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# **ITHI: Identifier Technology Health Indicators**

## **Defining Metrics**

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**ICANN**



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# ITHI GOAL

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- ⦿ ITHI: Identifier Technology Health Indicators
- ⦿ Track over time a set of indicators that reflect the “health” of the system of identifiers ICANN
- ⦿ The “actual” value of any of those indicators may not as important to us as the trend they are on.
- ⦿ ITHI work will stop at presenting the data and leave it to the community to take any action deemed necessary (e.g. new policy).

# ITHI Branches

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ITHI: 3 branches

**1**  
Names

**2**  
Numbers

**3**  
Protocol Parameters

**ITHI Numbers**

**NRO-Driven Process**

# Number Community Participation

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- The RIRs are driving the evaluation of ITHI metrics for the Numbers community.
- The RIR registry services have proposed a set of metrics focused on data accuracy. Those metrics are now being reviewed by the RIR community\*.
- It is expected that this branch of the project will be merged with the overall ITHI initiative at a later point in time.

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(\*) <https://www.nro.net/global-consultation-on-identifier-technical-health-indicators-ithi-project/>

# ITHI Names

# ITHI: Names

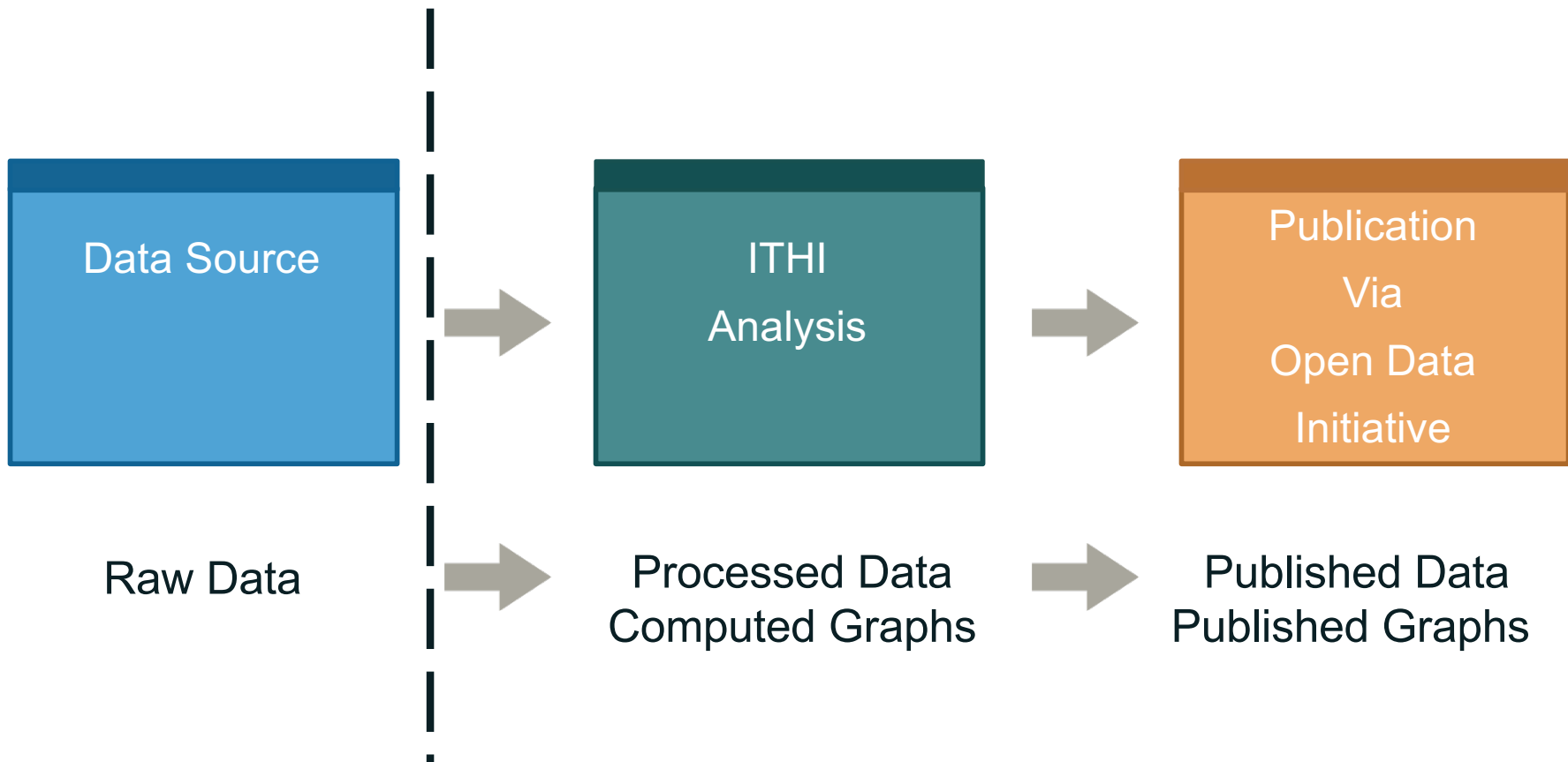
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- ⦿ We have identified 5 “Problem Areas”:
  - DNS Data (In-)Accuracy
  - DNS Abuse
  - Overhead in DNS Root Traffic
  - DNS Leakage
  - DNS Resolver Misbehavior
  
- ⦿ Over time, new problem areas could be defined, and/or some could be removed.

# ITHI Names: Process

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- For each “Problem Area”, we will put in place a 3-stage pipeline





## Candidate Metric Related to Data (in-)Accuracy

| M1                         | Data (In-)Accuracy   |
|----------------------------|--|
| M1 encompass 2 sub-metrics |  |
| M1.1                       | <p>Number of “validated complaints” per million registrations</p> <p>A “validated complaint” is a complaint received by the ICANN compliance department that has been acted on. In other words, this is not an obviously frivolous complaint.</p> |
| M1.2                       | <a href="https://whois.icann.org/en/whoisars">whois.icann.org/en/whoisars</a>  |

## Candidate Metrics Related to Abuse

M2

Number of abuses in  
the ICANN DAAR\* feeds  
for each TLD

M2 encompass 4 sub-metrics

M2.1

Spam

M2.2

Phishing

M2.3

Malware

M2.4

Botnet

(\*)DAAR: Domain Abuse Activity Reporting: <https://www.icann.org/octo-ssr/daar>

## Candidate Metric Related to Overhead in Root Traffic

**M3**

The overhead to the minimum traffic that would be required in a “best case” scenario where all DNS resolvers were only asking for TLDs that exists and would respect the associated TTLs.

M3 encompass 2 sub-metrics

**M3.1**

**% of NX domain**

**M3.2**

**% of queries that should never have been sent (TTL)**

# Candidate Metric Related to Leakage

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M4

Leakage

M4 encompass a list of  
“Top-N” strings seen at the root  
that have not been delegated by ICANN  
or put on the RFC6761 “Special Use Names”

## Candidate Metric Related to Resolver Misbehavior

|                            |  |
|----------------------------|--|
| M5                         | % of top 10k DNS resolvers interfering with end-user DNS traffic |
| M5 encompass 2 sub-metrics |  |
| M5.1                       | % of top 10k resolvers giving falsified answers                  |
| M5.2                       | % of top 10k resolvers intercepting port 53                      |

# ITHI Protocol Parameters

**Scoped to DNS Related  
Registries**

## Candidate Metric Related to DNS Usage

|                            |   |
|----------------------------|---|
| M6                         | DNS Usage   |
| M6 encompass 3 sub-metrics |   |
| M6.1                       | DNS Protocol Parameter Usage  |
|                            | M6.1 encompass the list of parameters and their frequencies plus a list of unregistered parameters (and their frequencies). |
| M6.2                       | DNSsec signed zones   |
| M6.3                       | TLS usage   |

## Candidate Metric Related to DNS Usage

|  |   |                     |
|--|---|---------------------|
| M6   | DNS Usage   |                     |
| M6 encompass 3 sub-metrics                                       |   |                     |
| M6.1   | DNS Protocol Parameter Usage  |                     |
| We need help from DNS recursive server operators to collect data | M6.1 encompass the list of parameters and their frequencies plus a list of unregistered parameters (and their frequencies). |                     |
|  | M6.2  | DNSsec signed zones |
|  | M6.3  | TLS usage           |