Tim Kräuter – 17/02/21

MPS in a nutshell

Høgskulen
på Vestlandet

Agenda

1. Key information about MPS
2. Running example: Families and Persons
3. Defining the abstract syntax / the metamodel
4. Developing the concrete syntax
5. Implementing model transformations

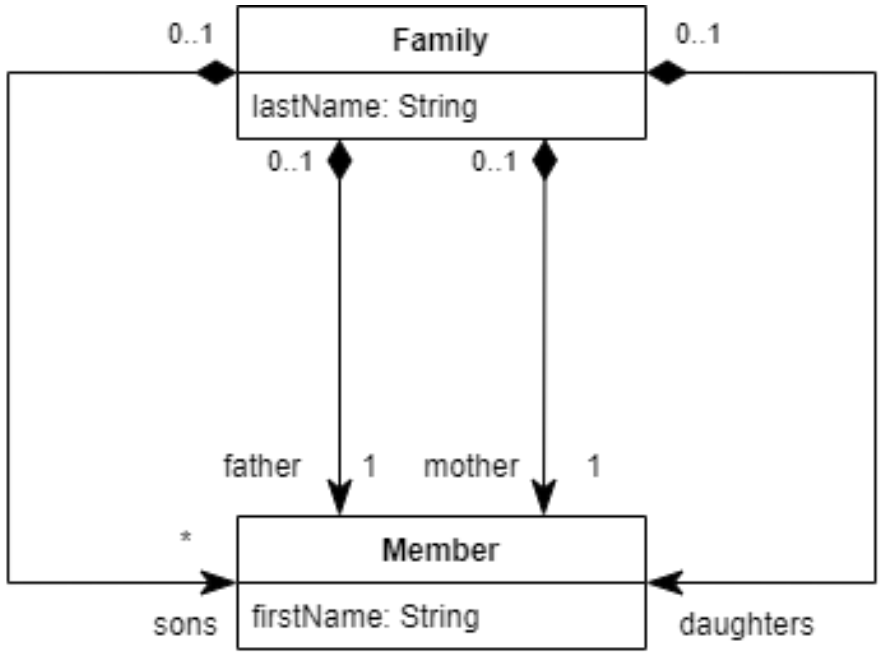
https://github.com/timKraeuter/PCS955-DAT355

Key information about MPS Meta Programming System

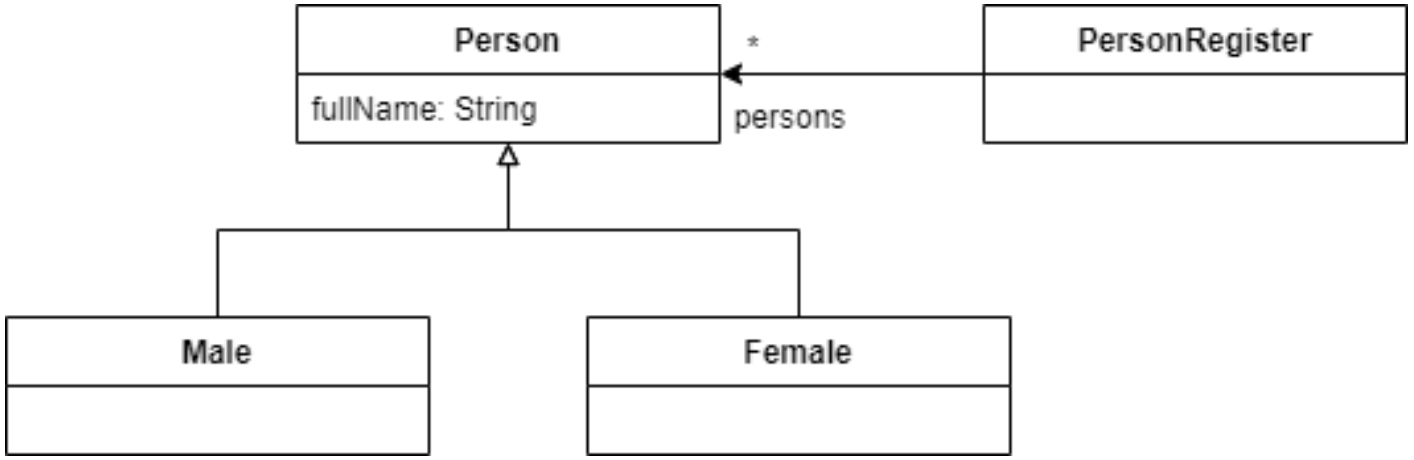
- Language Workbench to create DSL`s, which means:
  - Defining the abstract syntax of a language (= metamodel)
  - Adding constraints to the abstract syntax / the metamodel
  - Develop a concrete syntax
  - Implement model transformations
- Developed by: JET BRAINS

Running example: Families and Persons

Families metamodel:



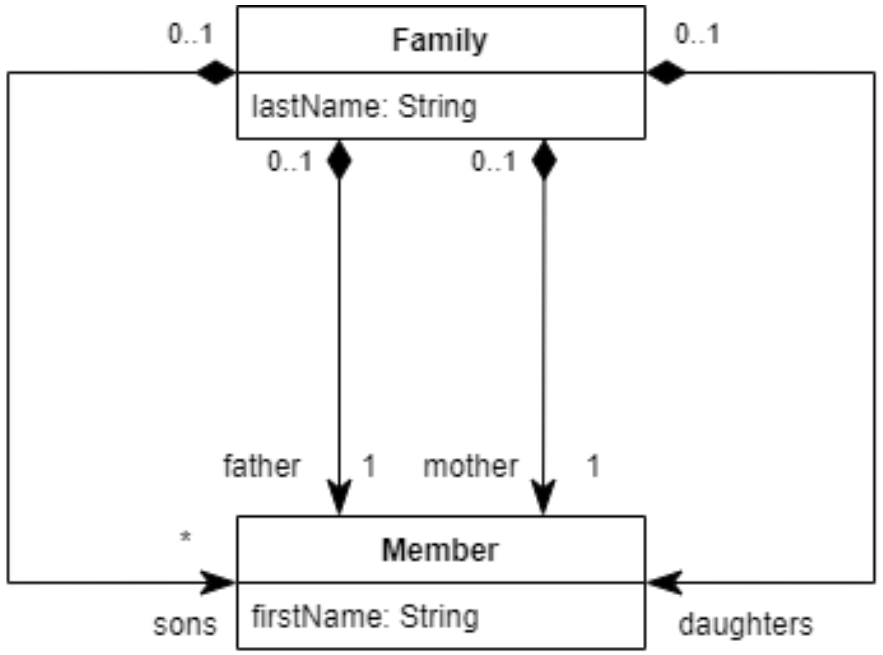
Persons metamodel:



Adapted from: https://wiki.eclipse.org/ATL/Tutorials_-_Create_a_simple_ATL_transformation

Defining the abstract syntax / the metamodel

- The definition of the metamodel is done by defining **concepts** in MPS.
- Let us define the **families metamodel** together
- You can find the end result here.

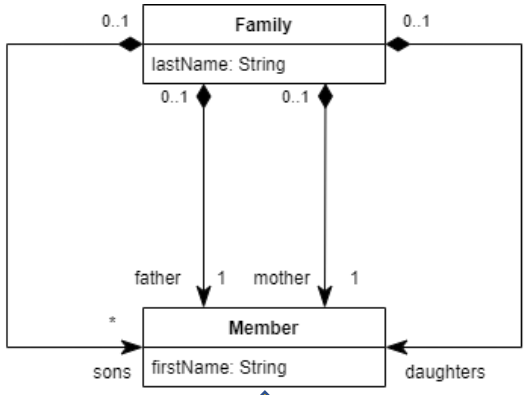


Developing the concrete syntax

- Developing the concrete syntax is done by defining **editors** in MPS.
- Let us define a **simple textual syntax** now and create a family (a model) by using it.
- You can find the end result here.

```
family Kräuter
father Karl-Otto
mother Maria
daughters
  Jessica
sons
  Tim
  Jan
```

Implementing model transformations

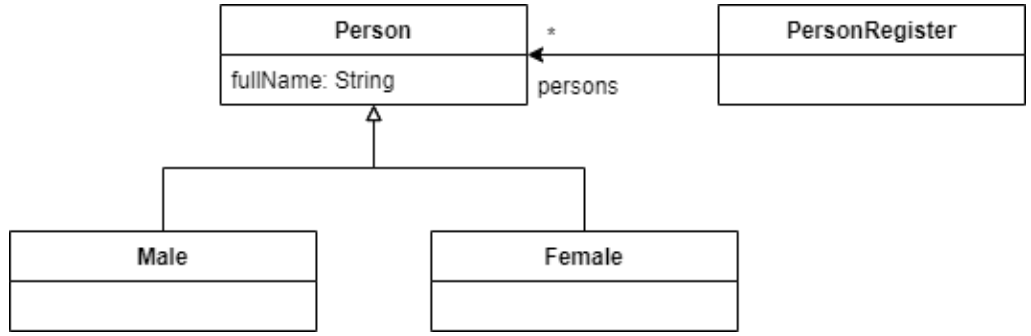


conforms to

```
family Kräuter
father Karl-Otto
mother Maria
daughters
  Jessica
sons
  Tim
  Jan
```

But how?

MPS Generator



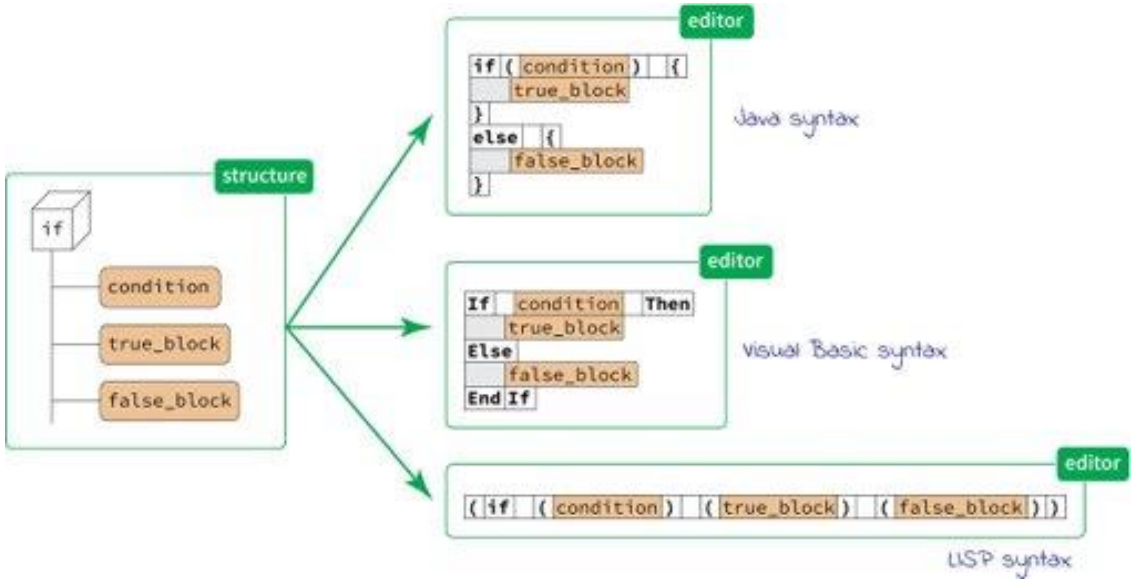
conforms to

```
Person Register Family Kräuter Register
persons
  female Maria Kräuter
  male Karl-Otto Kräuter
  male Tim Kräuter
  male Jan Kräuter
  female Jessica Kräuter
```

Conclusion

- The projectional editor is really interesting!
- Working on the abstract syntax tree will make you fluctuate between **euphoria** and **depression**!

  → You cannot jump right into MPS without doing any tutorial



- Very good documentation and stable DIE
- There is a lot more to learn about MPS!