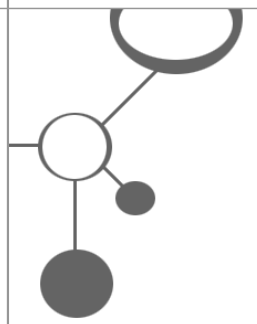
Practical Tau+

PanTau – A Topic Map engine build ontop of Tau+



Lars Heuer <heuer@semagia.com>
http://semagia.com

TMRA'05 · Work in progress report · 06.10.2005

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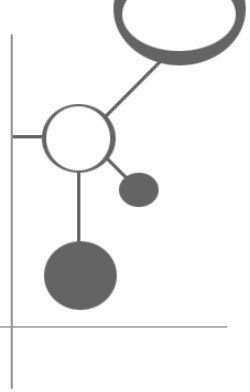

- Tau+ basics
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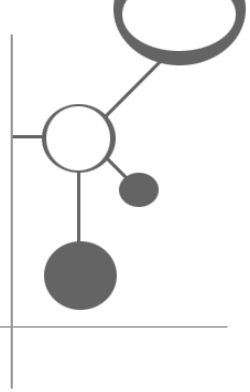
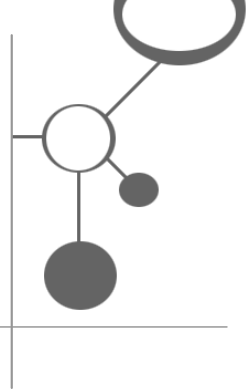
Tau+ - Brief overview



- Formal model of the Topic Maps Reference Model (TMRM)
- Formal model for the Topic Maps Query Language (TMQL)
- ***Subject Proxies**:* Set of (*key*, *value*) pairs (properties)
- ***Subject Map**:* Set of *Subject Proxies*
- Defines *path expressions* to extract information from Subject Maps (not covered here)

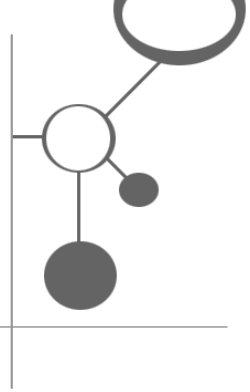
Tau+ - Overview I



- ***Property***: key/value pair: (`key`, `value`)
  Example: (`name`, ″`John Lennon`″)

- ***Subject Proxy***: Set of properties
  empty-proxy = {}
  proxy = {$property_0$, …, $property_n$}
  - Function id(*proxy*) returns an identifier
  - id(*proxy*) == id(*proxy'*) iff *proxy* == *proxy'*

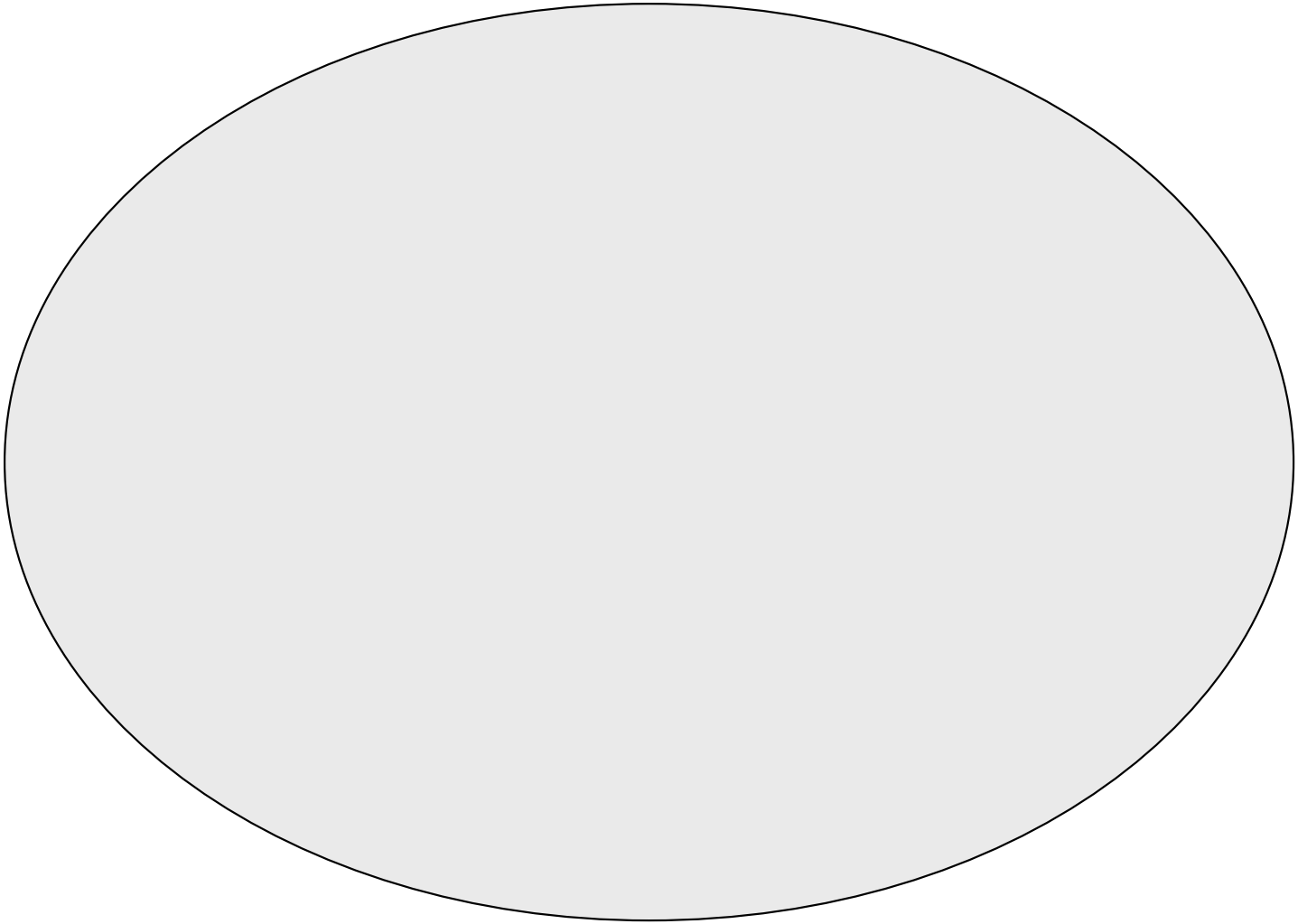
Tau+ - Overview II



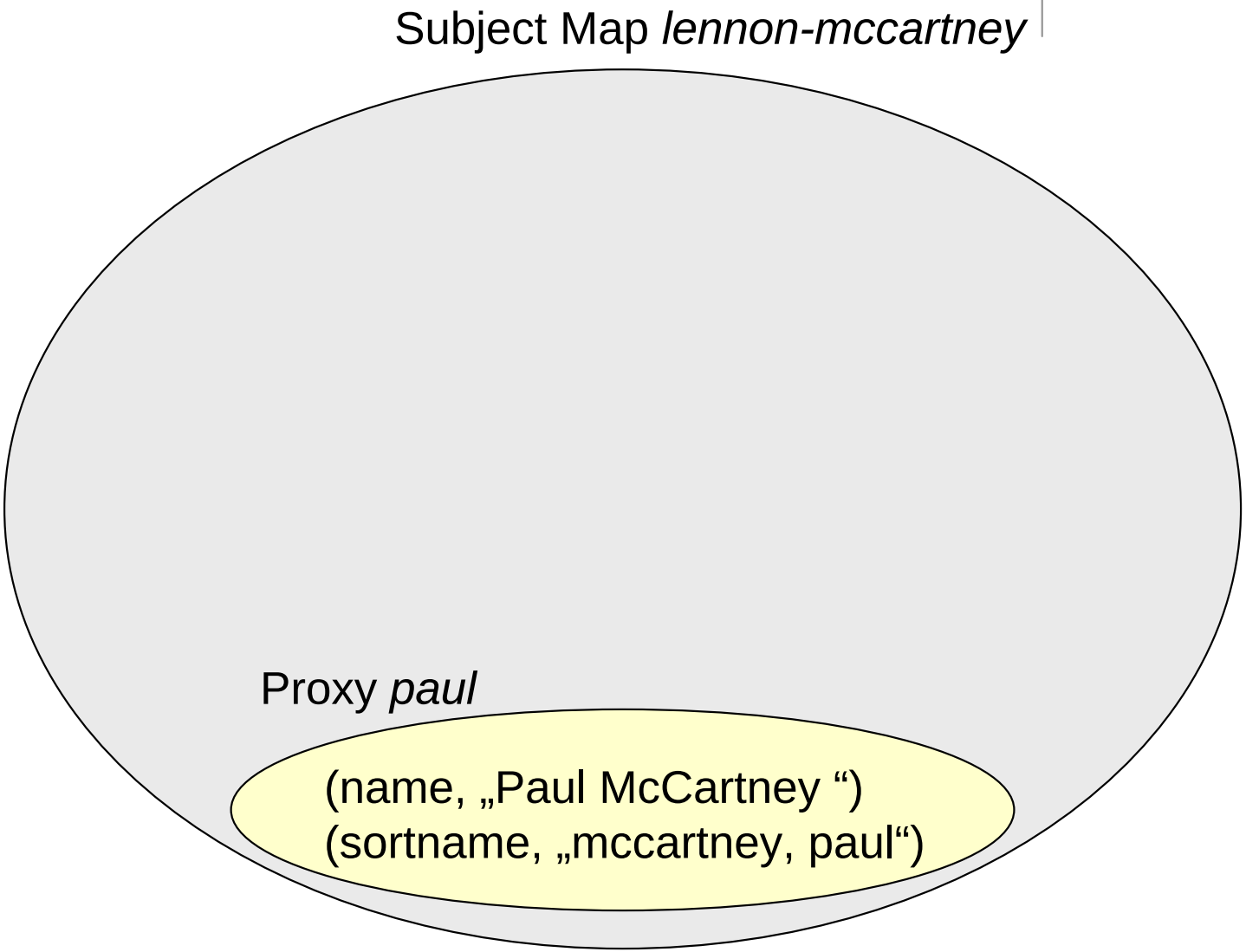
- ***Subject Map***: Finite (maybe empty) set of Subject Proxies
  $map = \{proxy_0, \ldots, proxy_n\}$
- Only identical proxies are merged
- Additional merging constraints have to be defined by a *merger function*
- A *merger function* identifies proxies that should be merged and replaces them with one proxy

Tau+ - Merging

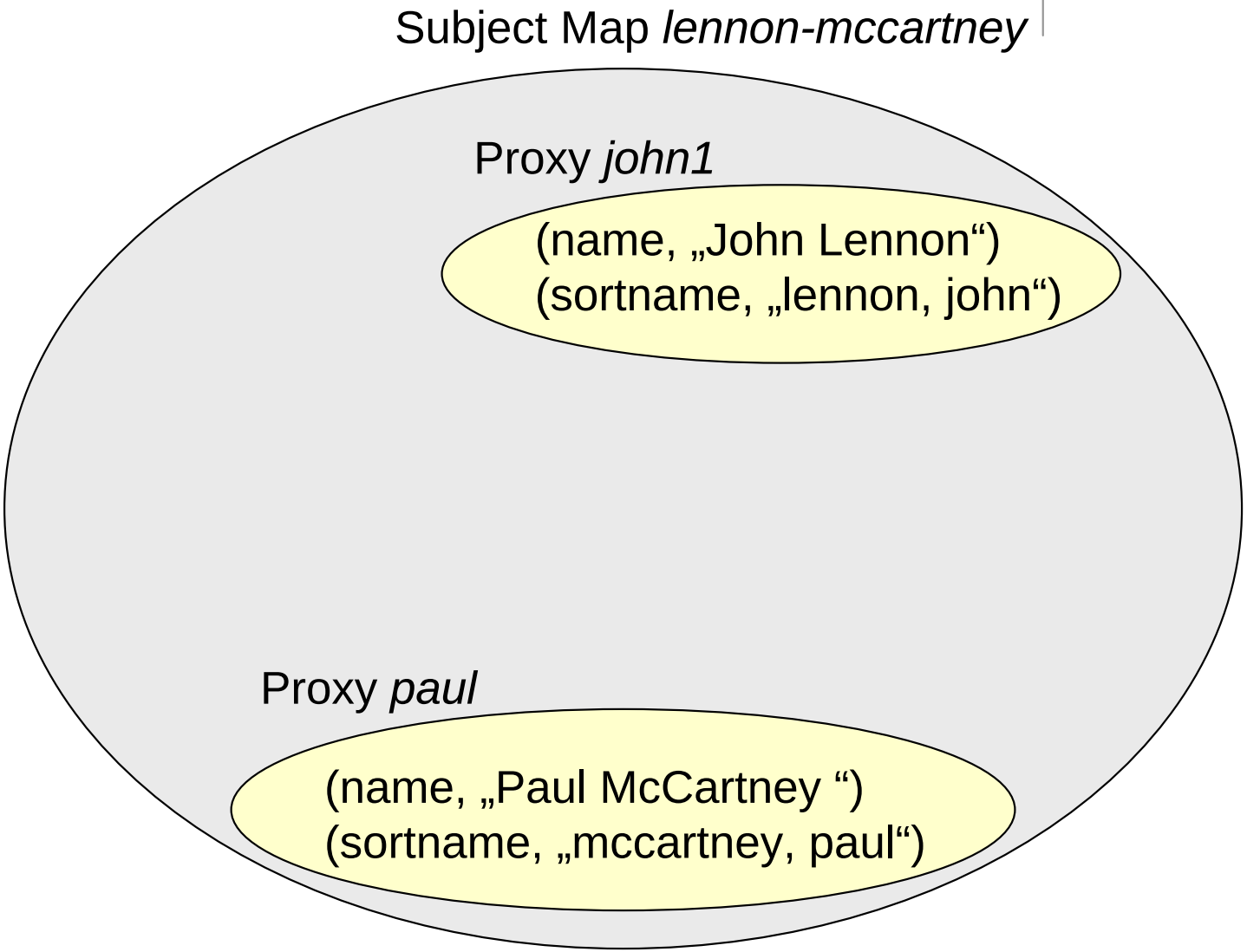
Subject Map *lennon-mccartney*



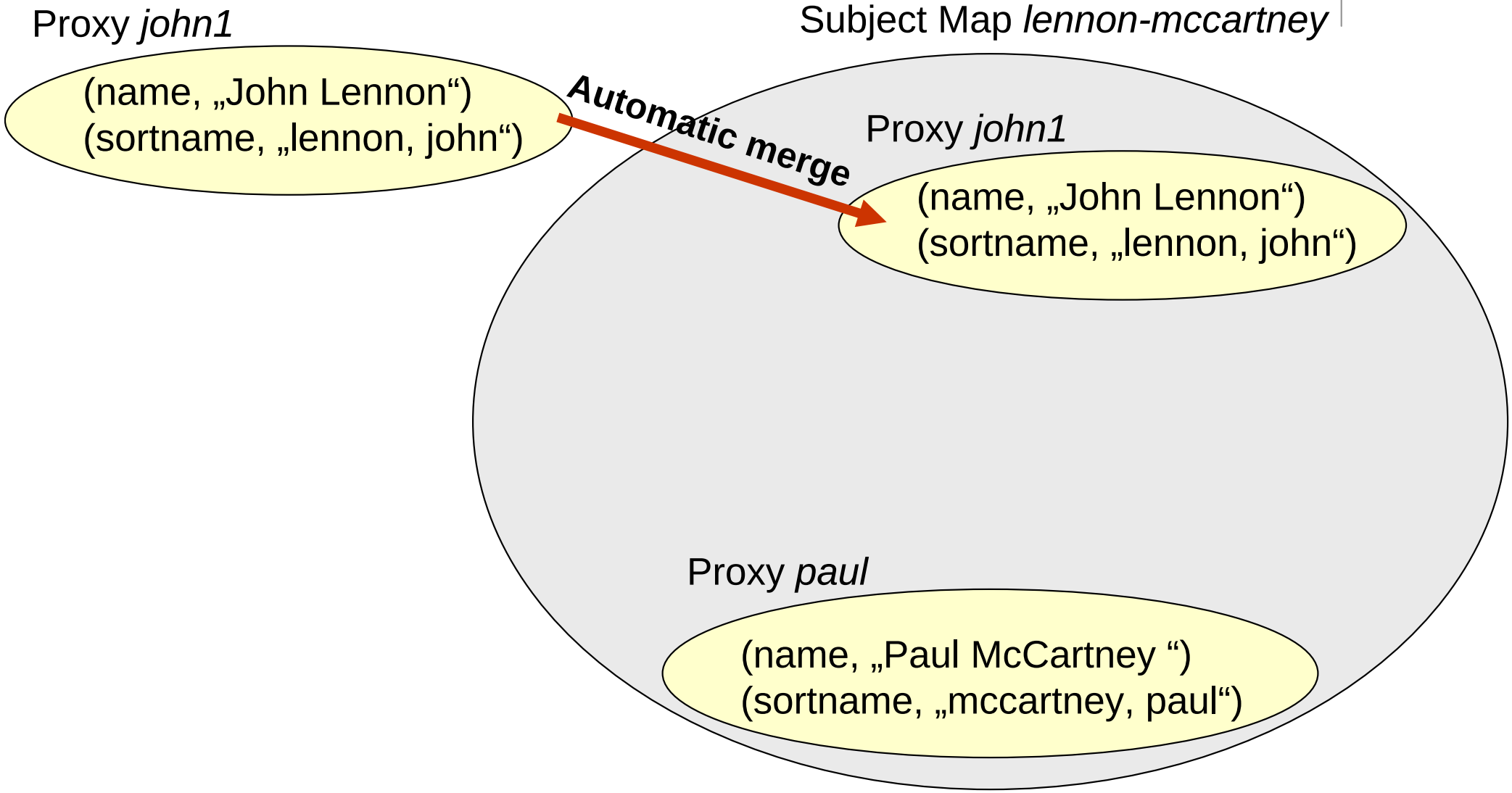
Tau+ - Merging


Subject Map *lennon-mccartney*
Proxy *paul*
(name, „Paul McCartney “)
(sortname, „mccartney, paul“)

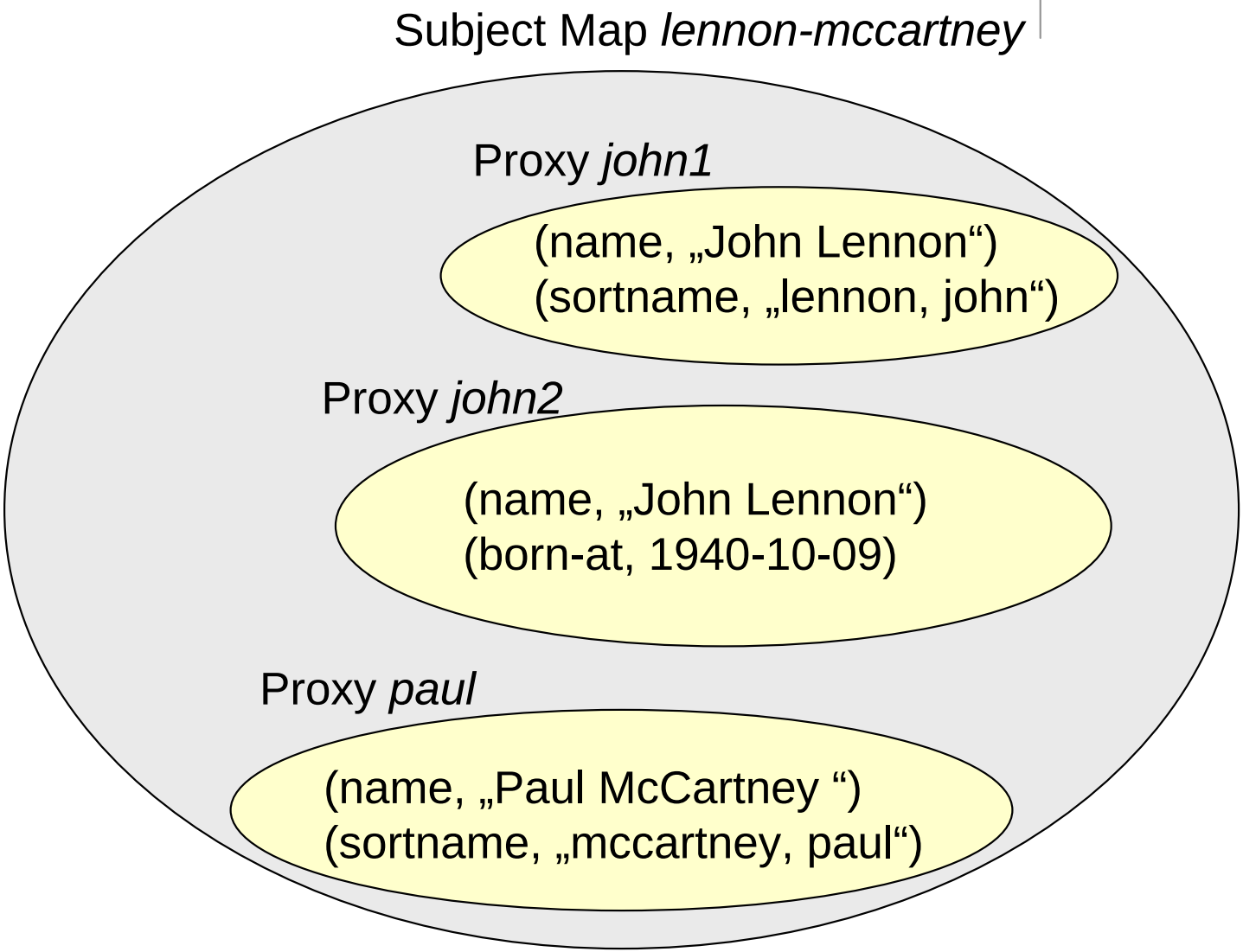
Tau+ - Merging


Subject Map *lennon-mccartney*
Proxy *john1*
(name, „John Lennon“)
(sortname, „lennon, john“)
Proxy *paul*
(name, „Paul McCartney “)
(sortname, „mccartney, paul“)

Tau+ - Merging


Proxy *john1*
(name, „John Lennon“)
(sortname, „lennon, john“)
Automatic merge
Subject Map *lennon-mccartney*
Proxy *john1*
(name, „John Lennon“)
(sortname, „lennon, john“)
Proxy *paul*
(name, „Paul McCartney “)
(sortname, „mccartney, paul“)

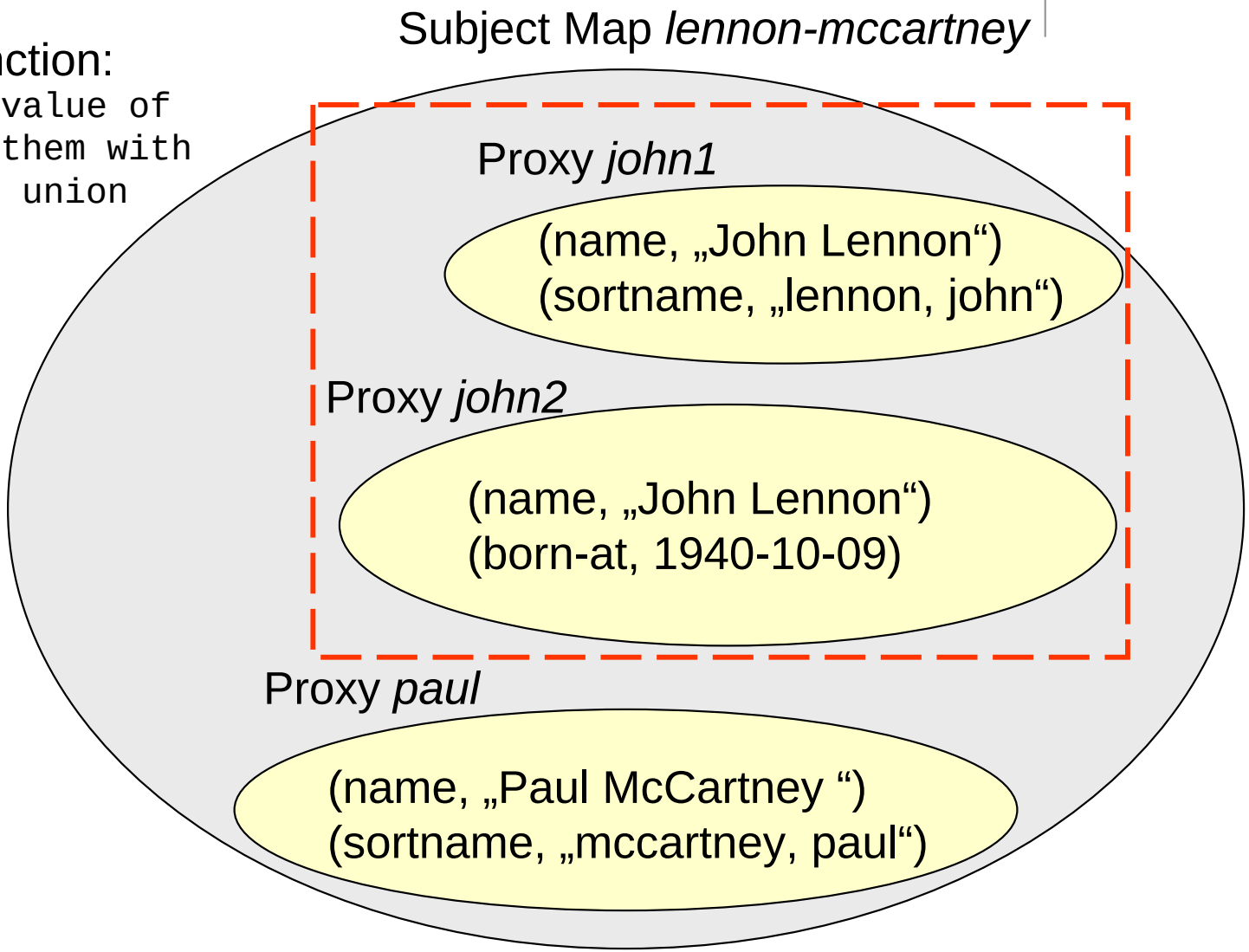
Tau+ - Merging


Subject Map *lennon-mccartney*
Proxy *john1*
(name, „John Lennon“)
(sortname, „lennon, john“)
Proxy *john2*
(name, „John Lennon“)
(born-at, 1940-10-09)
Proxy *paul*
(name, „Paul McCartney “)
(sortname, „mccartney, paul“)

Tau+ - Merging

Poor (aka bad) merger function:

```
if proxies with an equal value of
key „name“ exist replace them with
a proxy that contains the union
of the properties
```



Tau+ - Merging

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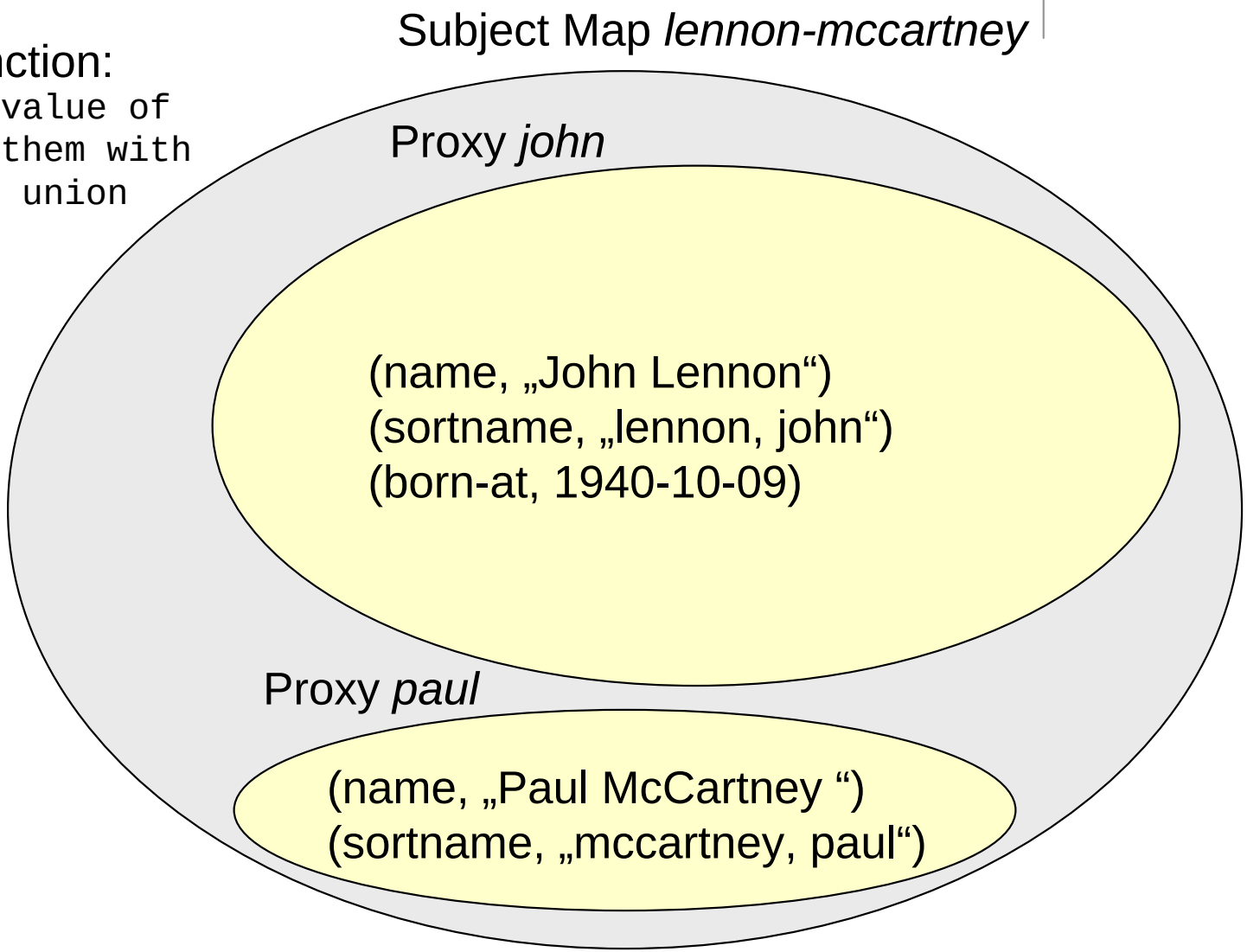
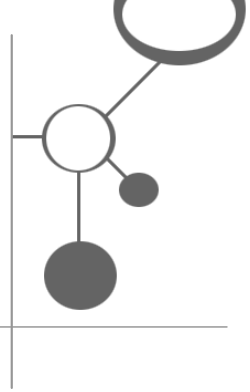
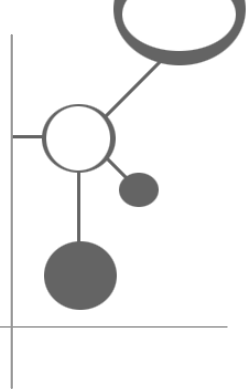


Impressions



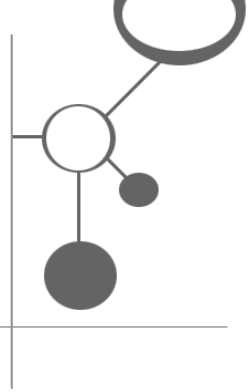
- *„Wow! Tau+ is simple, let‘s use it for a topic map engine!“*
- Tau+ will be the formal model of TMQL, so use Tau+ and get (a part of) TMQL for free!
- The only thing you need is a TMDM -> Tau+ mapping and you‘ll get all the fancy things!
- Conclusion: Don‘t use TMDM, but Tau+! ☺

Implementing Tau+ I



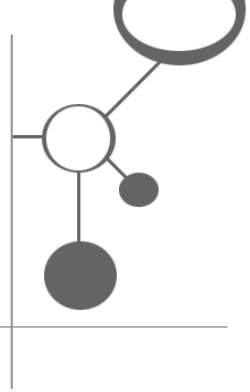
- TMDM is (just) an (important!) ontology:
  - Define the TMDM -> Tau+ mapping (aka TMDM diclosure) and get all the advantages of Tau+
  - Add some merger functions to fulfill TMDM merging constraints

Implementing Tau+ II



- Make hands dirty: Implement a topic map engine that uses Tau+ as core model (using Python)
- Implementing Tau+ is relative simple, but a good TMDM -> Tau+ mapping is not so easy
- Implementing the TMQL basics (TMQL lite) is straight forward, because path expressions are part of Tau+

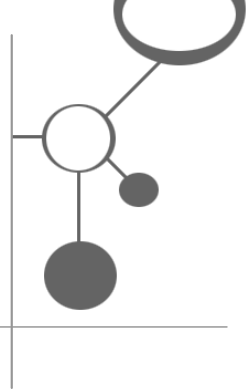
Implementing Tau+ III



- PanTau uses the Tau+ model as kernel and a variant of the Robert Barta / Lars Heuer TMDM-mapping (tomorrow more about the mapping)
- PanTau uses Tau+ path expressions to query topic maps

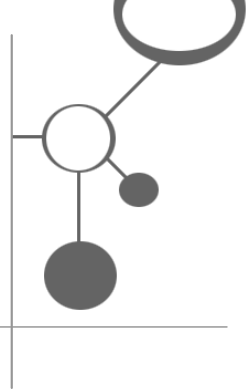
- ***But*** if you want to use TMDM Topic Maps and implement the core Tau+ model 1:1 you might end with a topic map engine that is inefficient

Summary



- Tau+ is a good, elegant theoretical model but should not be used as API for the end user
- More research how TMDM can be mapped to T+
- A specialized TMDM topic map engine might be more efficient
- Where is PanTau? Is it a dead born child? – PanTau is currently a prototype in an early stage. The engine will be published after implementing a stable TMDM->Tau+ disclosure and better API

More about Tau+ and TMDM



TMRA’05 – 07.10.2005 – 11.15h

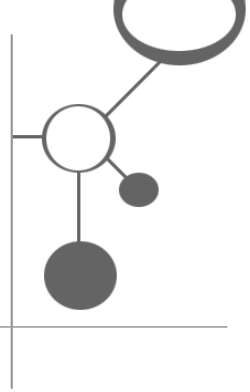
Robert Barta, Lars Heuer

„A TMDM disclosure using T+“

References

- S.R. Newcomp, S. Hunting, J. Algermissen, P. Durusau. „*Topic Map Reference Model*“.
  http://isotopicmaps/tmrm/
- R. Barta, G. Salzer. „*The T+ Model, Formalizing TMRM*“
  Part of TMRM, newer versions on request: Robert Barta <rho@bond.edu.au>, Lars Heuer <heuer@semagia.com>
- R. Barta, L. Heuer. „*A TMDM Disclosure Using T+*“.
  TMRA’05 – Conference Paper
- L.M. Garshol, G. Moore. „*Topic Maps – Data Model*“
  http://isotopicmaps.org/sam/sam-model/
- PanTau:
  http://pantau.semagia.com/ (currently no content)

Discussion



Questions?

I‘ll try to answer! ☺