



Social networks in Agrippa and semantic technology

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Overview

- Introduction
- The AMVC Letterenhuis and Agrippa
- Semantic Web
- Agrippa as a semantic network
 - A network of letters
 - Spatial and structural features
- Conclusions



Introduction

- Many complex systems can be modelled as **networks**
- Such networks can be studied with the aid of **Semantic Web technology**
- We study **Agrippa** as a system, taking correspondence as an example





The AMVC Letterenhuis and Agrippa

The AMVC Letterenhuis

- Archive and Museum of Flemish Cultural Life
- Covers 1750 – now
- Stores manuscripts, portraits, documentation etc.
- Catalogue: Agrippa



Agrippa

- Based on **ISAD(G)** and **ISAAR(CPF)**
- Information about
 - archival **materials**
 - 55,000 **persons and institutions**
 - **relations** between them
- <http://anet.ua.ac.be/agrippa>



Foto (87 Kbyte)
Naam: Hubert Lampo
Geboren: Antwerpen, 01-09-1920
Overleden: Essen, 12-07-2006
Biografie: (2 Kbyte)
Identificatienummer: L 179
Opmerking: Een bibliografie van Hubert Lampo is te vinden op de site van het Hubert Lampo Genootschap:
www.hubertlampogenootschap.org
Situering: *Proza, Journalistiek, Literatuurbeschouwing*
Bezit: Affiches, Brieven, Clichés, Documenten, Handschriften, Knipsels, Menu's, Necrologia, Opnamen, Foto's, Voorwerpen

Brieven:

[1363 beschrijving\(en\) van 1737 brief/brieven door Hubert Lampo](#)
[2982 beschrijving\(en\) van 3112 brief/brieven aan Hubert Lampo](#)
[24 beschrijving\(en\) van 24 brief/brieven over Hubert Lampo](#)
[1 beschrijvingen van 1 brieven uit het archief van Hubert Lampo](#)
[4027 beschrijvingen van 4027 brieven geschonken door Hubert Lampo](#)

Affiches:

[39 affiche\(s\) m.b.t. Hubert Lampo](#)

Foto's:

[122 foto\('s\) van Hubert Lampo](#)
[7 foto\('s\) in verband met Hubert Lampo](#)

Handschriften:

[304 handschrift\(en\) van Hubert Lampo](#)
[9 handschrift\(en\) i.v.m. Hubert Lampo](#)
[23 handschrift\(en\) over Hubert Lampo](#)
[3 handschrift\(en\) met aantekeningen van Hubert Lampo](#)
[31 drukproeven verbeterd door Hubert Lampo](#)

Schilderijen

[1 geschilderd\(e\) portret\(ten\) van Hubert Lampo](#)

Tekeningen

[9 getekend\(e\) portret\(ten\) van Hubert Lampo](#)
[2 tekening\(en\) in verband met Hubert Lampo](#)

Beelden

[1 beeld\(en\) van Hubert Lampo](#)

Prenten

[1 prent\(en\) in verband met Hubert Lampo](#)



Ga één niveau terug

Terug naar vertrekpunt

Help

Foto:



- Beschrijving:** *Karikatuur van Hubert Lampo*
- Kunstenaar:** [Vanstiphout, Stef](#)
- Tekening** pen en penseel met oost-indische inkt op papier
- Datum/Periode:** niet gedateerd
- Signatuur:** r.o.: *Stef*
l.o.: *Hubert Lampo*
- Afmetingen:** 7,3 x 5 cm
- Inschrijvingsnummer(s):** 103270/5
- Behoort tot het archief** [Vanstiphout, Stef](#)
- Trefwoord:** [Lampo, Hubert](#)

Zoekresultaat bewaren

U kan als volgt verder gaan:

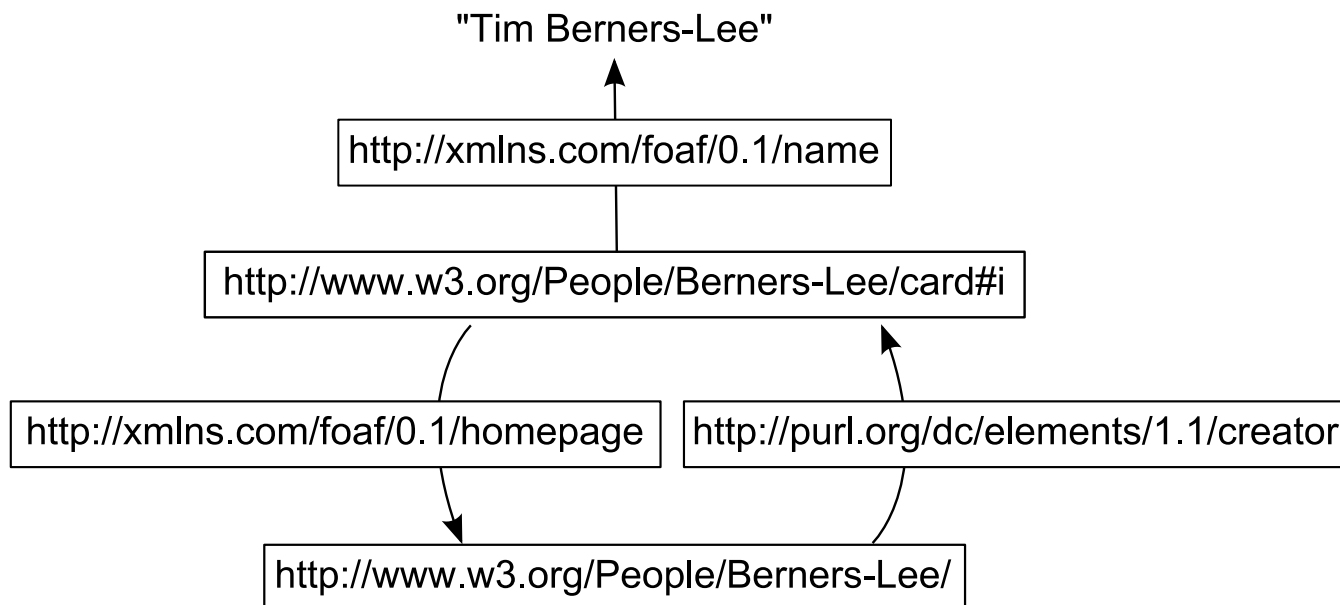
- **bewaar** deze beschrijving.



Semantic Web

Semantic Web

- **Extension** of the current Web
- Basis: **RDF**
- Network of interlinked **data** (instead of documents)





Agrippa as a semantic network

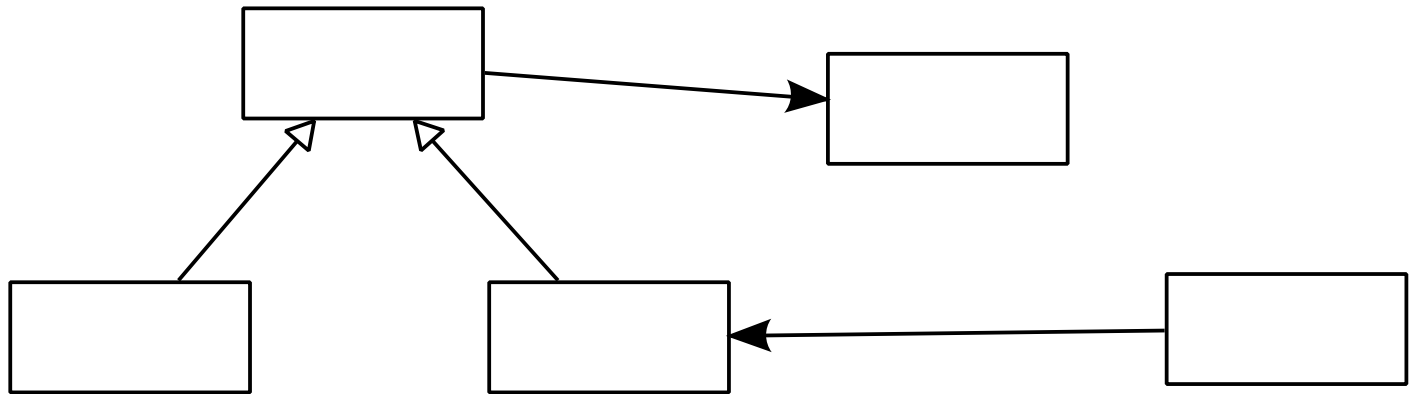
Advantages

- Interoperability
- Validation and error-checking
- Tools
- Research complex system



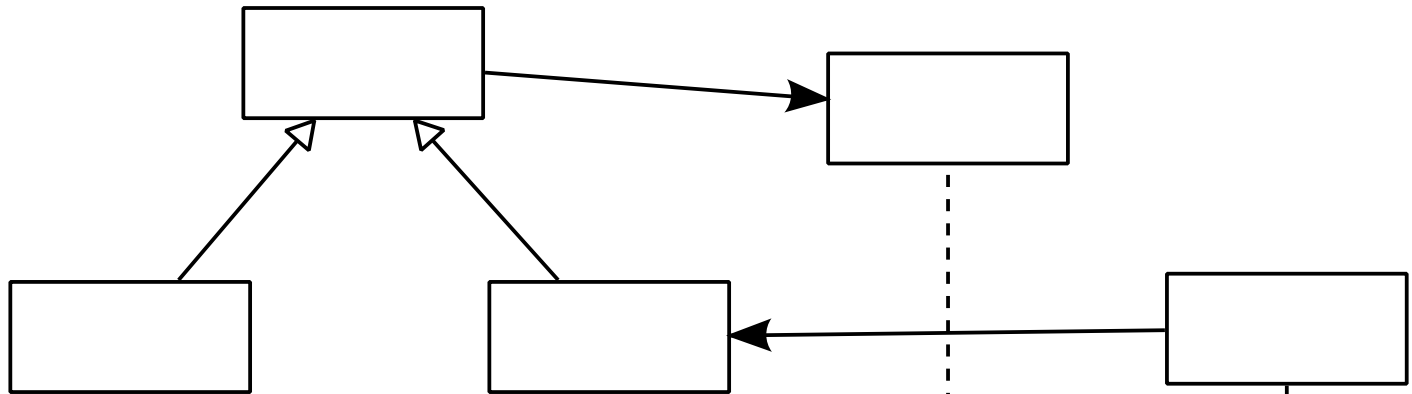
Agrippa ontology

Ontology

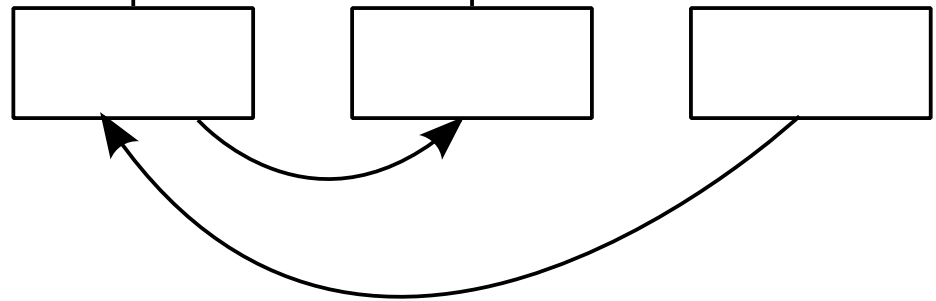


Agrippa ontology

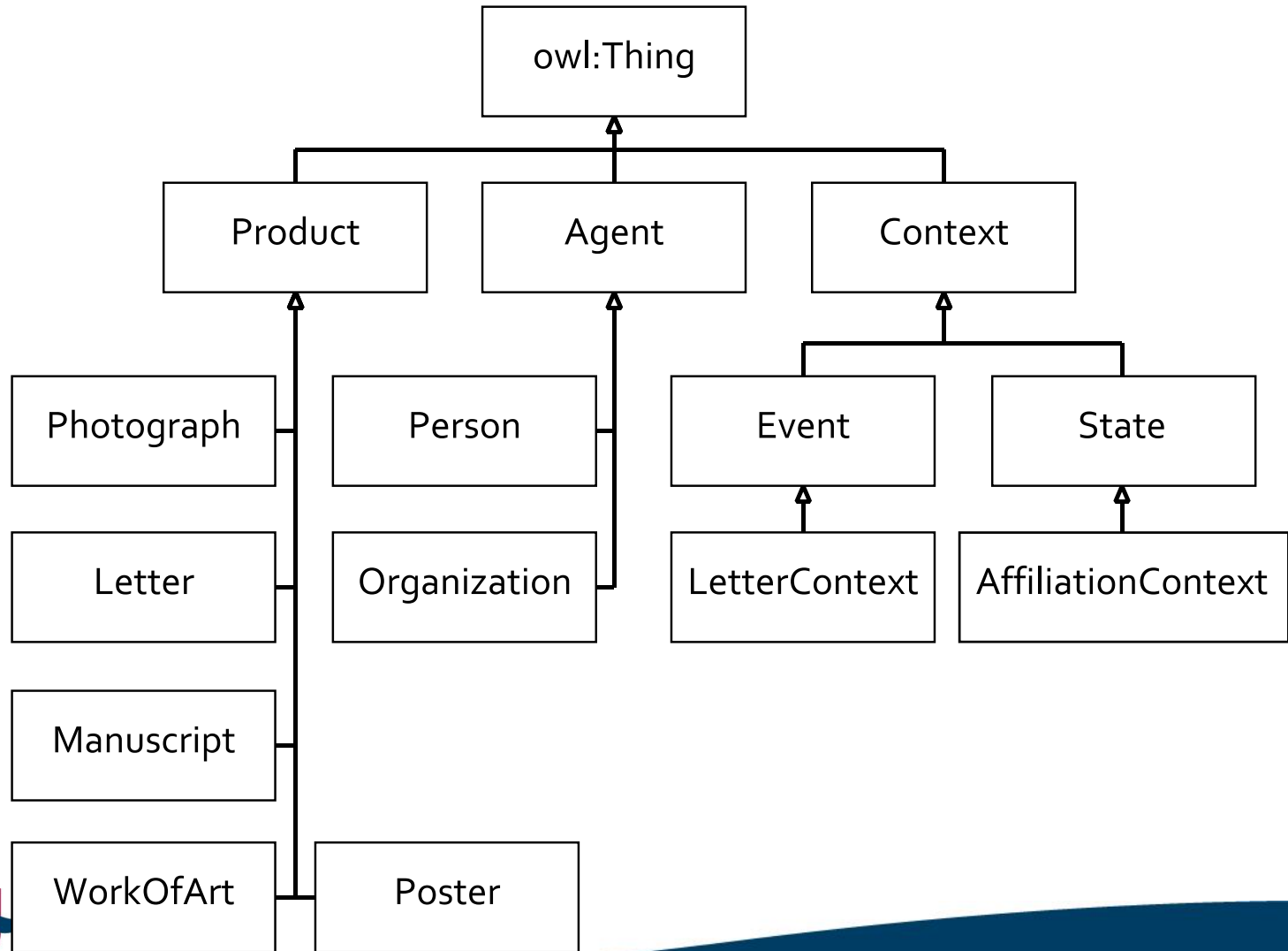
Ontology



Actual network



Agrippa classes



Storage and querying

- **Storage:** triple store
- **Querying:** SPARQL
 - SELECT
 - DESCRIBE
- **Extracting and combining** data: SPARQL
 - CONSTRUCT

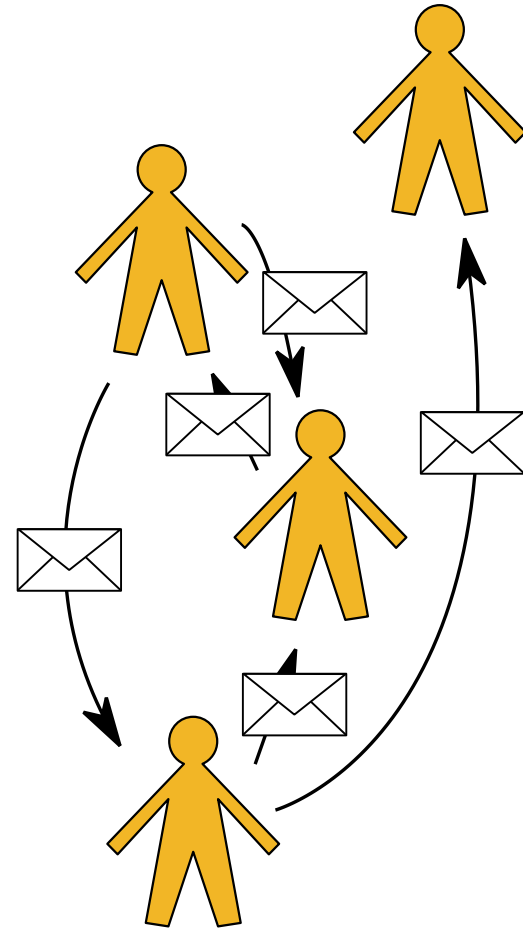




Agrippa correspondence network

Correspondence

- Definition of '**letter**':
 - creates/maintains contact
 - meant to be sent/handed to recipient
 - not intended for public
- ➔ social and intellectual **link from sender to recipient**
- ➔ inherently network-like

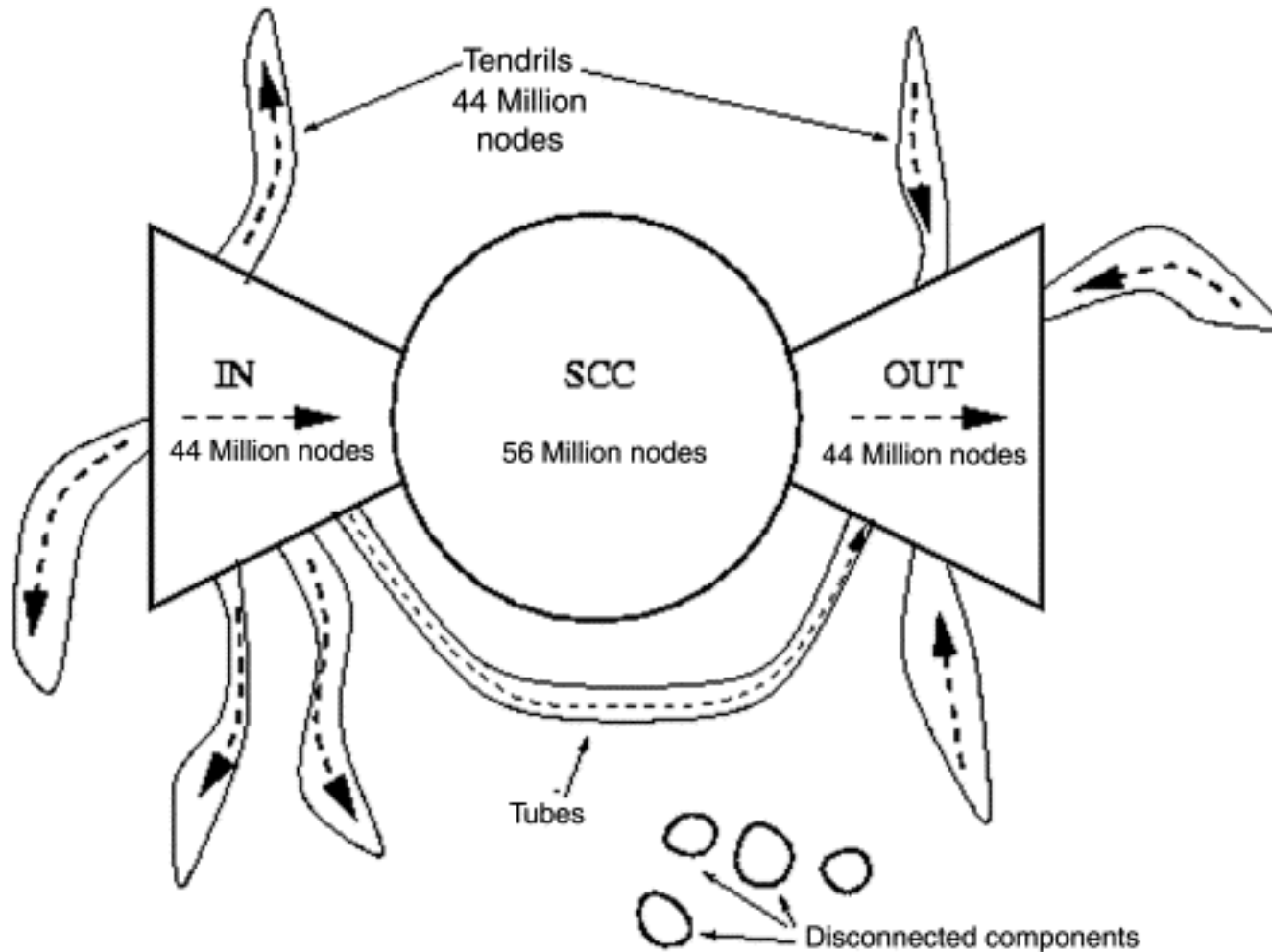


Agrippa correspondence

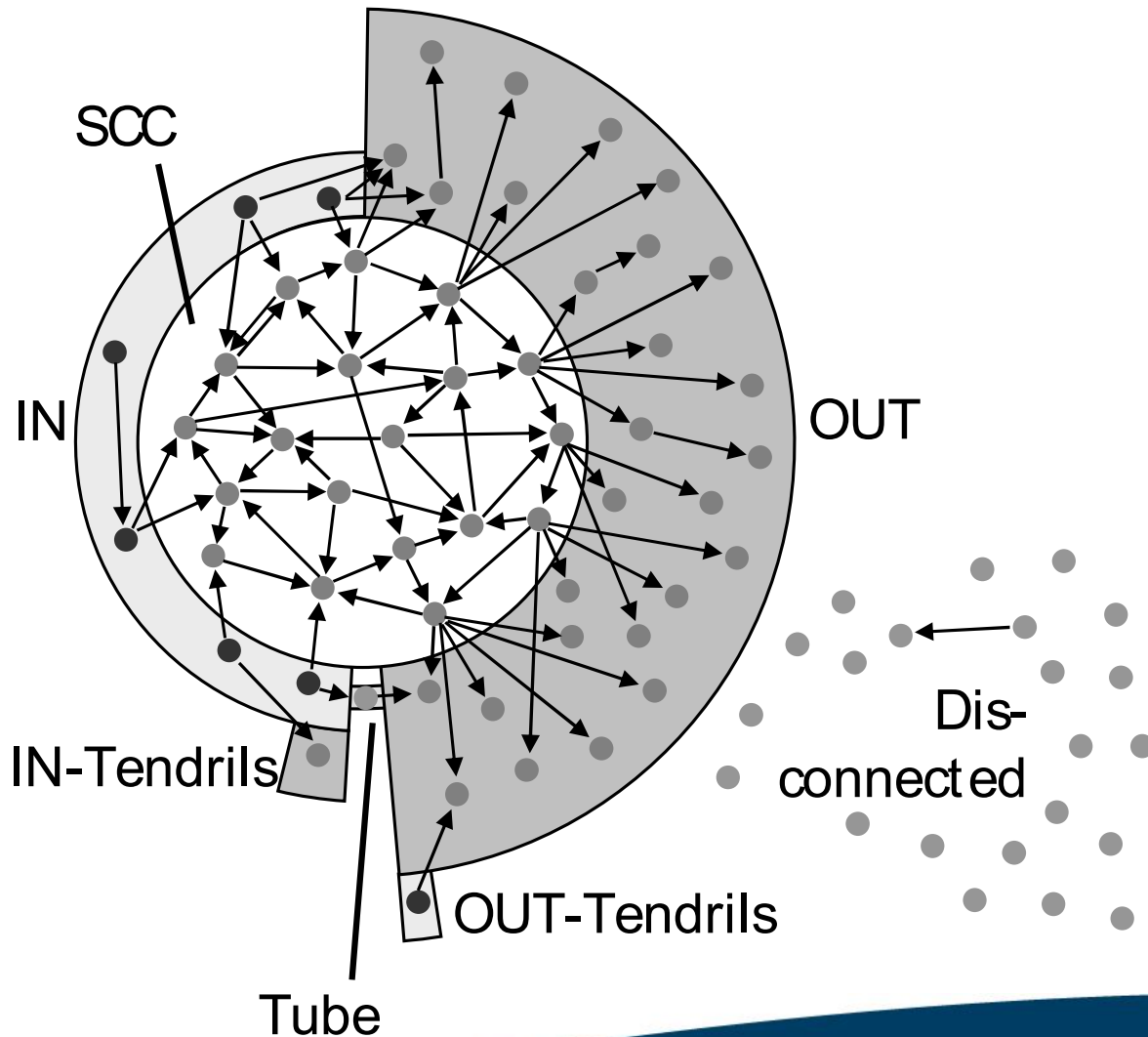
- Can be **extracted** from entire network
- Weighted sender – recipient network
 - 40,914 **nodes** = persons or organizations
 - link **weight** = number of letters
 - 103,860 **links**
- **Visualization**: only indirectly possible
- **Largest component**: 98.5% of all nodes



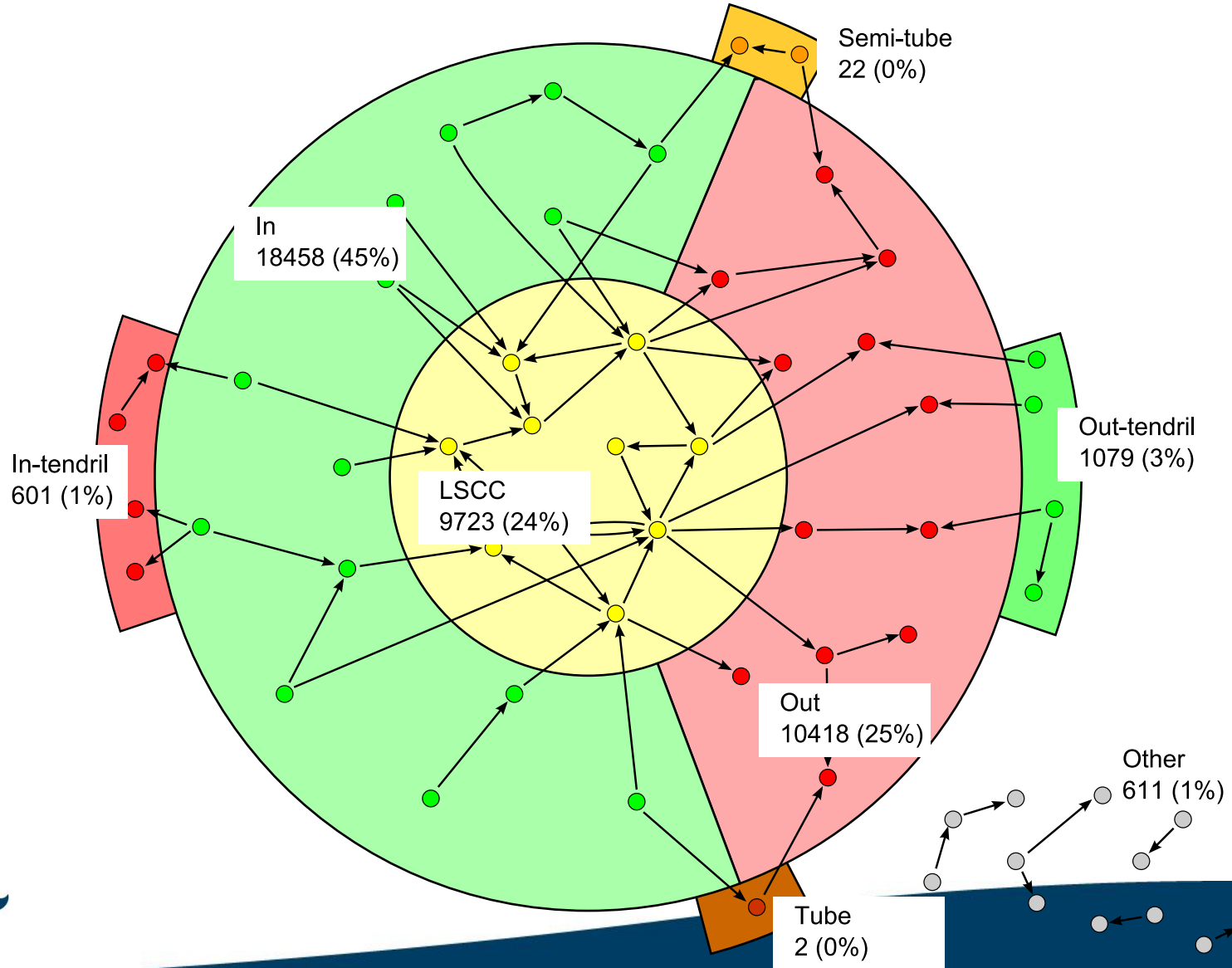
Bow-tie model



Corona model



Adapted corona model



Centrality

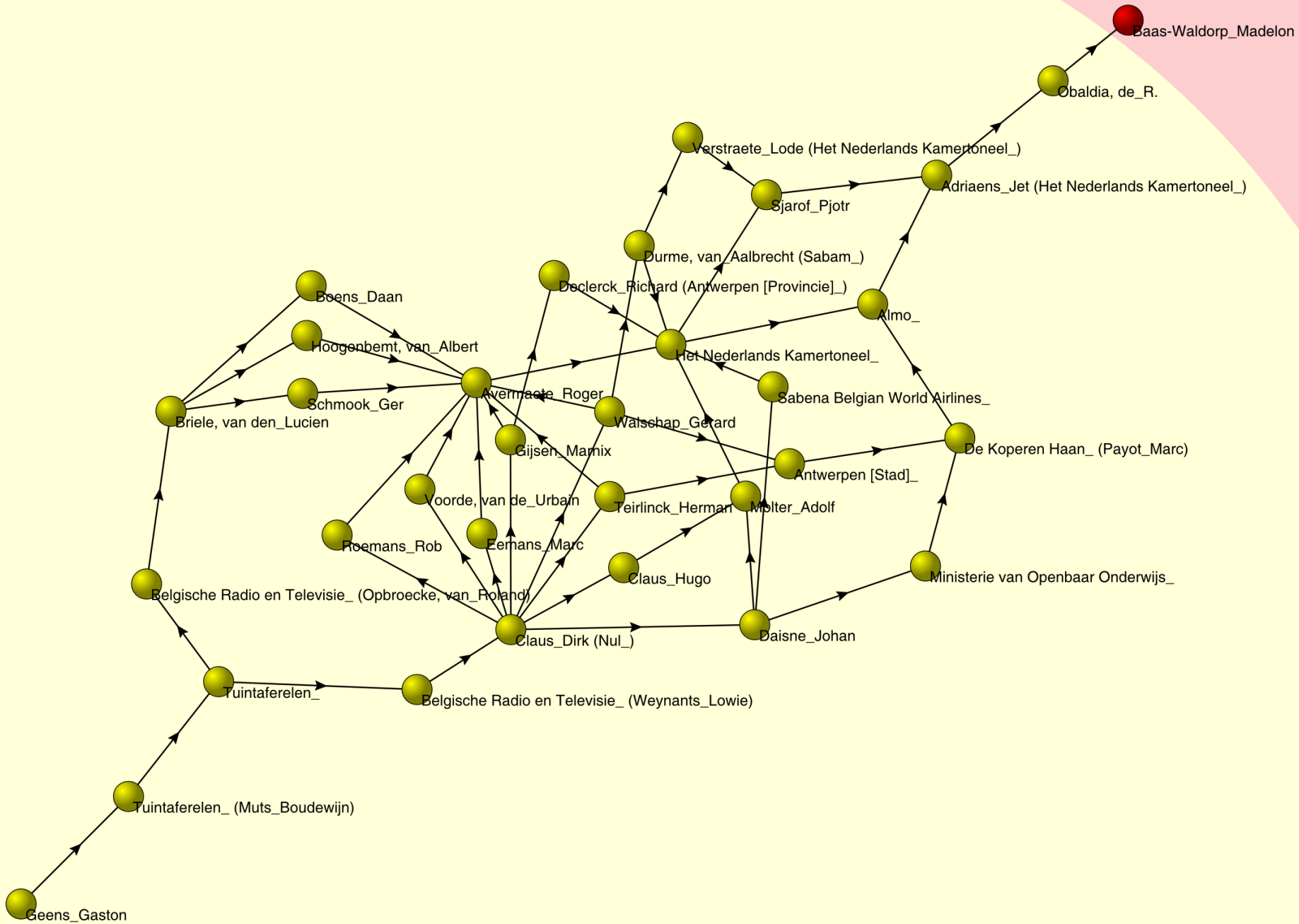
- **Degree** centrality
 - Correlation between in-degree and out-degree, due to dialogue-like nature of letters
- **Betweenness** centrality
 - Small number of LSCC nodes have very high betweenness, the rest quite low



Small world

- **Closeness** centrality
 - average shortest path: 3.49
 - diameter(longest shortest path): 11
 - High **clustering**
 - More than 300 times higher than random network (same size)
- Small world network





The effect of mutual links

- Cause the LSCC to grow faster
 - Cause the number of SCCs to decrease faster
- Again: micro-level feature has profound effect on macro-level topology



Conclusions

- **Semantic Web technology:** well suited for modelling and researching complex social systems
- **Correspondence network:**
 - modified corona model
 - small world
- **Dialogue nature of correspondence:** influences topology of resulting network
 - larger LSCC
 - correlation in-degree and out-degree
- **Future:**
 - expansion of data
 - interplay of several relations





Thank you!

Any questions?