Board, implement as appropriate

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Assignment of ccTLD Operators

+ RFC 1591: Domain Name System Structure and Delegation

  + *"selecting a designated manager for a domain that is able to do an equitable, just, honest and competent job"*

  + *"These designated authorities are trustees for the delegated domain, and have a duty to serve the community. The designated manager is the trustee of the top-level domain for both the nation and the global Internet community"*

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… cont. (Assignment of ccTLD Operators)

+ IANA performs due-diligence on

    + Operator's technical and operational competency

    + Legal structure of organization

    + Government views

    + Local Internet community views

    + Transfer plans and other stability issues

    + Compliance with various principles (GAC principles, RFC 1591)

+ IANA's report is presented to the ICANN Board for final approval of a request

    + Reports are available online

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What IANA Does Not Do

+ **Does not set policy**

  + Follow precedent where possible

  + Encourage review of its operations by the community

+ **Does not decide what the two letter codes should be**

  + ISO 3166-1 standard provides these codes

+ **Does not decide who runs a ccTLD**

  + The local Internet community decides this

  + IANA performs due-diligence to ensure requests accord with local Internet community view

Domain Names – Other Functions

+ .int domains — Intergovernmental treaty organizations

    + Follows certain criteria and no fees involved: http://www.iana.org/domains/int/

+ .arpa domains — Internet infrastructure purposes

    + For more details: http://www.iana.org/domains/arpa/

+ IDN tables — Registries share IDN language/script practices

    + See tables listed at: http://www.iana.org/domains/idn-tables/

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Number Resources

+ Internet Protocol (IP) Addresses

    + Unique identifier for each computer connected to the public Internet

    + Version 4 – currently in use

    + Version 6 – under deployment, but with a low undertake

+ Autonomous System (AS) Numbers

    + Unique identifier for each network that cross-connects with other networks

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Number Allocations

+ Most numbers allocated in large blocks to Regional Internet Registries

+ Some blocks held by IANA for special purposes (private use blocks, etc.)

+ Some blocks allocated directly by IANA (multicast address space, protocol specific use)

Protocol Assignments

+ Provided in coordination with the Internet Engineering Task Force (IETF)

    + IETF is the main venue for Internet standardization through a documentation series known as RFCs (Request for Comments)

+ Allocated directly to protocol developers and/or end users

    + All protocol assignments are free

    + Eligibility criteria varies, usually either open-to-all, or requires standard action to implement

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… cont. (Protocol Assignments)

+ RFC 2860: MOU between IETF and ICANN concerning technical work of IANA

+ IANA maintains protocol registries with guidance from the Internet Engineering Steering Group (IESG), and Internet Architecture Board (IAB)

US Government and IANA

+ ICANN performs the functions of IANA governed by a contract with the US Department of Commerce (DoC)

+ US DoC authorizes all changes to the DNS root zone

  + IANA does all the processing, and when a change is ready, it is sent to the DoC as the final step before implementation

  + DoC directs Verisign to implement the change into the root

  + DoC notifies IANA when change is implemented

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The U.S. Government's Announcement

+ On 14 March 2014, the U.S. Government (USG) announced its intent to transition its stewardship of the IANA functions to the global multistakeholder community;

+ As the first step, it asked ICANN to convene global stakeholders to develop a proposal to transition the current role played by the USG;

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… cont. (The U.S. Government's Announcement)

+ ICANN was asked to serve as a convener based on its role as the IANA functions administrator (since 1998) and the global coordinator for the Internet's Domain Name System (DNS).

+ The multistakeholder community has set the policies implemented by ICANN for more than 15 years.

Why Now?

+ The USG always envisioned its role as transitional;

+ Transitioning the USG out of its current role marks the final phase of the privatization of the DNS as outlined by the USG in 1997;

+ The decision further supports and enhances the multistakeholder model of Internet policymaking and governance.

Transition Proposal's Guiding Principles

NTIA has communicated to ICANN that the transition proposal must have broad community support and address the following four principles:

+ Support and enhance the multistakeholder model;

+ Maintain the security, stability, and resiliency of the Internet DNS;

+ Meet the needs and expectation of the global customers and partners of the IANA services; and

+ Maintain the openness of the Internet.

NTIA also specified that it will not accept a proposal that replaces the NTIA role with a government-led or an intergovernmental organization solution.

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ICANN's Engagement in the Middle East Region

ICANN Staff in the ME Region

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What is ICANN doing for the ME Region?

+ **Middle East Strategy Working Group (MESWG)**

    + Formed in late 2012 under ICANN's Coordination

    + Covers the 22 Arab states, Iran, Afghanistan, and Pakistan

    + An ad-hoc working group consisting of 21 experts from 11 countries of the region

    + A 3-year strategy with annual Implementation Plans

+ **Middle East DNS Forum**

+ **Middle East and Adjoining Countries School on IG (MEAC-SIG)**

+ **Training and Capacity Building Initiatives**

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Strategic Goals for ICANN's Engagement

+ Foster two-way engagement between ICANN and the broader Internet community in the region;

+ Build strong and competitive domain name industry in the region;

+ Promote multi-stakeholder Internet governance mechanisms in the region

Strategic Areas of Work

+ Working group has defined three strategic areas to work on:

1. DNS Security and Stability

2. Domain Name Industry

3. Internet Governance Ecosystem

+ More   at https://community.icann.org/display/MES/Middle+East+Working+Group

What is the MESWG Up To?

+ Task Force on Arabic Script IDNs (TF-AIDN)

+ Task Force on Capacity Building and Awareness (TF-CBA)

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Task Force on Arabic IDNs (TF-AIDN)

+ Announced during the Arab IGF in Algiers in early October 2013

+ Consists of 26 volunteers from the region

    + Majority are fresh blood that have never been involved in regional discussions on Arabic IDNs, or the ICANN process

+ Holding calls when needed to ensure timelines are attained and momentum is maintained

+ The first F2F meeting took place in Singapore during March 20-22.

    + ICANN Funded 10 of the 11 who attended

    + A very productive 3-day meeting

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TF-AIDN – Moving Forward

+ Work underway on Arabic Email Support and Universal Acceptance of Arabic script IDNs

+ The work on *Label Generation Ruleset (LGR)* is expected to end in late November 2014

+ Next F2F meeting to take place in Istanbul, Turkey during June 8-12, 2014

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Task Force on Capacity Building & Awareness (TF-CBA)

+ Call circulated on December 1, 2013, and was open for interested candidates from outside of the Middle East Strategy region

+ 21 applications received

    + A Steering Committee was formed from within the MESWG to evaluate the applications and set the next steps

    + All applicants have been welcomed on board

+ Train-the-Trainer Model

    + Ongoing discussions on how to implement this model in our region

    + Consensus that the TF-CBA is a building block for this model to move forward

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Engagement with Stakeholders

+ Attend events where ICANN can benefit in engaging with participants

+ Visit academic institutes and educate them on IG

+ Visit SME funding entities, angel investors, incubators, and startup accelerators and aware them on the various business opportunities in the domain name industry

+ Engage with all local stakeholders through country visits

+ Engage via a dedicated mailing list (Arab ICANN) and Arabic Twitter feed (**@icann_ar**)

Questions?

Thank you

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http://www.icann.org/

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