MONITORING AND EVALUATING ENS THROUGH THE INSO

Eric Osterweil -- eoster@gmu.edu

Pavan Kumar Dinesh – pdinesh@gmu.edu (itspavan.eth)

Srivalli Vajjha -- svajjha@gmu.edu

GEORGE MASON UNIVERSITY

SHOULD THE ETHEREUM NAME SERVICE (ENS) BE INFORMED BY DNSSEC?

- Our community has learned that a lot goes into securing the Internet's namespace
- DNSSEC and DS automation are topical research ***because*** they address complex challenges
  - Their lessons and developments are relevant to general namespace security

- Recently, blockchain-based name systems being positioned for Internet naming
  - Are they just "different?" Do they have similar challenges? What are they aiming at?
- In this talk, I will present preliminary monitoring of one prominent example: the ***Ethereum Name Service (ENS)***
- We extend our DNSSEC monitoring system (the INSO) to facilitate side-by-side evaluations
  - We ask: Are comparisons relevant? How do they apply? Are these systems doing different things?

- We find preliminary evidence that ENS is already aiming to resolve DNS' namespace

WHAT IS THE ETHEREUM NAME SERVICE (ENS)?

- *ENS* is a name mapping service that is built on the *Ethereum* blockchain
  - *Ethereum* is a blockchain system that stores *transactions* on its immutable ledger
  - These transactions encode the creation and invocations of *smart contracts* (code stored and executed on *Ethereum* itself)
  - As is typical of blockchain systems, the address space in *Ethereum is flat*
- *ENS* provides semantic names that resemble the structure of DNS
  - These names were initially designed to map semantically meaningful ENS names to Ethereum's flat address space
  - Objectives include mapping names to wallets, IPFS content, Web3 web pages, etc.
- Native ENS names are delegated below the **.eth** [pseudo] Top-Level Domain (TLD)

- But, is it more?

WHAT ENS MAY BE

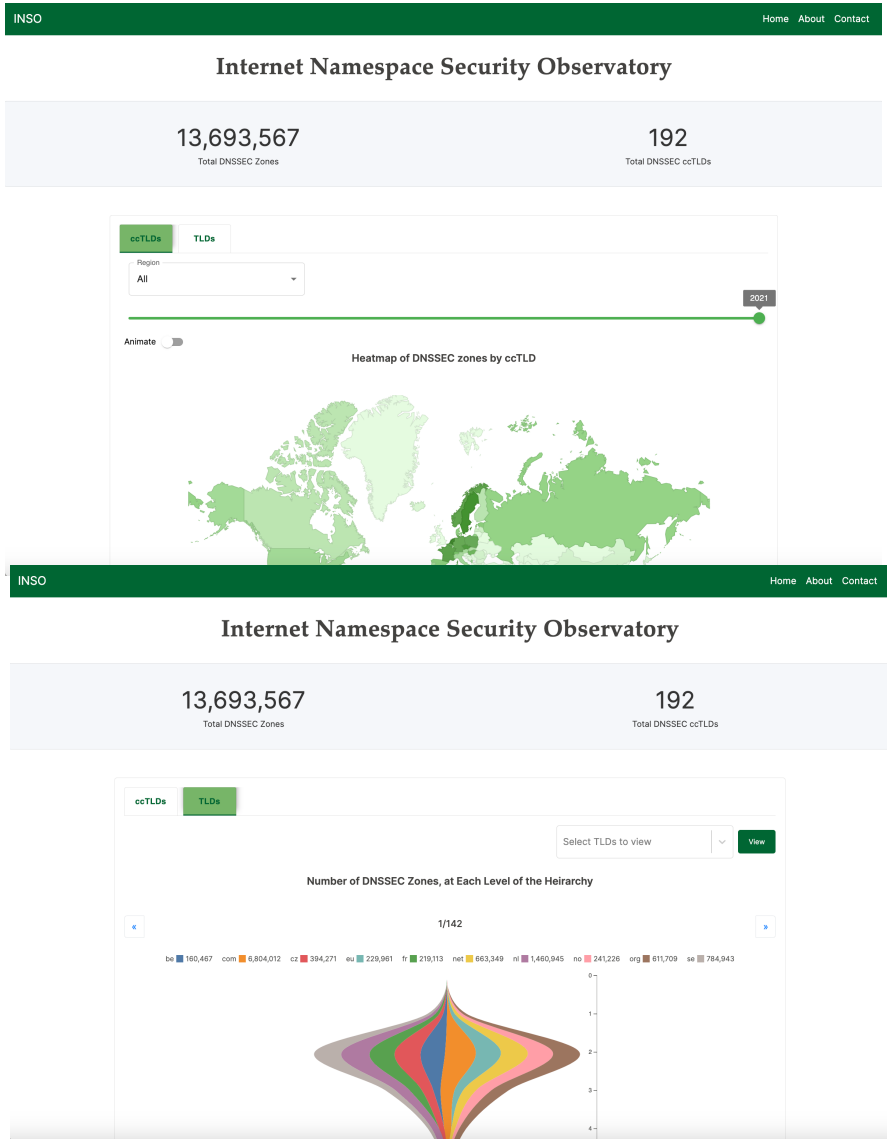
- ENS presents a general name resolution service, for arbitrary names
- Coexistence with the DNS is already codified in Ethereum's standards
  - Ethereum Request for Comments (ERCs) specify rules for creating of tokens, smart contracts, etc.
  - ERC-1185: Storage of DNS Records in ENS
  - Claiming a DNS name in ENS requires operation and validation of DNSSEC
- ERC-1185 states, "This allows ENS to be used as a store of authoritative DNS information"

- The stated design and deployment objectives for ENS remain focused on Ethereum addresses, NFTs, IPFS, Web3, etc.
- However, monitoring reveals growing populations of DNSSEC names in ENS' ~2.5M names

- We feel that monitoring ENS' growth and function is becoming increasingly important
- For this, we are extending the Internet Namespace Security Observatory (INSO), https://inso.gmu.edu/

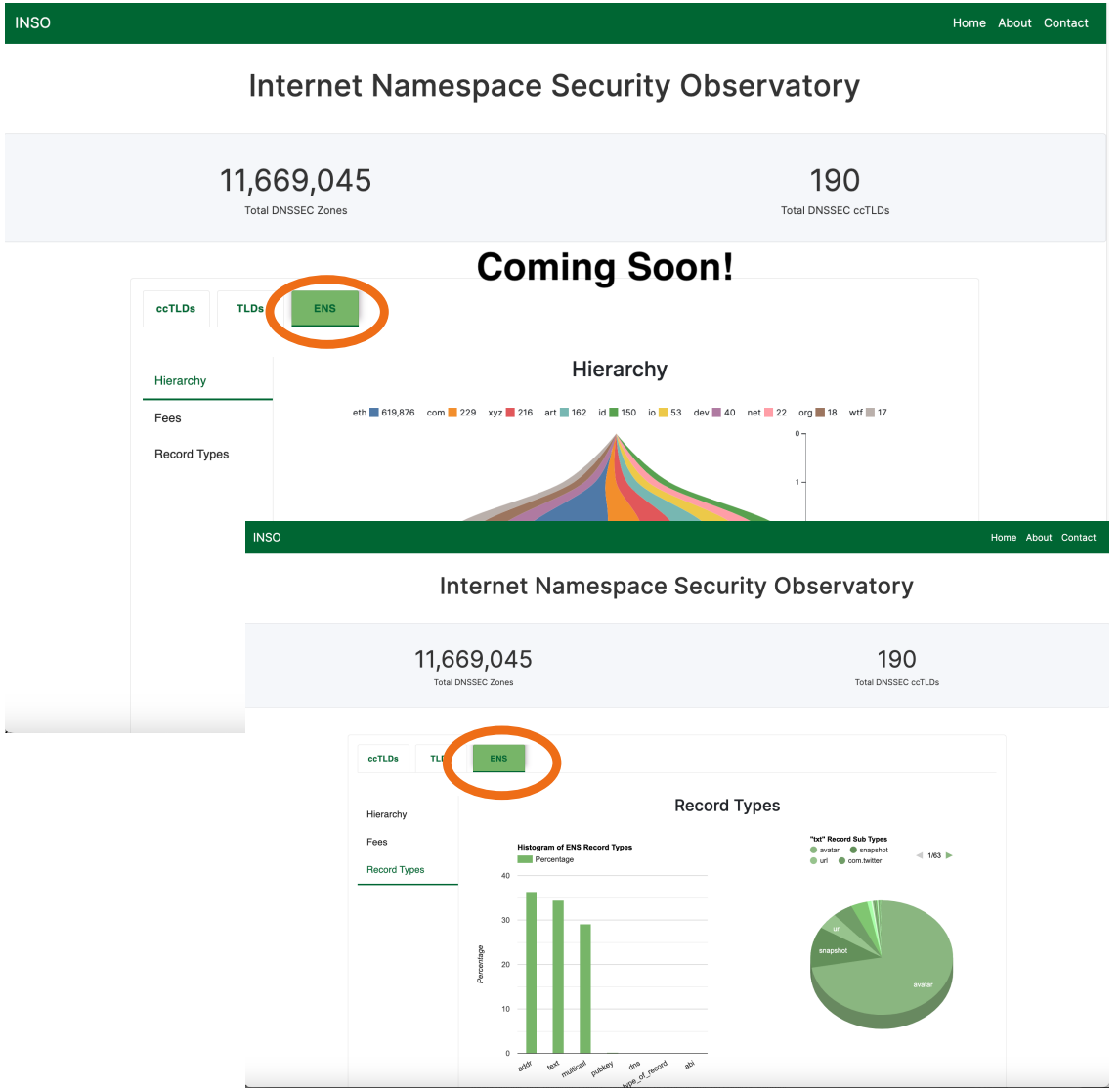
INTERNET NAMESPACE SECURITY OBSERVATORY (INSO)

- INSO ***holistically*** monitors, measures, and evaluates DNSSEC
- INSO focuses on
  - ***Historical*** progress of the Internet's namespace security
  - ***Structure*** of the hierarchy
- Both important in the ENS as well (albeit details are quite different)
- https://inso.gmu.edu/



MONITORING ENS THROUGH THE INSO

- Because ENS is part of the Ethereum blockchain, we can measure its full structure and history
- We can also perform ongoing monitoring to evaluate its growth and usage
- Already discovering behaviors
  - ~3.7% of “Text” types in ENS point to email addresses
  - ~4.7% point to URLs (DNS-based)
  - ~4.5% point to twitter.com
  - ~5.3% point to domains in .com, .org, .xyz, .me, .network, …



FUTURE

- Current results scraped from Ethereum
- We have deployed an Ethereum index called TrueBlocks' Chifra
  - https://trueblocks.io/
- We are provisioning an Ethereum archive node
  - Learning operational lessons about the challenges of operating a node
- Will be integrating our Chifra index with our archive node
- Will be deploying the ENS view of the INSO in the coming quarter

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  (svajjha@gmu.edu
  https://www.linkedin.com/in/srivalli-vajjha-197a43110/)

- Both are on the job market!

THANK YOU

QUESTIONS?