A General Methodology for Mapping EuroWordNets to the Suggested Upper Merged Ontology

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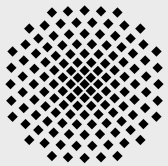

Motivation

Polysemy in a Conceptual System

- Project at University of Stuttgart, funded by DFG
- Creation of a ***lexical semantic resource of polysemous French verbs***
- ***Formal*** lexical semantic descriptions

- Encode ***selectional argument restrictions*** for ***WSD***
- Express restrictions wrt. ***ontological types***, rather than WordNet synsets

Problem

No mapping between a French lexical resource and an ontology

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Outline

- Motivation
- **Existing Mappings from WordNets to Ontologies**
- **Creating the Mapping from the French EWN to SUMO**
  - Prerequisites
  - Methodology
  - Results
- **Conclusion**

EuroWordNet and the EWN Top Ontology — Vossen et al., 1998

- Linking of EuroWordNet's ***Inter-Lingual-Index*** to a set of ***Top Concepts*** as part of the EWN project

Princeton WordNet and SUMO — Niles and Pease, 2003

- Mapping between ***Princeton WordNet 1.6*** and the ***Suggested Upper Merged Ontology***

The Global WordNet Grid — Horák et al., 2008

- ***Goal:*** Provide mappings from (all) WordNets to ***SUMO***

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(Euro)WordNet — Vossen, 1998

- EWN synsets *linked to Inter-Lingual-Index (ILI)*
- ILI represents *version 1.5 of Princeton WordNet*
- New releases of Princeton WN are related via sensemaps

SUMO/WordNet mapping — Niles and Pease, 2003

- Links to synsets of WN1.6 - WN3.1

Idea

- Go from French EWN to ILI ($\approx$ WN1.5)
- Use *sensemap files* to go from WN1.5 to WN1.6
- Use *SUMO/WN1.6 mapping*

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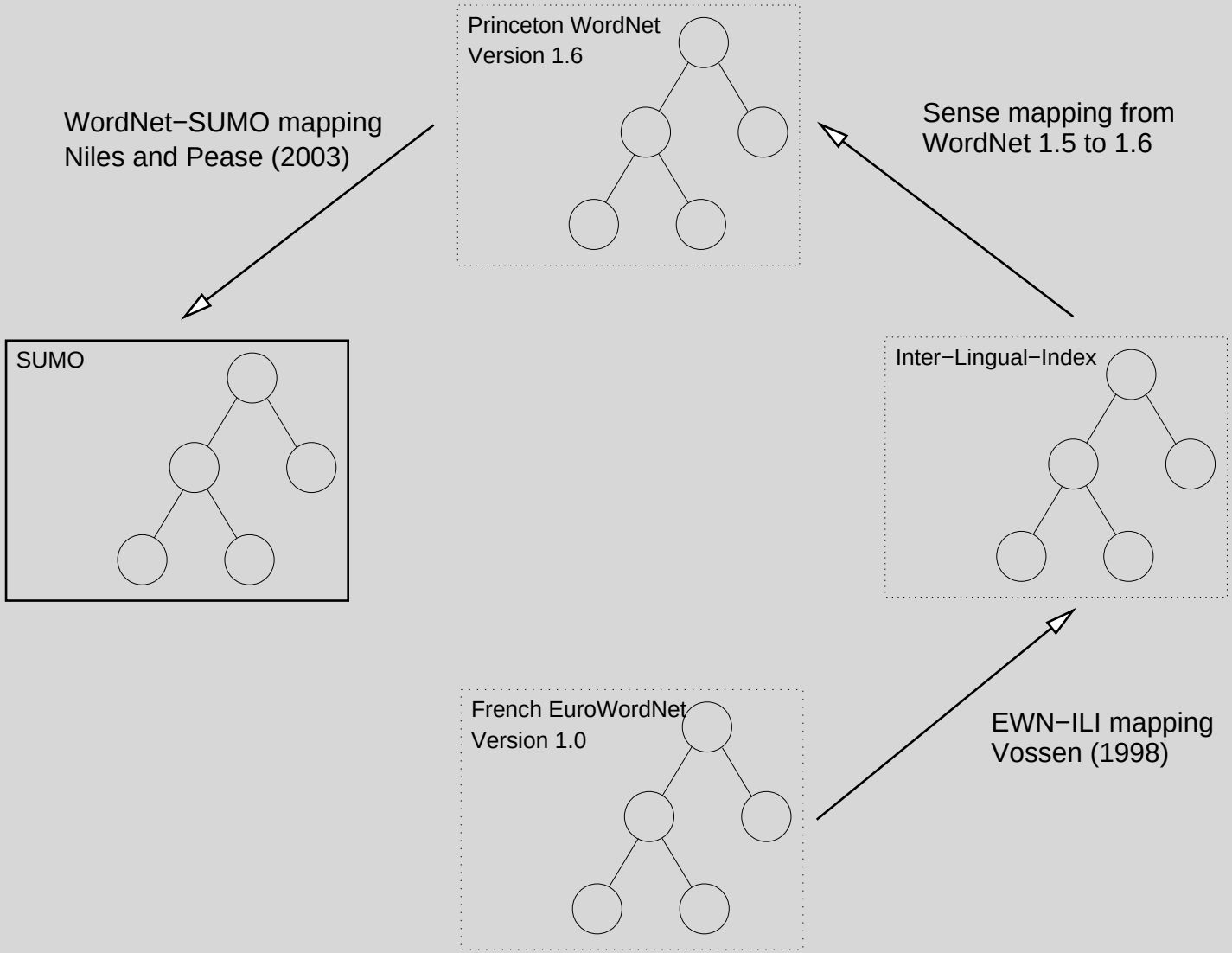
Mapping from SUMO to EuroWordNet



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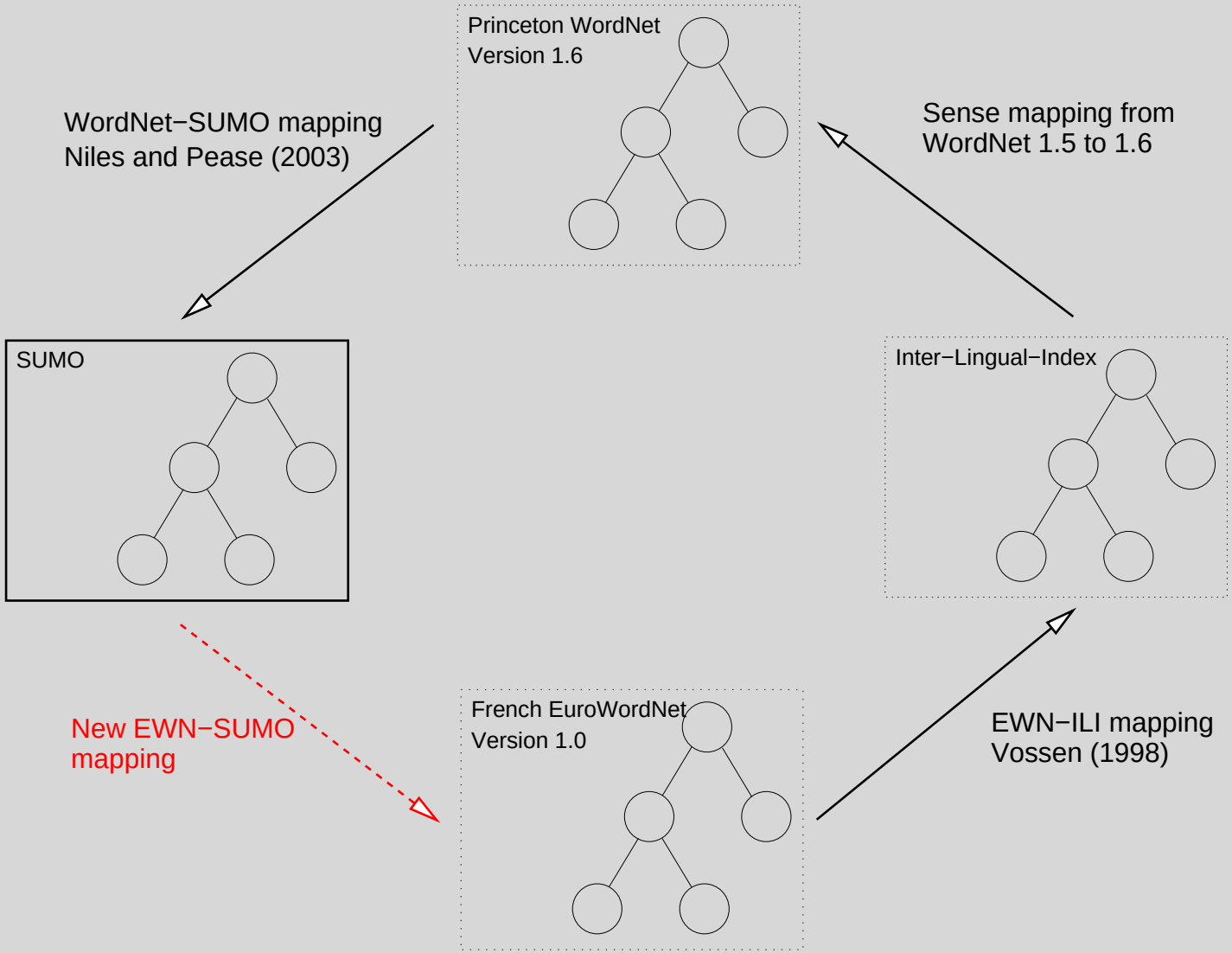

French EuroWordNet — Vossen (ed.), 1998

```
<SYNSET> ...
 <LITERAL>entité<SENSE>1</SENSE></LITERAL>
 <ILI> 00002403-n </ILI>
</SYNSET>
```

Sensemap — Fellbaum (ed.), 1998

```
entity%1:03:00::; 00002403  entity%1:03:00::; 00001740
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WordNet-SUMO mapping — Niles and Pease, 2003

```
 00001740  03 n 02 entity 0 ... | anything having
existence (living or nonliving)  &%Physical=
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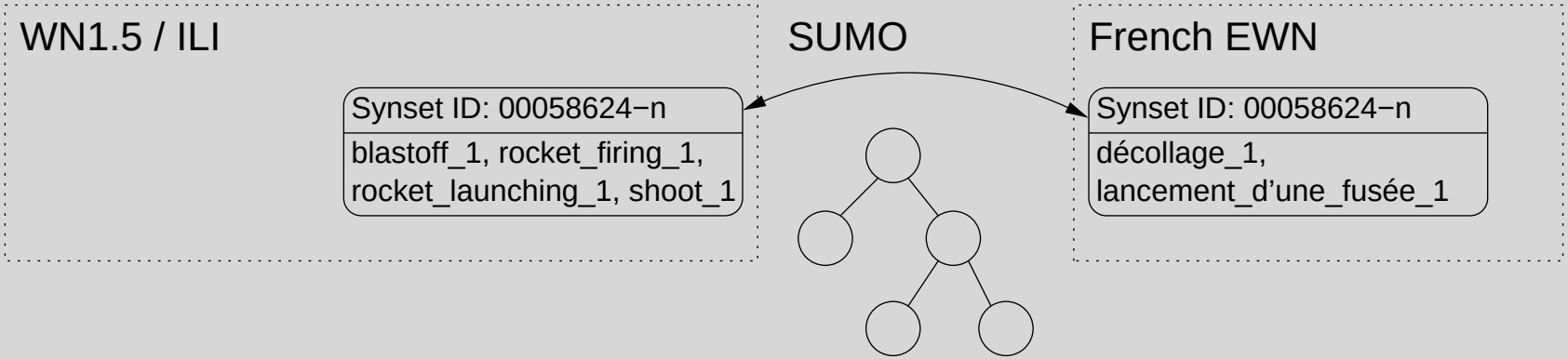
Some issues

Synset splitting from WN1.5 to 1.6



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- Which SUMO classes should the French synset map to?

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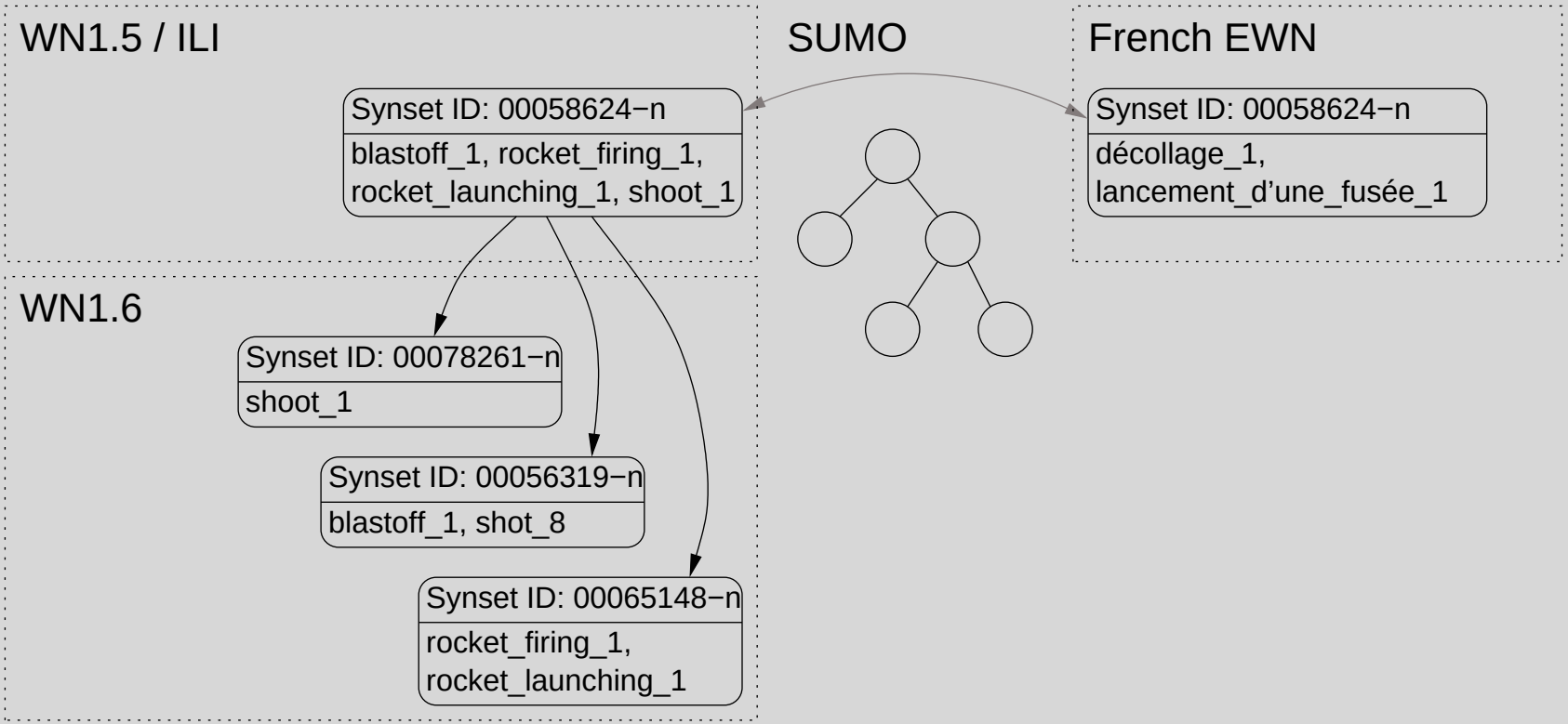

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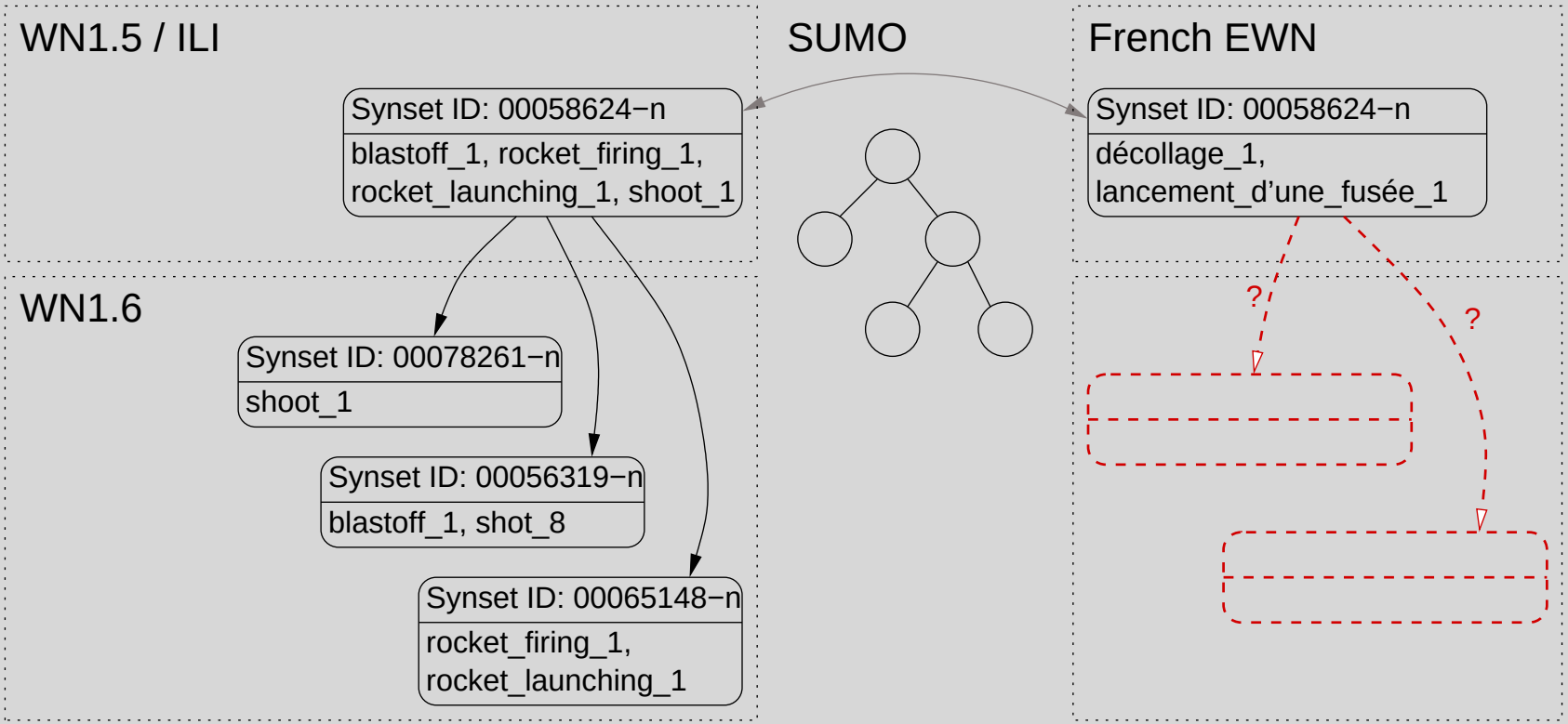

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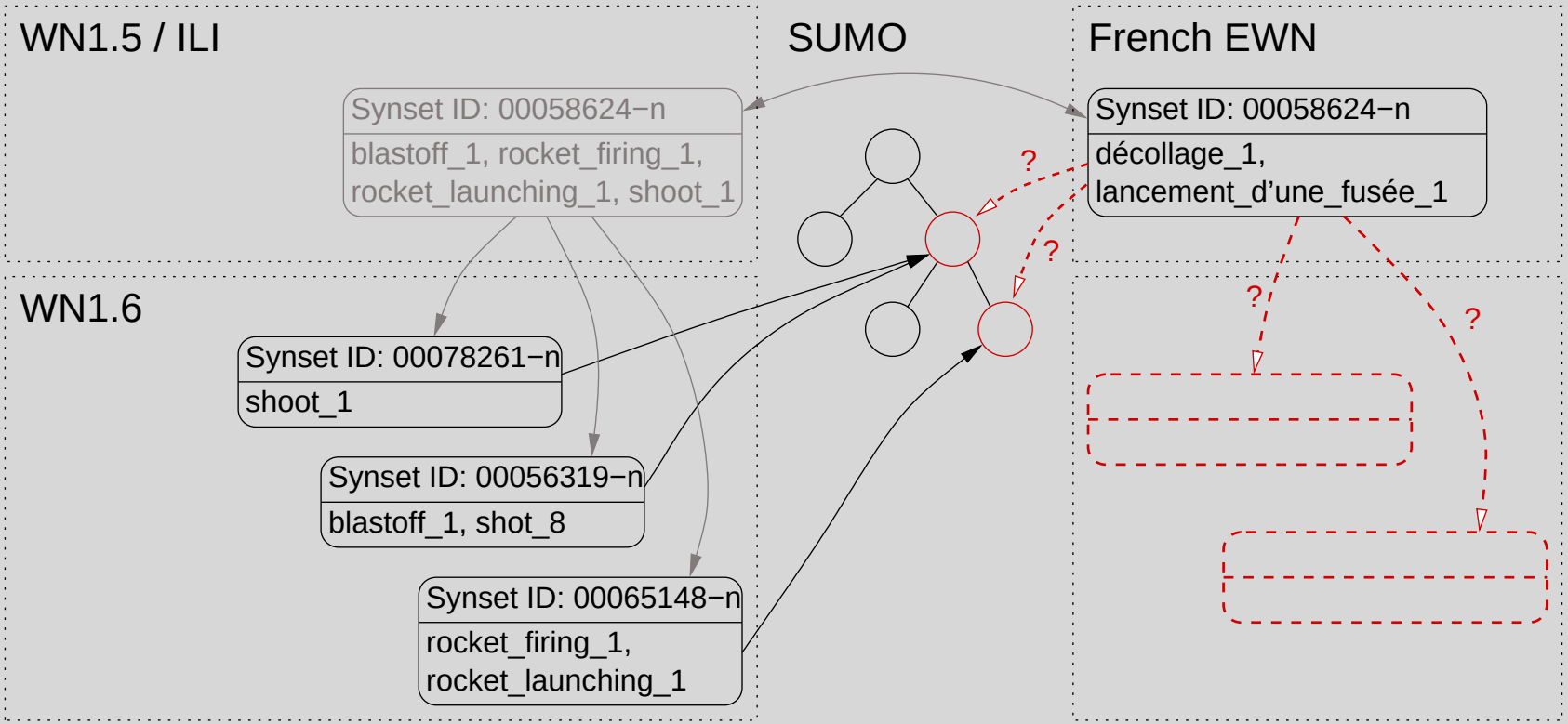

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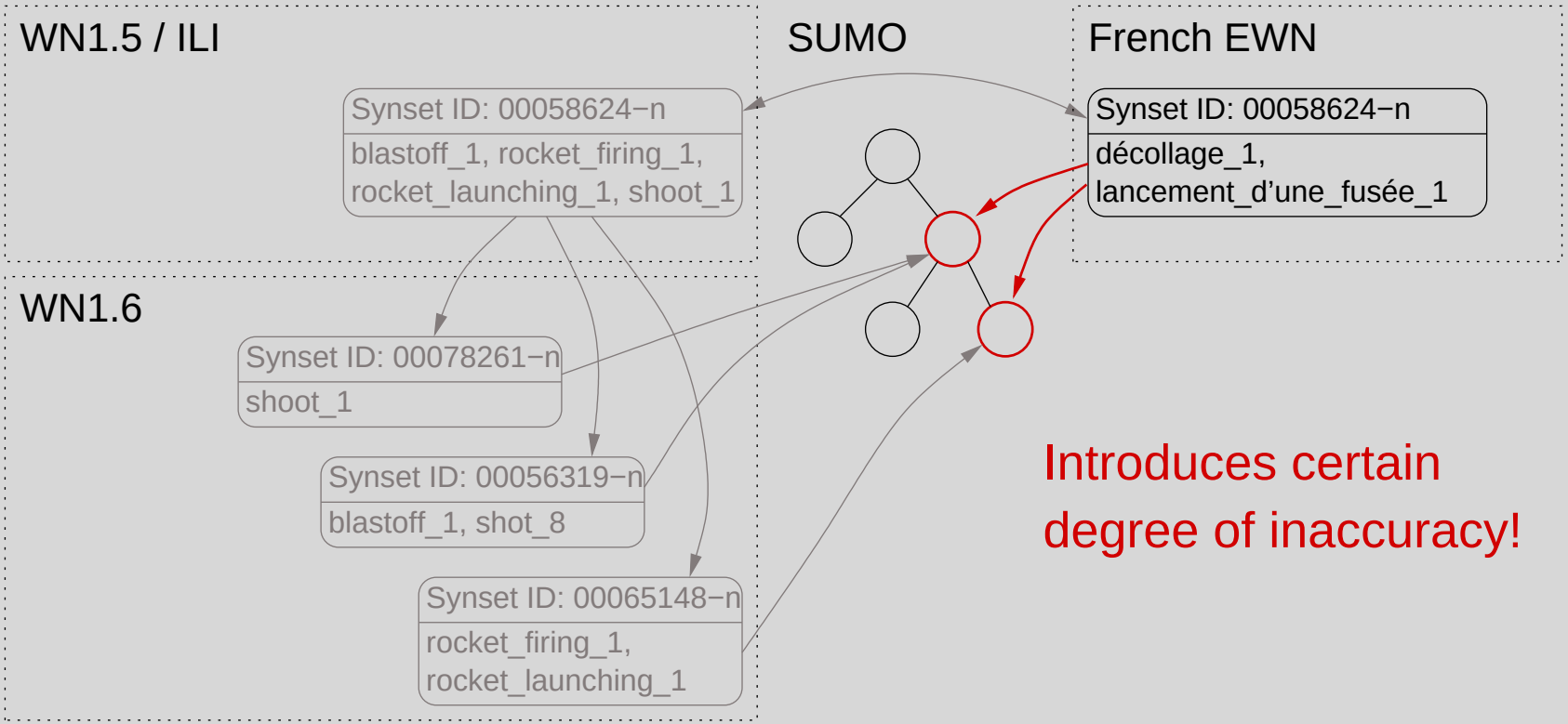

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Overall mapping results

	Type	*Frequency*	
		abs	*rel*
1	Synsets in French EWN	22,745	100.00%
2	. . . with SUMO mapping	22,351	98.27%
3	. . . without SUMO mapping	394	1.73%
	Of those with SUMO mapping		
4	. . . with one mapping	22,026	98.54%
5	. . . with two mappings	214	0.96%
6	. . . with three or more mappings	111	0.50%
7	. . . with only one sensemap	9,739	43.57%
8	. . . with more than one sensemap but only one SUMO class	12,287	54.97%
9	. . . with more than one sensemap and more than one SUMO class	325	1.46%

Analysis

Of the 394 without SUMO class . . .

. . . ***323*** are from the ***new technology domain***, e.g. *adresse d'inter-réseau* (*'network address'*), *applet* or *cache mémoire* (*'cache memory'*)

. . . ***23*** are ***collocational*** or ***idiomatic***, e.g. *tenir compte de* (*'to account for'*), *vendre la mèche* (*'to reveal a secret'*; lit. *'to sell the fuse'*) or *saigner quelqu'un à blanc* (*'to exploit someone'*; lit. *'to bleed someone to white'*)

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- Mapping from French EuroWordNet to SUMO
- Fairly straightforward methodology using existing mappings of Princeton WordNet

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- Mapping from French EWN to SUMO did not exist before
- Methodology is applicable to all EuroWordNets
- Resulting resource can be used e.g. for calculation of selectional preferences

Outlook

Updating to the latest SUMO-WN mapping

- We didn't use the latest mapping since ***degree of inaccuracy increases*** when going from 1.6 to 3.0
- Basically three options:
  1. Accept the resulting inaccuracy and evaluate the manual effort needed to resolve it
  2. Apply methodology only to those synsets that have not been split, at the cost of a heterogeneous resource
  3. Manually create a direct mapping from the French EuroWordNet to the latest version of Princeton WordNet

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