

# Norwegian Police Knowledge Graph

How to save lives  
through shared understanding  
of data

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Team Knowledge Graph

# Norwegian Police Knowledge Graph

How to **save lives**  
through **shared understanding**  
of data



# Norwegian Police

## National Criminal Investigation Service (*Kripos*)



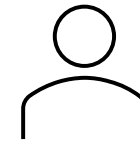
Police investigators



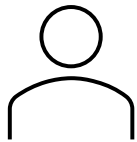
They **save lives**  
through their work!



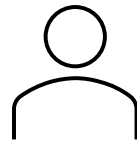
What do we know about this person?



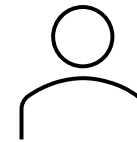
Police System 1

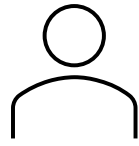


Police System 2

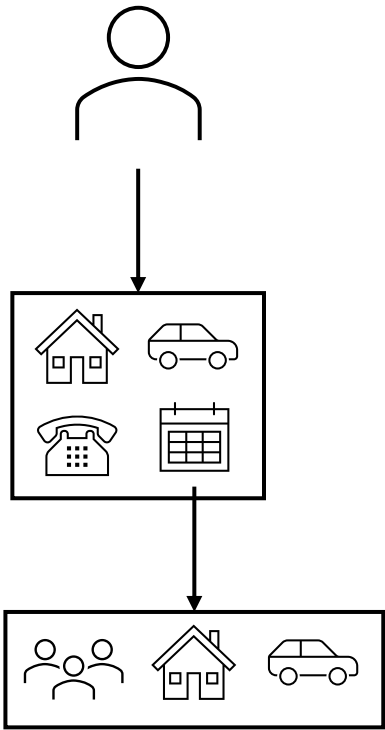


Police System 3

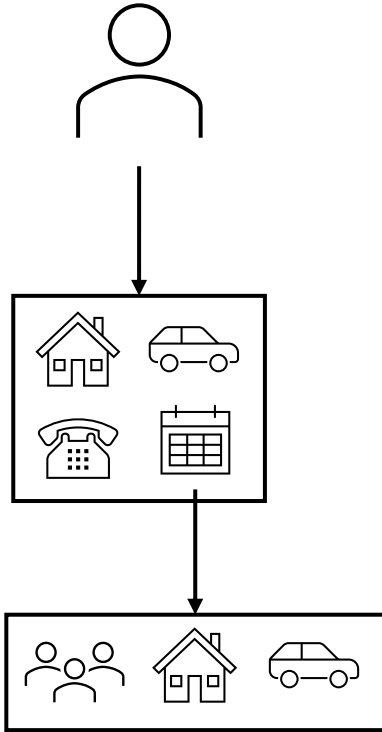




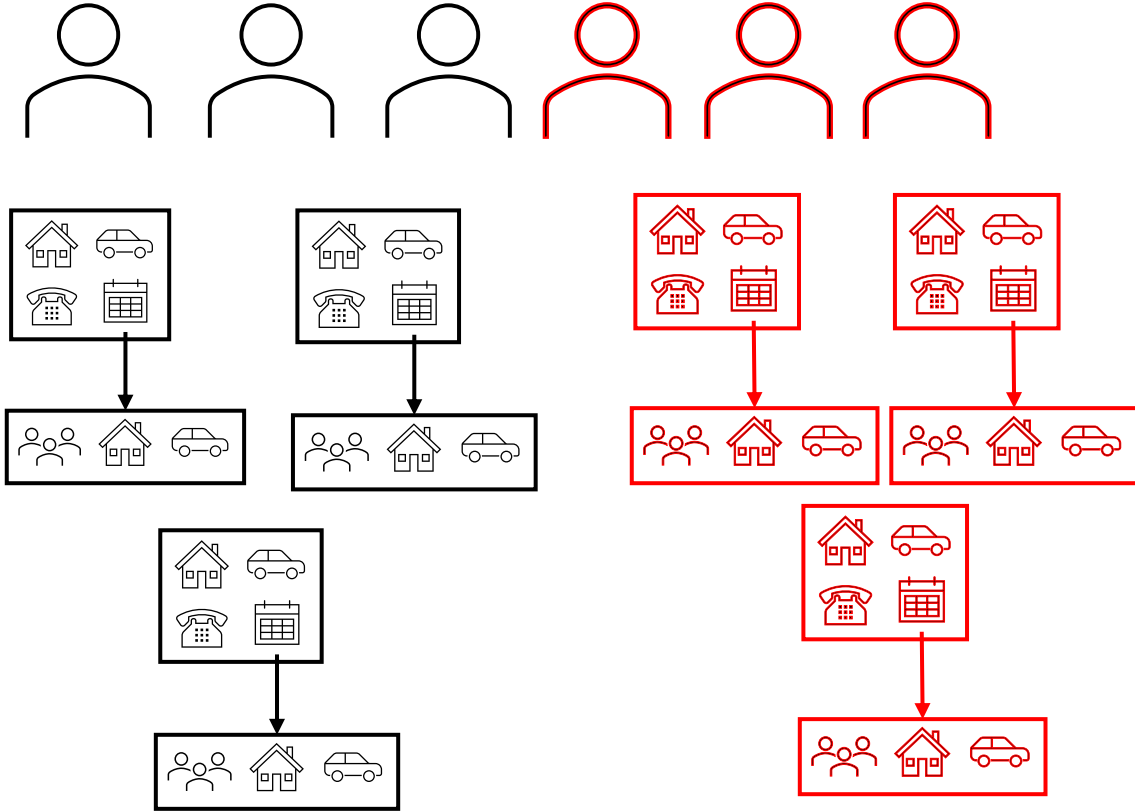
Police System 1

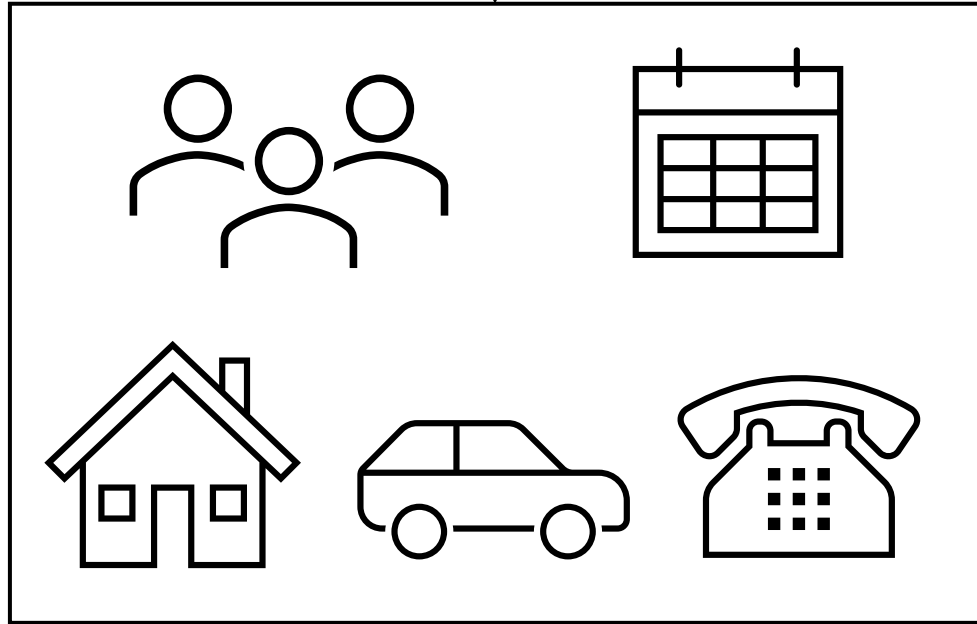
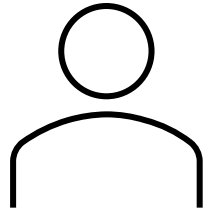


Police System 2



Police System 3





How can we help the Police Investigators?

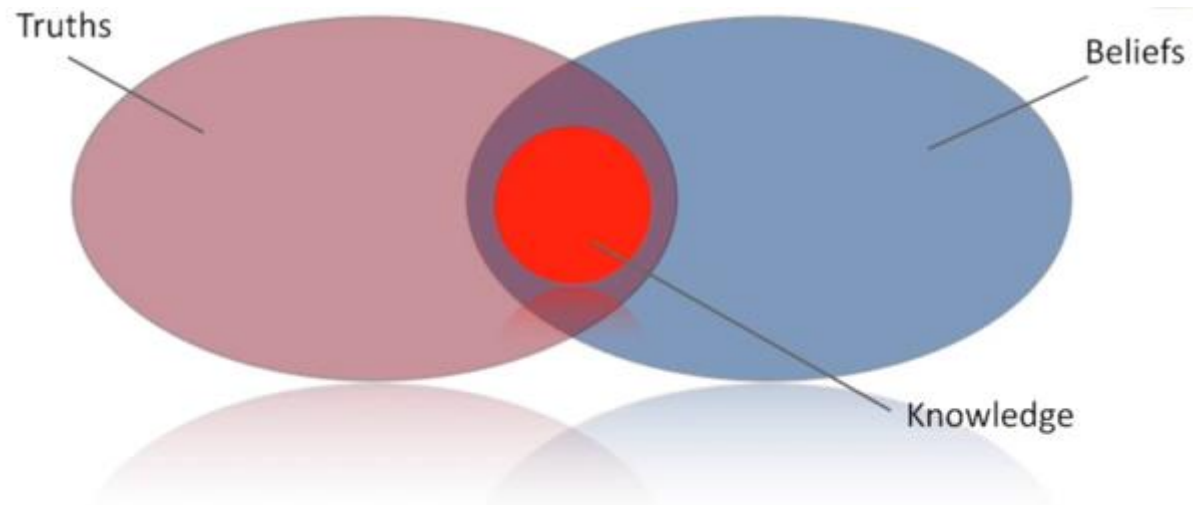
AI



# AI



# Knowledge Representation

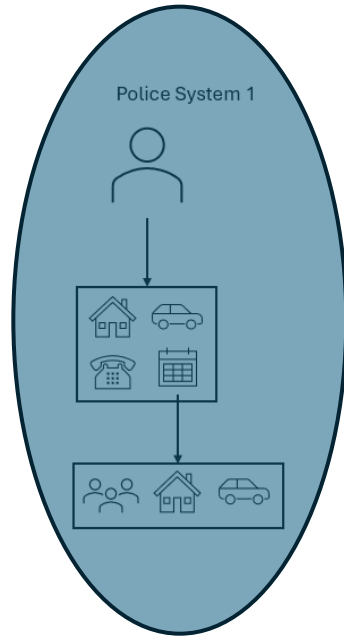


Traditional Definition: „Knowledge is a subset of all true beliefs“

# Challenge 1

Data and meaning are stored separately

Data in a model



Relational database/code/API

Meaning of the model

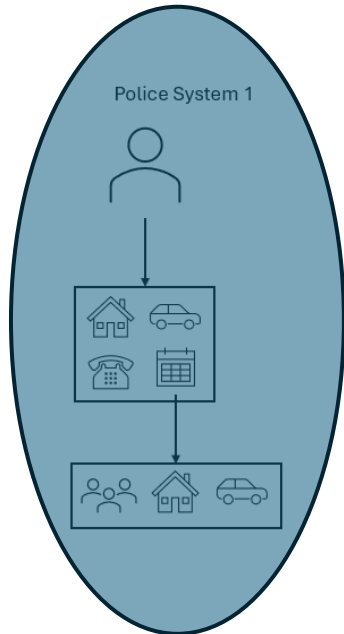


Human developer

## Challenge 1

# The guessing game

Data in a model

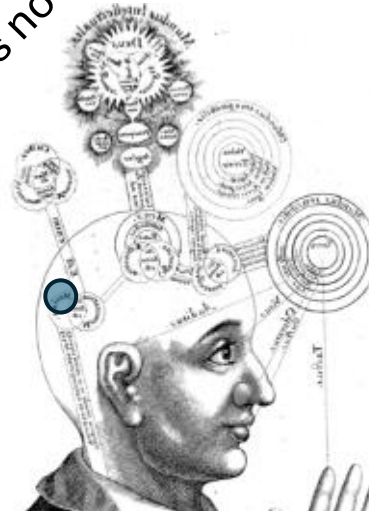


What is the meaning the data in this structure?



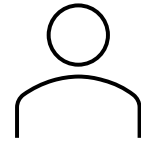
Unstable storage

Meaning of the model is not available



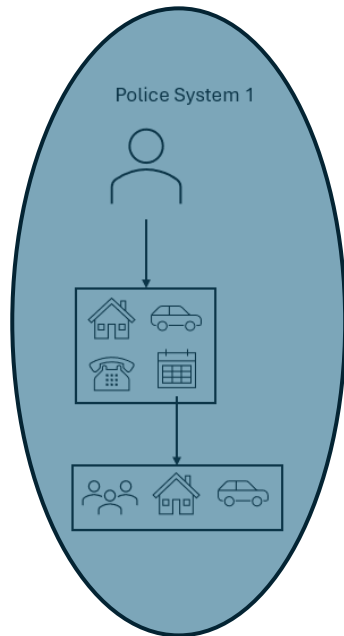
## Challenge 2

We have **no shared language**

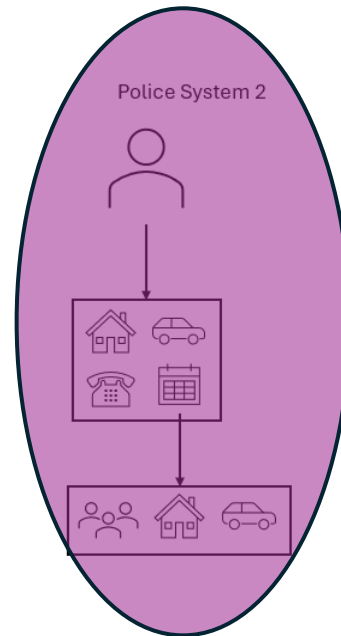


Where do we talk about this person?

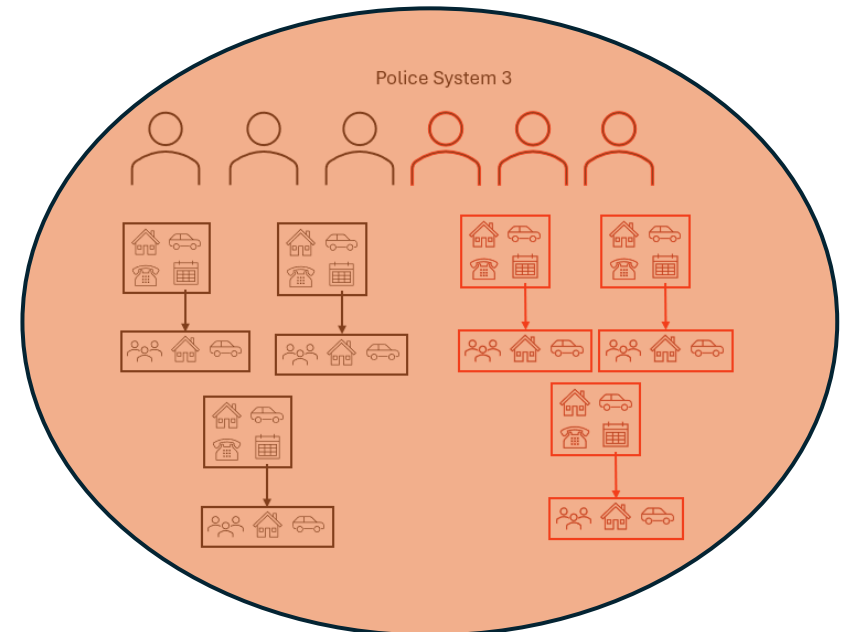
Model/Language 1



Model/Language 2



Model/Language 3

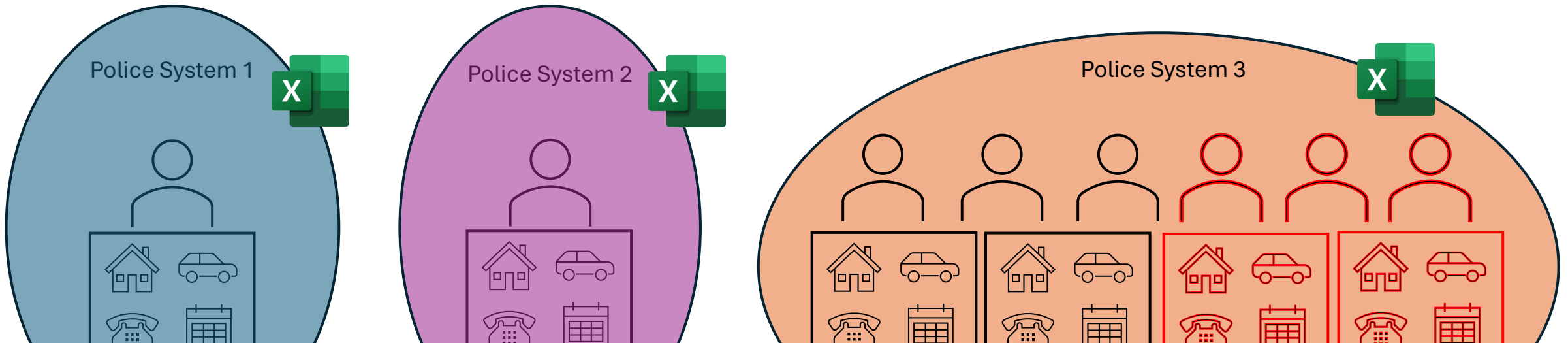
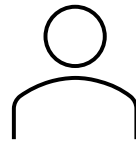




Real person, but anonymized!



What do we know about “06088137533”?



# Semantic Web

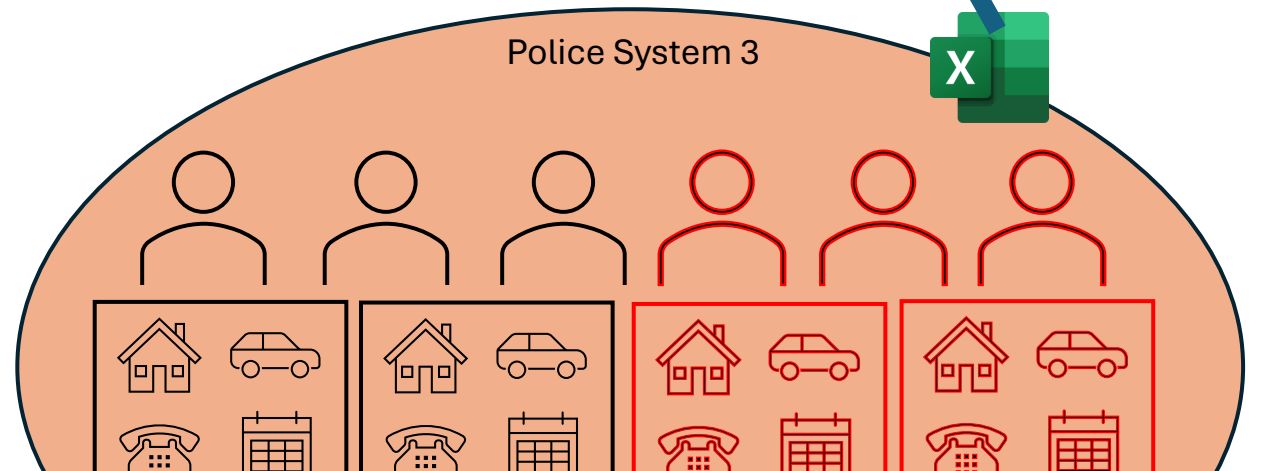
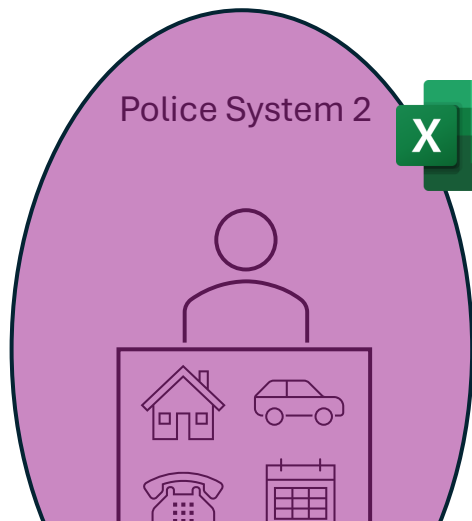
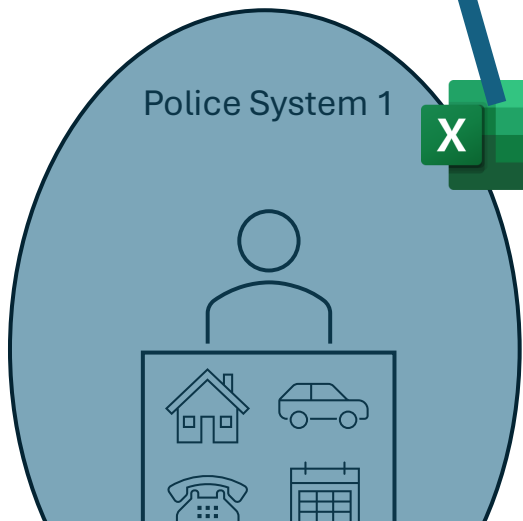


“Knowledge Representation  
using Web technologies”

N *NamedIndividual*  
06088137533 (Police System 1)

N *NamedIndividual*  
06088137533 (Police System 2)

N *NamedIndividual*  
06088137533 (Police System 3)





Unstable label for the humans



**N** *NamedIndividual*  
06088137533 (Police System 1)

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IRI: <https://global-id.politiet.no/07cf691c-254a-4f80-8cc9-9cb2aa7b2...>

National identity number 06088137533  
(Norway)

**N** *NamedIndividual*  
06088137533 (Police System 2)

---

IRI: <https://global-id.politiet.no/cdaa5c25-0f8e-4651-9d71-3447fd8c0...>

National identity number 06088137533  
(Norway)



Stable URL for the machine

**N** *NamedIndividual*  
06088137533 (Police System 3)

---

IRI: <https://global-id.politiet.no/dfa4c0b7-41f6-49a2-bd7e-144f6bf17d...>

National identity number 06088137533  
(Norway)



Data value

**N** *NamedIndividual*  
06088137533 (Police System 1)

IRI: <https://global-id.politiet.no/07cf691c-254a-4f80-8cc9-9cb2aa7b2...>

National identity number 06088137533  
(Norway) //

**N** *NamedIndividual*  
06088137533 (Police System 2)

IRI: <https://global-id.politiet.no/cdaa5c25-0fbe-4651-9d71-3447fd8c0...>

National identity number 06088137533  
(Norway) //

**N** *NamedIndividual*  
06088137533 (Police System 3)

IRI: <https://global-id.politiet.no/dfa4c0b7-41f6-49a2-bd7e-144f6bf17d...>

National identity number 06088137533  
(Norway) //

**C** *Class*  
National identity number (Norway)

type

type

type



Shared understanding!



N

NamedIndividual

06088137533 (Police System 1)

IRI: <https://global-id.politiet.no/07cf691c-254a-4f80-8cc9-9cb2aa7b2...>

National identity number 06088137533  
(Norway)

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NamedIndividual

06088137533 (Police System 2)

IRI: <https://global-id.politiet.no/cdaa5c25-0fbe-4651-9d71-3447fd8c0...>

National identity number 06088137533  
(Norway)

N

NamedIndividual

06088137533 (Police System 3)

IRI: <https://global-id.politiet.no/dfa4c0b7-41f6-49a2-bd7e-144f6bf17d...>

National identity number 06088137533  
(Norway)

type

type

type

C

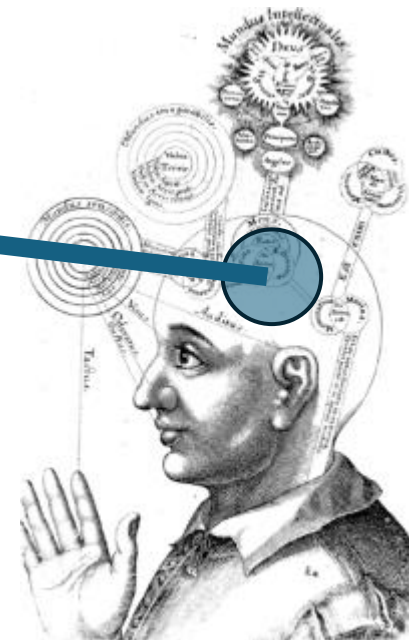
Class

National identity number (Norway)

IRI: <https://vocabulary.politiet.no/2f074f46-1c78-4512-ae26-61d821cf...>

comment

Et fødselsnummer er et identifikasjonsnummer med elleve siffer. Alle som er folkeregistrert i Norge har et fødselsnummer. Nummeret regnes ikke som en særlig kategori av personopplysninger



**N***NamedIndividual*

06088137533 (Police System 1)

IRI: <https://global-id.politiet.no/07cf691c-254a-4f80-8cc9-9cb2aa7b2...>National identity number 06088137533  
(Norway) //**N***NamedIndividual*

06088137533 (Police System 2)

IRI: <https://global-id.politiet.no/cdaa5c25-0f8e-4651-9d71-3447fd8c0...>National identity number 06088137533  
(Norway) //**N***NamedIndividual*

06088137533 (Police System 3)

IRI: <https://global-id.politiet.no/dfa4c0b7-41f6-49a2-bd7e-144f6bf17d...>National identity number 06088137533  
(Norway) //

type

type

type

**C***Class*

National identity number (Norway)

IRI: <https://vocabulary.politiet.no/2f074f46-1c78-4512-ae26-61d821cf...>

comment

Et fødselsnummer er et identifikasjonsnummer med elleve siffer. Alle som er folkeregistrert i Norge har et fødselsnummer. Nummeret regnes ikke som en særlig kategori av personopplysninger

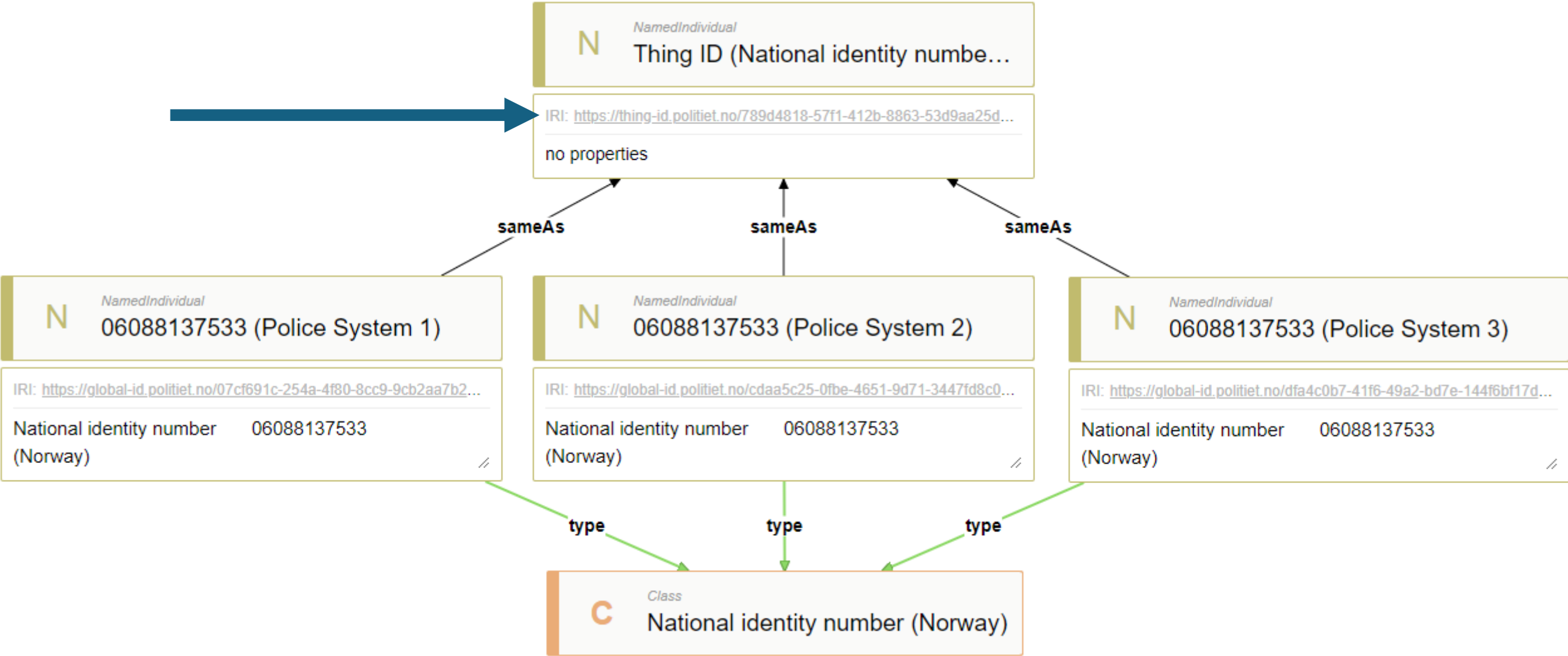
**C***Class*

Wikipedia: National identity numb...

IRI: [https://en.wikipedia.org/wiki/National\\_identity\\_number\\_\(Norway\)](https://en.wikipedia.org/wiki/National_identity_number_(Norway))isDefinedBy <https://en.wikipedia.org/...>  
seeAlso <https://no.wikipedia.org/...> //

equivalentClass





**N** *NamedIndividual*  
Thing ID (National identity numbe...)

IRI: <https://thing-id.politiet.no/789d4818-57f1-412b-8863-53d9aa25d...>  
National identity number 06088137533  
(Norway) //

sameAs

sameAs

sameAs

**N** *NamedIndividual*  
06088137533 (Police System 1)

IRI: <https://global-id.politiet.no/07cf691c-254a-4f80-8cc9-9cb2aa7b2...>  
National identity number 06088137533  
(Norway) //

**N** *NamedIndividual*  
06088137533 (Police System 3)

IRI: <https://global-id.politiet.no/dfa4c0b7-41f6-49a2-bd7e-144f6bf17d...>  
National identity number 06088137533  
(Norway) //

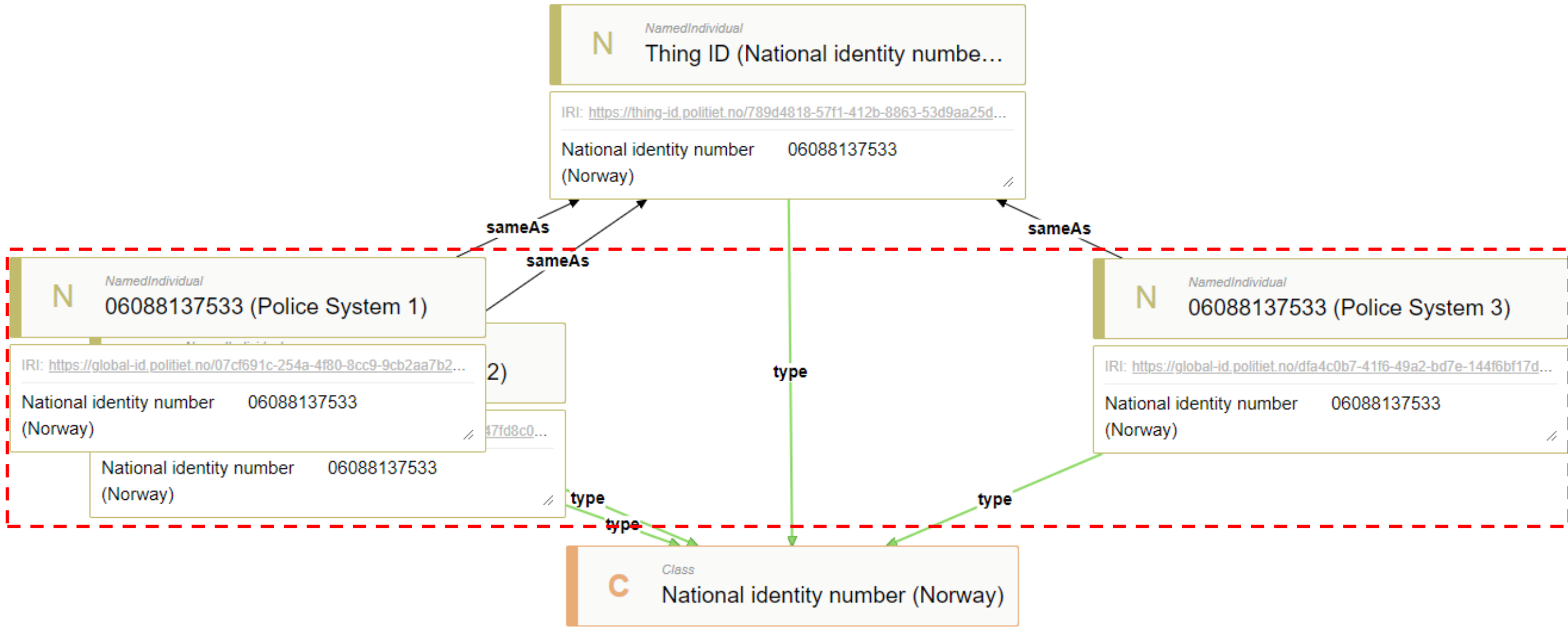
type

type

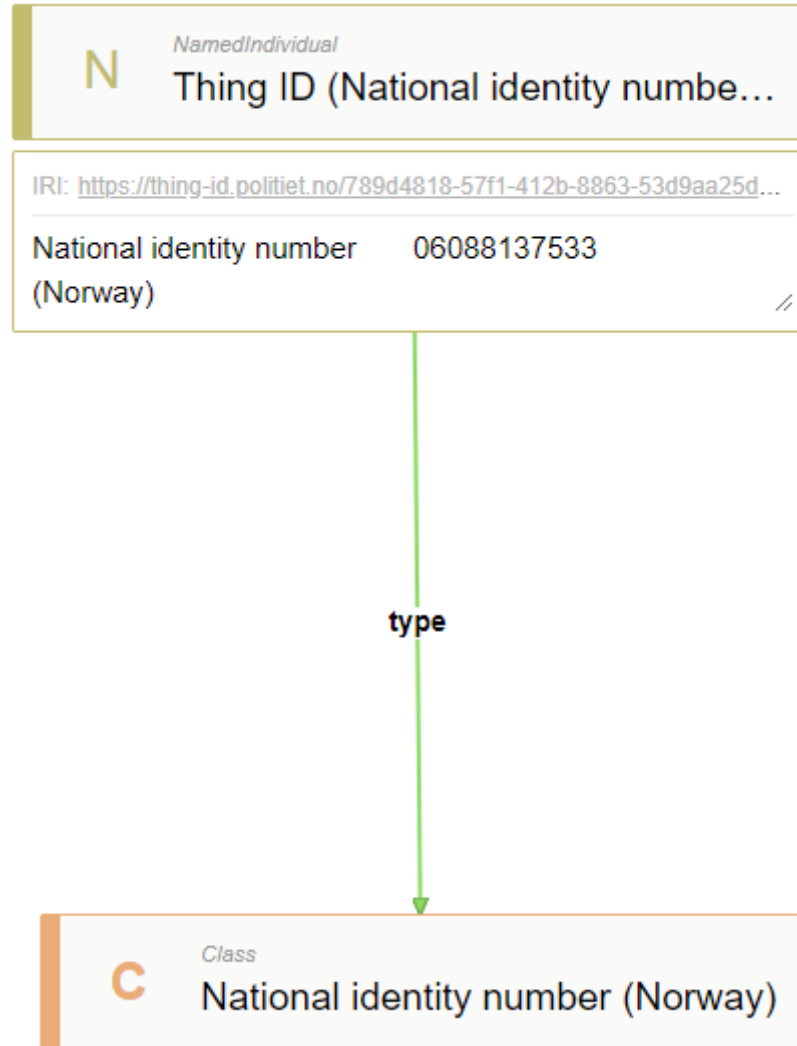
type

type

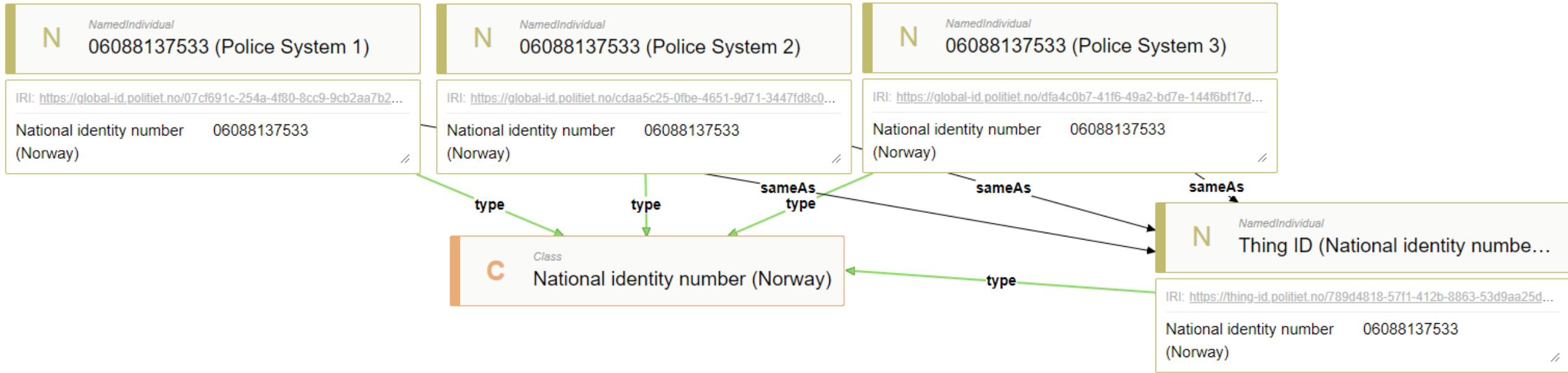
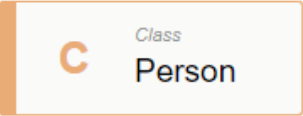
**C** *Class*  
National identity number (Norway)

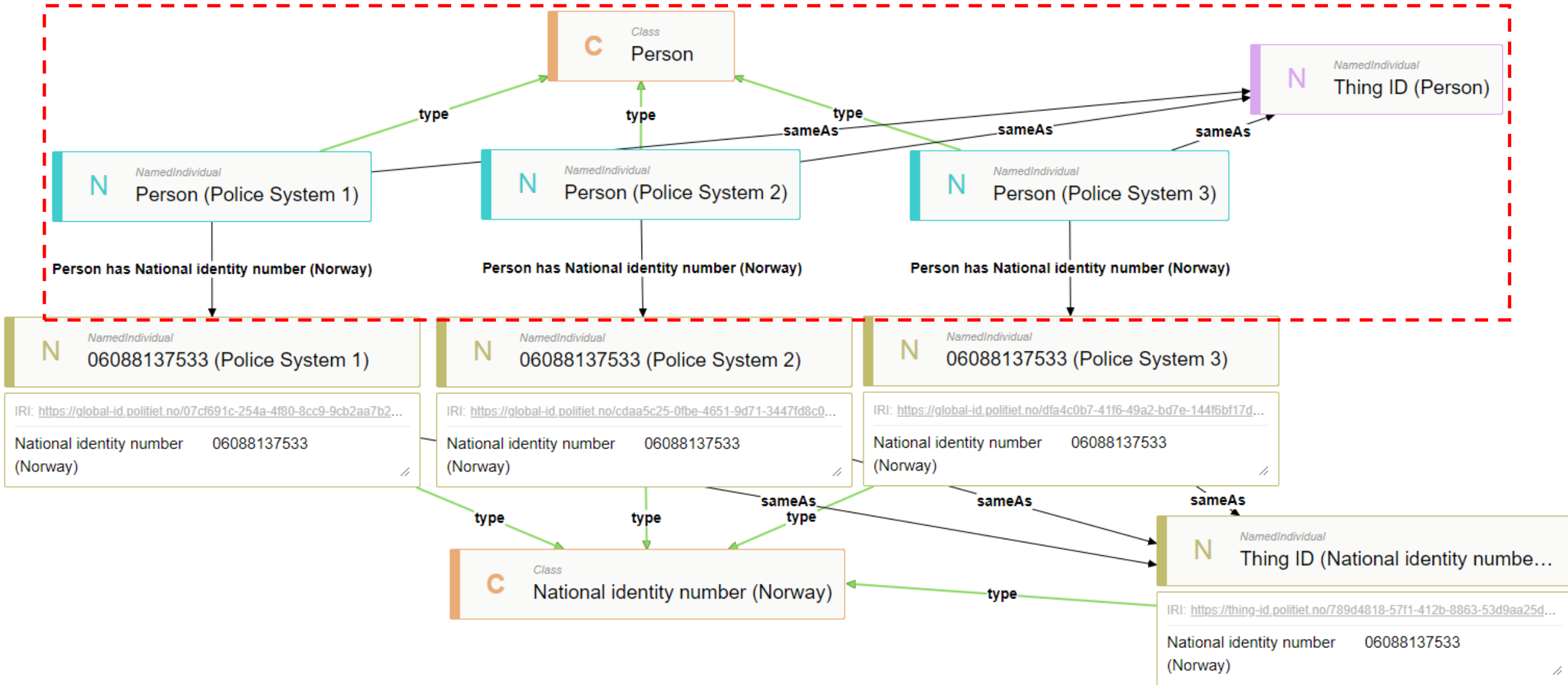


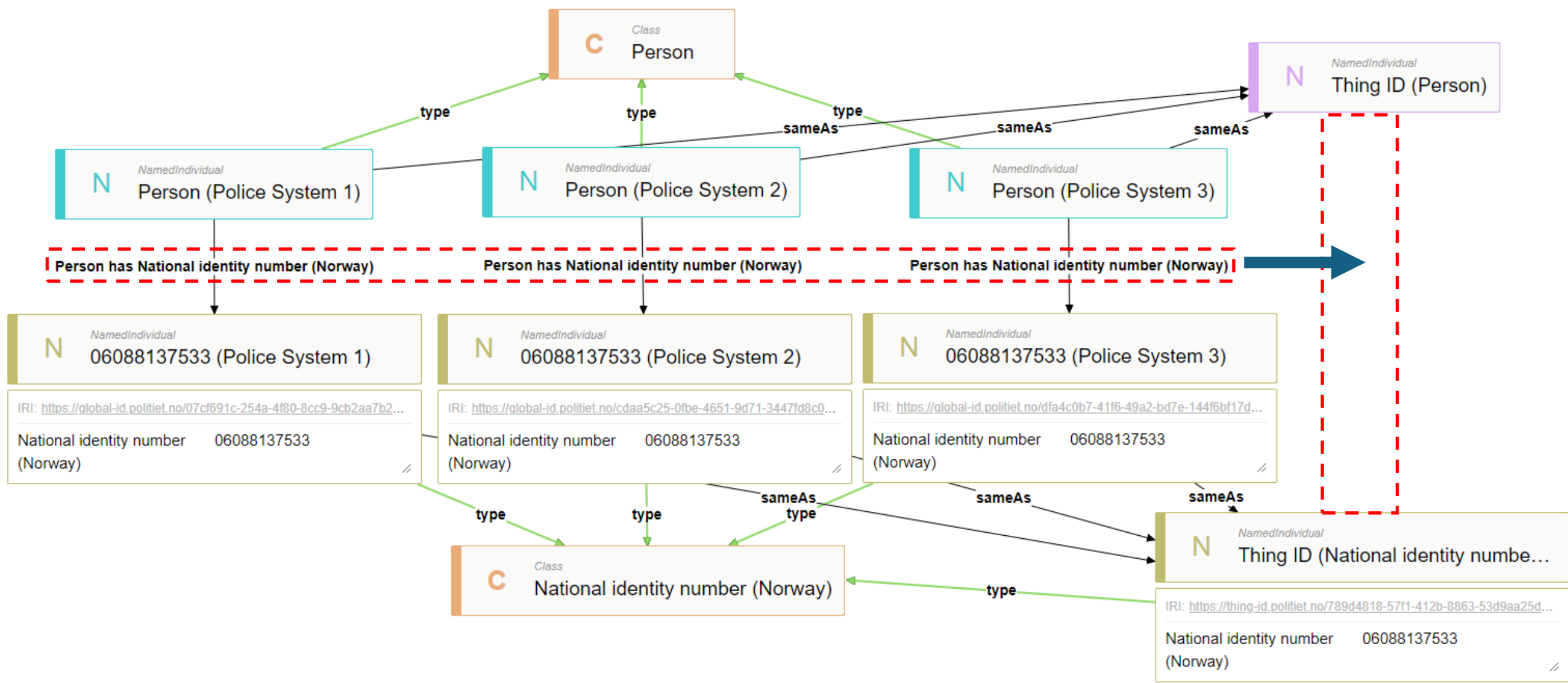
Data  
+  
Shared understanding

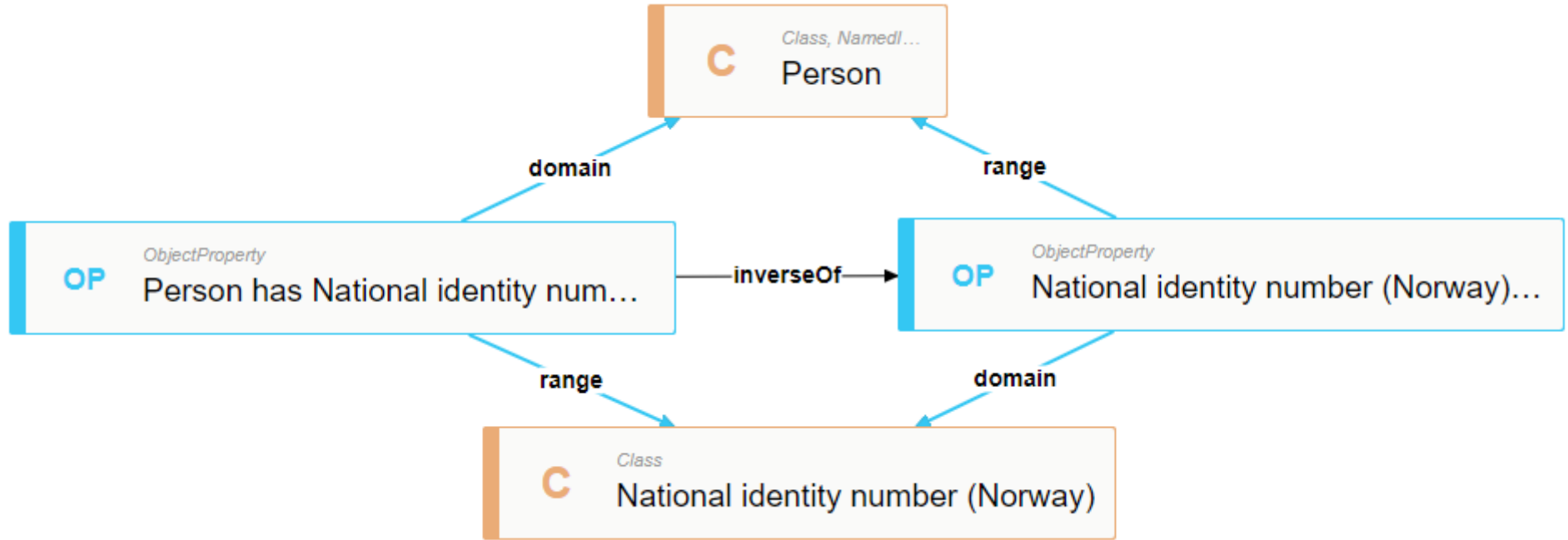


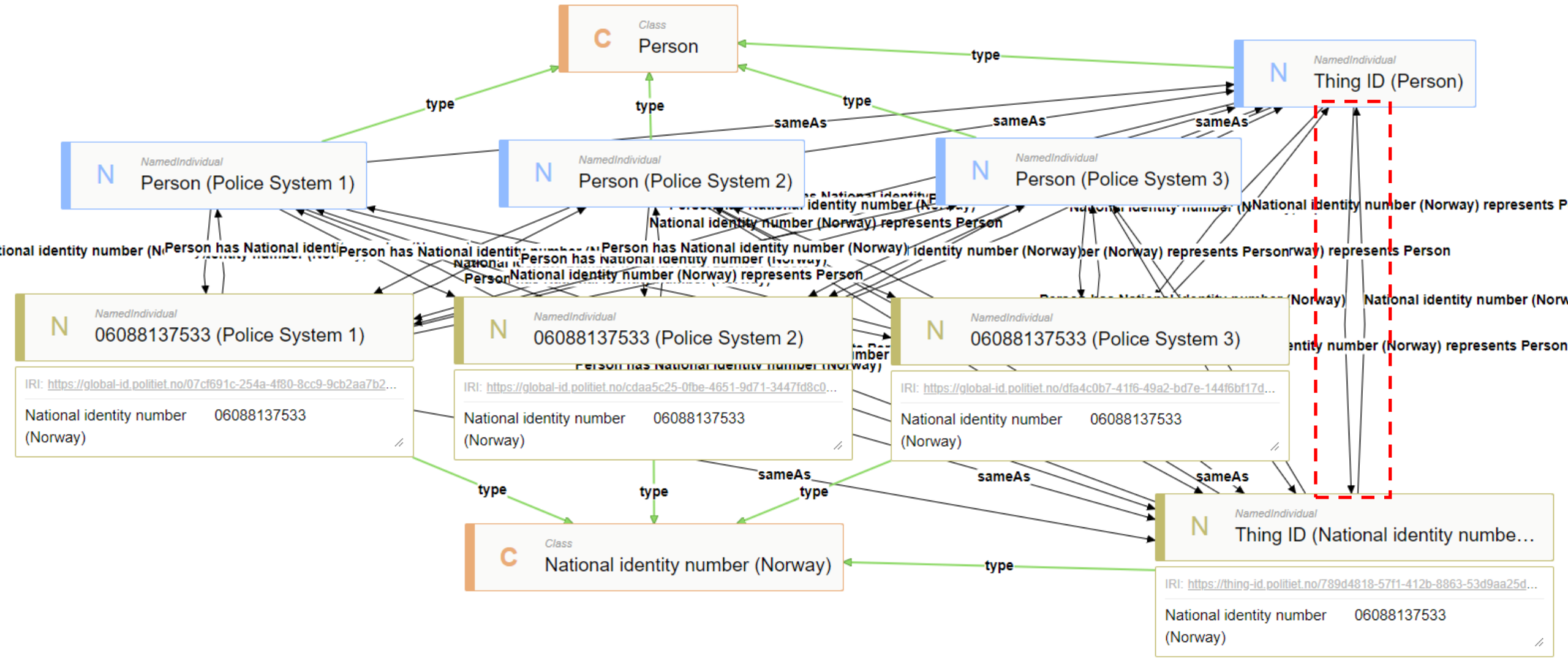


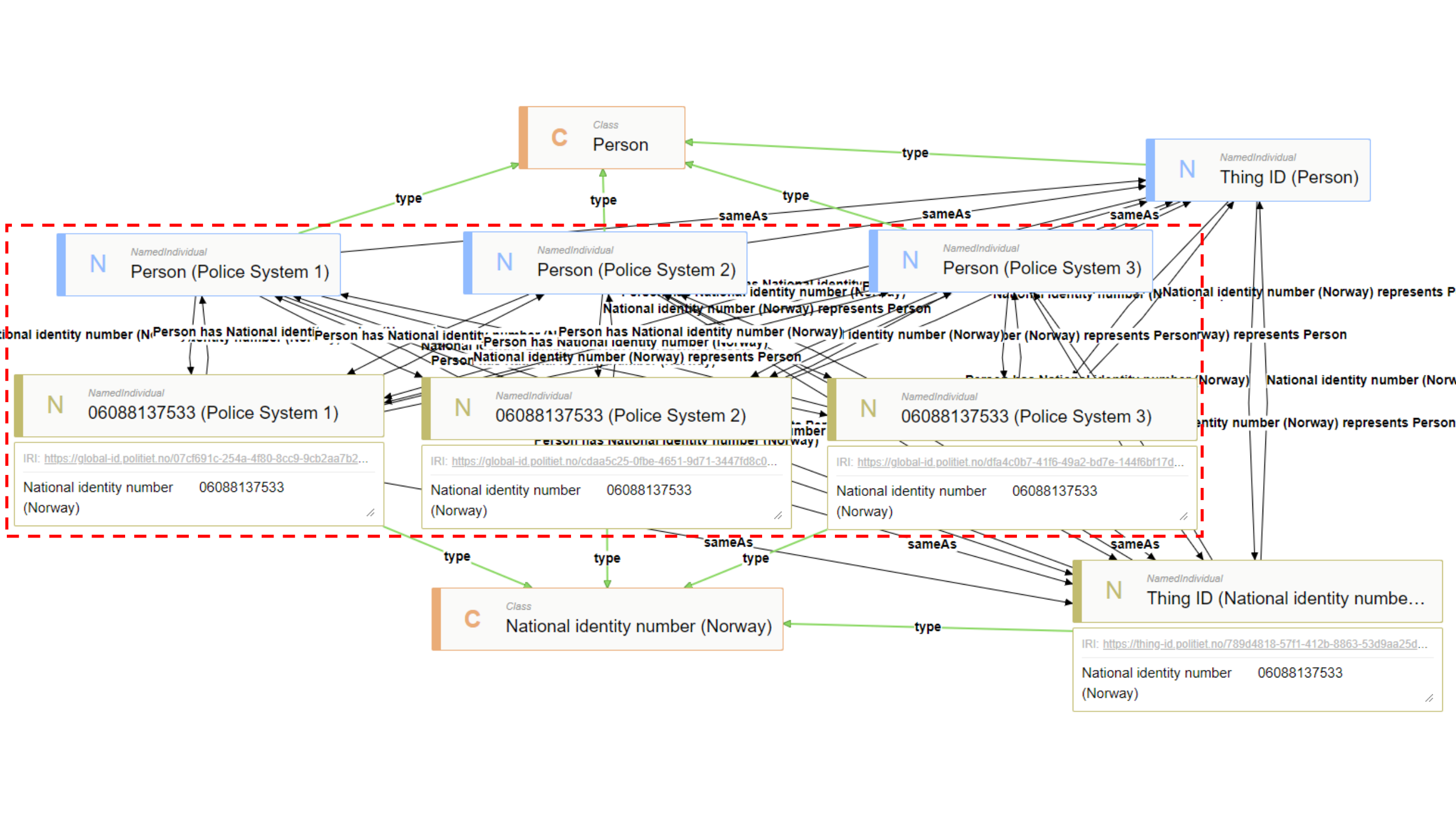












**C** *Class*  
**Person**

IRI: <https://vocabulary.politiet.no/2f074f46-1c78-4512-ae26-61d821cf...>

comment      En person er et vesen som har en bestemt moralsk status, og dermed også bestemte rettigheter og plikter.  
A human being regarded as an individual. //

**C** *Class*  
**National identity number (Norway)**

IRI: <https://vocabulary.politiet.no/2f074f46-1c78-4512-ae26-61d821cf...>

comment      Et fødselsnummer er et identifikasjonsnummer med elleve siffer. Alle som er folkeregistrert i Norge har et fødselsnummer. Nummeret regnes ikke som en særlig kategori av personopplysninger ... //

**N** *NamedIndividual*  
**Thing ID (Person)**

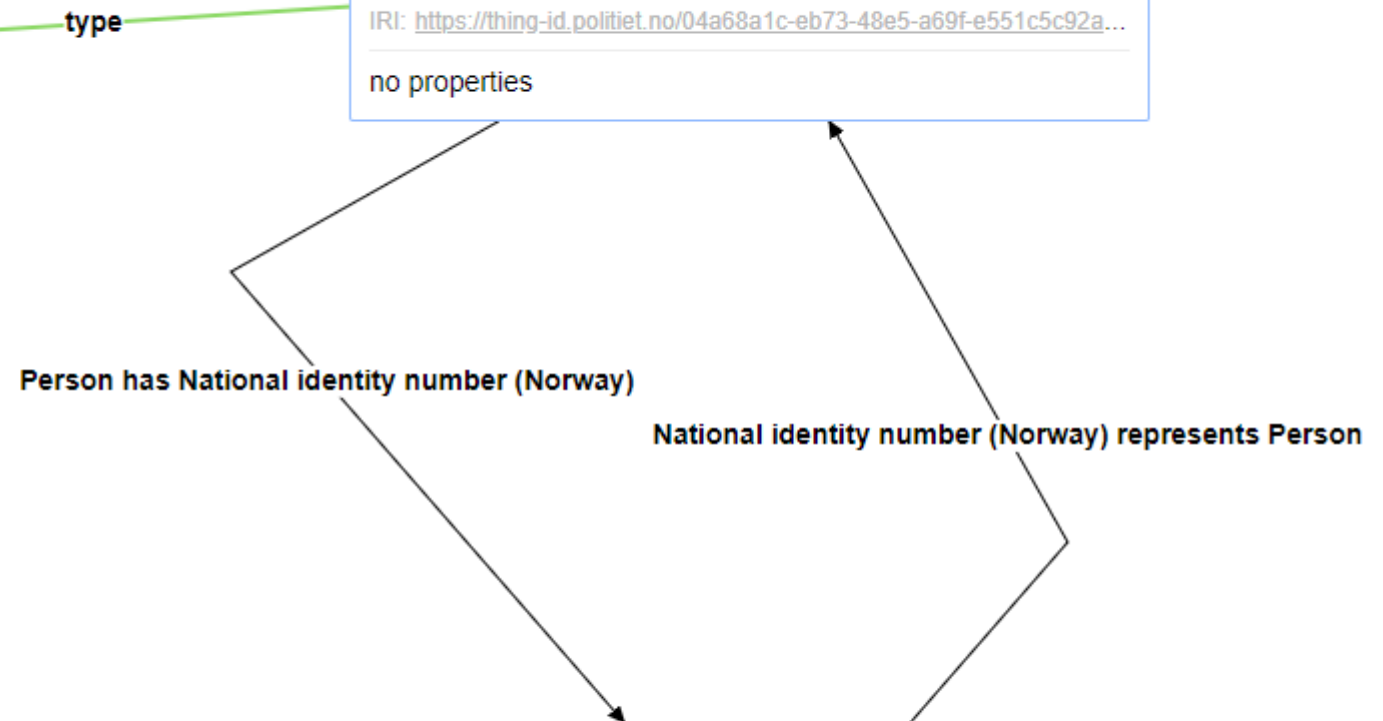
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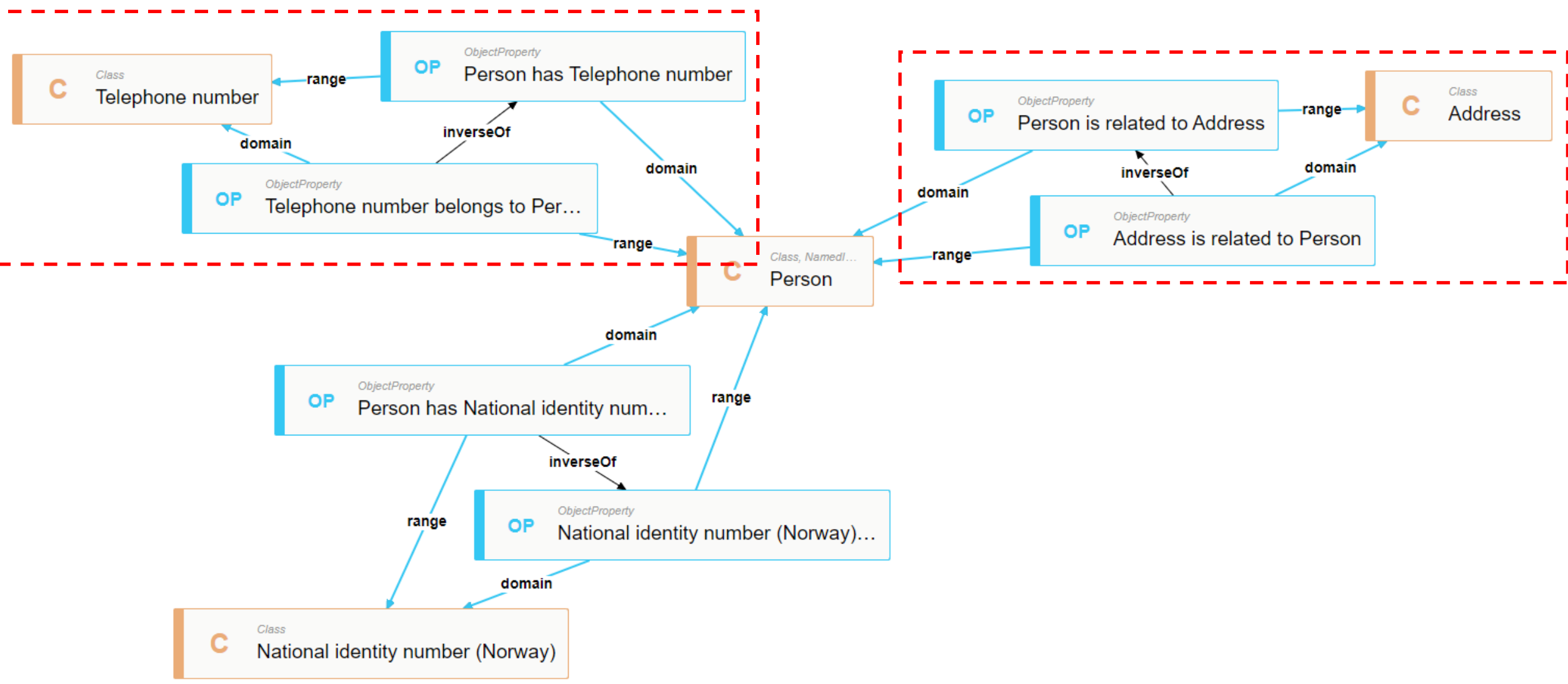
no properties

**N** *NamedIndividual*  
**Thing ID (National identity numbe...**

IRI: <https://thing-id.politiet.no/789d4818-57f1-412b-8863-53d9aa25d...>

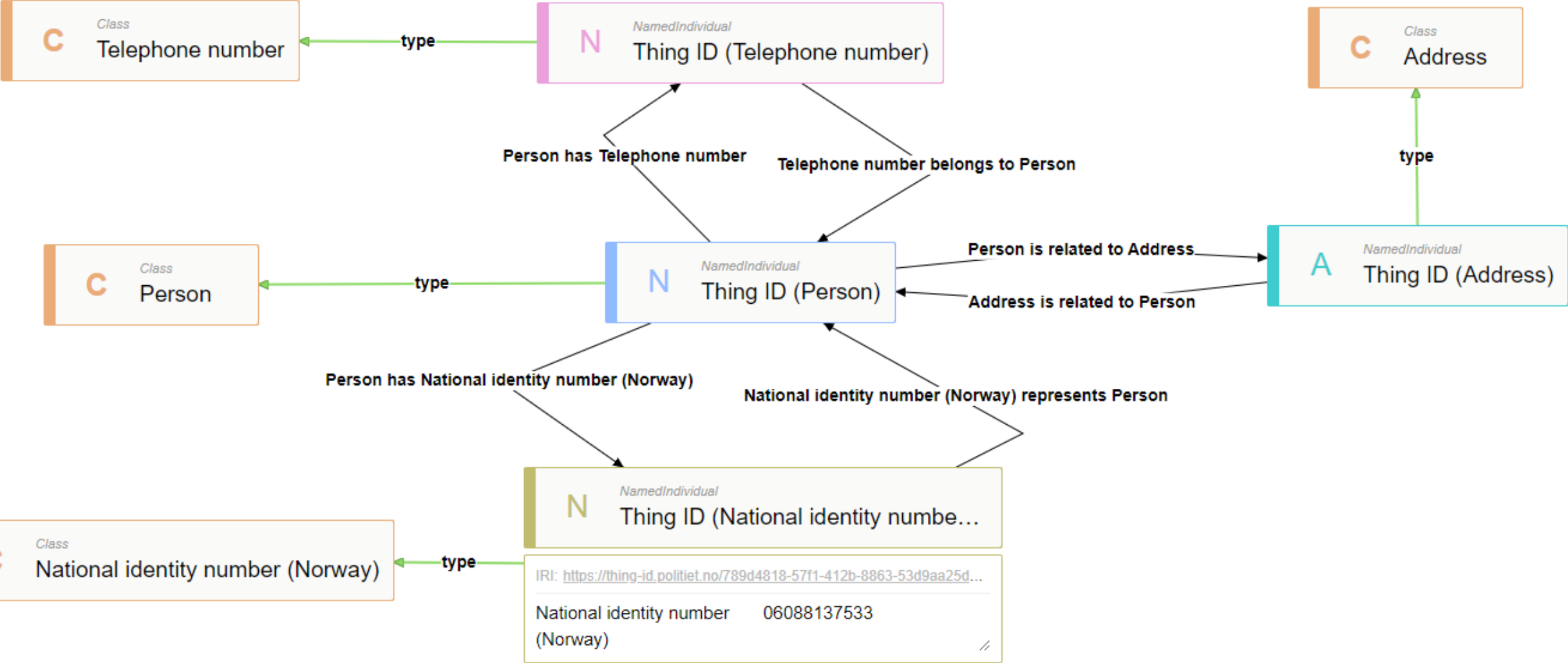
National identity number      06088137533  
(Norway) //



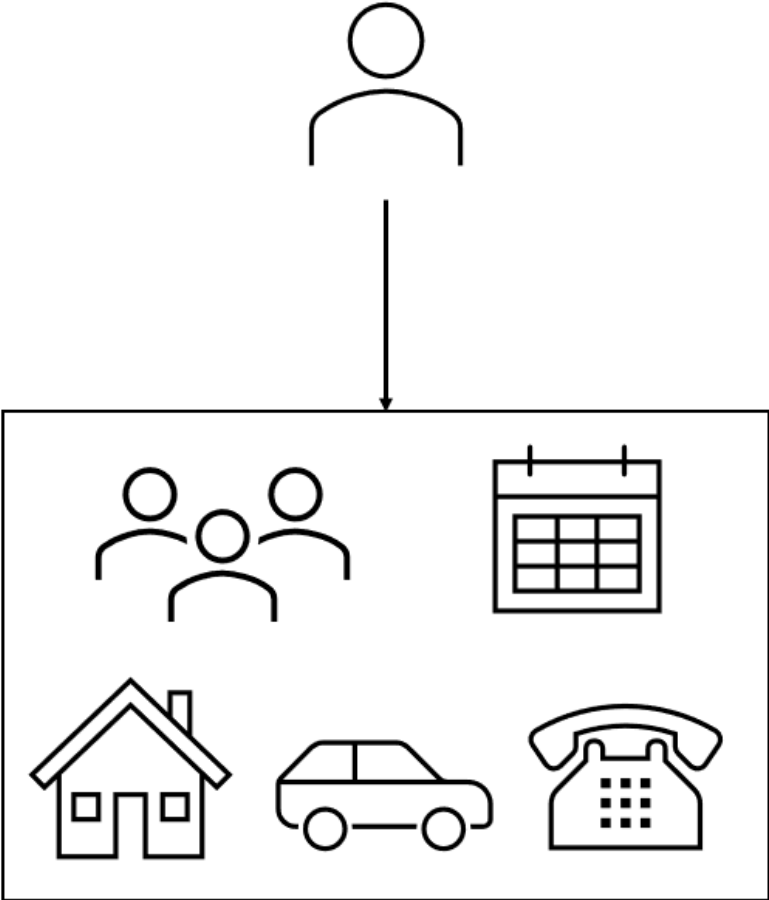
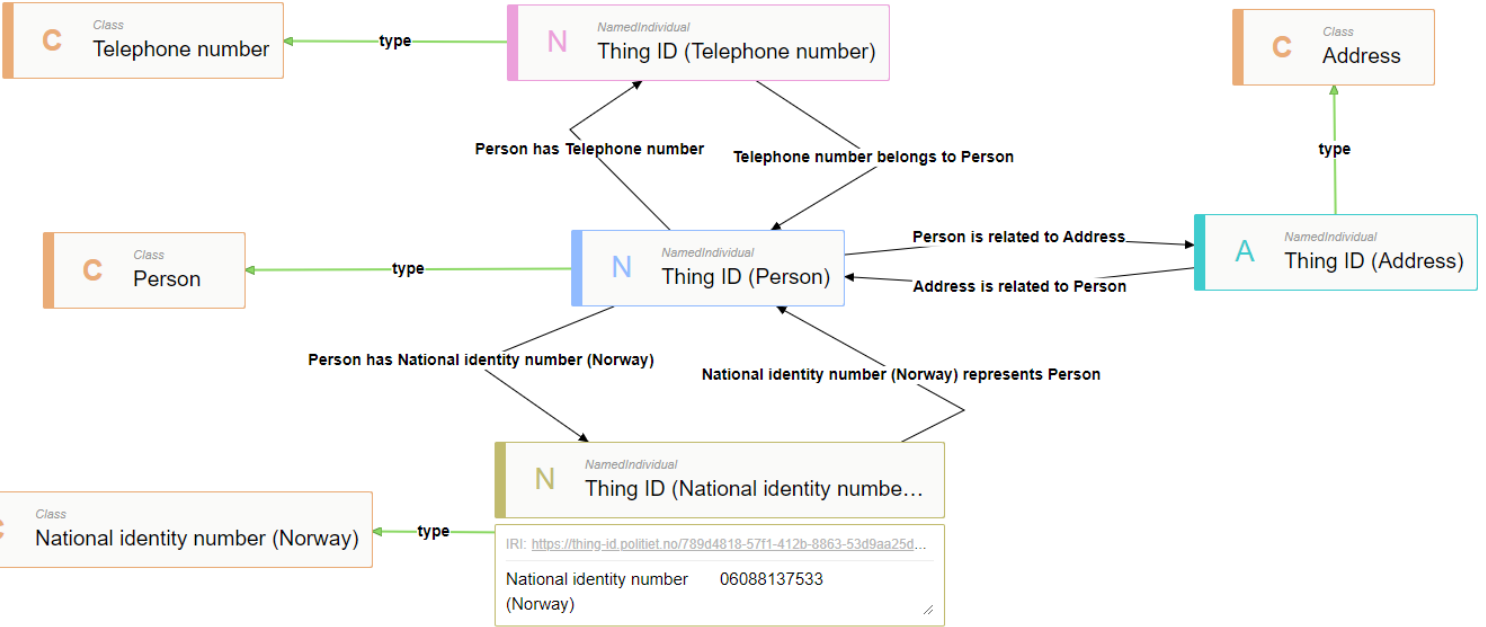




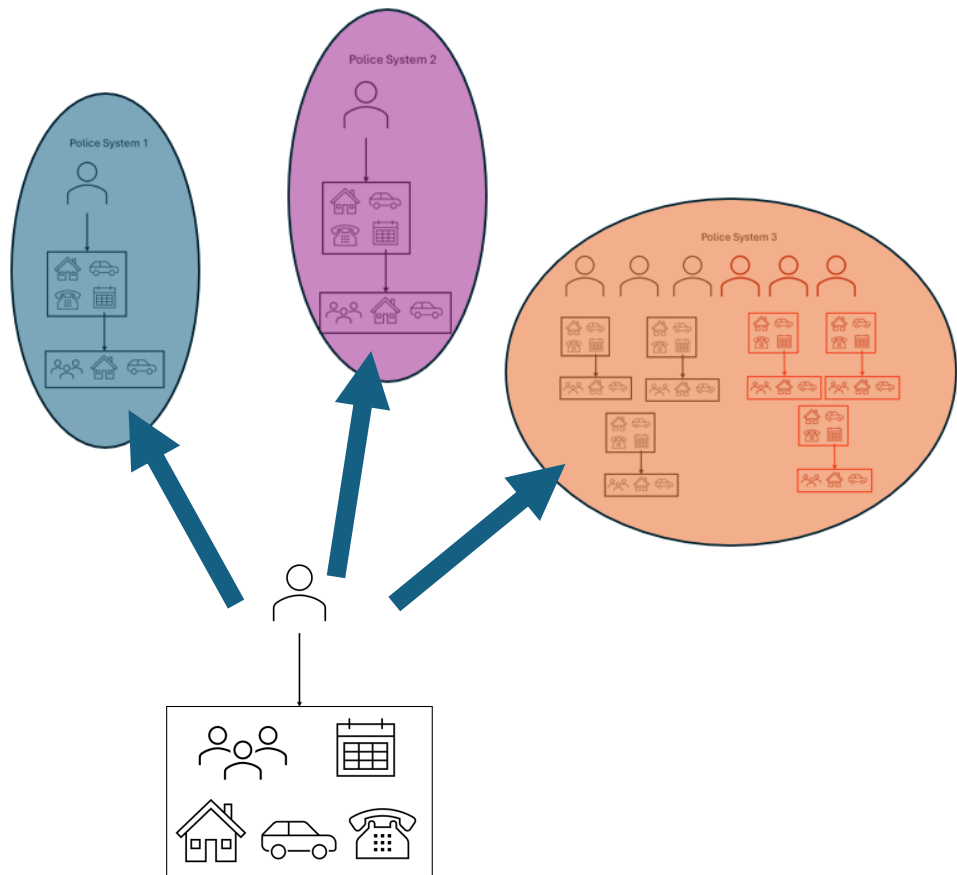
# Norwegian Police Knowledge Graph



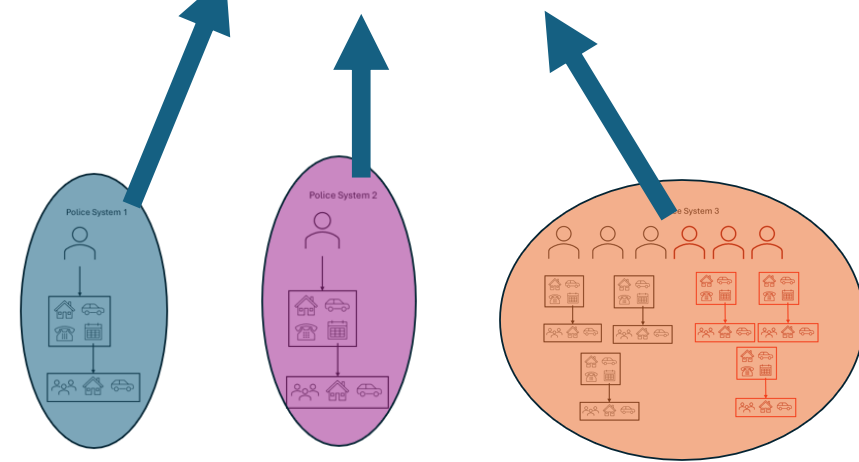
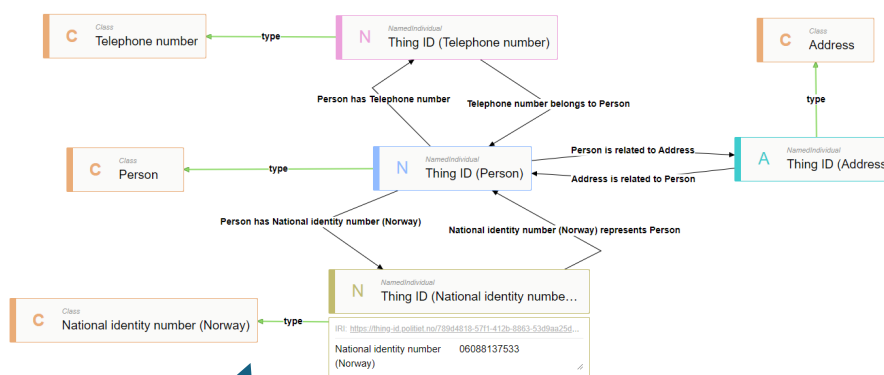
# Norwegian Police Knowledge Graph



# Application-Centric



# Data-Centric





• **Fra maskin til maskin**

DigiTalt

Tenk om vi kunne hatt et overordnet felles språk i hele politiet? Som gjorde at vi raskt kunne knytte sammen data med data, og data med felles forståelse, slik at en kan...



Aug 29 • 33 min 20 sec



**POLITIET**  
POLITIETS IT-ENHET

Det har aldri vært  
**mer spennende**  
å jobbe i politiet

**Besøk oss på stand og hør mer om våre spennende stillinger**

