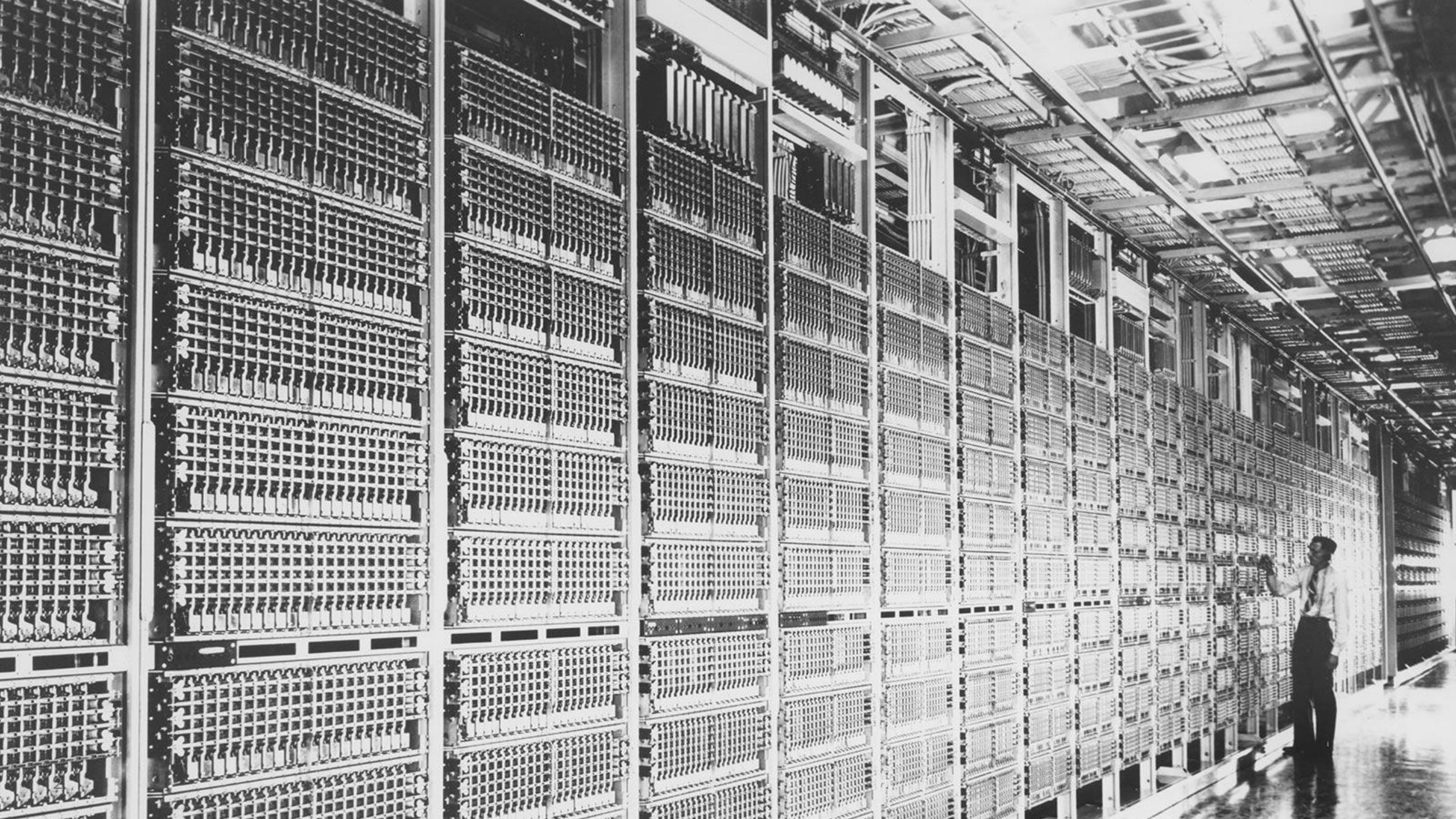
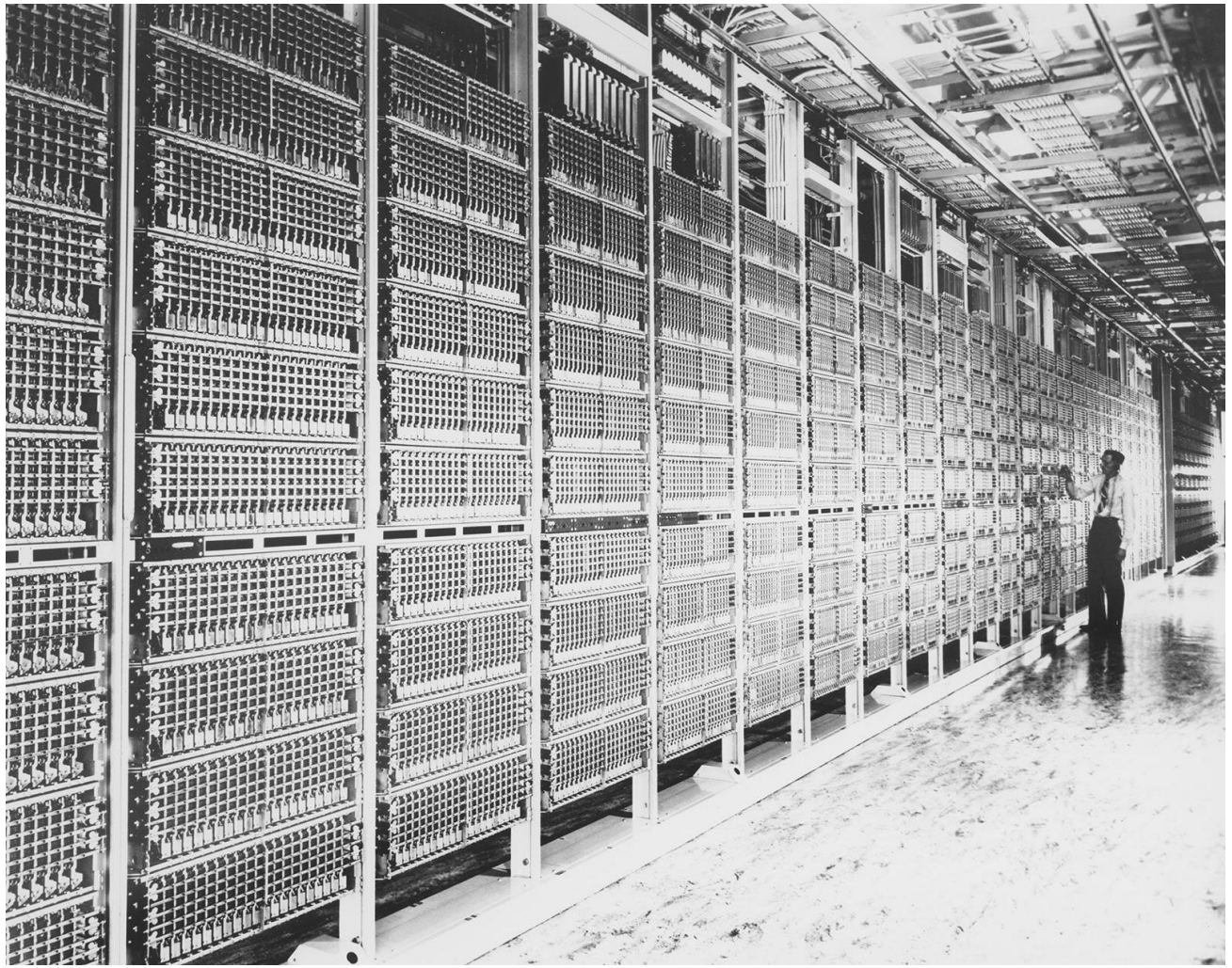
DNS & Digital Identity

Nic Williams, nic@infoblox.com



Ancient History: Area Codes

- 1947 North American Numbering Plan:
  - 212 (New York City)
  - 213 (Los Angeles)
  - 312 (Chicago)
- Population-dense cities use fewer rotary-dial pulses per area code than rural areas like Alaska (907) or Wyoming (307)
- High-traffic city phones faster and cheaper to reach:
  - Fewer pulses meant shorter dialing and setup time
  - Less time and motion in the electromechanical network (and less trunk time held) reduced overall operating cost
- CCITT E.29 (60s), ITU-T E.163/4 (80s)



Source: https://www.britannica.com/technology/telephone/The-telephone-network

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~110 years to standardize after invention

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www.example.com

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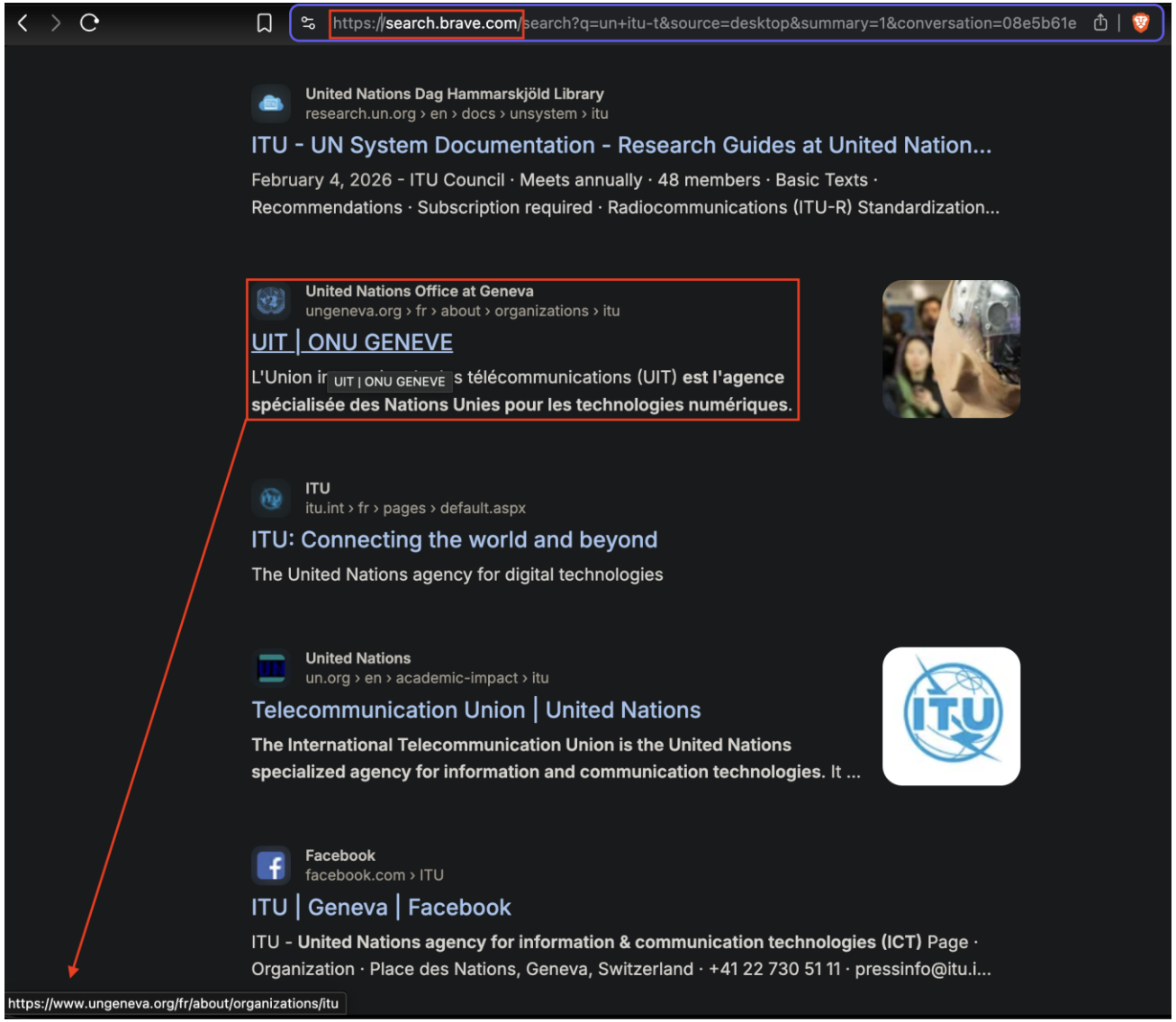
Websites & "Area Codes"

- Well-known records
  - www = webpage
  - mail = email
  - status, support, trust, search, etc.

- Well-known $PATH
  - www.example.com/support

- Relatively deterministic: query the service (phone book | DNS), another protocol (voice | HTTP/2) handles application exchange



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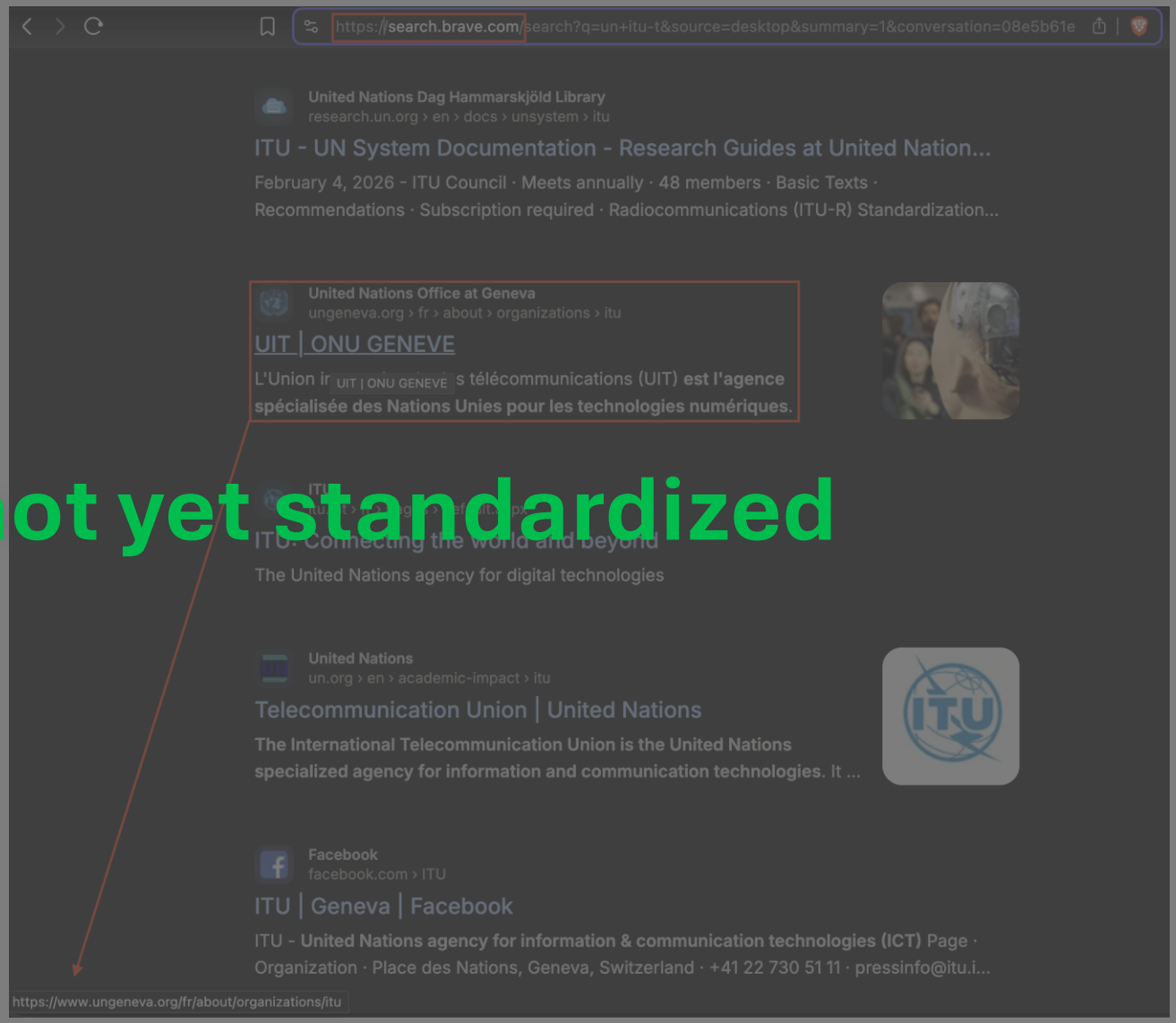
~37 years, not yet standardized



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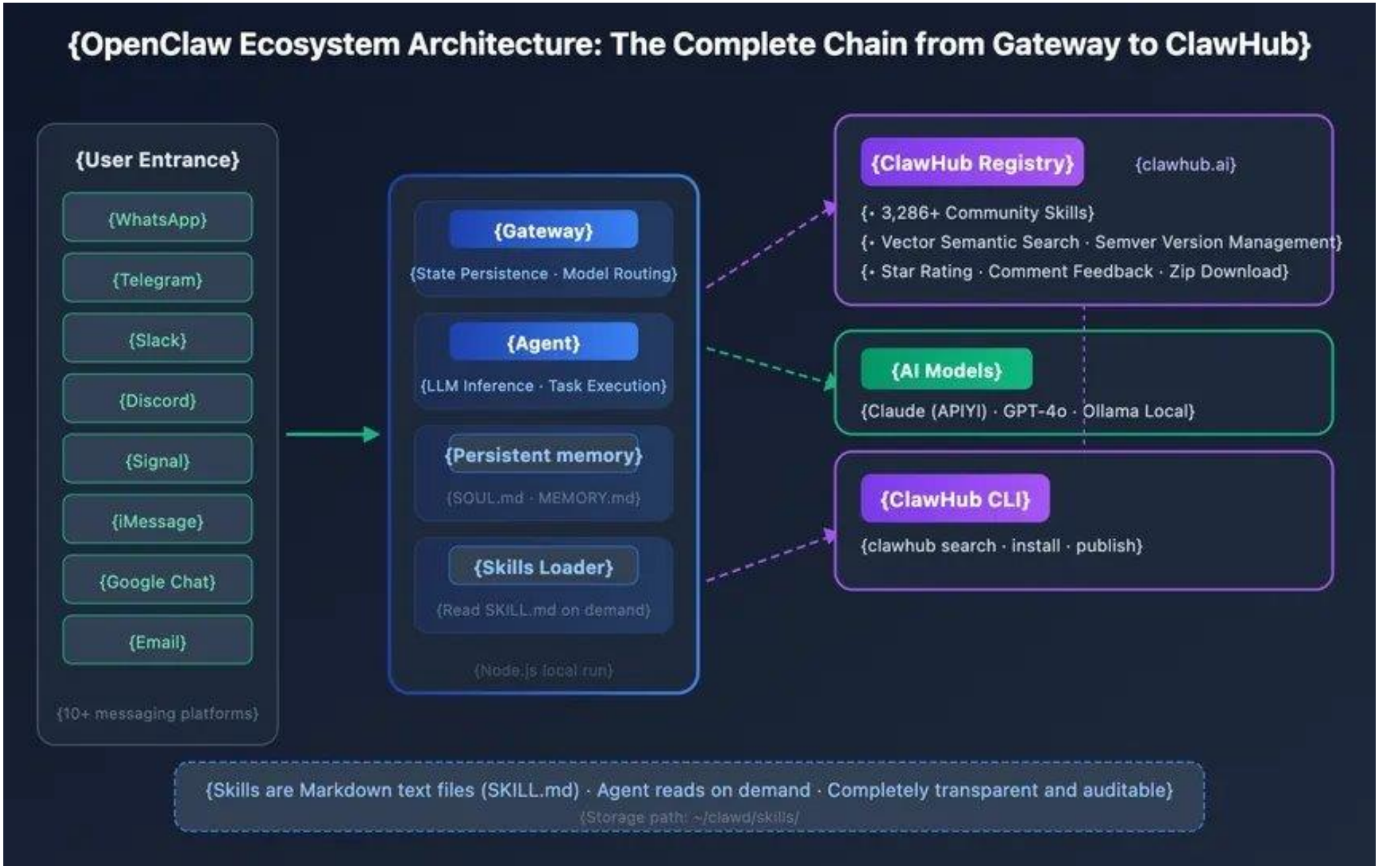
- *AI labs are widely distributed, protocol work exists across many forums (Linux Foundation, IETF, ITU-T, open source, private industry, etc.)*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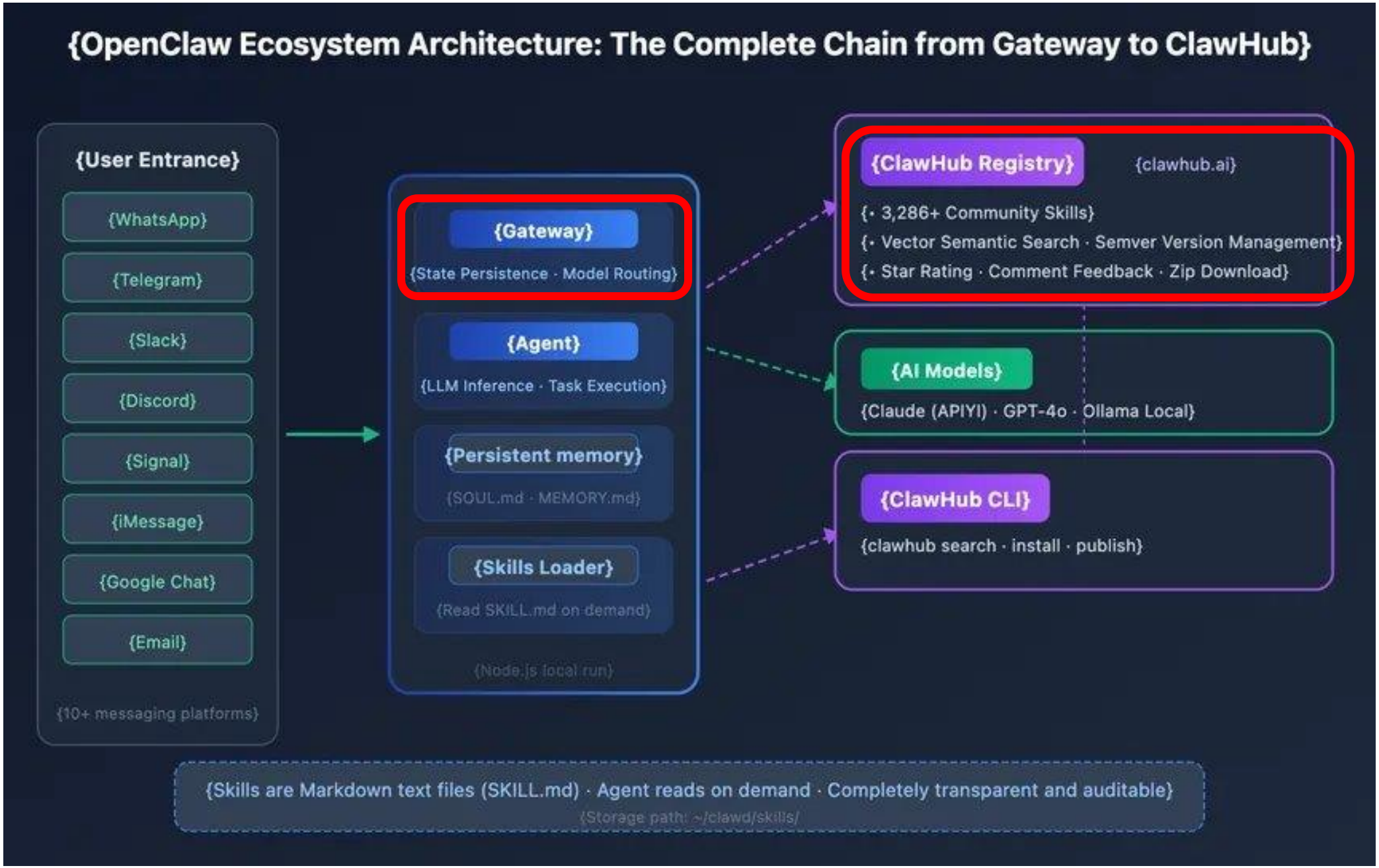
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DNS AID

"Solve a small part of the discovery and identity problem space"

DNS-AID Naming Pattern (leaf attribute zone)

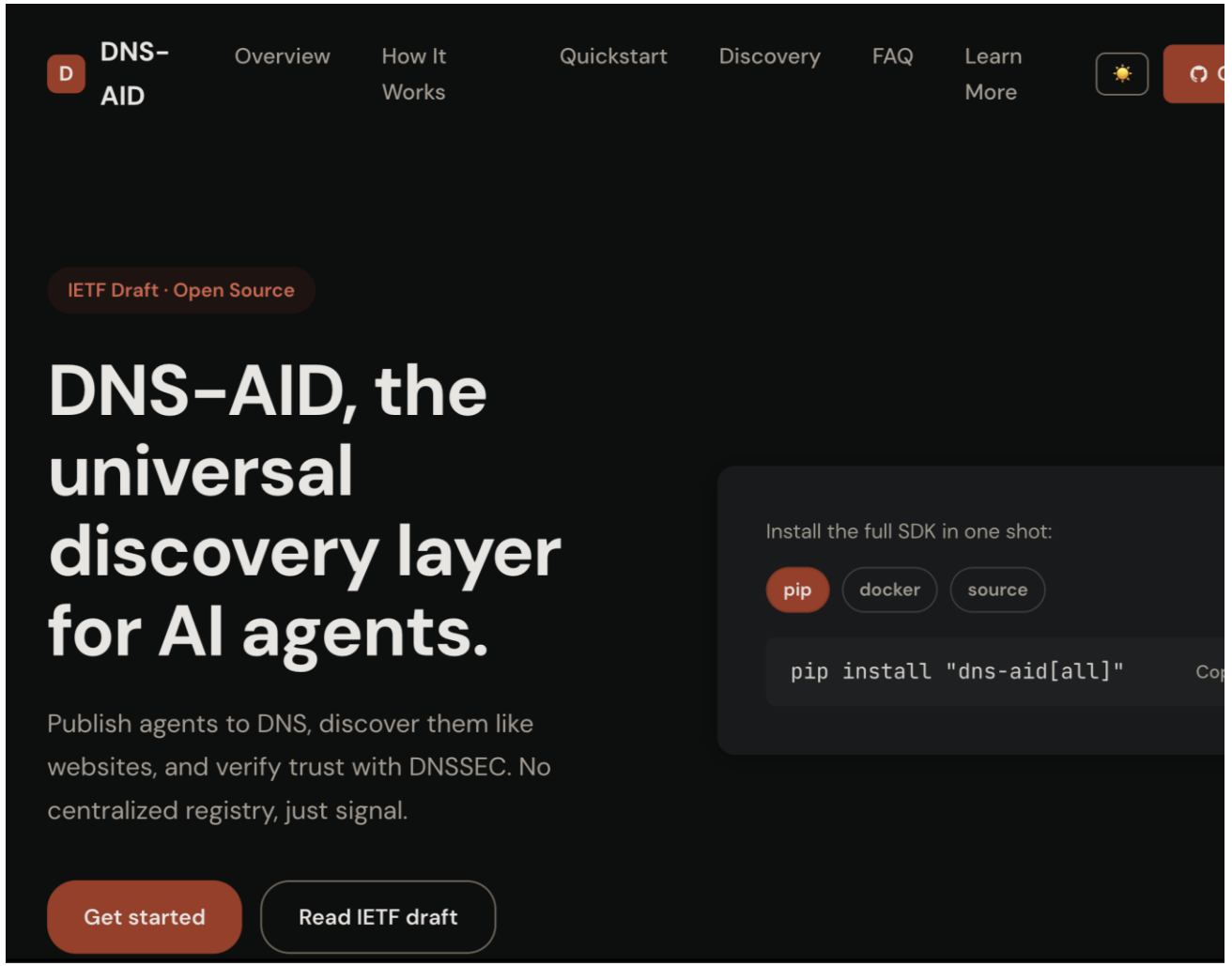
- _<agent-name>._<protocol>._agents.<your-domain>

Examples (SVCB, TXT fallback)

- chatbot._mcp._agents.example.com agent
- search._a2a._agents.example.com A2A search
- data-cleaner._a2a._agents.acme.com capability
- index._agents.example.com all agents

Multi-tenant

- analytics._mcp._agents.customer1.saas.com



Source: https://dns-aid.org/ | see also https://agentcommunity.org/

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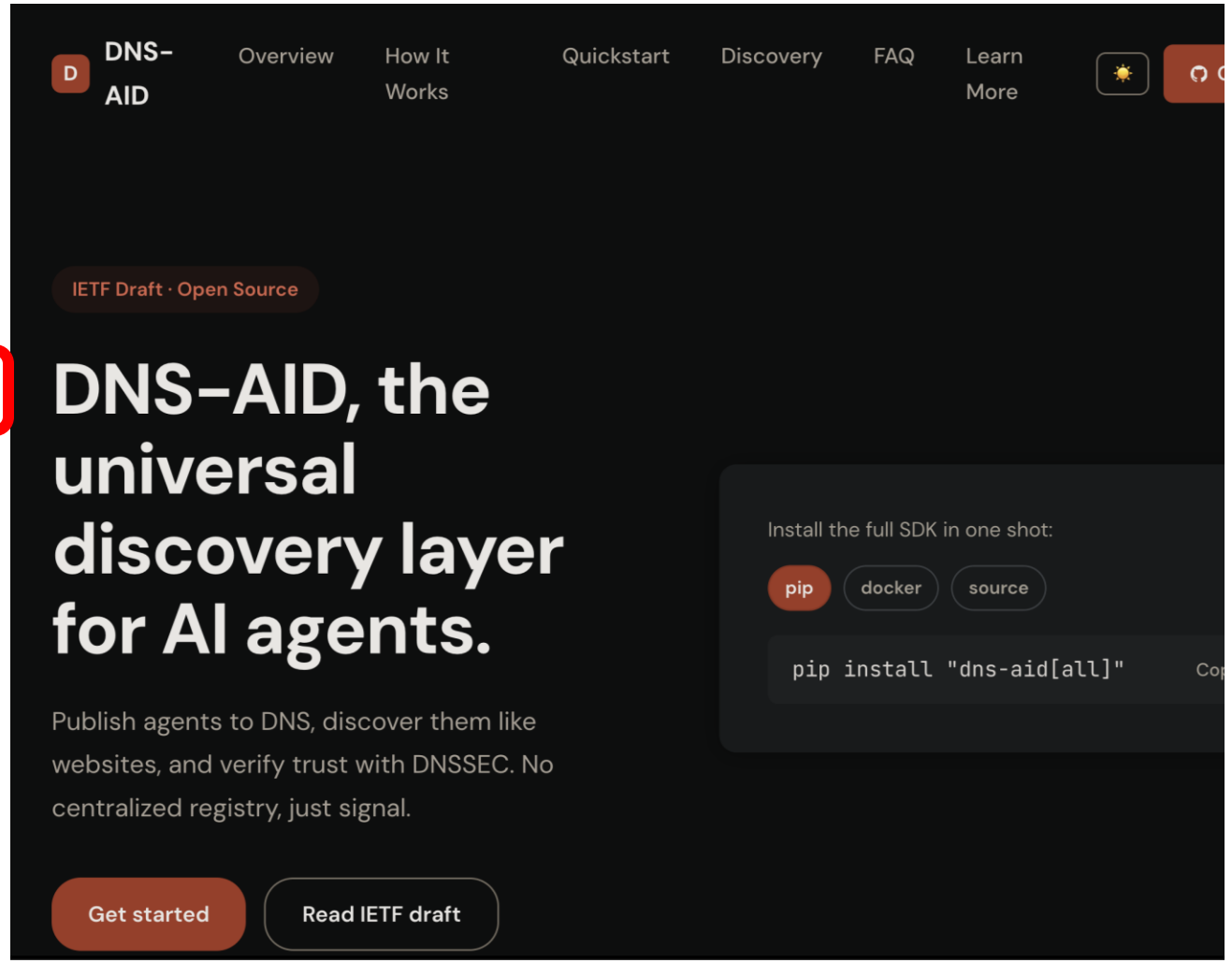

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Why DNS?

Practicality

- BGP glues together the networks making up the Internet, DNS facilitates everything communicating over it… these are the two "glue" protocols of the internet.
- Largest scale of deployed federated / decentralized protocols (~500T daily queries, ~10^104 total namespace permutations)
- Leverage existing technology expertise / employees: developers, vulnerability community, enterprises use and integrate to existing technologies to current network stack
- Reduce internet fragmentation utilizing all the above to give AI workloads a known entry point to organizations using existing digital trust boundaries (domain + certificates a la DNSSEC, DANE, mTLS, etc.)… right now 😎

Governance

- Root zone operation / control federated across borders
- Diversity of hosting options across TLDs, registrars, registries, and even the hosting infrastructure
- *Accepted universal domain takedown process (UDRP)*
- Increase individual operator sovereignty while decreasing third-party reliance: organizations advertise their own services without the risk of opaque registry rules or business practice (i.e. paid placement of less-reputable agents), delegate authority to business partnerships without need for registry approval