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RDAP Implementation

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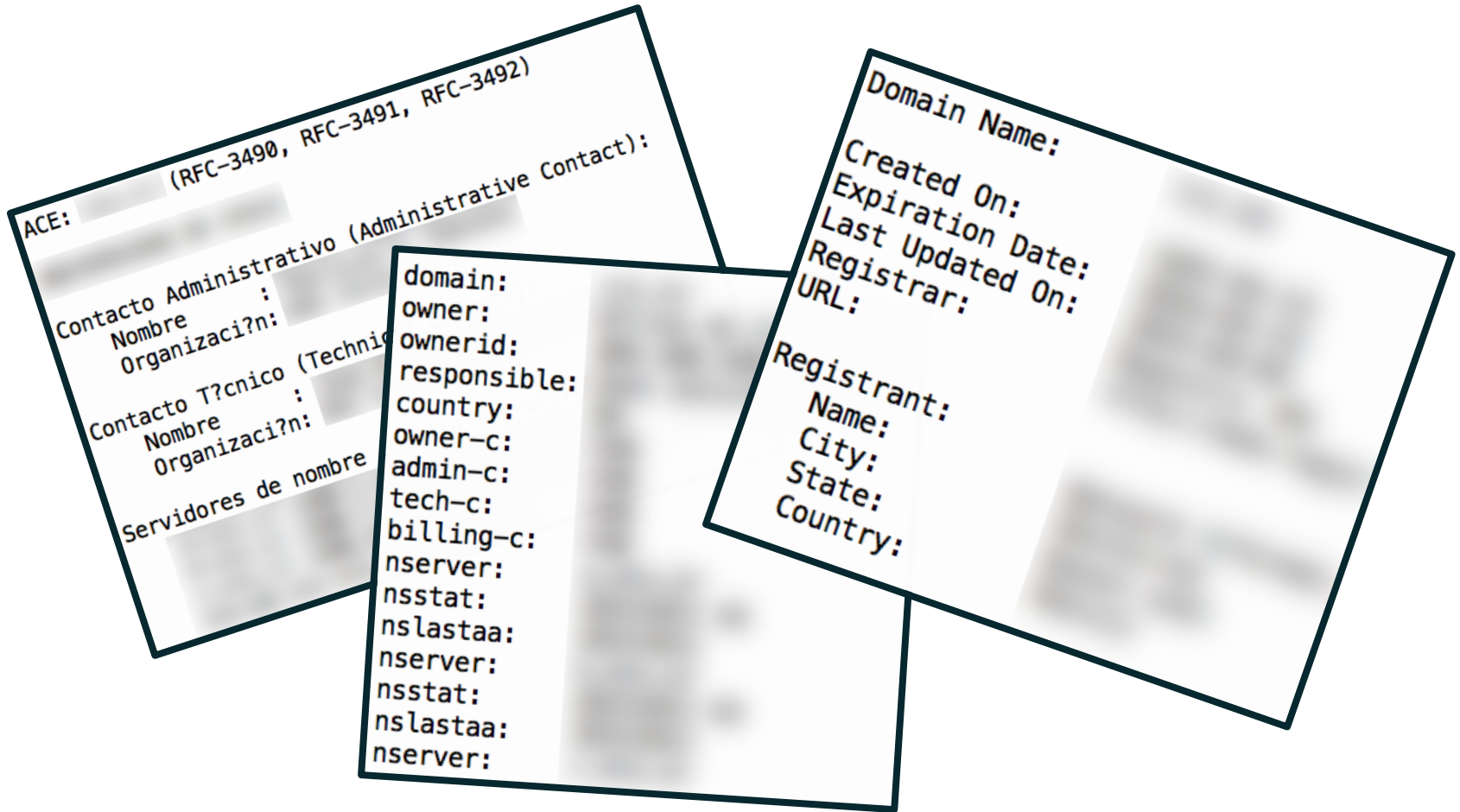
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History of Replacing the WHOIS Protocol

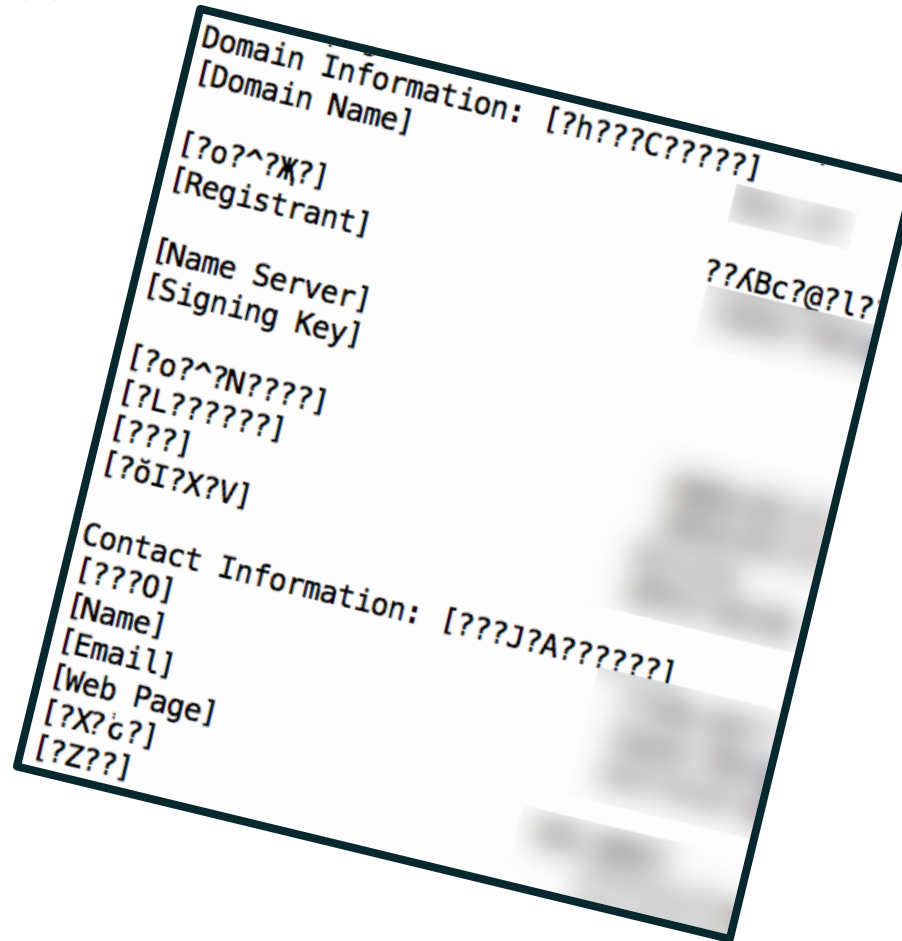
Why WHOIS (port-43) should be replaced?

- ⦿ Non standardized format



Why WHOIS (port-43) should be replaced?

- ⦿ Not internationalized



Why WHOIS (port-43) should be replaced?

- ⊙ Unauthenticated
 - ⊙ Unable to differentiate between users
- ⊙ Unable to provide differentiated service
 - ⊙ The same fields are provided to all users
- ⊙ Insecure
 - ⊙ No support for an encrypted response
- ⊙ No bootstrapping mechanism
 - ⊙ No standardized way of knowing where to query
- ⊙ Lack of standardized redirection/reference
 - ⊙ Different workarounds implemented by TLDs

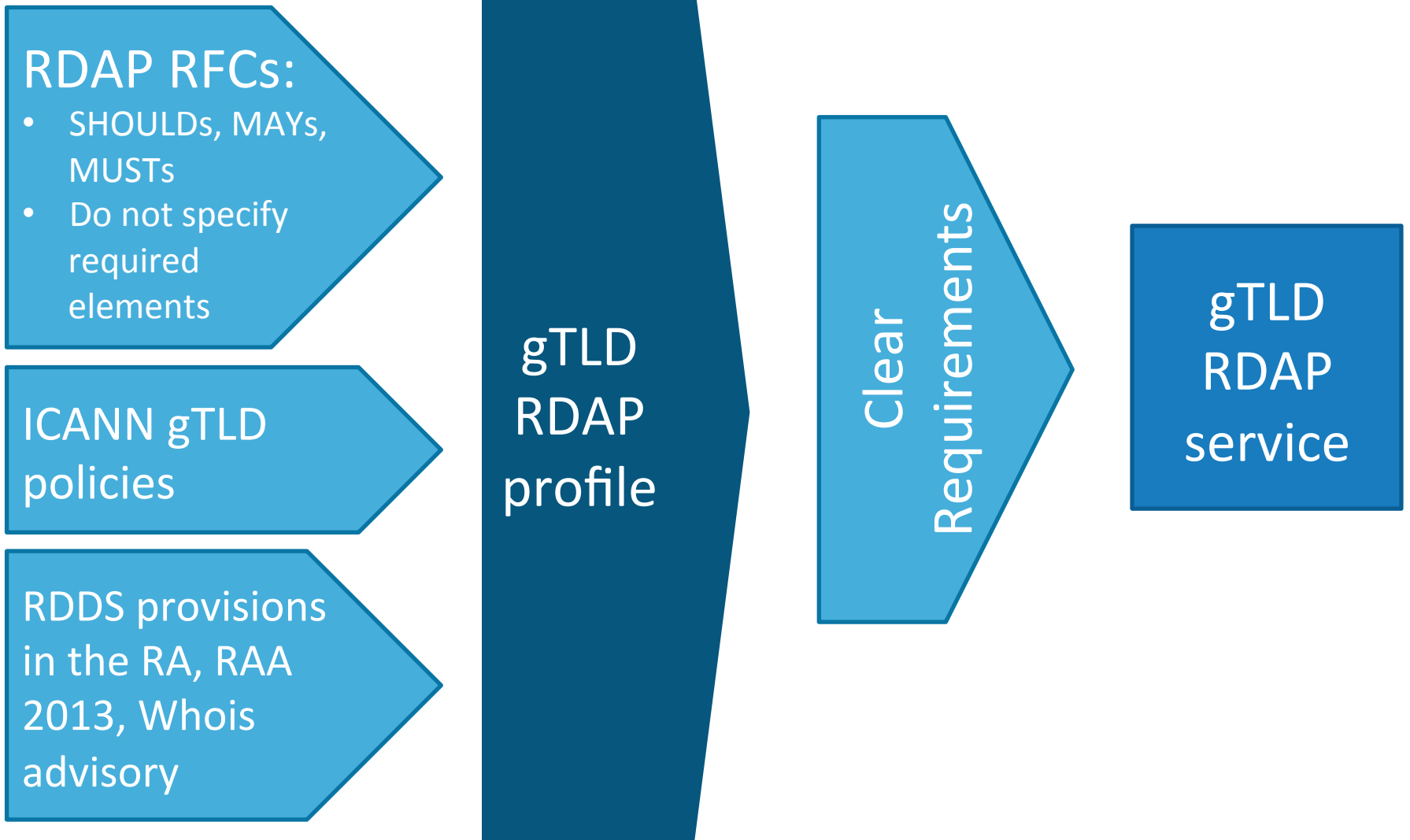
History on Replacing the WHOIS Protocol

- ⦿ SSAC's SAC 051 Advisory (19 Sep 2011):
 - *The ICANN community should evaluate and adopt a replacement domain name registration data access protocol*
- ⦿ Board resolution adopting SAC 051 (28 October 2011)
- ⦿ Roadmap to implement SAC 051 (4 June 2012)
- ⦿ Registration Data Access Protocol (RDAP) community development within IETF working group started in 2012
- ⦿ Contractual provisions in: .biz, .com, .info, .name, .org, 2012 Registry Agreement (new gTLDs), and 2013 Registrar Accreditation Agreement

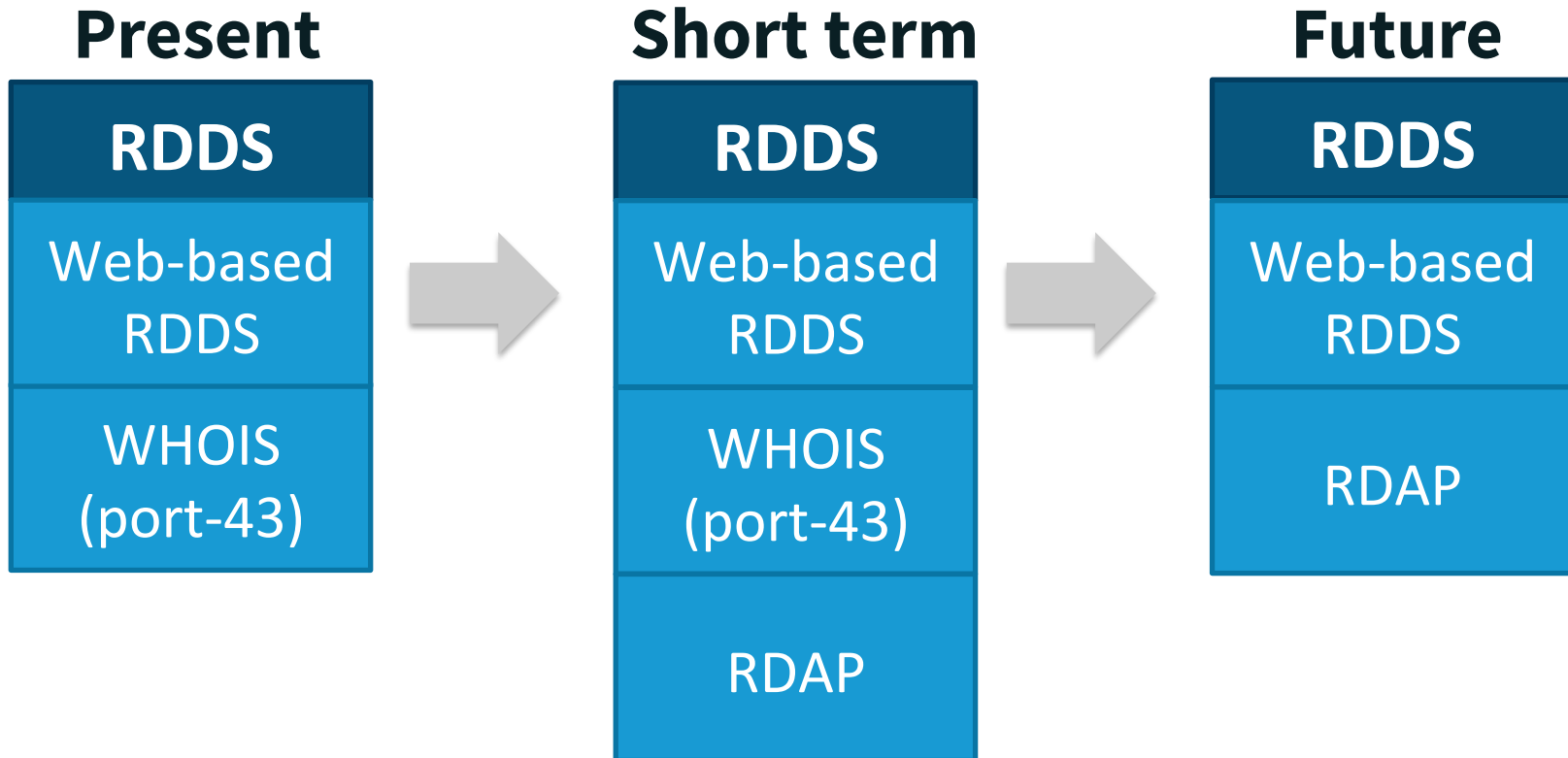
History on Replacing the WHOIS Protocol

- ⦿ RDAP Request for Comments (RFCs) published in March 2015
- ⦿ First draft of the gTLD RDAP profile shared for discussion with the community in September 2015.

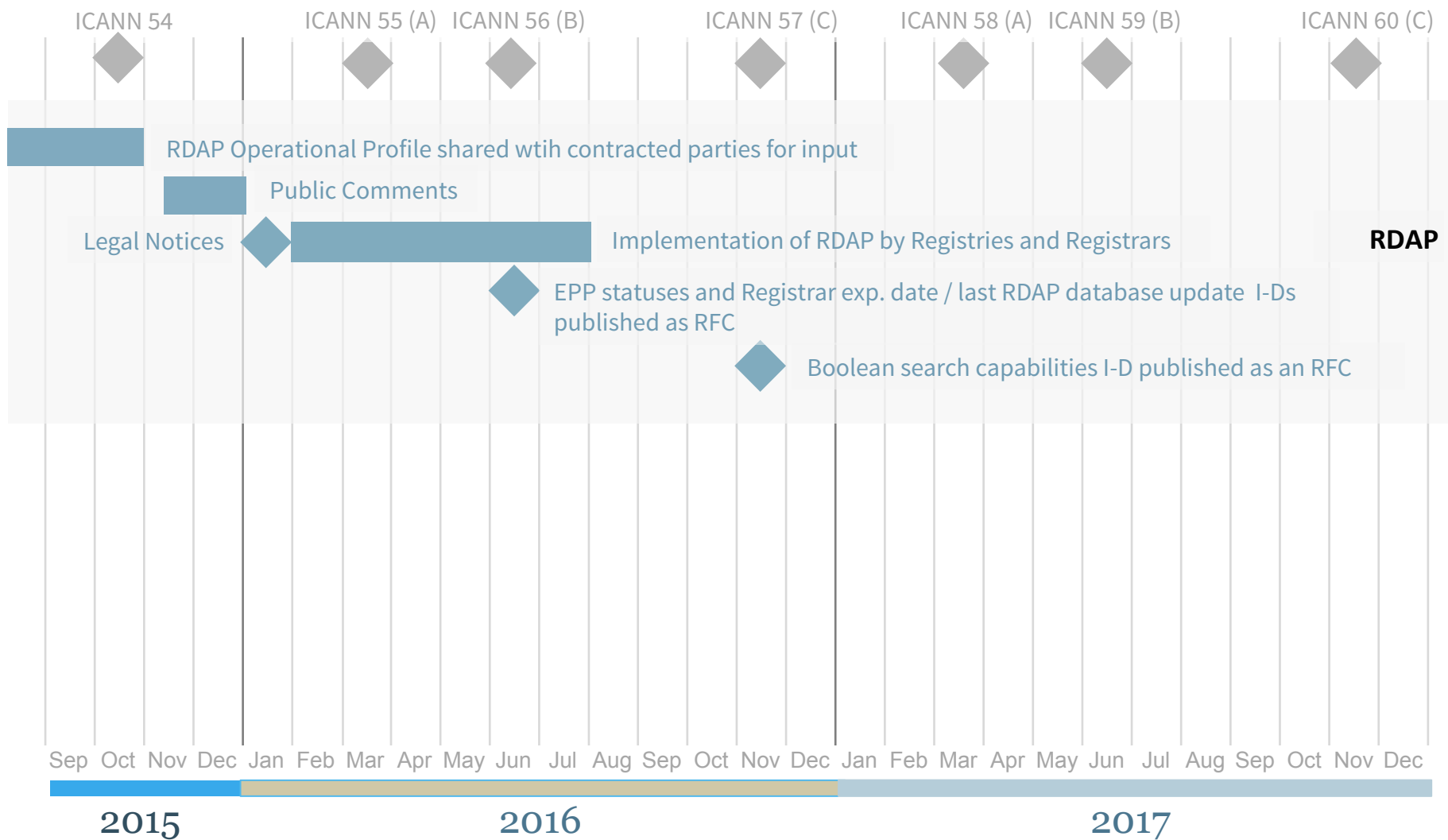
Why do we need an RDAP profile?



How the transition looks like



Implementation Timeline



Transition open questions

- ⦿ How long after RDAP deployment before turning off (port-43) WHOIS?
- ⦿ Should the requirement to offer web-based (HTML) RDDS remain after the transition to RDAP?
 - ⦿ R. Yes

The background of the slide is a teal color. Overlaid on this is a stylized world map. The map is not a solid shape but is composed of a complex network of white lines connecting numerous small white circular nodes. These nodes and lines are distributed across the entire frame, with a higher density in the areas that correspond to the continents, creating a digital or network-like representation of the world's geography.

gTLD RDAP Profile

- ⦿ Registration Data Directory Services refers to the collective of: WHOIS (port 43), Web-based RDDS and RDAP (after the implementation of the RDAP service).
- ⦿ Through the RAA and RA, all references to Registration Data Directory Services (RDDS) apply to the following services: WHOIS (port 43), Web-based RDDS and RDAP.

Main work items for Registries/Registrars

- ⦿ HTTPS:
 - ⦿ Connections received on WHOIS (port-43) will be received in RDAP at some point.
 - ⦿ RDAP connections will be done over HTTPS, therefore the load of WHOIS (port-43) will migrate to HTTPS.
- ⦿ DNSSEC:
 - ⦿ The resource records related to the RDAP service MUST be properly signed with DNSSEC.

Main work items for Registries / Registrars

- ⦿ Registrar's RDAP base URL
 - ⦿ The RDAP domain name response must contain the URL of the RDAP service of the Registrar for the queried domain name.
 - ⦿ Registries will need to collect the RDAP base URL from every Registrar.

Main work items for Registries / Registrars

- ⦿ Monitoring:
 - ⦿ The gTLD monitoring system will monitor RDAP.
 - ⦿ The emergency contacts may receive alerts for RDAP.
 - ⦿ Registries and registrars should modify their internal procedures to handle alerts regarding RDAP.

Main work items for Registries

- ⦿ Monthly reports:

- ⦿ The following rows are added to the Registry Functions Activity Report:

rdap-queries

rdap-search-entity

rdap-rate-limit

rdap-truncated-authorization

rdap-redirects

rdap-truncated-load

rdap-authenticated

rdap-truncated-

rdap-search-domain

unexplainable

The background of the slide is a solid orange color. Overlaid on this is a stylized world map. The map is formed by a complex network of white dots of varying sizes, connected by thin white lines. The dots are more densely packed in some areas, particularly in North America and Europe, and more sparse in others. The overall effect is a digital, networked representation of the world's continents.

RDAP Profile - details

- ⦿ RDAP extensions must be registered in the IANA Registry.
- ⦿ Deployment of RDAP extensions in gTLD Registries operated under agreement with ICANN, are subject to approval by ICANN via the RSEP process.

Searchable WHOIS

- ⦿ Registries offering searchable Whois service (e.g., per exhibit A of their RA) MUST support RDAP search requests for domains and entities.

Consistency

- ⦿ The source data used to generate the RDAP responses MUST be the same across all RDDS services (i.e. port-43 WHOIS, web-based RDDS and RDAP).

Transport requirements

- ⦿ RDAP must be supported over IPv4 and IPv6.
- ⦿ The RDAP service must be available over HTTPS only.

- ⦿ Internationalized Domain Name (IDN) RDAP lookup must be supported.
- ⦿ Variant names must be included in the domain response.

Thick Whois policy

- ⦿ The RDAP profile allows to include reseller information.
- ⦿ The RDAP profile requires to include in the RDAP response, the link to the “Whois Inaccuracy Complaint Form”.
- ⦿ The RDAP profile requires to include in the RDAP response, the registrar abuse contact details.
- ⦿ The RDAP profile requires to include the “Registrar Registration Expiration Date”.

Name server attributes

- ⦿ The existence of a name server used as an attribute for an allocated domain name is equivalent to the existence of a host object.
- ⦿ The nameserver object **MUST NOT** contain the following members: events, handle and status.

Differentiated access

- ⦿ An RDAP response may contain redacted registrant, administrative, technical and/or other contact information in accordance with the appropriate Registry Agreement.

Bootstrapping

- ⦿ The base URL of RDAP services MUST be registered in the IANA's Bootstrap Service registry for Domain Name Space.
- ⦿ A IANA's Bootstrap registry for Domain Name Space entry MUST be populated after the RDAP service is available over both IPv4 and IPv6.

Responses by Registrars

- ⦿ A Registrar is **REQUIRED** to respond with information regarding domain names for which the Registrar is the Sponsoring Registrar.
- ⦿ A Registrar **MUST** return a 404 response when the Registrar is not the Sponsoring Registrar for the domain name.

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Open issues – gTLD RDAP Profile

Open issues – gTLD RDAP Profile

1. Status Codes for Domains
2. Last update of RDAP database
3. Boolean Search Capabilities
4. Multiple host objects for the same name server name
5. Registrar expiration date

Status Codes for Domains

- ⦿ The current Whois provisions require the use the EPP domain statuses codes in responses.
- ⦿ Not all the EPP domain statuses codes are defined as RDAP values in the base RFCs.

Possible solution:

- ⦿ There is an Internet Draft that addresses this issue.

Last update of RDAP database

- ⦿ The base RDAP specification does not define an element to map the "Last update of WHOIS database" RDDS field.

Possible solution:

- ⦿ There is an Internet Draft that addresses this issue.

Boolean Search Capabilities

- ⦿ Searchable Whois requires a set of logical operators for search criteria (AND, OR, NOT operators) that are not supported in the base RDAP specifications.

Possible solution:

- ⦿ The RDAP specifications would need to be extended to support this requirement.

Multiple host objects – one name

- ⦿ The base RDAP specification does not support the existence of multiple host objects for the same name server name.

Possible solution:

- ⦿ Use a link member with a rel:collection.

Registrar expiration date

- ⦿ RDAP does not include an event to specify the registrar registration expiration date as described in the RAA 2013.

Possible solution:

- ⦿ There is an Internet Draft that addresses this issue.

Conclusion and Next Steps

Conclusion and Next Steps

- ⦿ The RDAP Profile is necessary for gTLD registry and registrar operators to adhere to existing policies and contractual terms.
- ⦿ A few issues (5) have been identified around underspecified topics in RFCs.
- ⦿ Open question on when to retire (port-43) WHOIS.

Engage with ICANN



Thank You and Questions

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