

Linked Data at Next Generation Internet webinar

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Next Generation Internet

- EU fund for improving the internet
- <https://ngi.eu>
- Many reasons for NGI, let's pick one example problem.



Why internet? Communication!

- Initially text (mail, html), some markup, images
- Enabled anyone to publish and interact
- Allow everyone to communicate easily with few restrictions
- Many groups communicate via the internet



Communication is a common good

- Society is overlapping groups with a shared interests
 - neighbors, global market, municipality, trade group
- No communication, no group
- ‚good communication‘ is a group norm
 - e.g. secure, private, no hate-speech, no advertising, etc...
- „The communication channel should be under the control of the group.“ insp by Elenor Ostrom, Nobel Prize Economics



Internet 2021: 3rd party platforms

- Group no longer has control of their communication
- 3rd party platforms
 - block, track, profile participants and sell data
 - censor and change communication
 - insert advertisements
 - force use of other products
 - are your guardian, you are their ward

Example: Contact tracing dictated by Google and Apple



How did this happen?

- People want ,free' stuff
- Network effect
- 3rd party platforms are arbiters of truth
 - Likes cannot be moved without losing credibility
 - Lock-in by trust



Next Generation Internet

- Fix '*tragedy of the unmanaged commons*' by funding work on the internet
- Subgranting: organizations like NLnet manage topical grants
- >10 funds, NLnet involved in Search & Discovery, Privacy Enhancing Technology, and Assure



Linked Data

- Web started as text, markup images
- Difficult to derive data from that and automate
- Solution: Resource Description Framework (RDF)
- ‚Anyone can say anything about anything‘ in structured way
- Subject – Predicate – Object
- Stand-alone or embedded

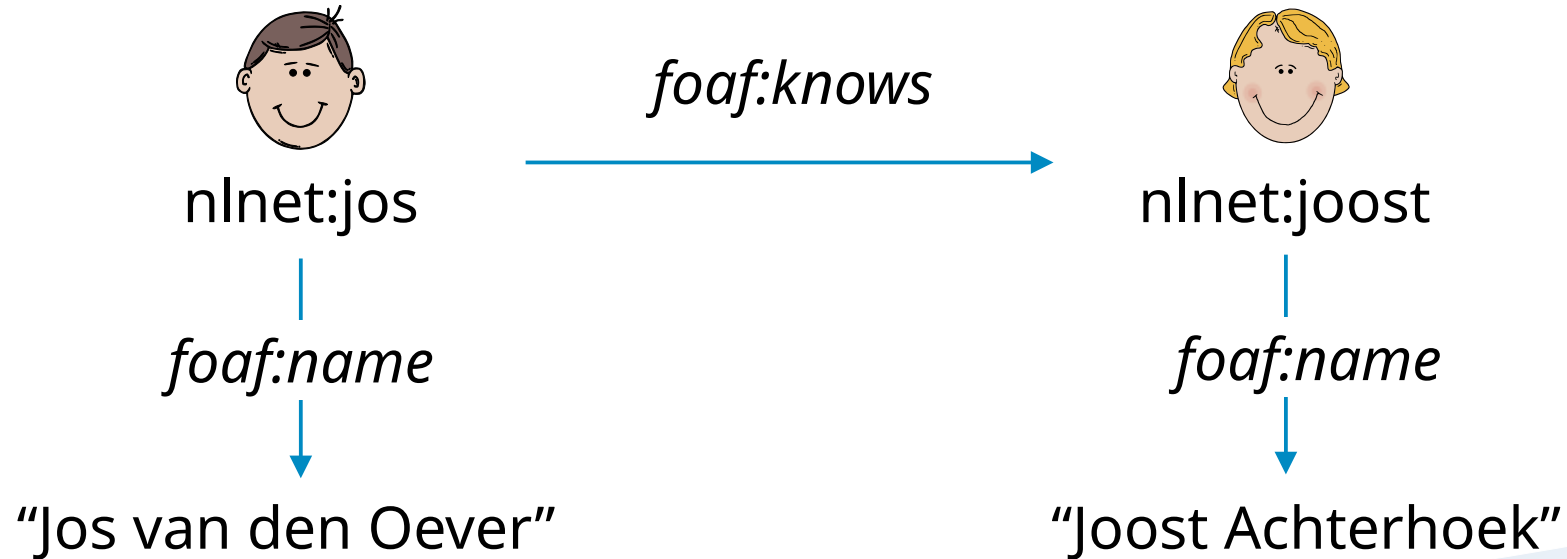
```
@prefix foaf: <http://xmlns.com/foaf/0.1/> .  
nlnet:jos foaf:name „Jos van den Oever“ ;  
nlnet:jos foaf:knows nlnet:joost .
```



Linked Data

@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix nlnet: <https://nlnet.nl/rdf/> .

subject $\xrightarrow{\text{predicate}}$ object



Linked Data

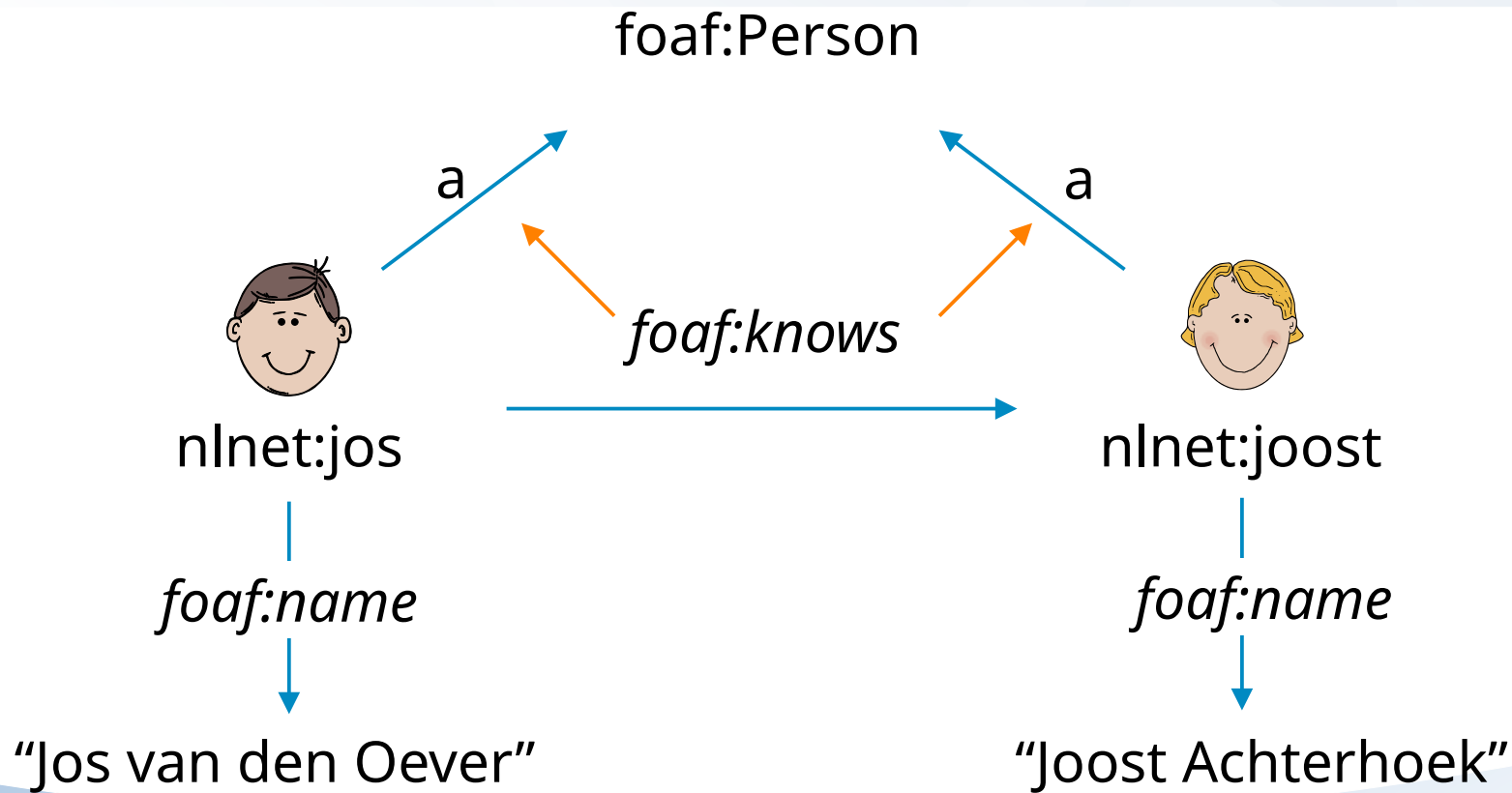
Innovations from RDF:

- simple file formats (Turtle, JSON-LD)
- name things with IRIs
- graph instead of tree
- inferencing



Linked Data: inferencing

subject $\xrightarrow{\text{predicate}}$ object

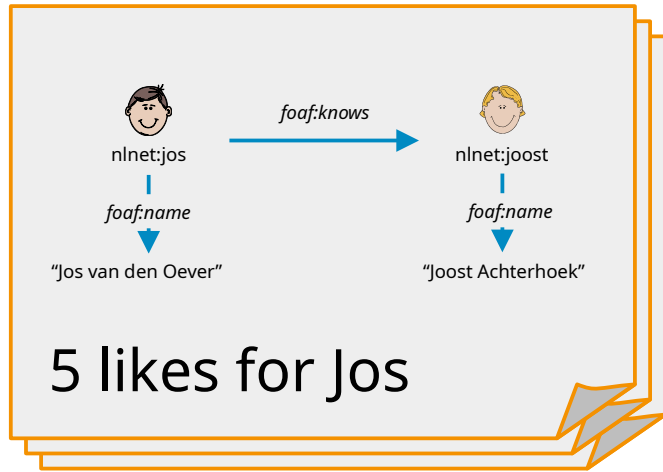


Capture all facts in Linked Data

- DBPedia, Wikidata, Gene Ontology, Protein Ontology
- Mostly public facts
- ActivityPub (decentralized communication) built on RDF
- People are still people
 - spam, fake news, phishing, invalid data



Linked Data: authenticity



bigplatform.com 

Authenticity tied to host:
Lock-in by log-in



Signed graphs:

Authenticity tied to author
Move information without loss
No lock-in

Linked Data: work ahead

Find a precise and democratic way to communicate

- Define the language
- Creation: speak the language
- Translate to the language
- Provenance: structured data trail
- Authentication: digitally signed graphs

openEngiAdina, DREAM, m-Id, Corteza, PeARS, Solid-Shape, PROVIT4DATA, PDS Interop, DASI Breaker, FedeProxy

*NGI Zero Discovery
NGI DAPSI
NGI Assure
NGI Pointer*

