Naming e DNS

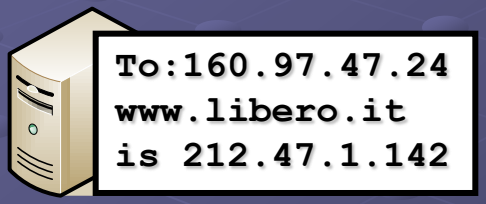
1. Necessità del naming
2. DNS: un database distribuito
3. Meccanismi di querying
4. Tipologie di record
5. Cenni all'(in)sicurezza di DNS
6. Uso di `nslookup`

Naming Gerarchico:

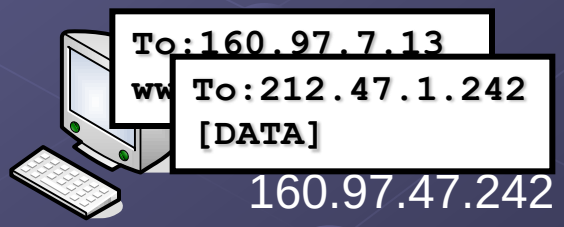
maia.mat.unical.it <-> 160.97.47.242

Dominio di 2° livello

Dominio di 1° livello

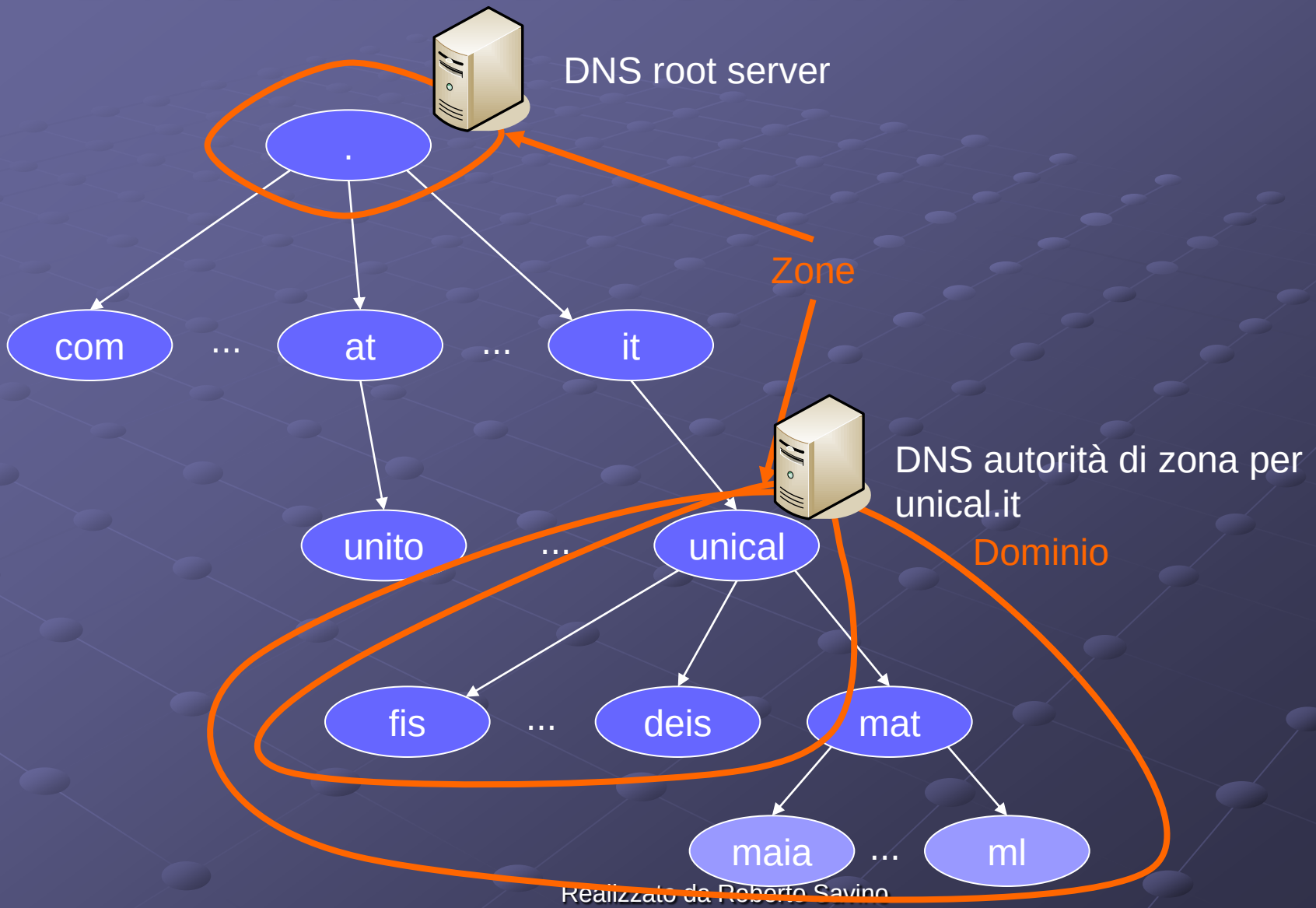


www.libero.it



160.97.47.242

DNS: un DB distribuito



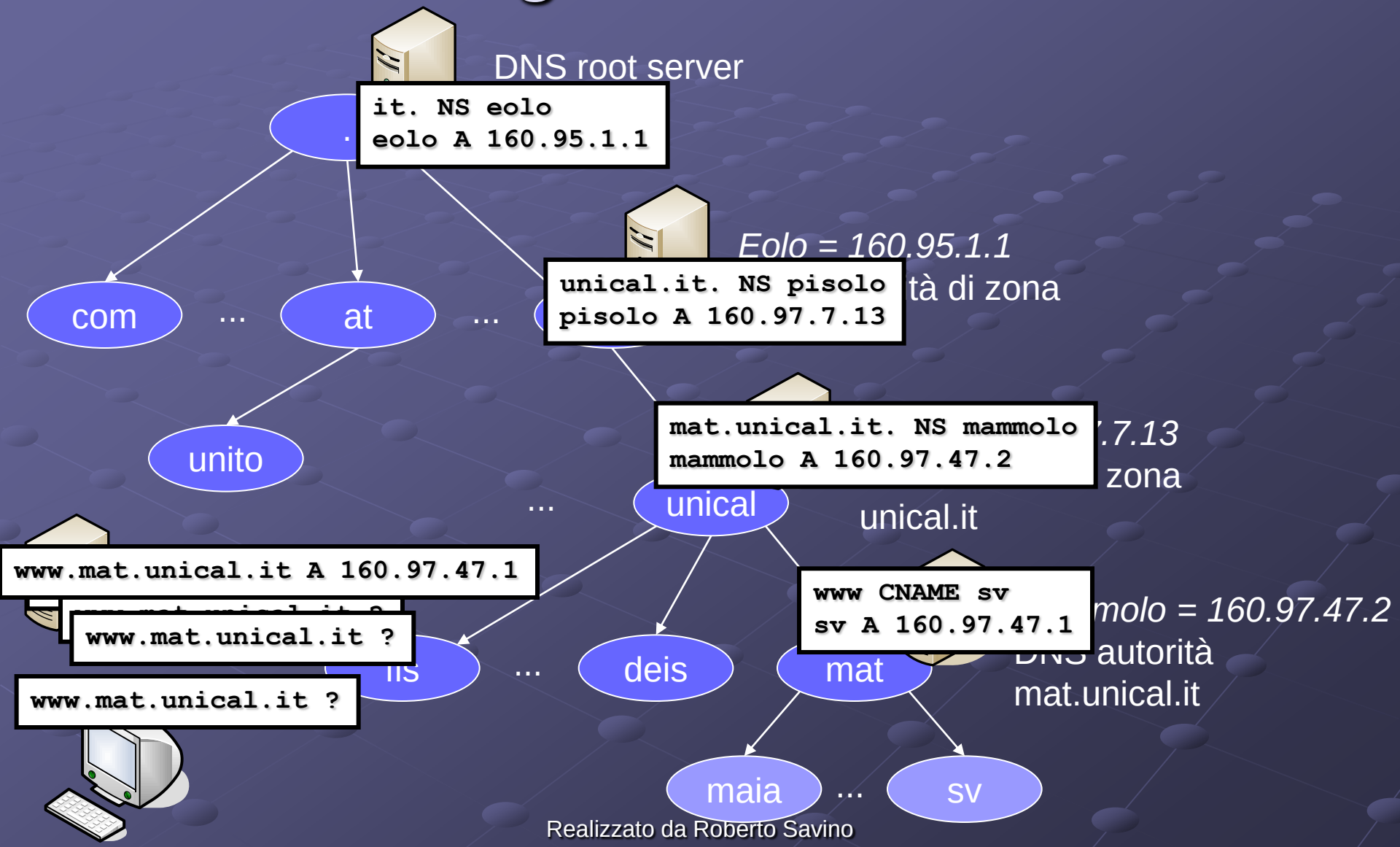
Tipologie di DNS Server

- Server autoritativo di dominio
  - Risponde direttamente per la propria ‘zona’
  - Conosce i server autoritativi per i propri sottodomini fuori ‘zona’
- Server root
  - Autoritativo per il top della gerarchia
- Server locale
  - Funge da ‘resolver’

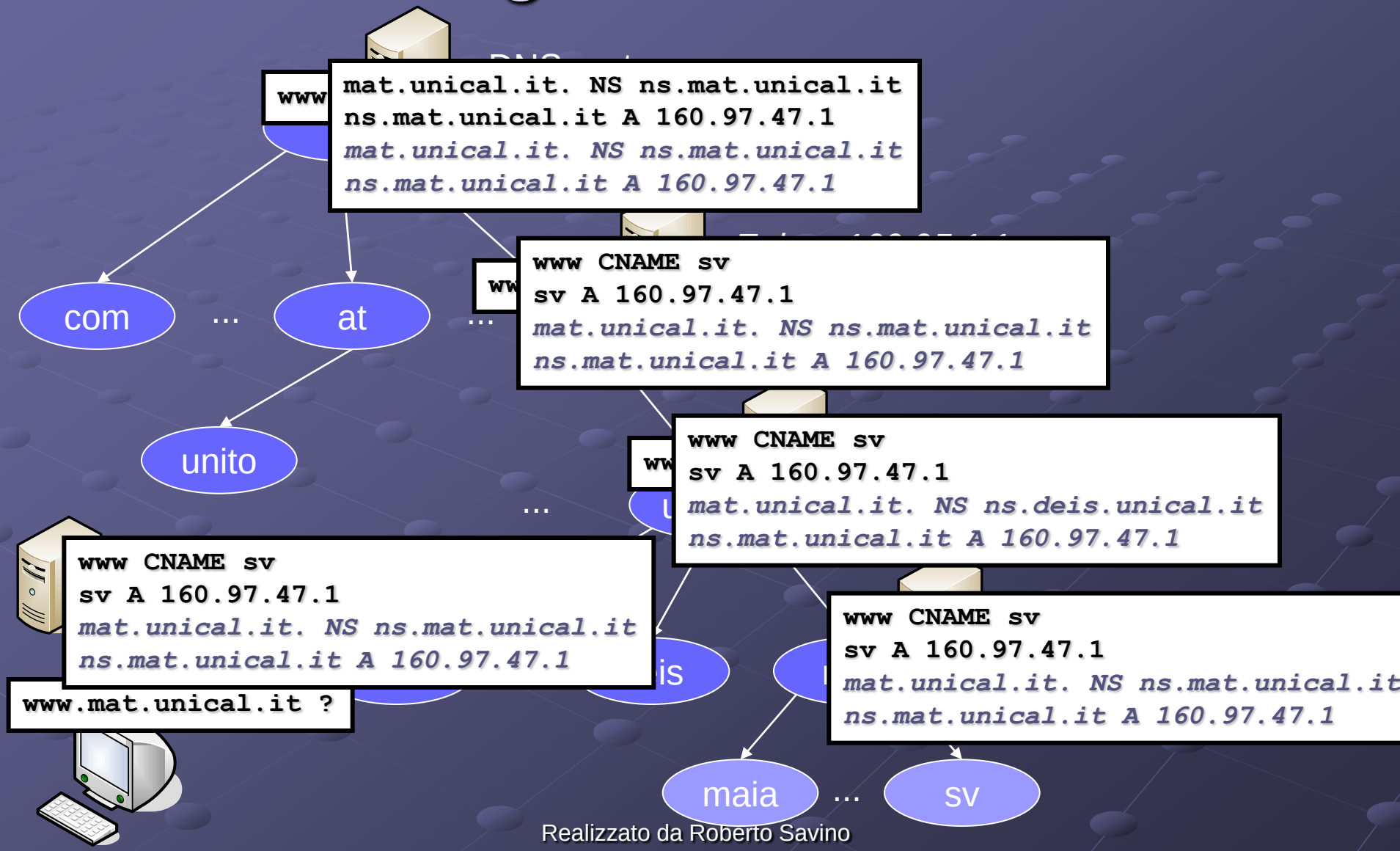
Cosa contiene un file di zona

- Triple del tipo
  - `< Name, Type, Value >`
- Associazioni nome – IP
  - `maia.mat.unical.it. A 160.97.47.242`
- Associazioni dominio – NS authority (glue information)
  - `mat.unical.it. NS ns.mat.unical.it`
- Associazioni dominio – mail exchanger
  - `mat.unical.it. MX ml.mat.unical.it`
- Associazioni inverse
  - `242 PTR maia.mat.unical.it`
- Alias
  - `www.mat.unical.it CNAME sv.mat.unical.it`

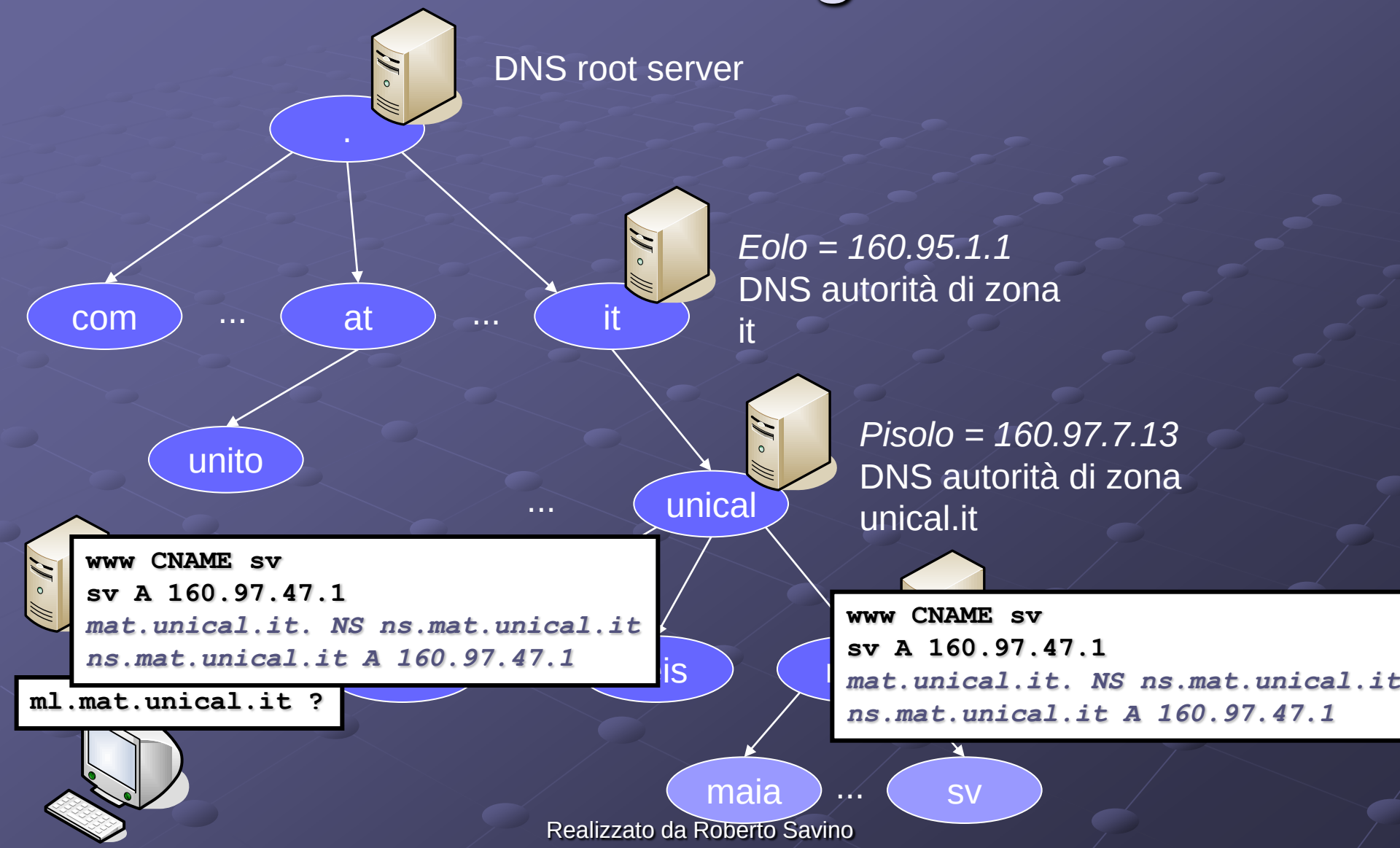
Interrogazione iterativa



Interrogazione ricorsiva

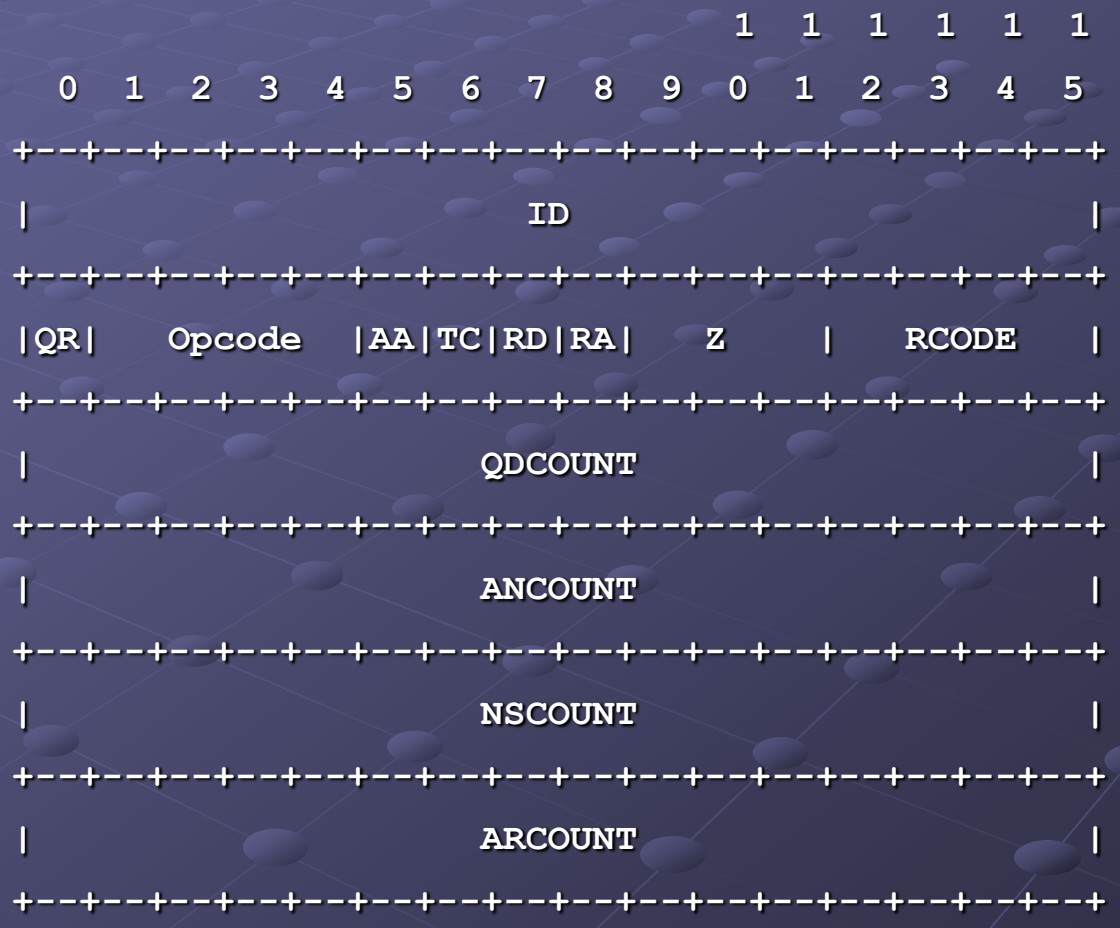


Caching

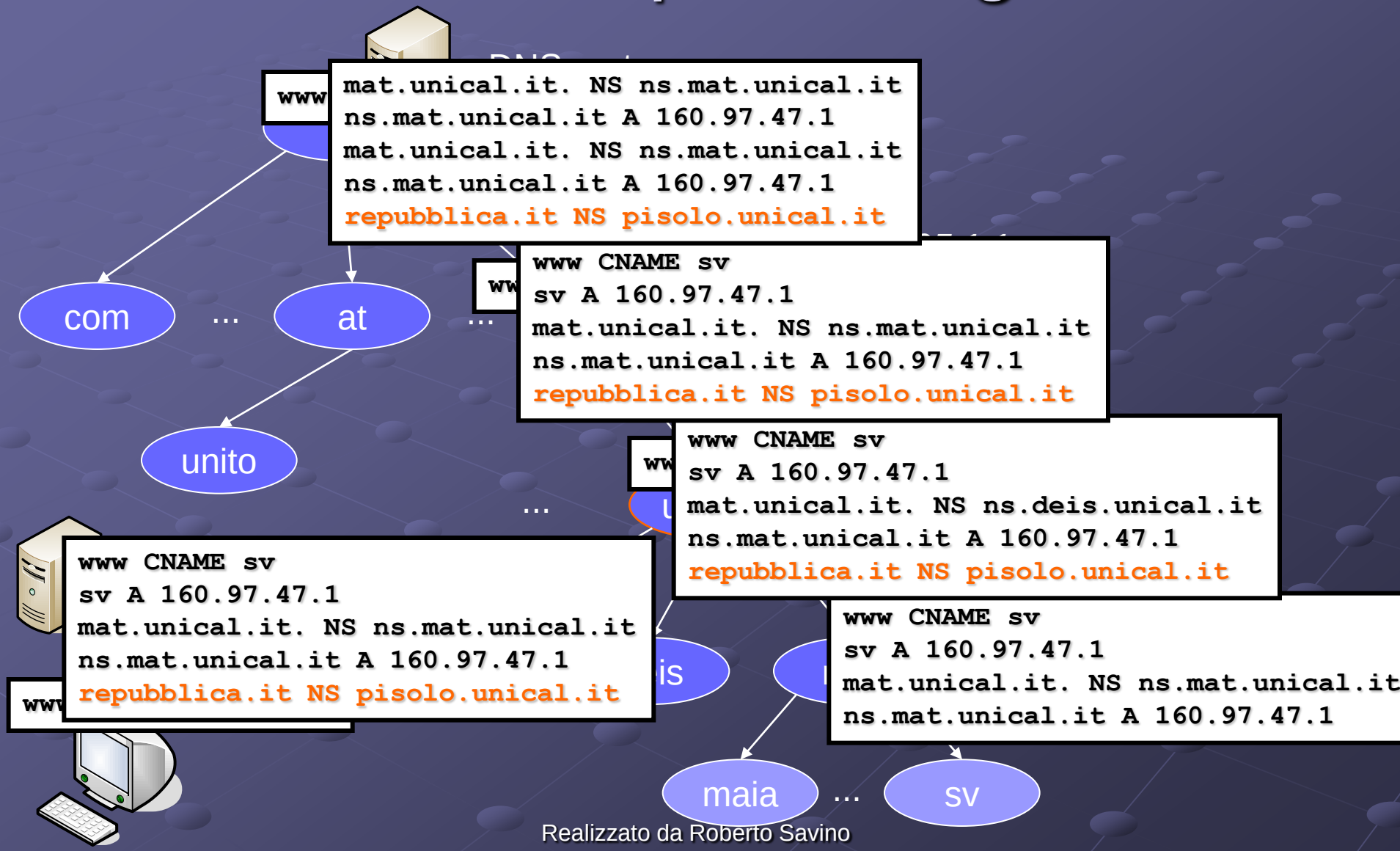

DNS root server
.
com
...
at
...
it
Eolo = 160.95.1.1
DNS autorità di zona
it
unito
...
unical
Pisolo = 160.97.7.13
DNS autorità di zona
unical.it
www CNAME sv
sv A 160.97.47.1
mat.unical.it. NS ns.mat.unical.it
ns.mat.unical.it A 160.97.47.1
ml.mat.unical.it ?
is
www CNAME sv
sv A 160.97.47.1
mat.unical.it. NS ns.mat.unical.it
ns.mat.unical.it A 160.97.47.1
maia
...
sv

Struttura dei pacchetti DNS

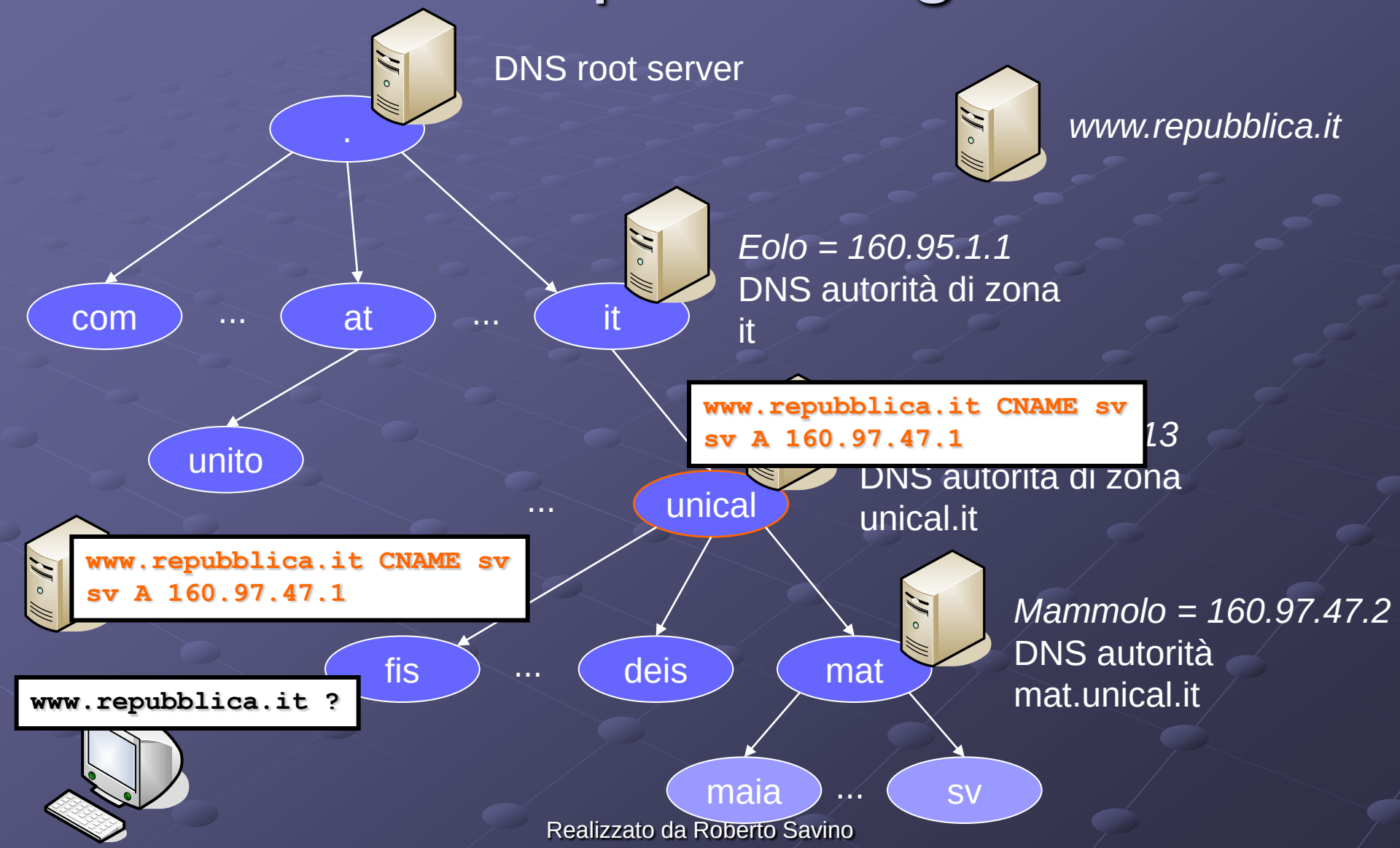
- UDP, *TCP* in casi particolari



Cache poisoning



Cache poisoning - 2



Tool per sperimentare

- **`nslookup`**
  - Possibilità di preparare semplici record di richiesta
  - set type=(A,PTR,MX,SOA,NS)
  - set server=IP
  - set debug