.eu, .ευ & .ею and DNS Abuse

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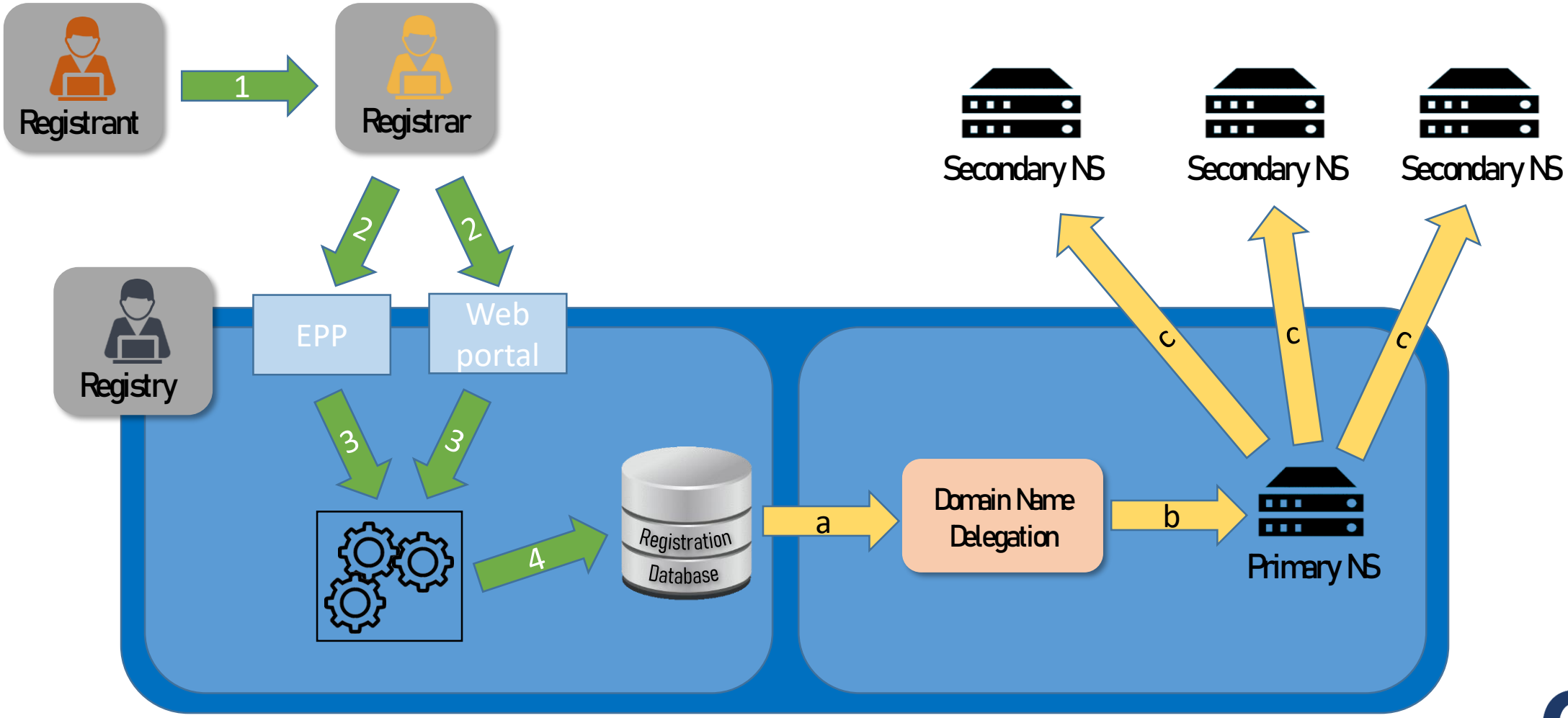
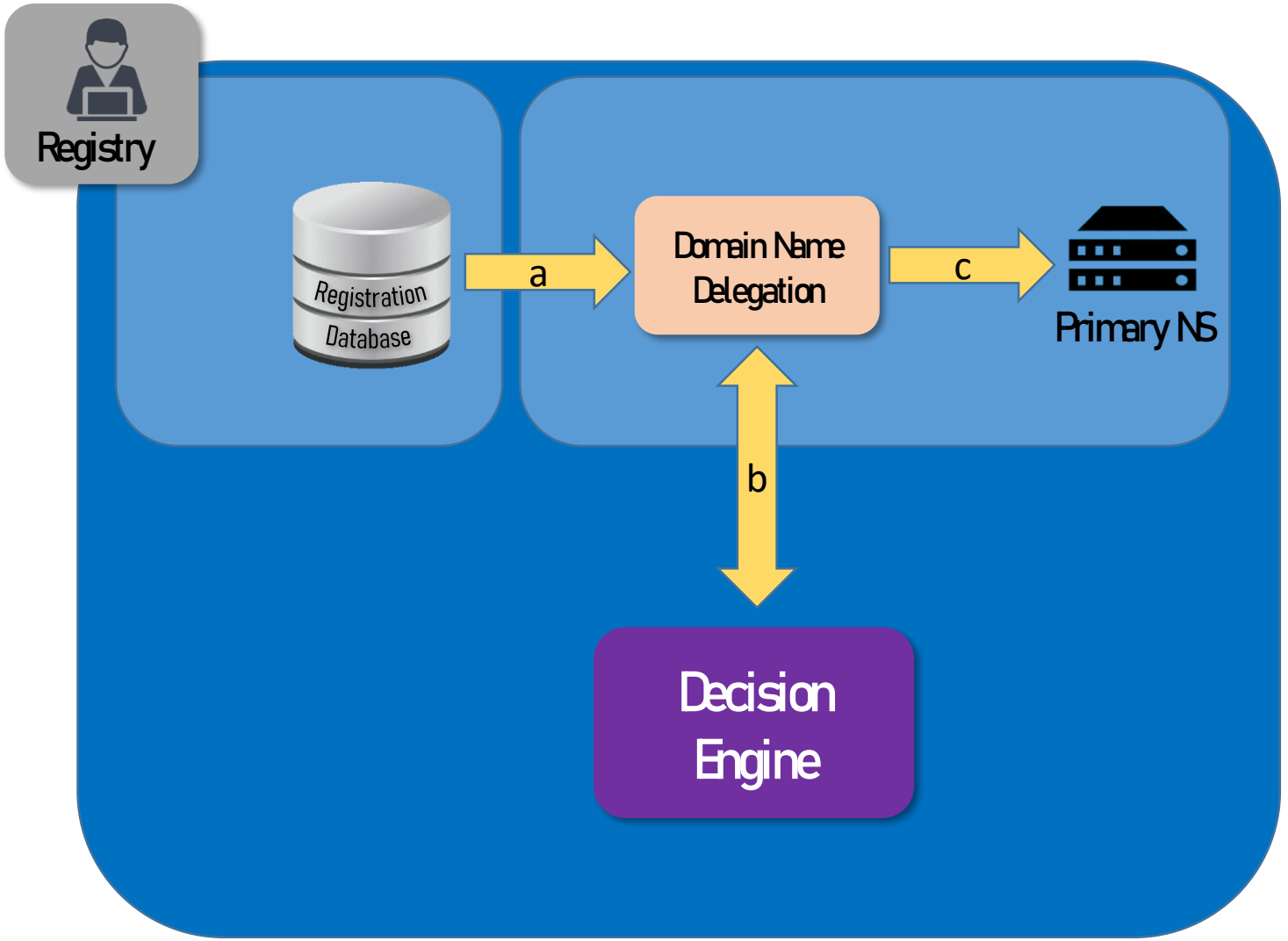
Registration & delegation process



Delayed delegation



At “delegation time”

Evaluate the registration

Flagged as “potential malicious”

Yes

Delay delegation

Start validation process

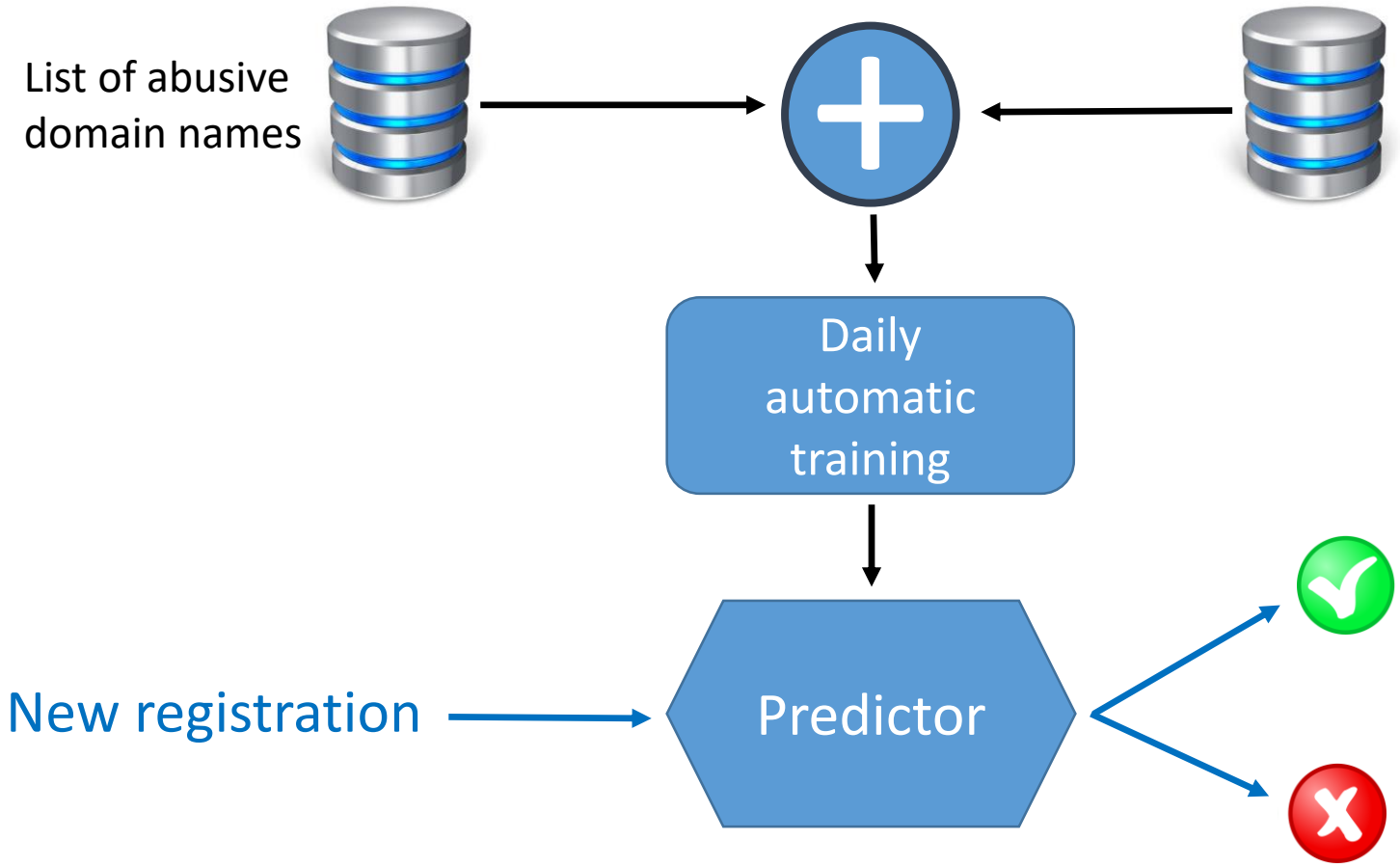
No

Delegate

Decision engine (APEWS)

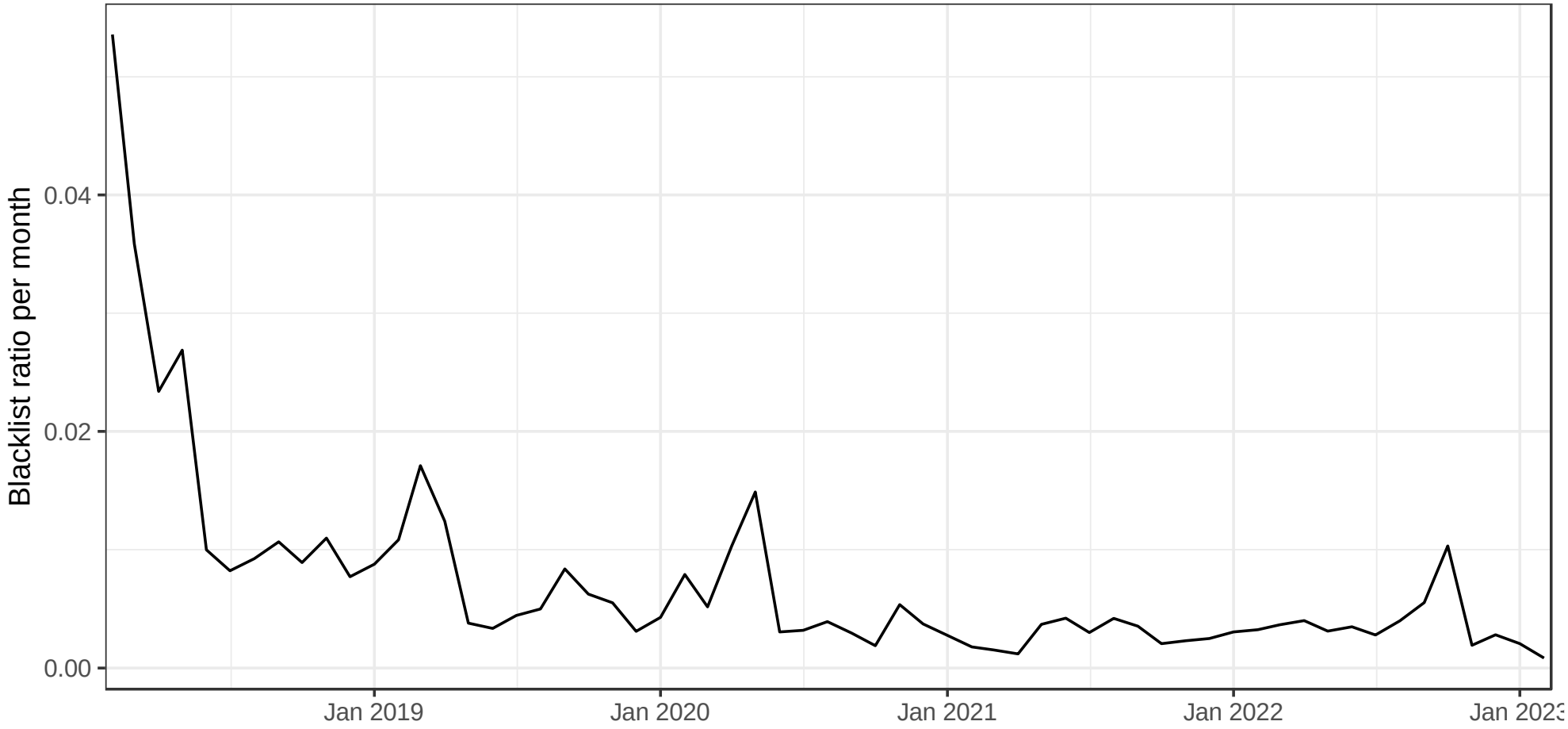
- Abuse Prediction and Early Warning System
- Goal:
  - At time of registration of a domain name
  - Predict if the domain name is registered with malicious/abusive intent
- Domain name “attributes”
  - Registrant data (name, address, email, ...)
  - Registrar
  - Domain name “randomness”
  - DNS info (name servers)
- Machine learning models

Predictive model



For each new registration, the system predicts if the domain name was registered with malicious intent.

Prediction results



Prediction model

- Tuning
  - Recall (how many were found)
    vs.
  - Precision (how many of those that were found were correct)
- During the time predictions were made but no delayed delegation
  - Recall > 80%
  - Precision > 80%
- False positive (predicted as malicious but really benign)
  - Registrant has to do a little extra effort (validate the registrant data)

Deployment

- Post registration – Pre delegation
- Pre registration
  - Prediction needs to be fast enough
    (as registrar is waiting for response from registration request)
- Post registration – Post delegation
  - Other information is available (content of websites, security feeds, ...)
- Cross TLD/registry
  - Similar abusive patterns exist across different TLDs
  - Anonymisation of registrant data (one way hashing)
    - “peterjanssen” -> “c103ce1de8dfcfaa705fb18487a7c602”

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