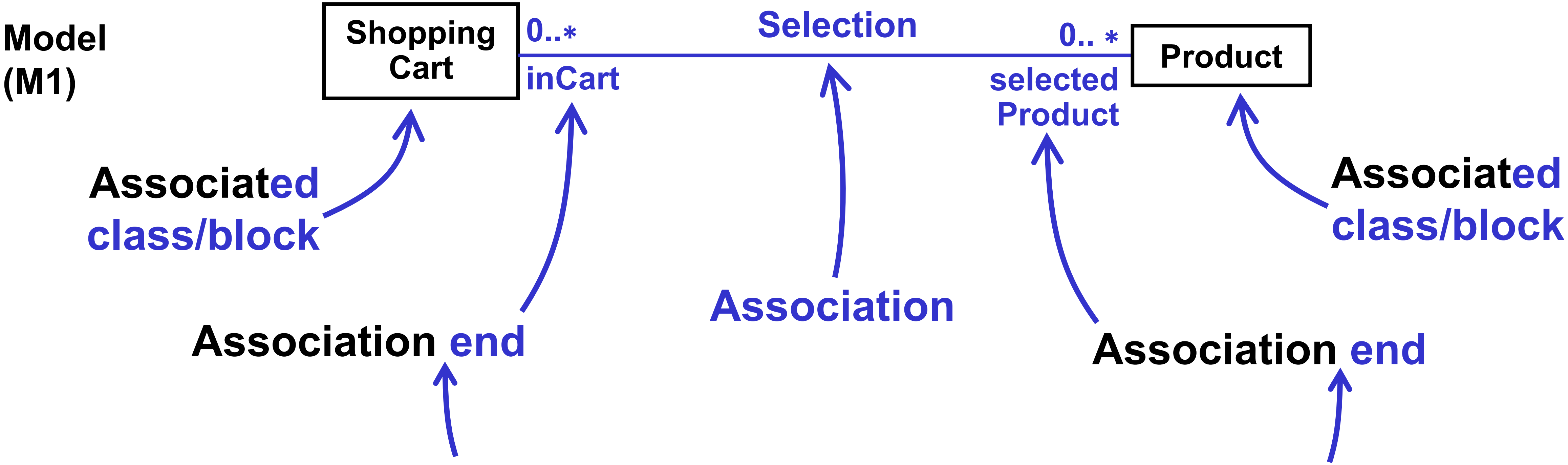
Overview

- **Associations**
- Debt (SysML1 & SST)
  - Paid (SST February)
  - Unresolved (still paying interest)
- Proposals
- Summary

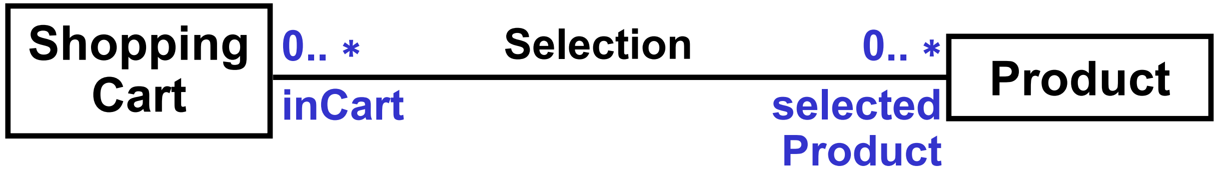
UML/SysML1 Associations


Model
(M1)
Shopping Cart
0..*
inCart
Selection
0.. *
selected Product
Product
Associated class/block
Association end
Association
Association end
Associated class/block

- **Association ends are properties for identifying**
  - **("navigating to") instances of one associated class/block …**
  - **… based on ("from") instances of the other.**

Association “Ends”

Model (M1)



Shopping Cart

0.. *

inCart

Selection

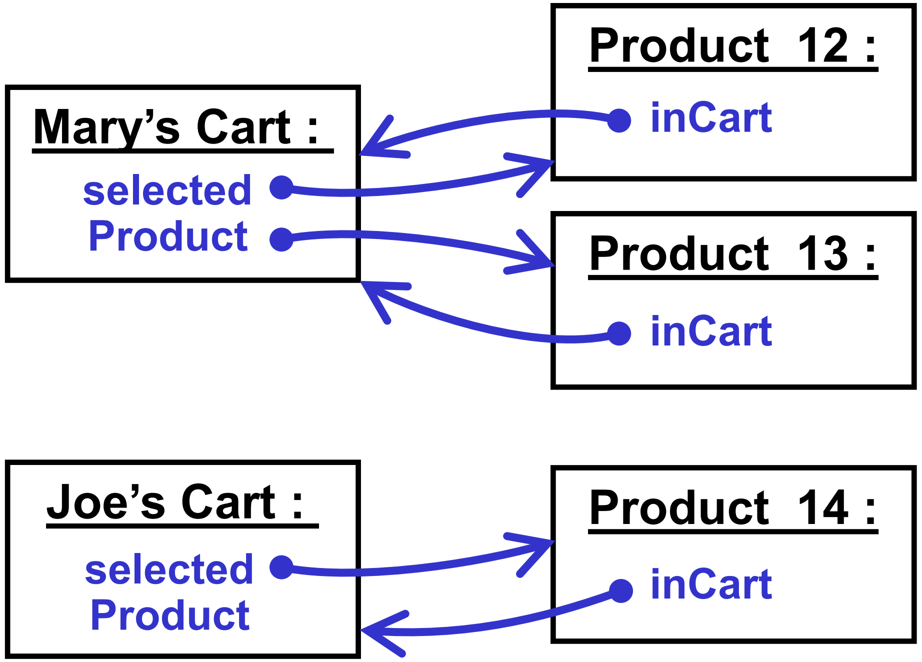
0.. *

selected Product

Product

Things Being Modeled (M0)

Object oriented
(UML/SysML1)



Mary’s Cart :
selected Product
selected Product

Product 12 :
inCart

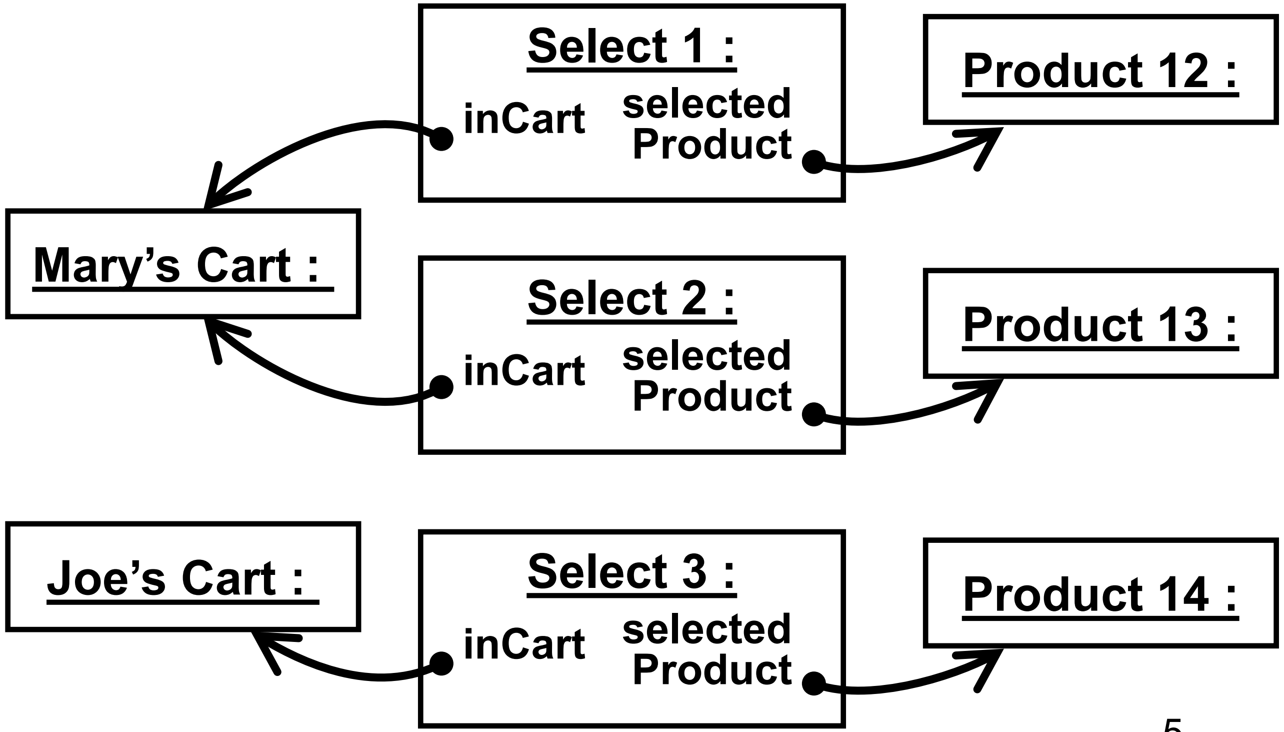
Product 13 :
inCart

Joe’s Cart :
selected Product

Product 14 :
inCart

Modelled “in” associated classes/blocks

Relational



Mary’s Cart :

Select 1 :
inCart
selected Product

Product 12 :

Select 2 :
inCart
selected Product

Product 13 :

Joe’s Cart :

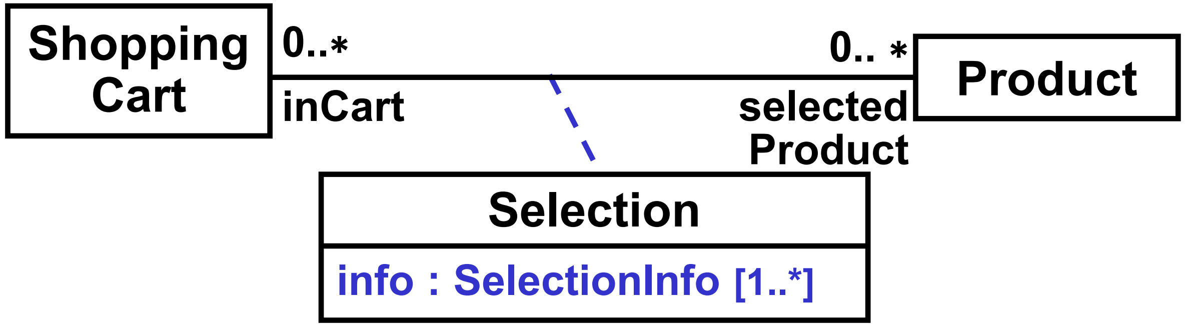
Select 3 :
inCart
selected Product

Product 14 :

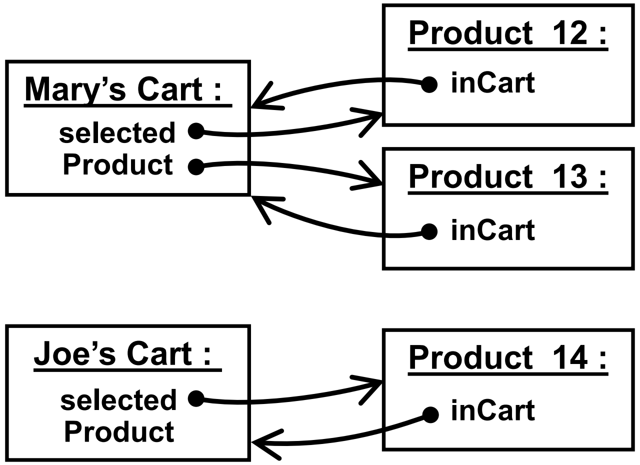
Modelled from the “middle”

Relational: Properties of Associations

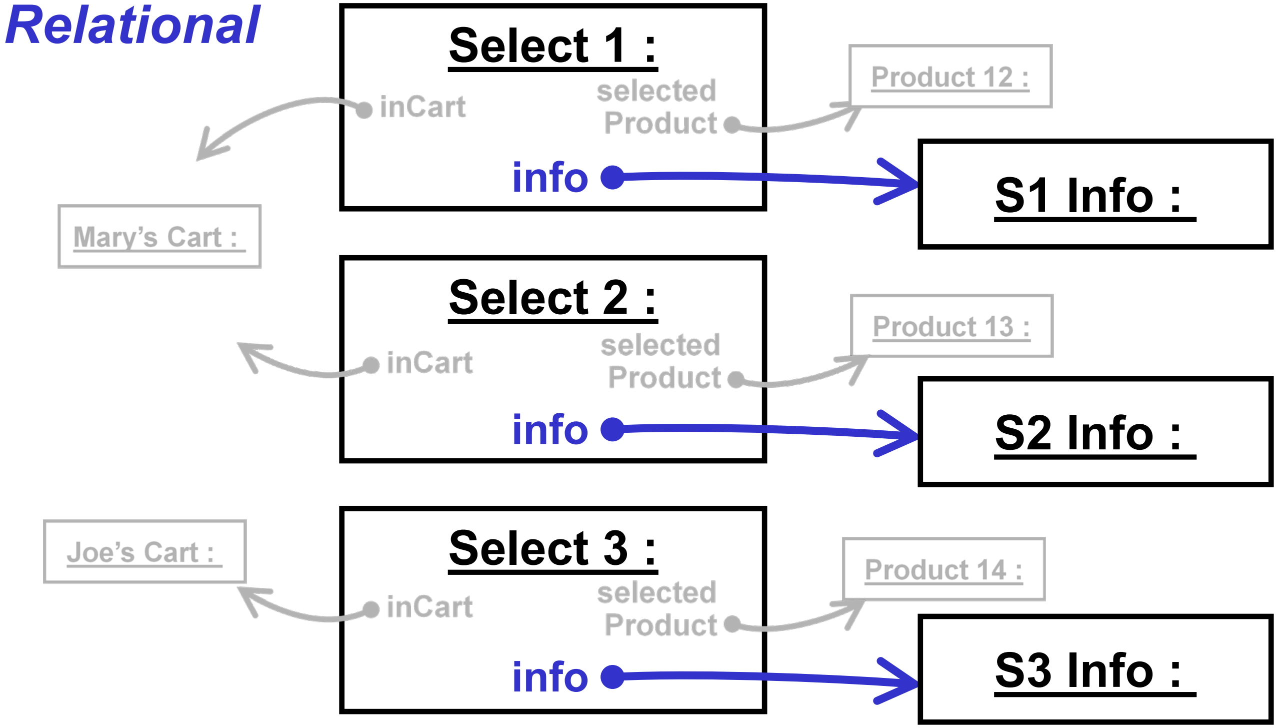
Model (M1)


Shopping Cart
0..*
inCart
0.. *
selected Product
Product
Selection
info : SelectionInfo [1..*]

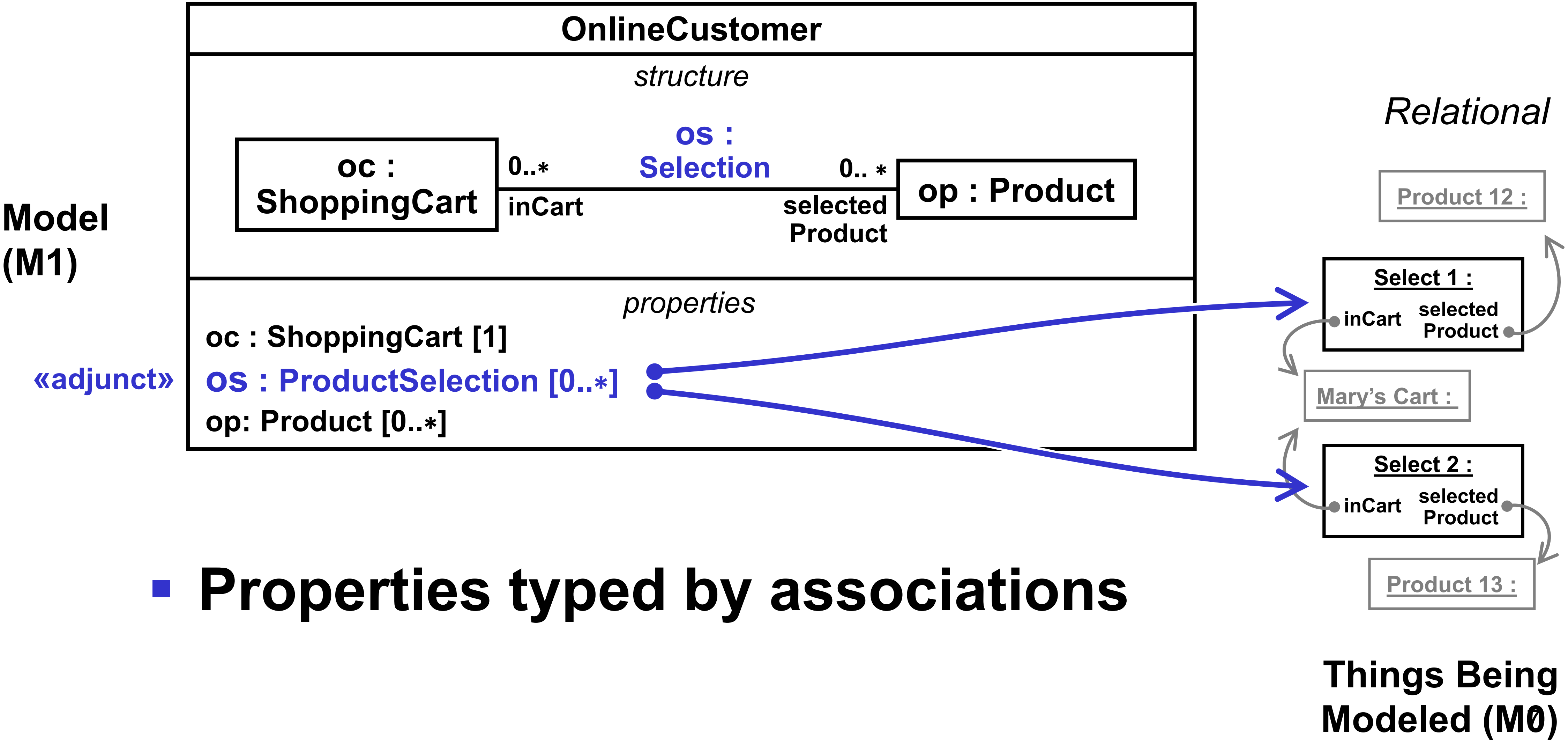
Object oriented


Mary's Cart :
selected Product
Product 12 :
inCart
Product 13 :
inCart
Joe's Cart :
selected Product
Product 14 :
inCart

Relational


Select 1 :
inCart
selected Product
info
Product 12 :
S1 Info :
Mary's Cart :
Select 2 :
inCart
selected Product
info
Product 13 :
S2 Info :
Select 3 :
inCart
selected Product
info
Joe's Cart :
Product 14 :
S3 Info :

Relational: **Connectors**



Model (M1)

OnlineCustomer

structure

oc : ShoppingCart

0..*

inCart

os : Selection

0.. *

selected Product

op : Product

properties

oc : ShoppingCart [1]

«adjunct» os : ProductSelection [0..*]

op: Product [0..*]

Relational

Product 12 :

Select 1 :

inCart

selected Product

Mary's Cart :

Select 2 :

inCart

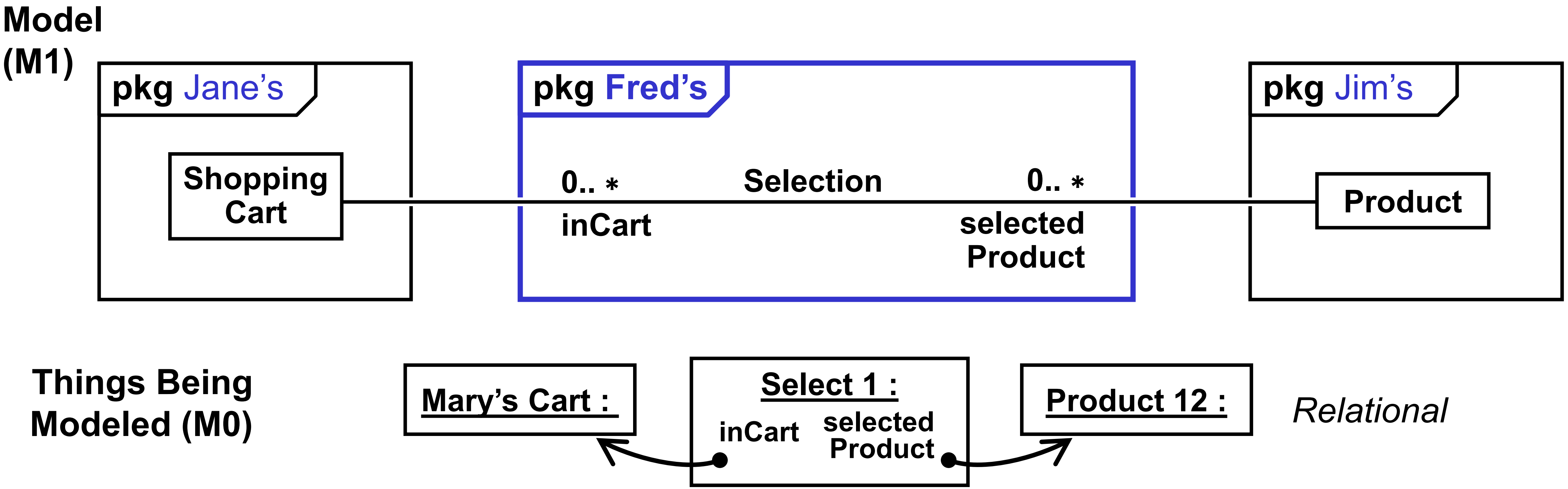
selected Product

Product 13 :

Things Being Modeled (M0)

- **Properties typed by associations**

Relational: “Blind” Association



Model (M1)

pkg Jane’s

Shopping Cart

pkg **Fred’s**

0.. *

Selection

0.. *

inCart

selected Product

pkg Jim’s

Product

Things Being Modeled (M0)

Mary’s Cart :

Select 1 :

inCart

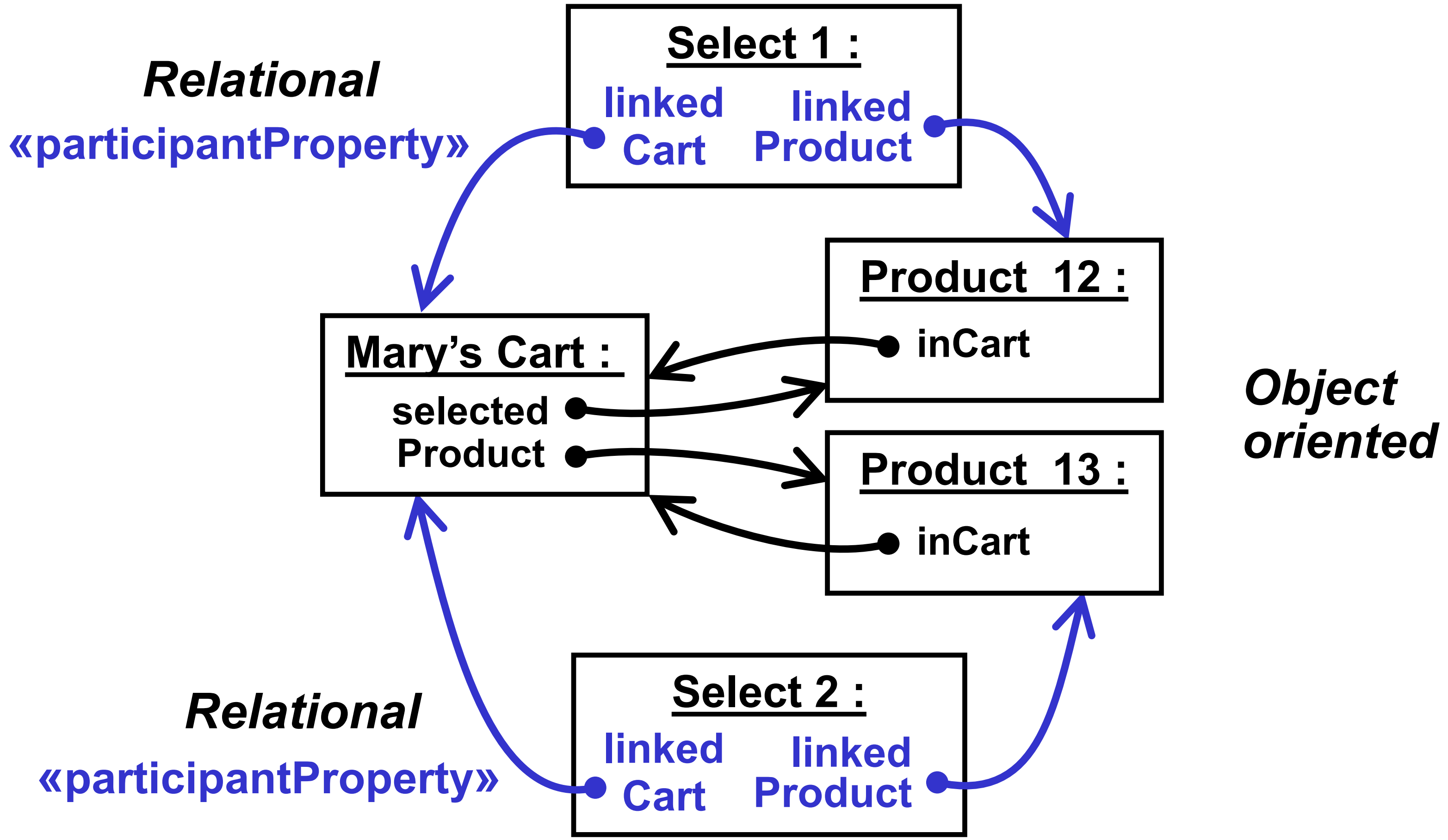
selected Product

Product 12 :

Relational

- **Associating classes/blocks that you don’t “own”.**
  - **Ends are not “in” associated classes/blocks …**
  - **… but still navigable.**
  - **UML/SysML1 association-owned ends.**

SysML1 Association Participant Properties



Relational
«participantProperty»

Select 1 :
linked Cart
linked Product

Product 12 :
inCart

Mary's Cart :
selected Product

Product 13 :
inCart

Object oriented

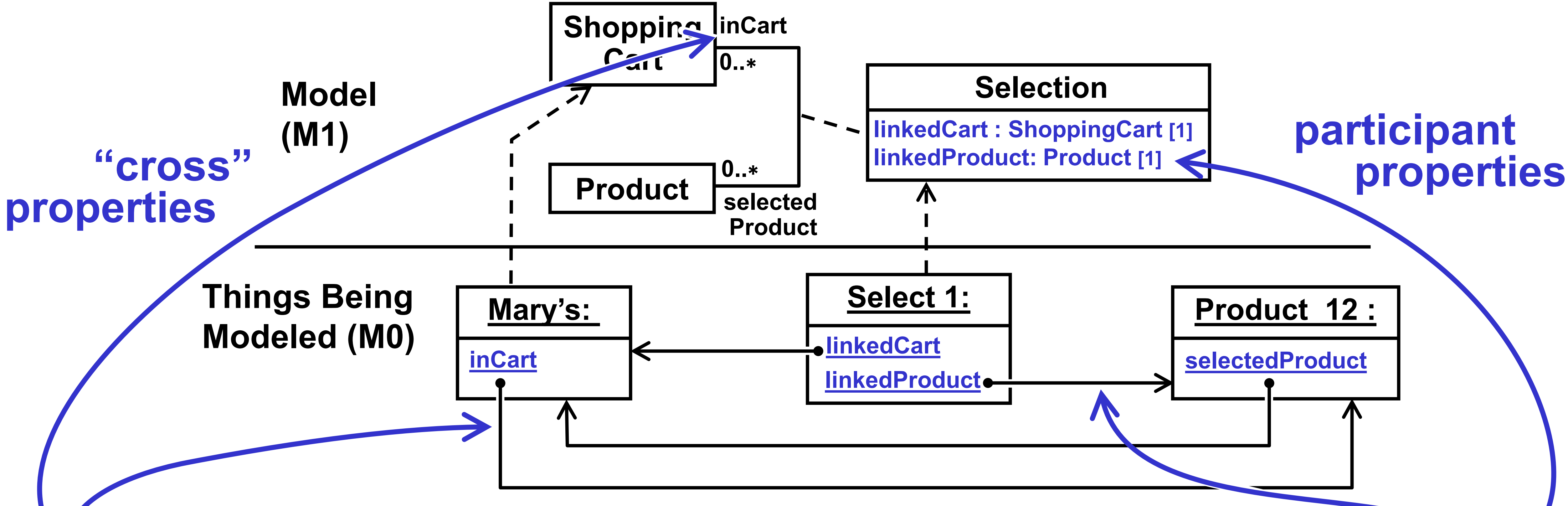
Relational
«participantProperty»

Select 2 :
linked Cart
linked Product

Ref roles papers

- SysML 1 ParticipantProperty stereotype.
  - Always multiplicity [1] {readonly}

Two Kinds of Association Properties


Shopping Cart
inCart
0..*
Model (M1)
Selection
linkedCart : ShoppingCart [1]
linkedProduct: Product [1]
participant properties
"cross" properties
Product
0..*
selected Product
Things Being Modeled (M0)
Mary's:
inCart
Select 1:
linkedCart
linkedProduct
Product 12 :
selectedProduct

- **Two kinds** of properties, for navigating from:
  - One linked thing to another ("cross" properties).
  - Identify linked things (participant properties).
    - Exactly one thing for each, cannot change.