Introduction to PTI for the GWG

Kim Davies
VP, IANA Services; President, PTI

**PTI** | An ICANN Affiliate

Three years ago

- From 2000 until 2016, ICANN performed the IANA functions under a contract with the US Government
  - Prior to ICANN, IANA functions were activities under other US Government programs
- The **IANA stewardship transition** ended that contractual oversight role and replaced it with a model where the ICANN community oversees the functions
- The formal model the community designed creates a new non-profit that operates the IANA functions called **Public Technical Identifiers** (PTI), a backronym for *post-transition IANA*.

12am 1 October 2016
The IANA contract ends

What are the IANA functions?

- The record keeper for the unique names and numbers used by Internet technologies to interoperate

- The IANA functions pre-date ICANN. In 1998, ICANN was established to be the home of the IANA functions

- The unique identifiers include protocol parameters, Internet numbers and domain names

- The IANA team maintains these records according to policies adopted by Internet names, numbers and protocol standards communities
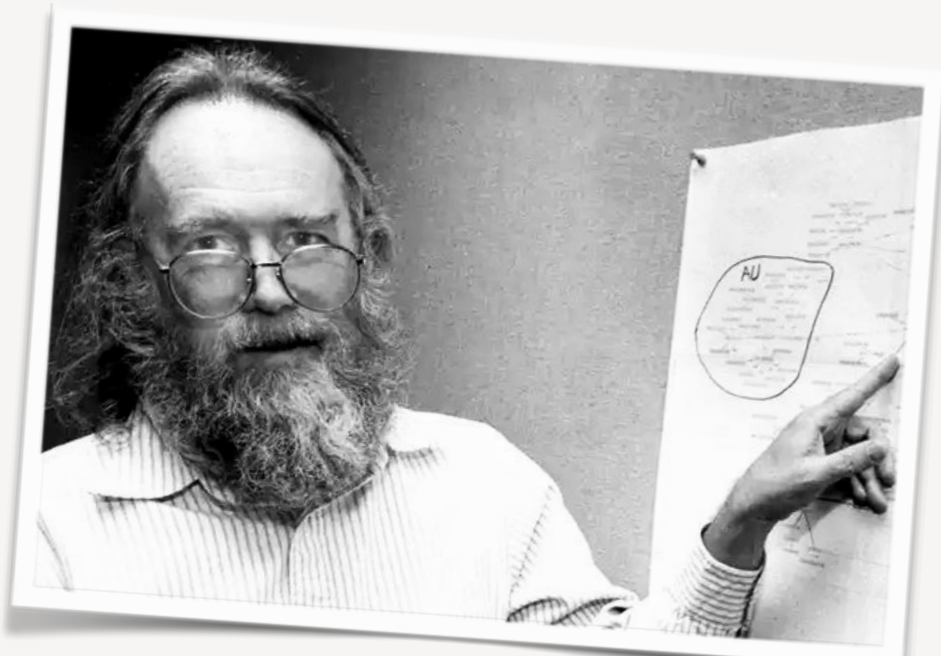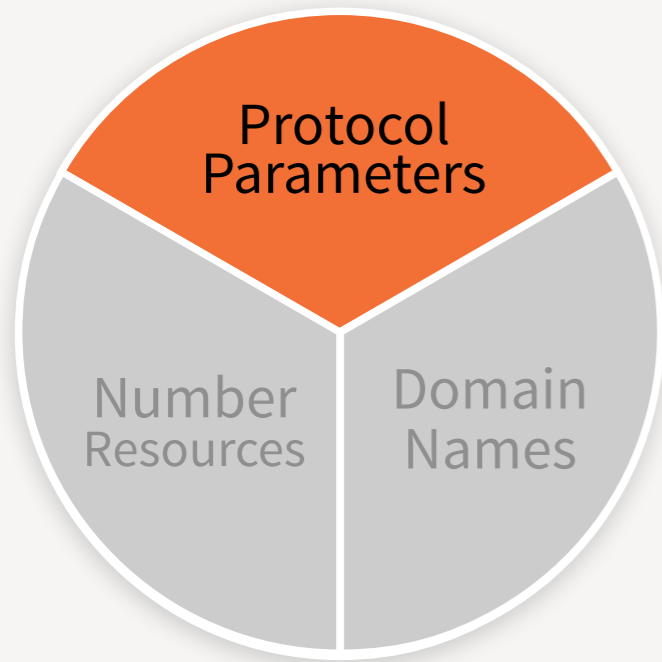

Jon Postel (L) started the IANA; with Steve Crocker and Vint Cerf (R)
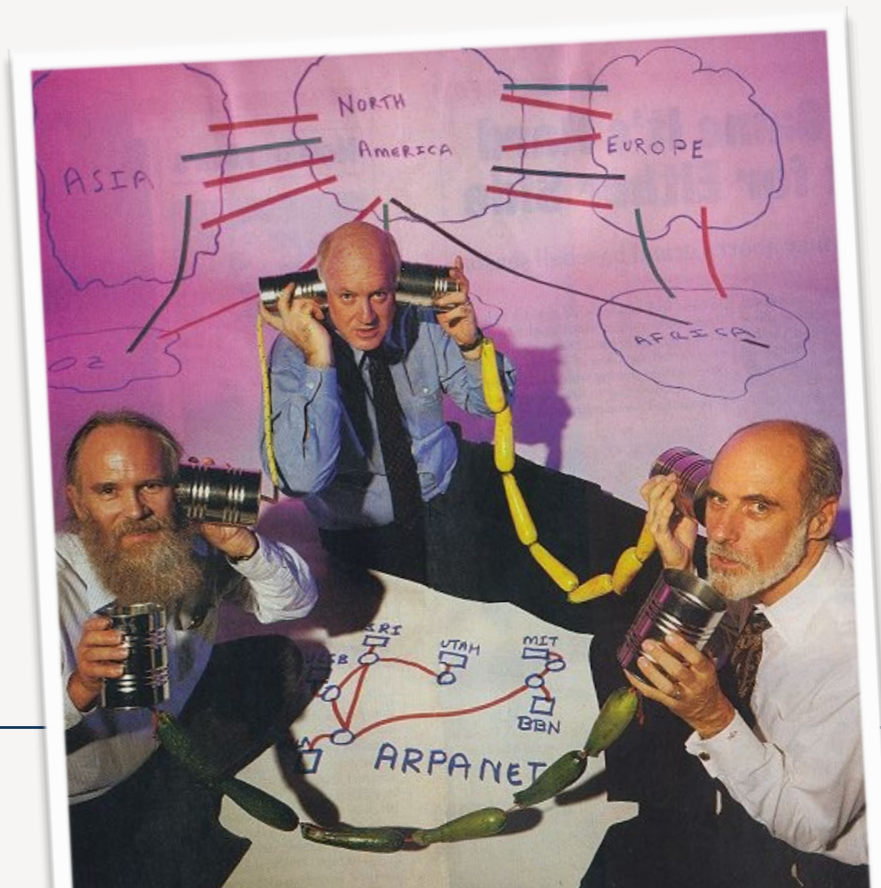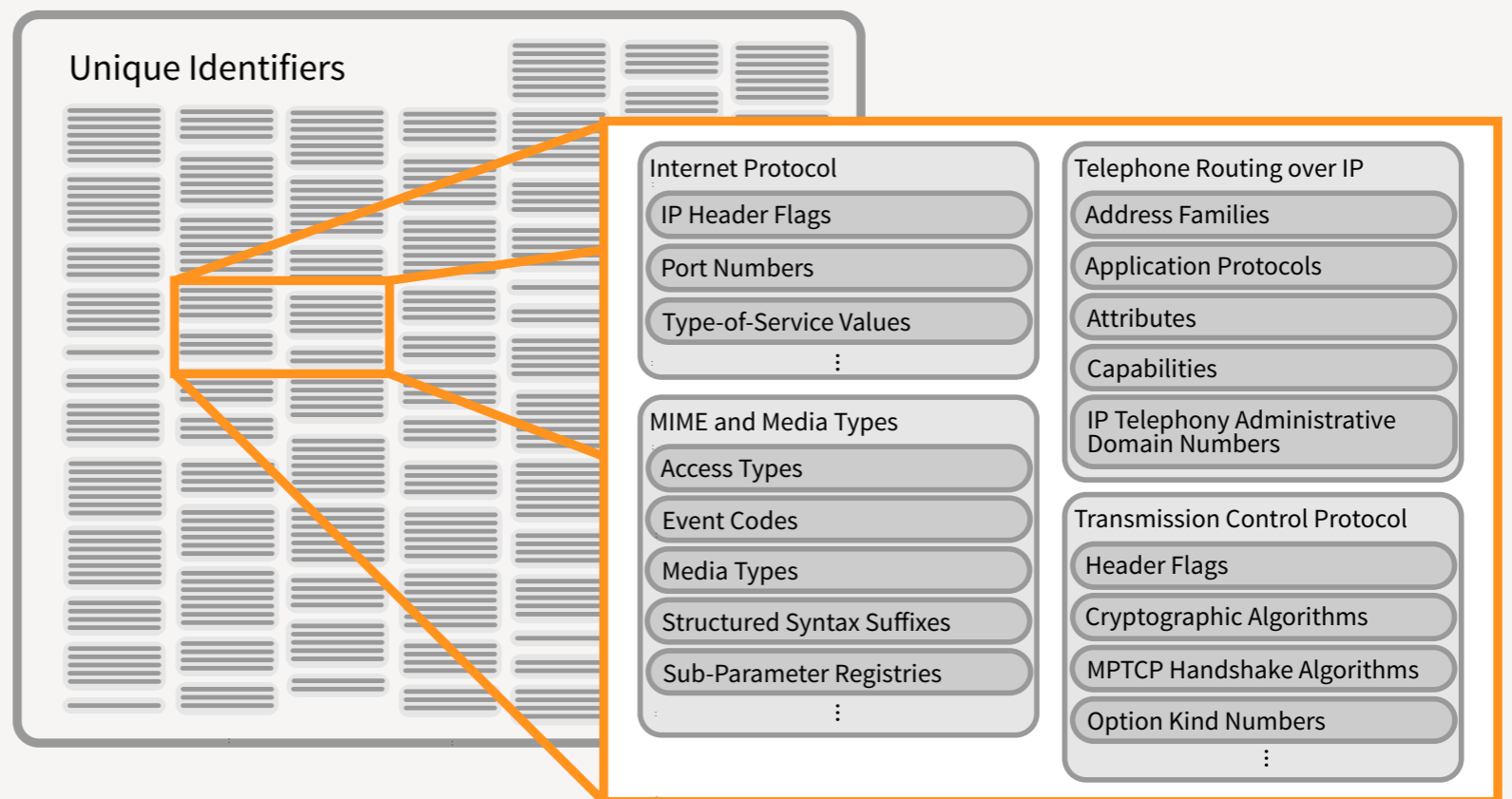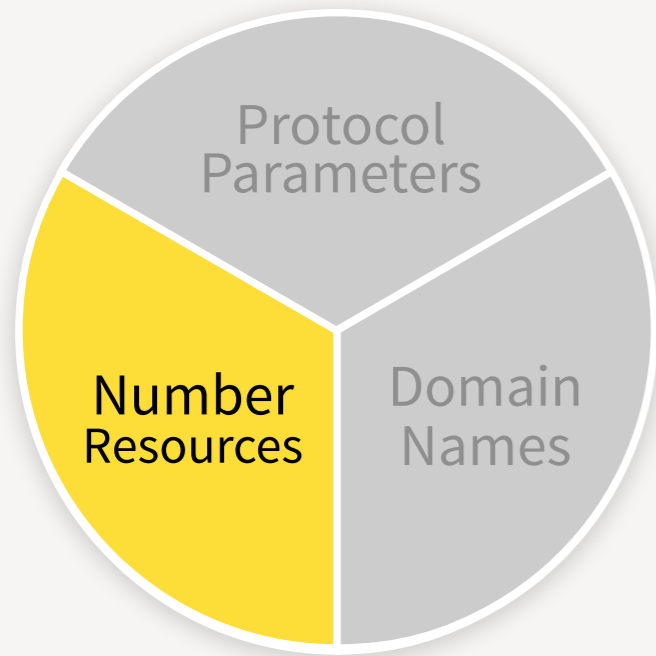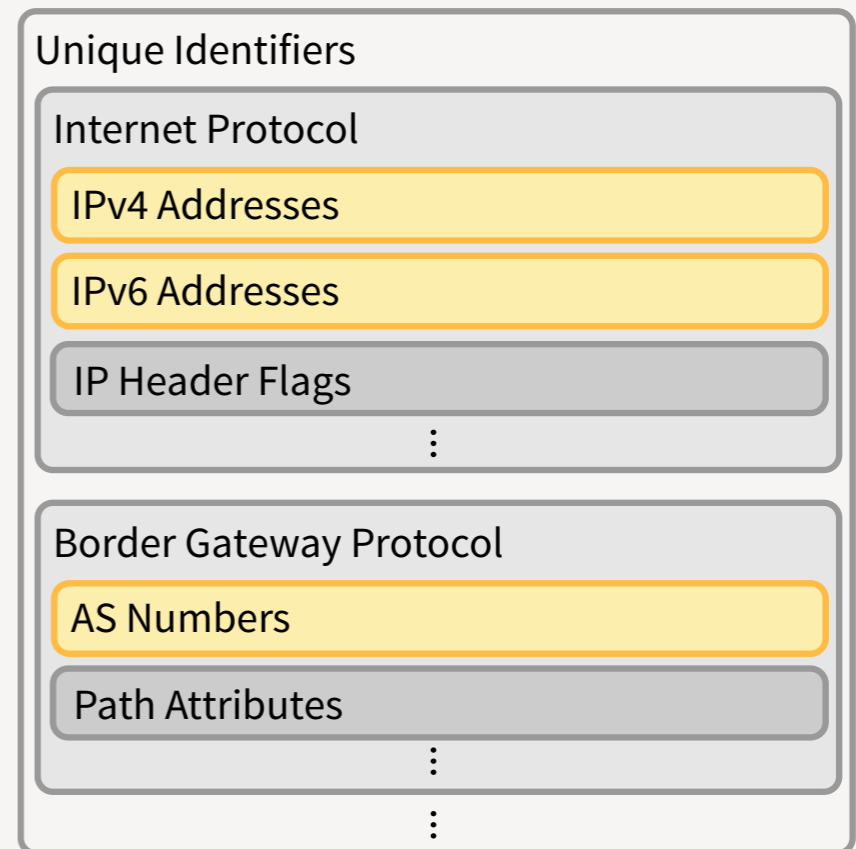
The core IANA functions areas
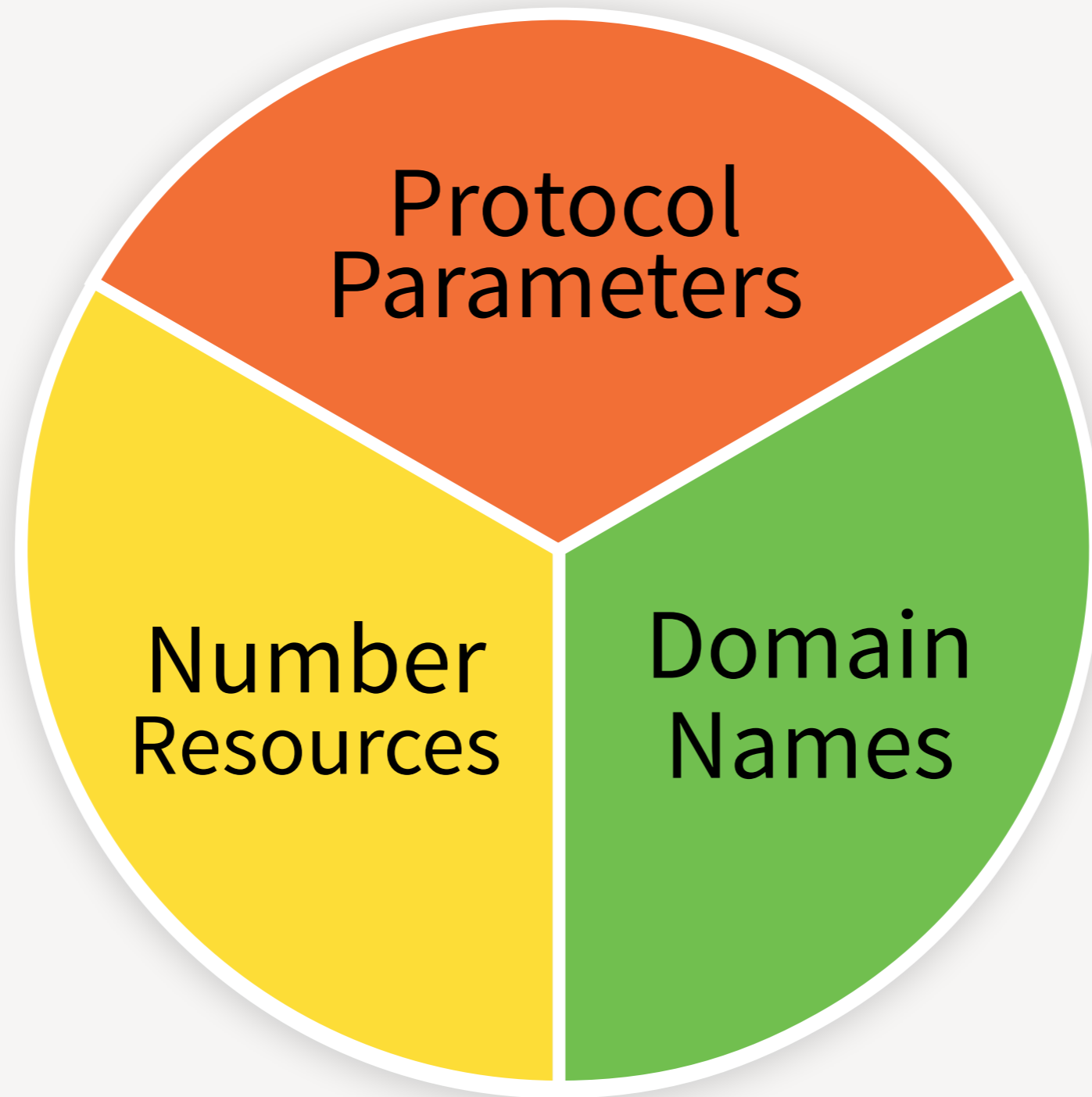
- **Protocol Parameters** are used everywhere and are directly issued by IANA. Rules differ for the qualifying criteria for each type. Applications are evaluated by IANA according to the set criteria.

- Most protocol parameters' visibility is limited to software implementors (i.e. inside software code).
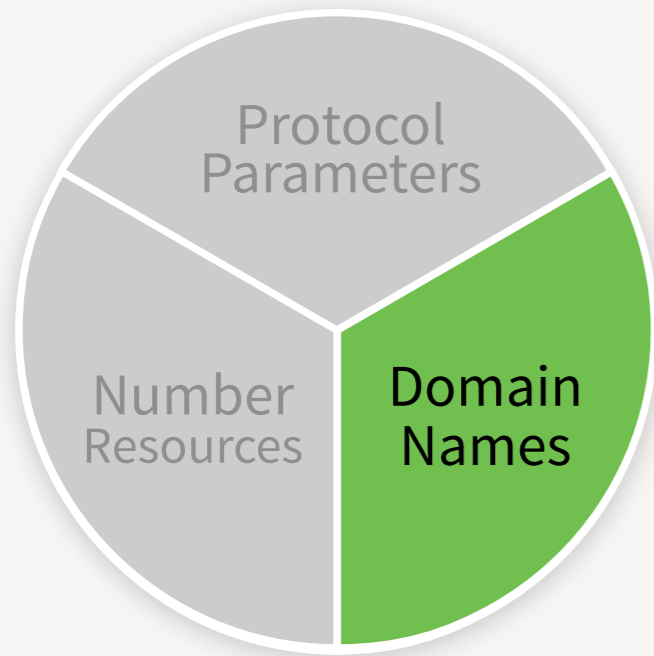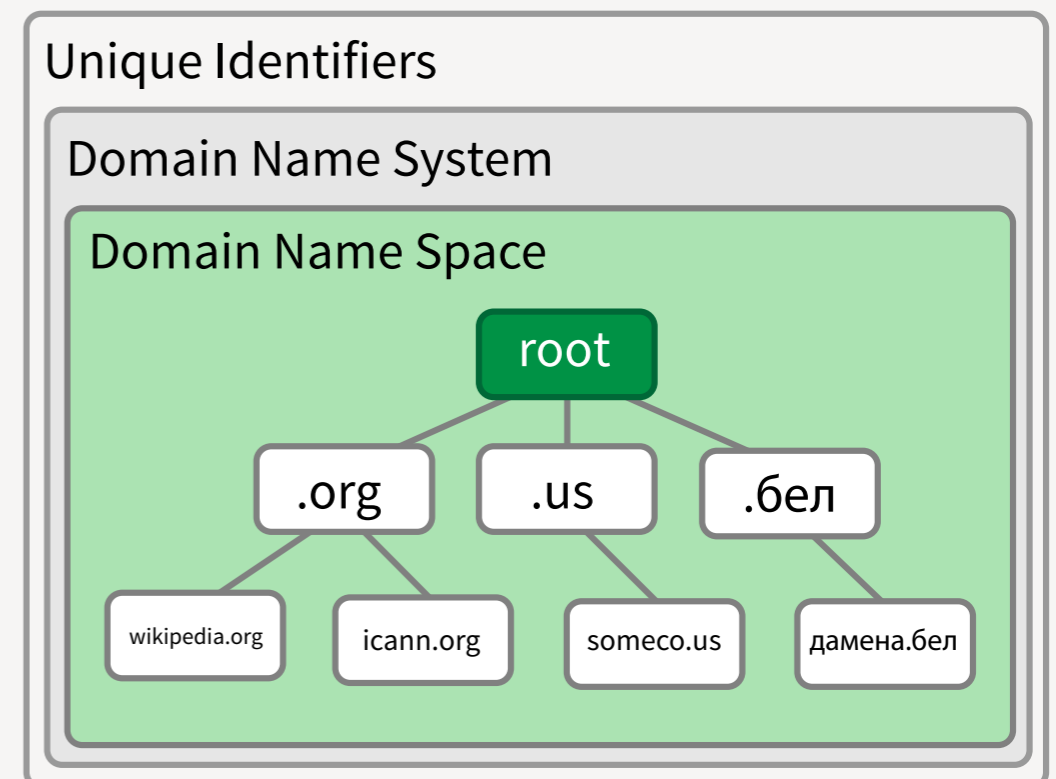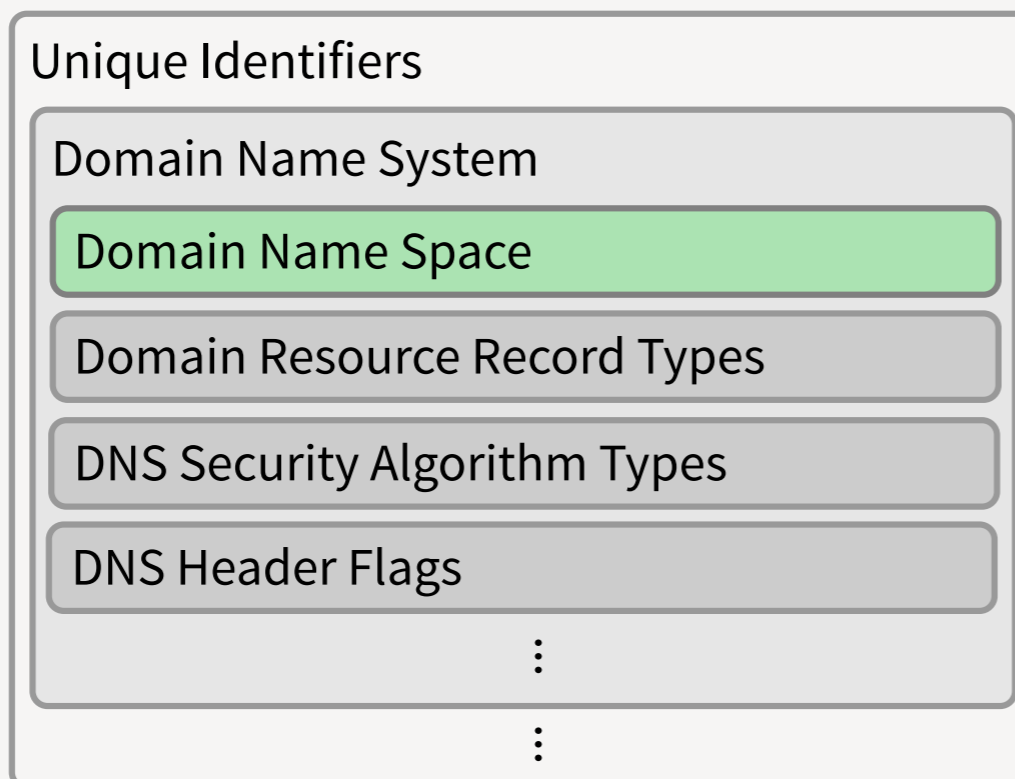
Unique Identifiers

Internet Protocol
IP Header Flags
Port Numbers
Type-of-Service Values
⋮

MIME and Media Types
Access Types
Event Codes
Media Types
Structured Syntax Suffixes
Sub-Parameter Registries
⋮

Telephone Routing over IP
Address Families
Application Protocols
Attributes
Capabilities
IP Telephony Administrative Domain Numbers

Transmission Control Protocol
Header Flags
Cryptographic Algorithms
MPTCP Handshake Algorithms
Option Kind Numbers
⋮

Protocol Parameters

Number Resources

Domain Names

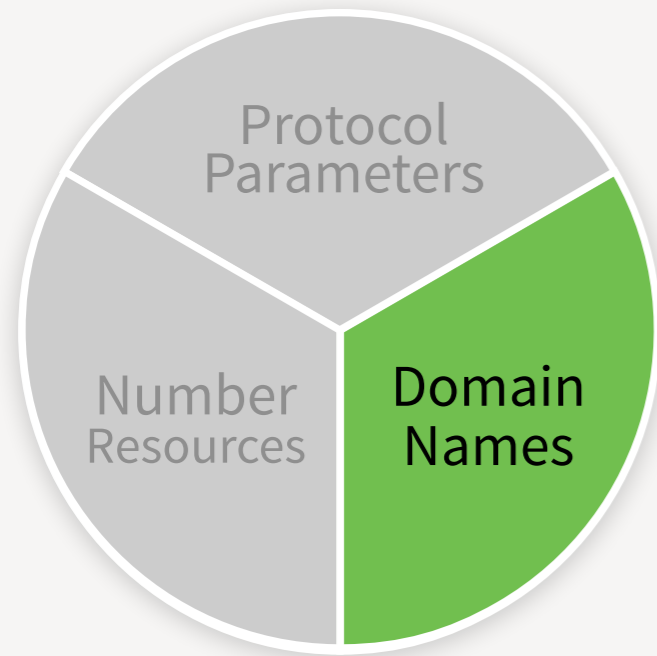**Number Resources** are specialized forms of protocol parameters:

- IP Addresses: unique identifiers for devices on the Internet

- Autonomous System (AS) numbers: unique identifiers that group networks on the Internet

Protocol Parameters

Number Resources

Domain Names

Unique Identifiers

Internet Protocol

IPv4 Addresses

IPv6 Addresses

IP Header Flags

⋮

Border Gateway Protocol

AS Numbers

Path Attributes

⋮

⋮

- Most notable IANA function is managing the DNS root zone, which defines top-level domains

- Like number resources, the domain name space is hierarchically delegated, with IANA responsible for the upper-most level of allocations

Unique Identifiers

Domain Name System

Domain Name Space

Domain Resource Record Types

DNS Security Algorithm Types

DNS Header Flags

⋮

⋮

Unique Identifiers

Domain Name System

Domain Name Space

root

.org .us .бел

wikipedia.org icann.org someco.us дамена.бел

- The IANA tasks include:
  - Receiving and evaluating root zone changes requests against policies and operational requirements:
    - Assignment and transfer of TLDs
    - Routine maintenance of name servers and other technical elements
    - Points of Contact
  - Transmitting vetted changes for implementation in the root zone and root servers
  - Operating the .INT domain for intergovernmental treaty organizations
  - IDN table/LGR repository maintenance

Protocol Parameters

Number Resources

Domain Names
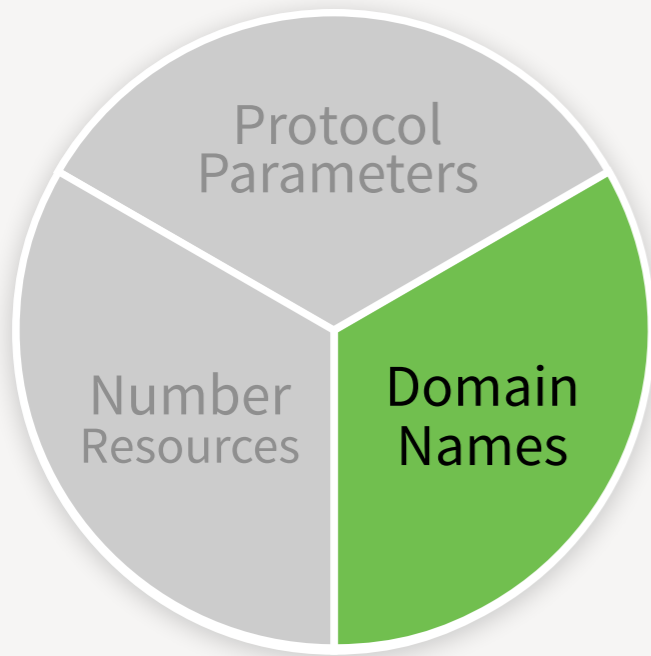
- Managing the trust anchor for the DNS (the "Root Zone Key Signing Key")
  - Using the key happens in public "key signing ceremonies", involving trusted community representatives and other oversight.
  - Includes managing the lifecycle of the key, including when it is replaced (a "rollover")
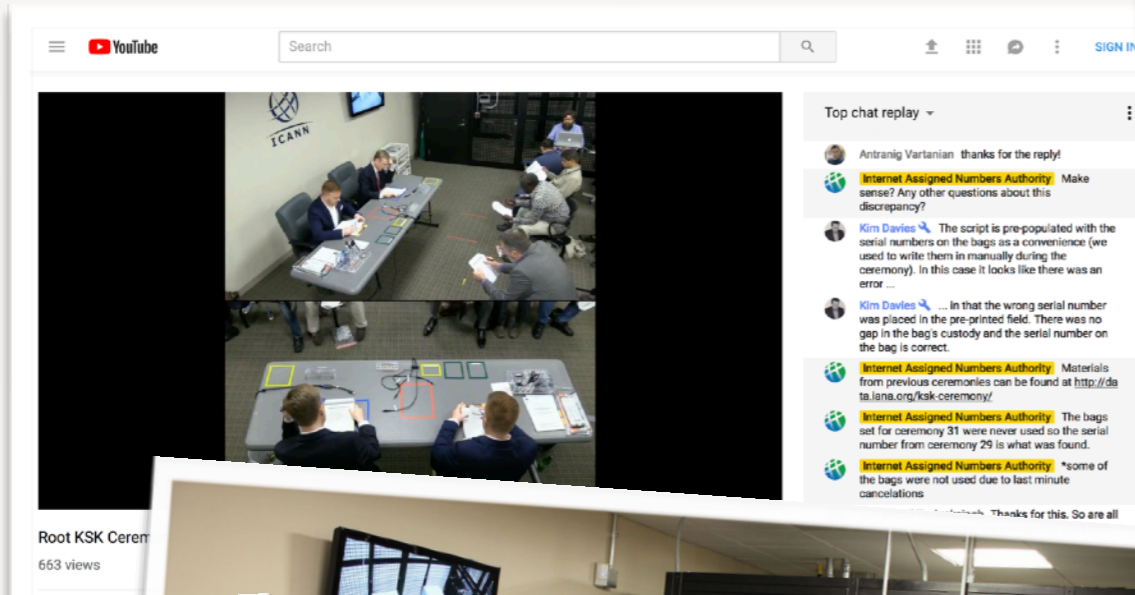
Root KSK Ceremony 34

This DNSSEC key signing ceremony is planned for
15 August 2018, 2000 UTC

Location	Root Zone Key Management Facility West
	El Segundo, California, USA
Ceremony Start	2018-08-15 20:00:00 UTC
	Wednesday 15 August 2018, 1 p.m. (local time at facility)
Objectives	Sign the ZSK for 2018Q4

Observing the ceremony

The key signing ceremony is a public event, and you are welcome to observe. Due to space only a small number of persons are able to participate as observers at a ceremony in person broadcast ceremonies as they happen, and will provide recordings after the ceremony is co Prior to observing a ceremony, we recommend you review the ceremony materials (i.e. the in advance.

Protocol Parameters

Number Resources
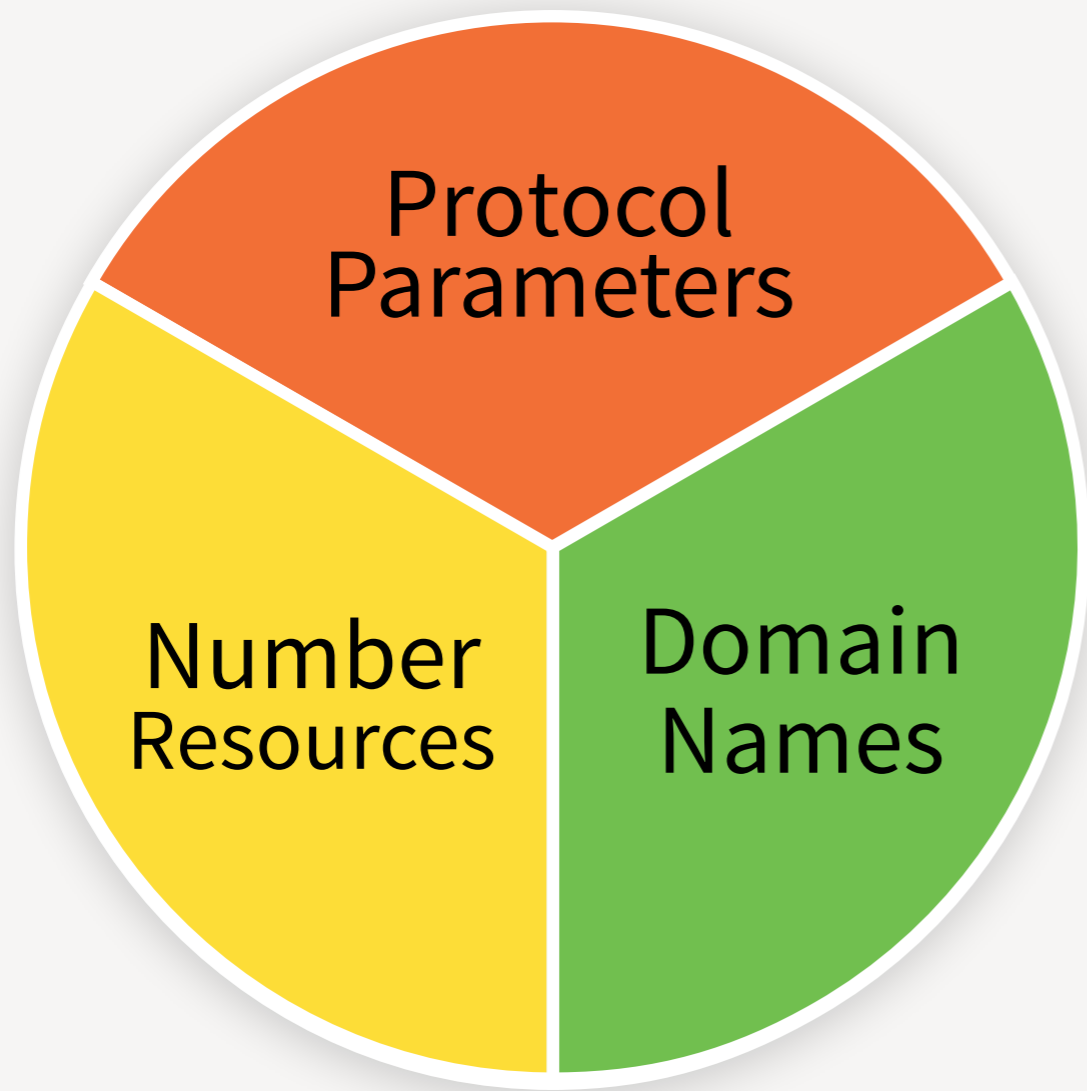
Domain Names

- Together, protocol parameters, number resources and domain names comprise the IANA functions

- These divisions also represent the three different accountability mechanisms for these functions
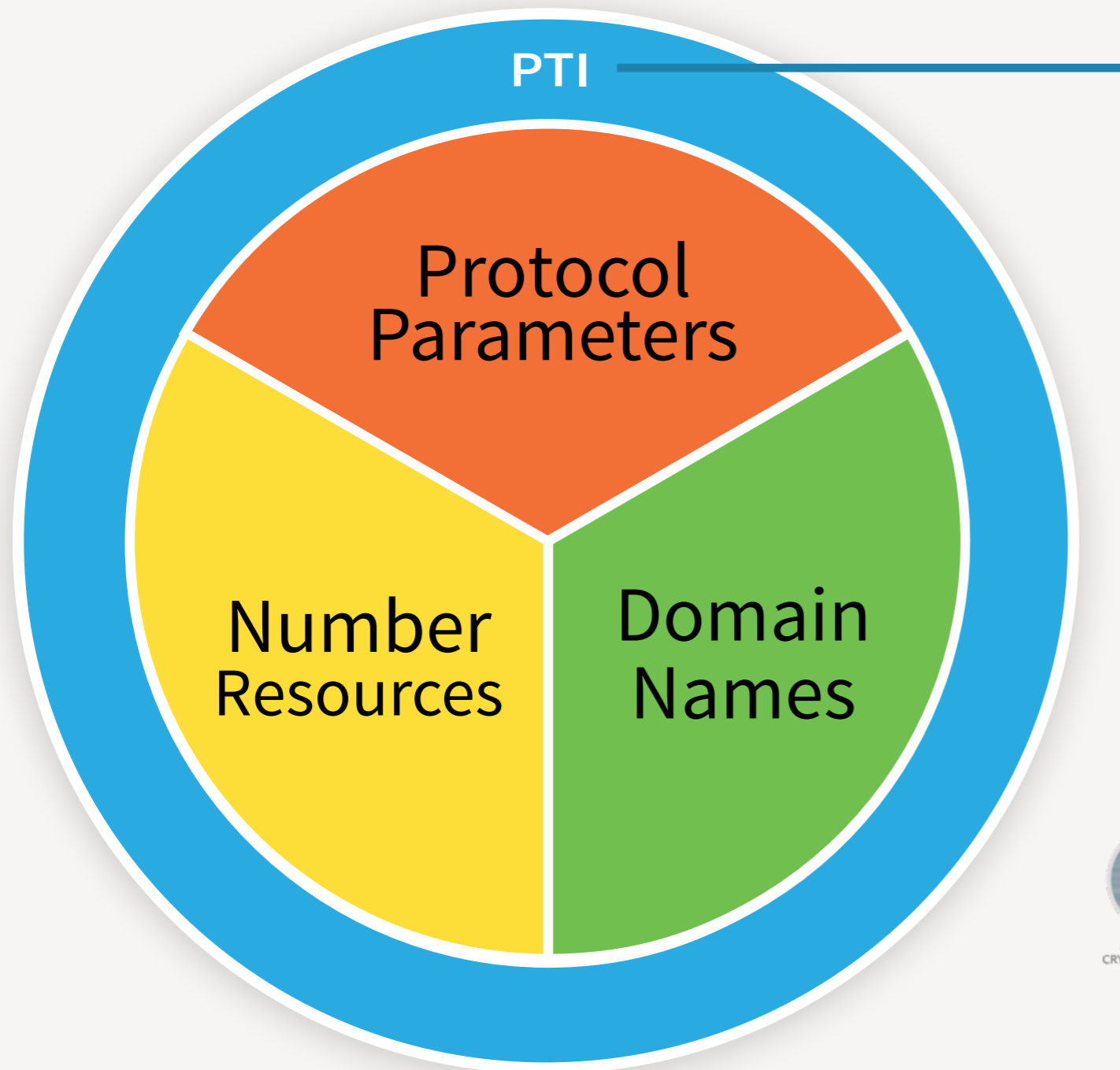
Public Technical Identifiers

- Performs the IANA functions
- Hires the IANA staff
- Is a non-profit organization created in 2016
- ICANN is its sole member (i.e. affiliate of ICANN)

PTI

Protocol Parameters

Number Resources

Domain Names

Alan Akahoshi
PRODUCT MANAGER

Shaunte Anderson
AUDIT

Amanda Baber
REQUEST SPECIALIST

Michelle Cotton
IETF RELATIONS

Kim Davies
PRESIDENT

Aaron Foley
CRYPTO OPERATIONS

Selina Harrington
REQUEST SPECIALIST

Marilia Hirano
PROGRAM MANAGER

Jennifer Johnson
PROJECT COORDINATOR

Ali Mohammadi
SOFTWARE

Andres Pavez
CRYPTO OPERATIONS

Seman Said
SOFTWARE
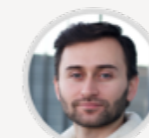
George Sarkisyan
REQUEST SPECIALIST

Naela Sarras
OPERATIONS DIRECTOR

Sabrina Tanamal
REQUEST SPECIALIST
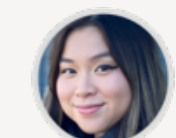
Michelle Thangtamsatid
REQUEST SPECIALIST
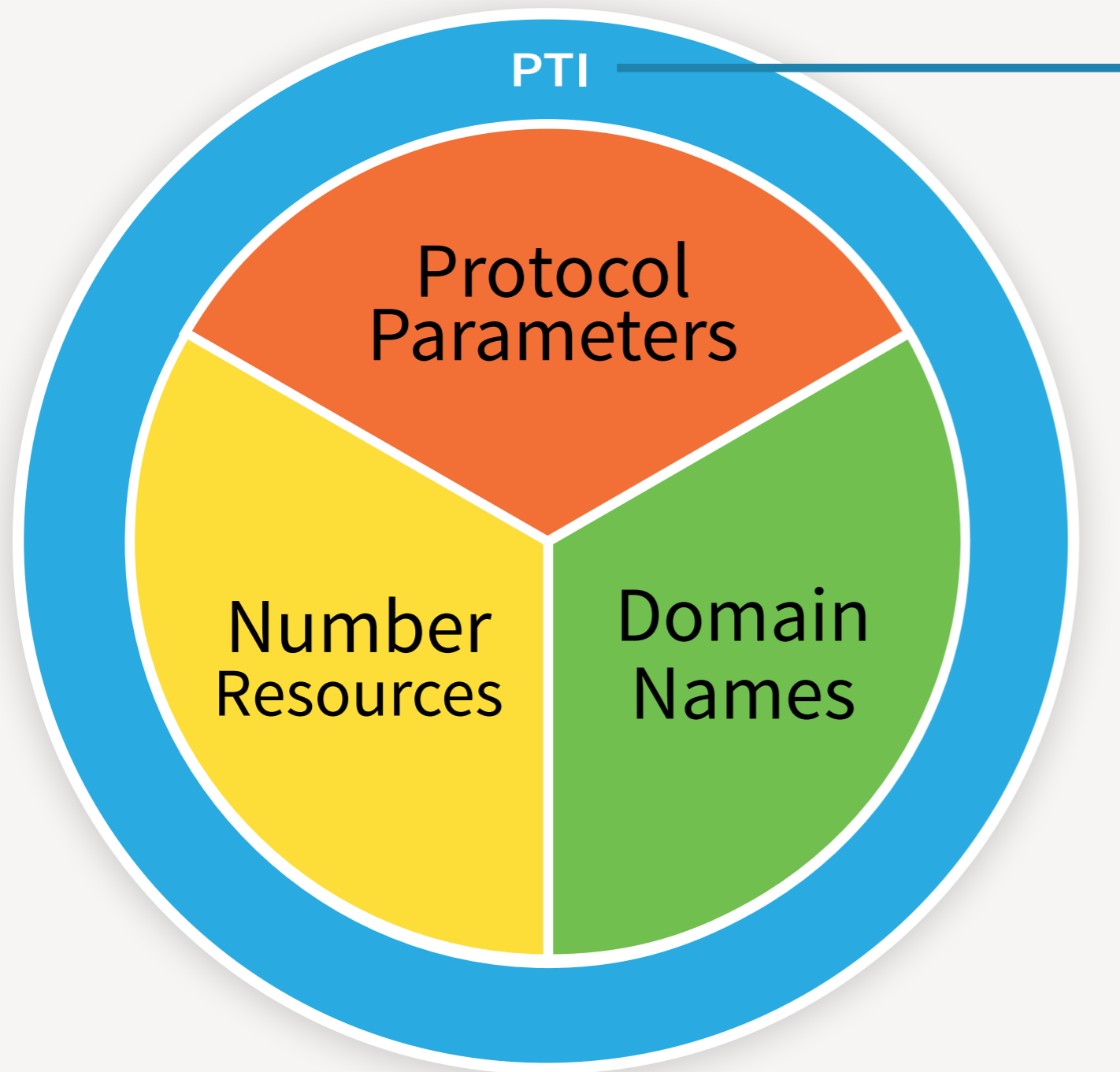
Public Technical Identifiers

- Five-member board of directors including 2 Nomcom appointees

Lise Fuhr
CHAIR
NOMCOM APPTEE

Wei Wang
NOMCOM APPTEE

Kim Davies
PTI PRESIDENT

David Conrad
ICANN CTO

Jia-Rong Low
ICANN VP, APAC

PTI

Protocol Parameters

Number Resources

Domain Names

PTI | An ICANN Affiliate
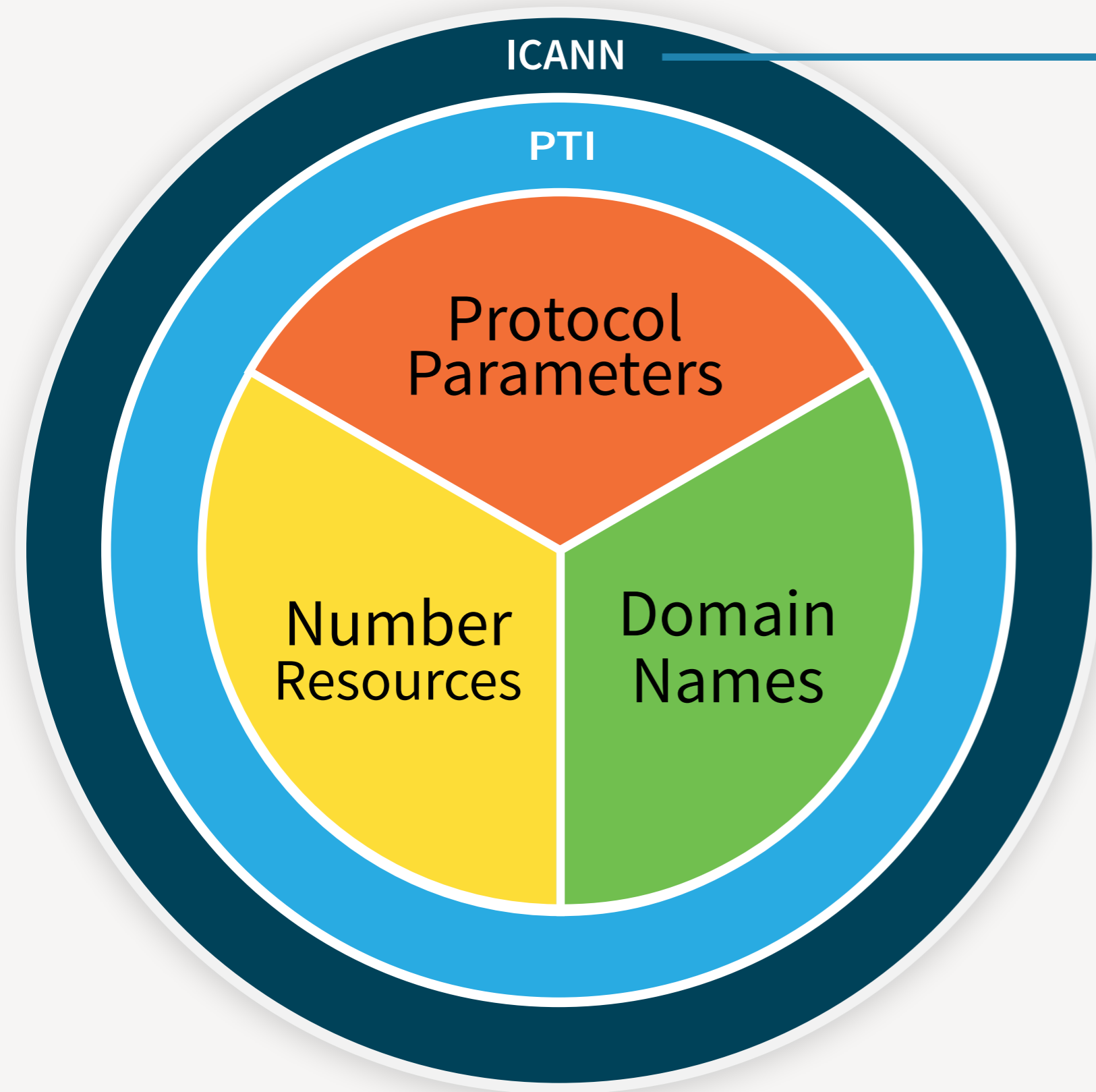
ICANN

- Responsible for the IANA functions
- Contracts PTI to perform the IANA functions
- Oversees PTI's performance
- Provides shared and dedicated resources (Legal, IT, HR, Finance and many others)
- Provides all funding to PTI
- Operates additional accountability mechanisms such as Customer Standing Committee, IANA Naming Function Reviews

PTI | An ICANN Affiliate

Accountability

Protocol Parameter oversight
through **Memorandum of Understanding**
between **IETF** and ICANN,
subcontracted from ICANN to PTI
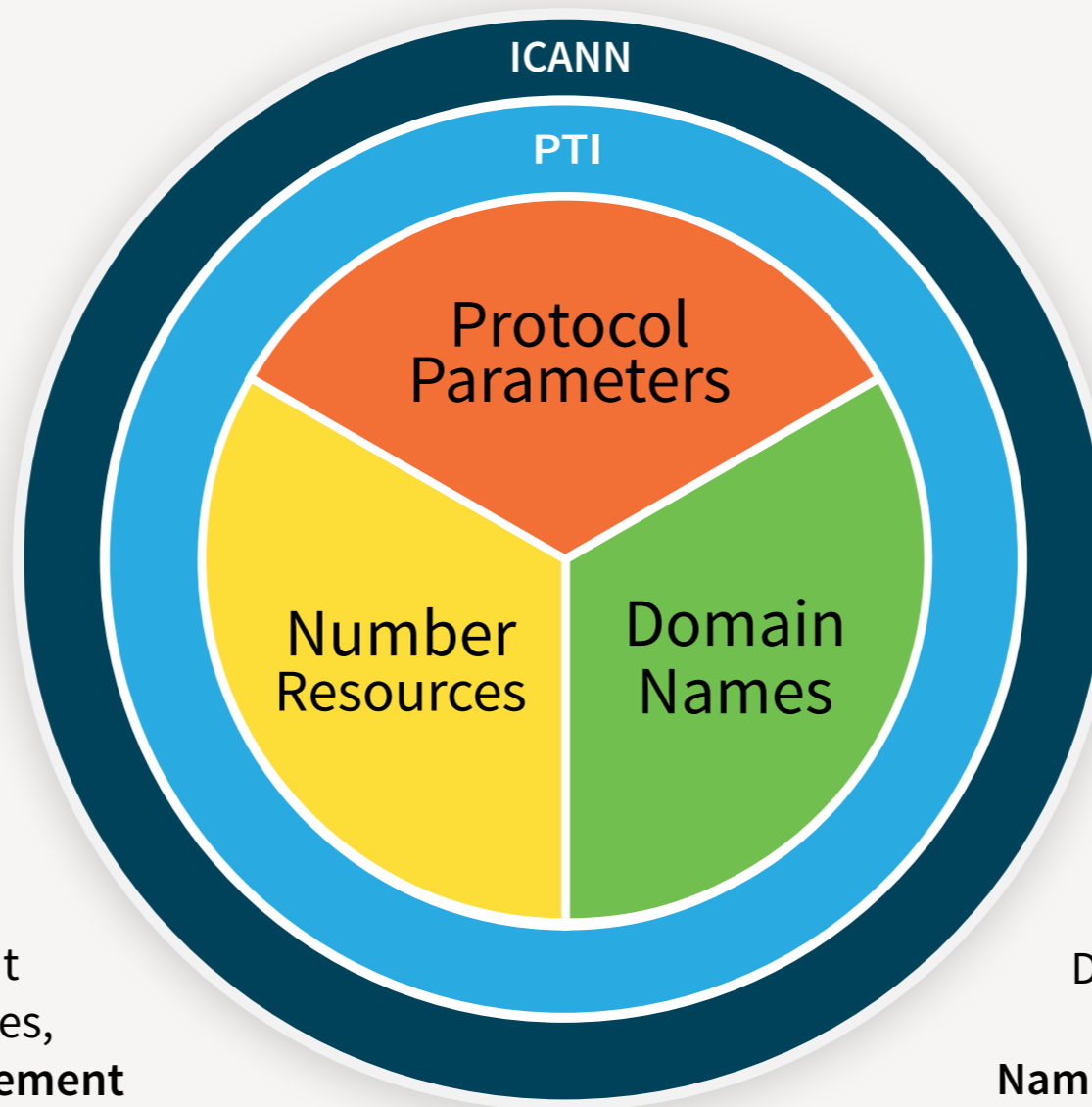
Number resource oversight
by Regional Internet Registries,
governed by **Service Level Agreement**
between ICANN and RIRs,
subcontracted from ICANN to PTI

Domain Name oversight by ICANN;
governed by
Naming Contract between ICANN and PTI;
performance oversight by
ICANN Customer Standing Committee

Performance Reporting

- Monthly reporting for each of the three areas

Protocol Parameters

Number Resources

Domain Names

Stakeholder Relationships

- Protocol Parameters
  - IETF leadership
  - IETF community
- Number Resources
  - RIR Leadership
  - RIR Communities
- Domain Names
  - Direct customer relationships (TLD managers, etc.)
  - ICANN SOs and ACs (ccNSO, GNSO, ALAC, RSSAC)
  - Customer Standing Committee
  - RZERC
  - IANA Naming Function Reviews
- ICANN

Root Server Relationships

- Individual Root Operators

- RSSAC

Root Server Operational Needs

- Identity verification

- Procedures for authorizing changes to NS configuration (i.e. glue)

- Procedures for authorizing changes to RSO identity

- Baseline requirements IANA needs to test upon change requests

- Processes/procedures around adding/replacing/removing RSOs

- Protocols around fielding general RS-related questions

Thank you!

Website	**iana.org**
Service level reporting	**iana.org/performance**
Functional areas	**iana.org/protocols**
	iana.org/numbers
	iana.org/domains
More background	**iana.org/about**
PTI website	**pti.icann.org**