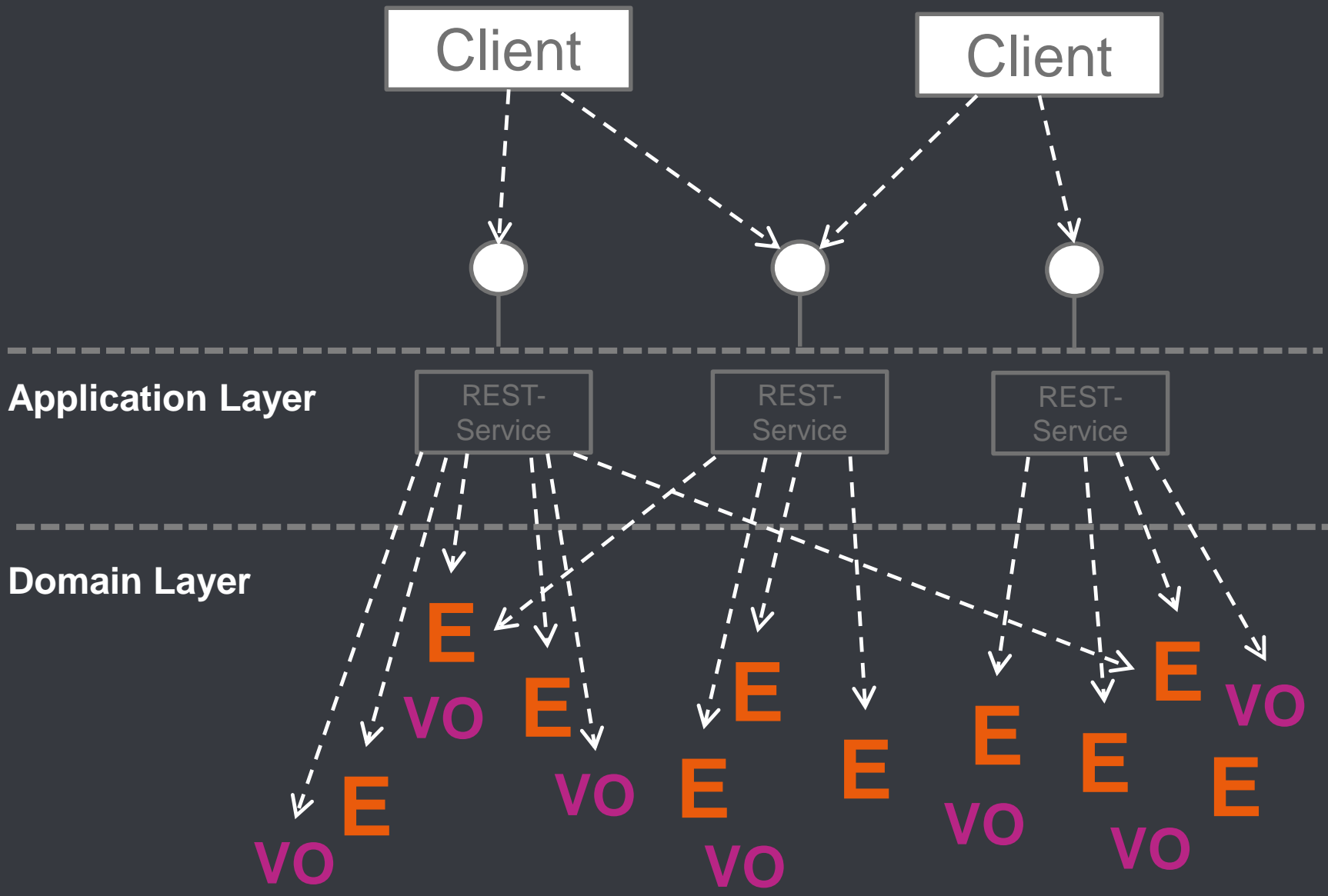
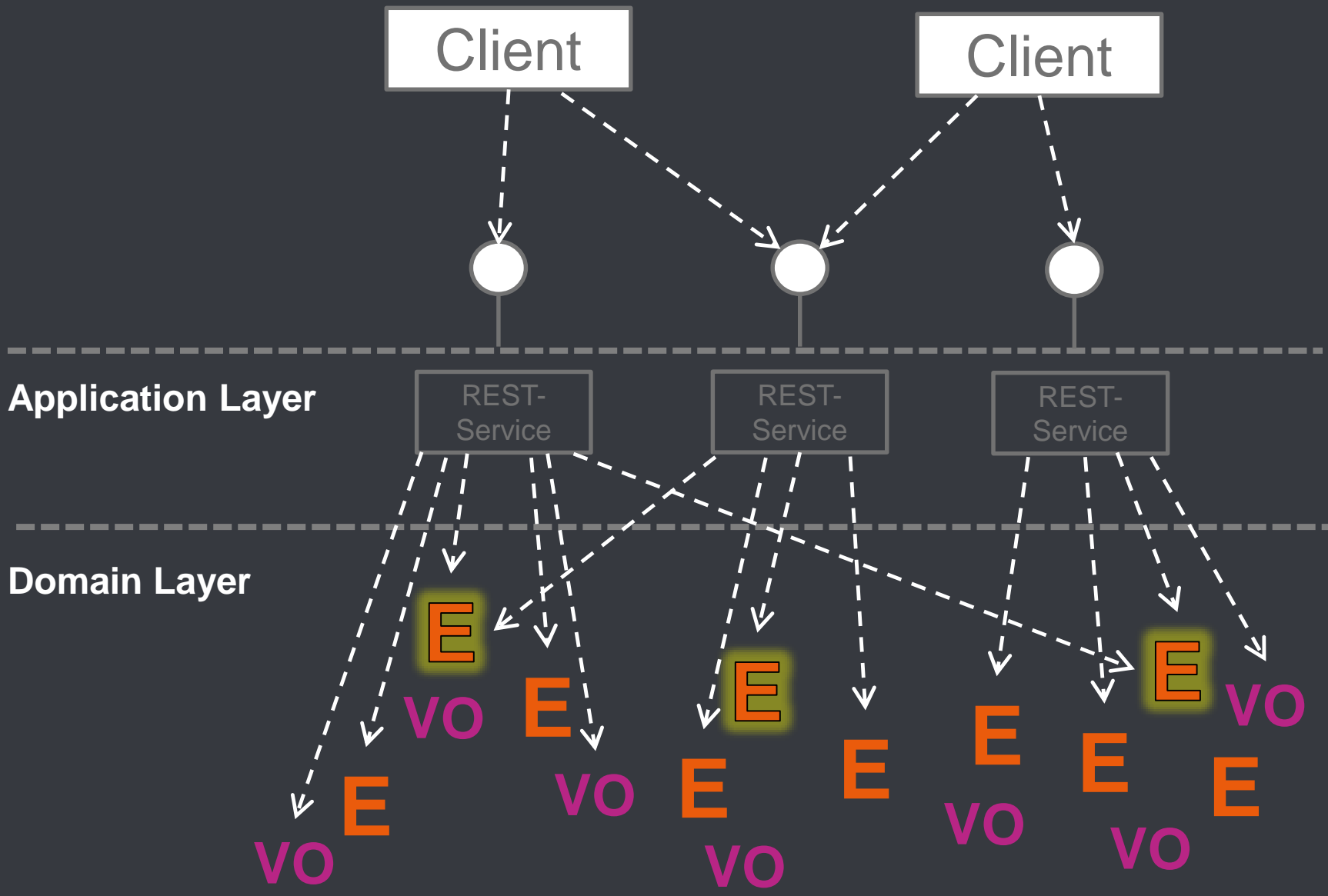
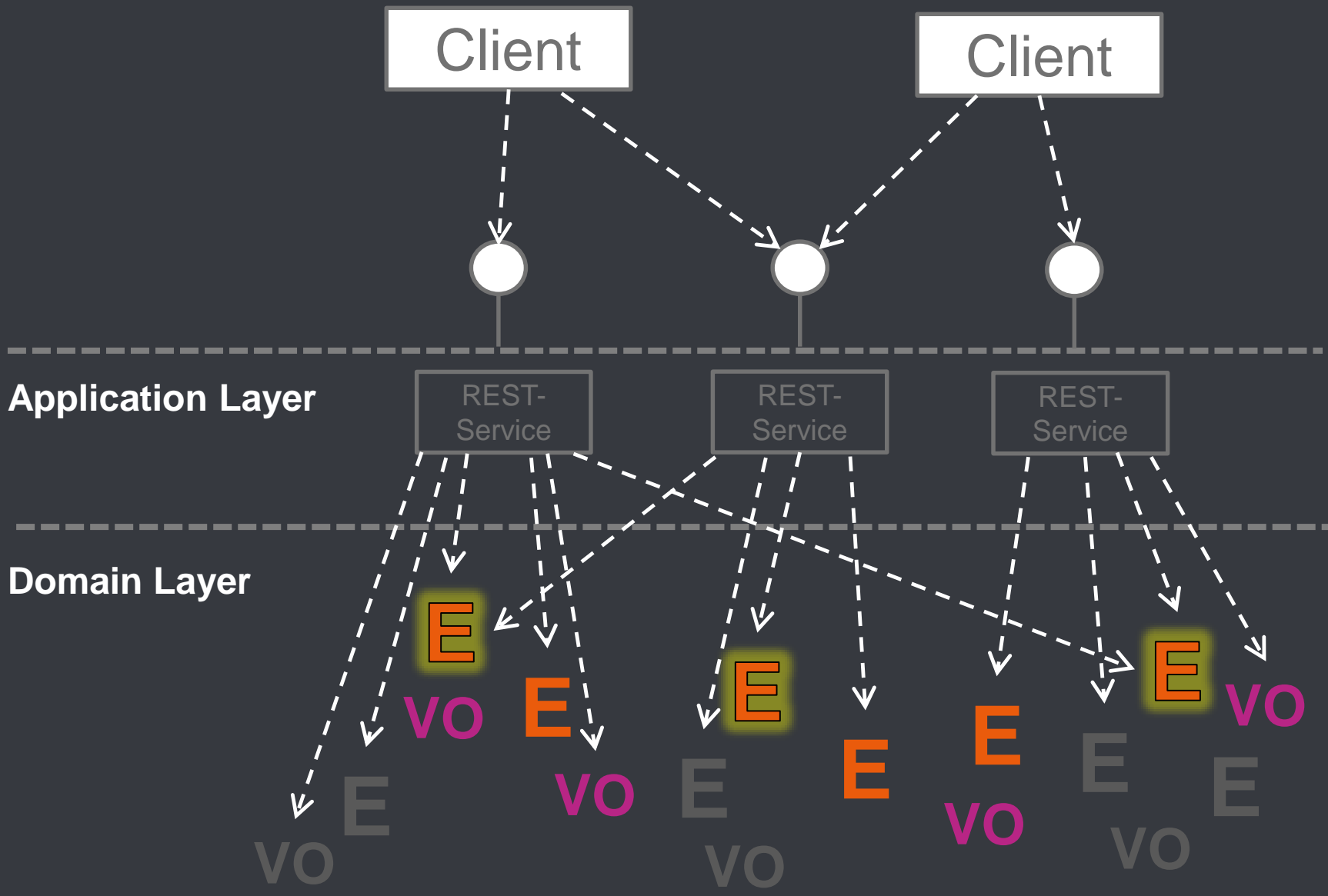


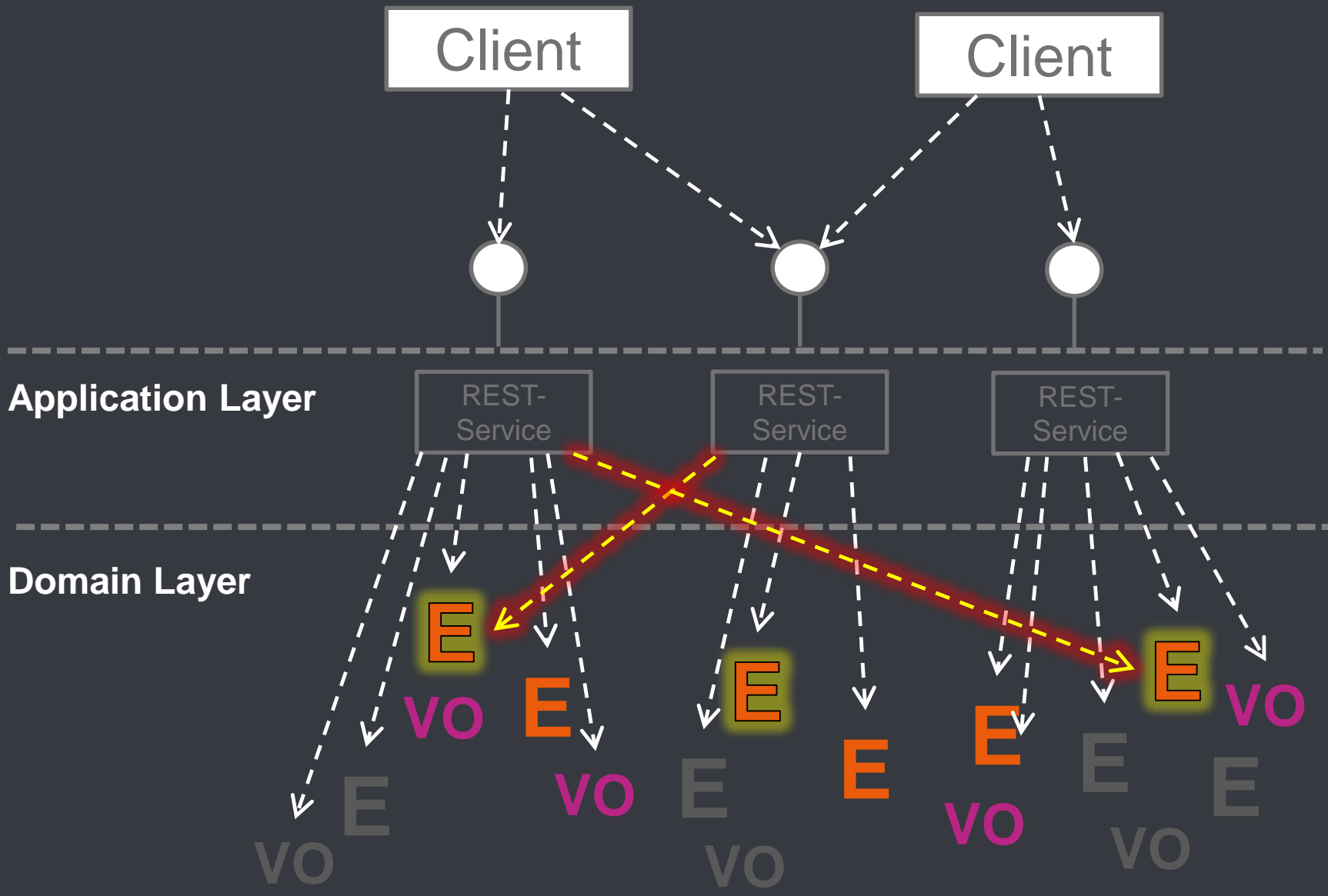
Was sind Aggregates?

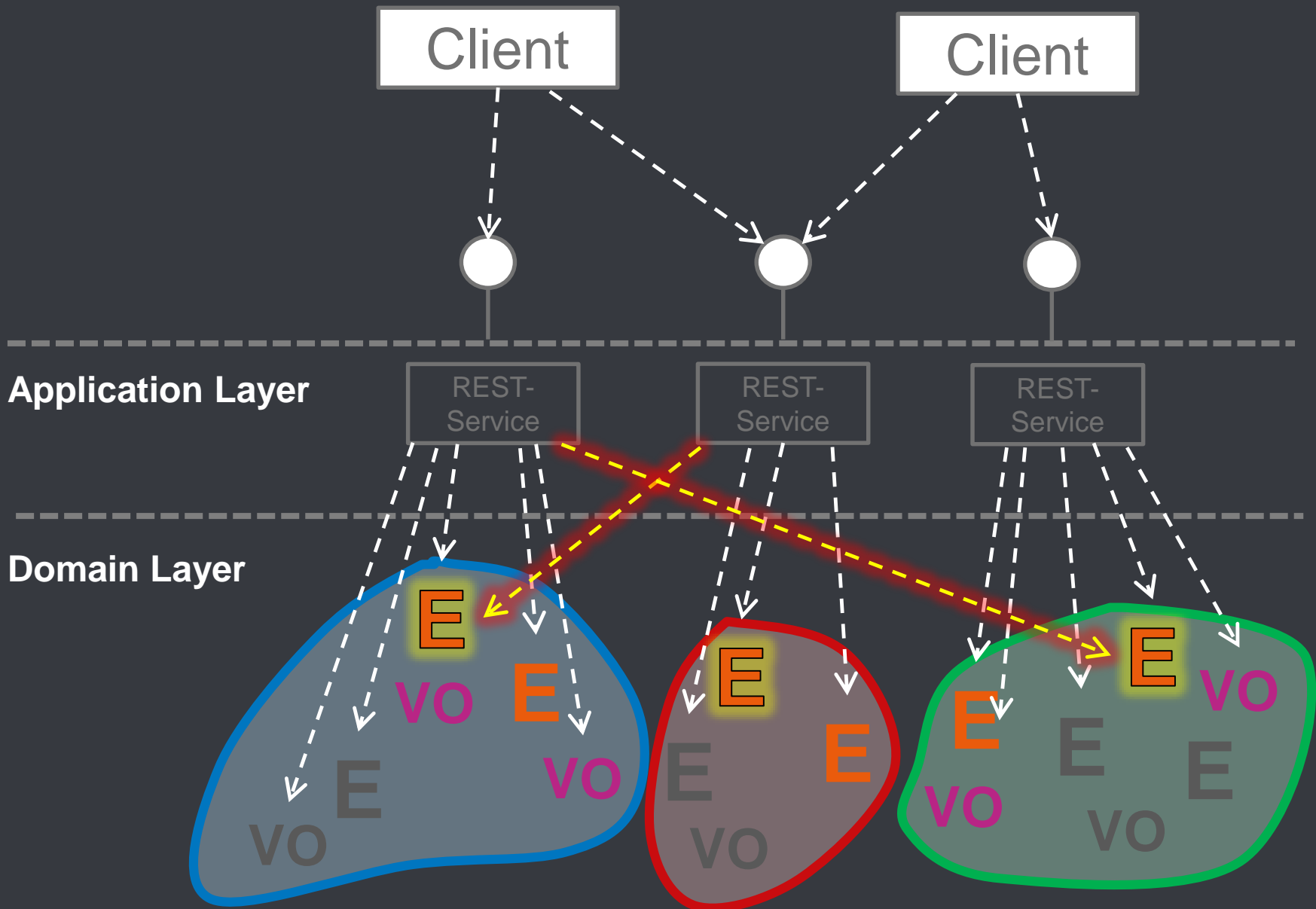
... und wofür braucht man die?

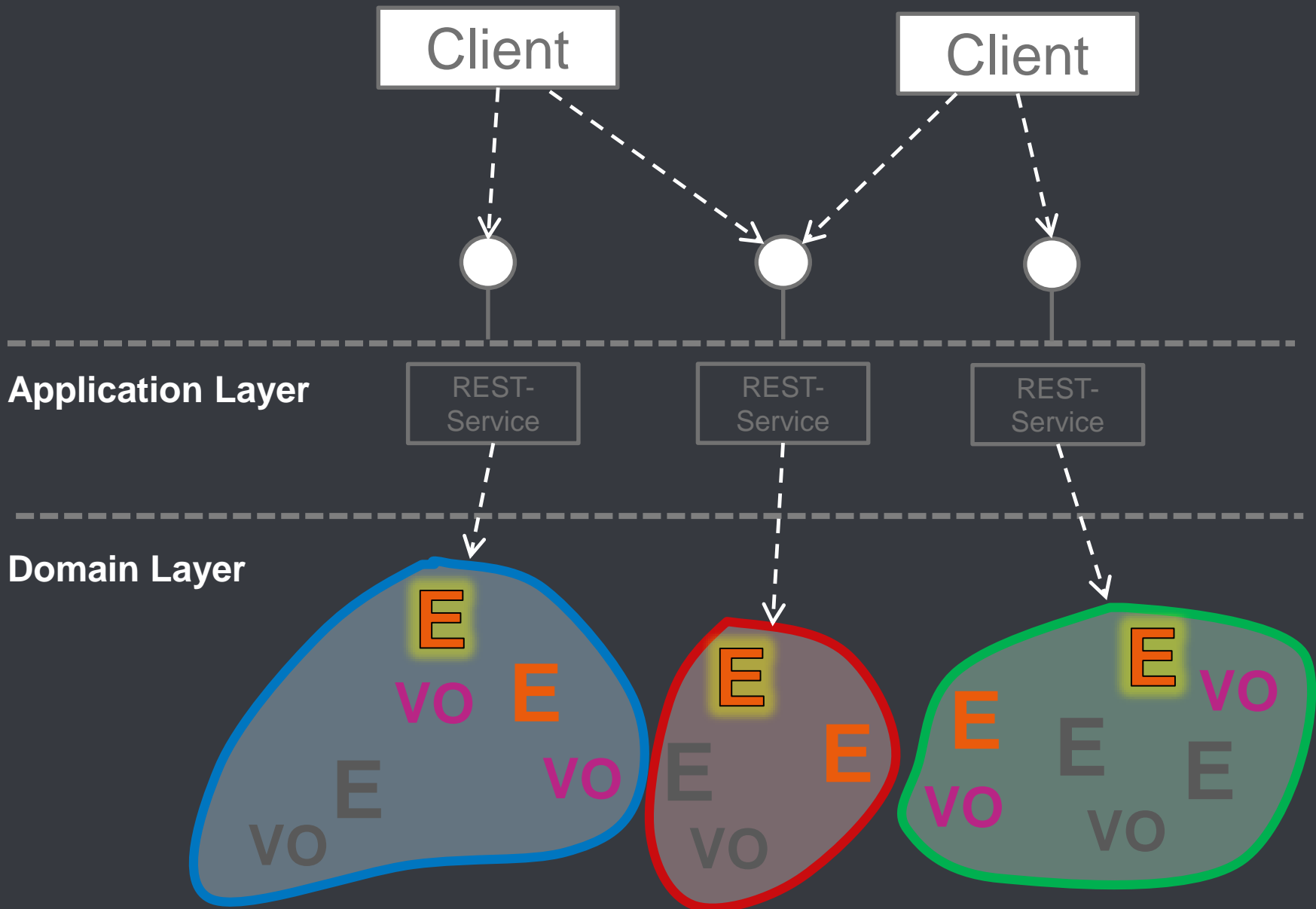






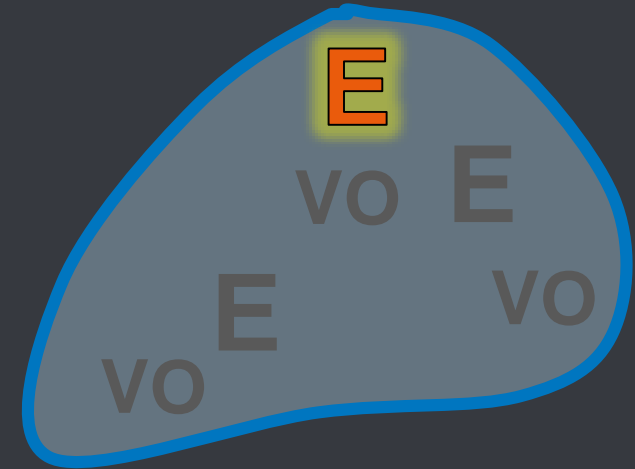


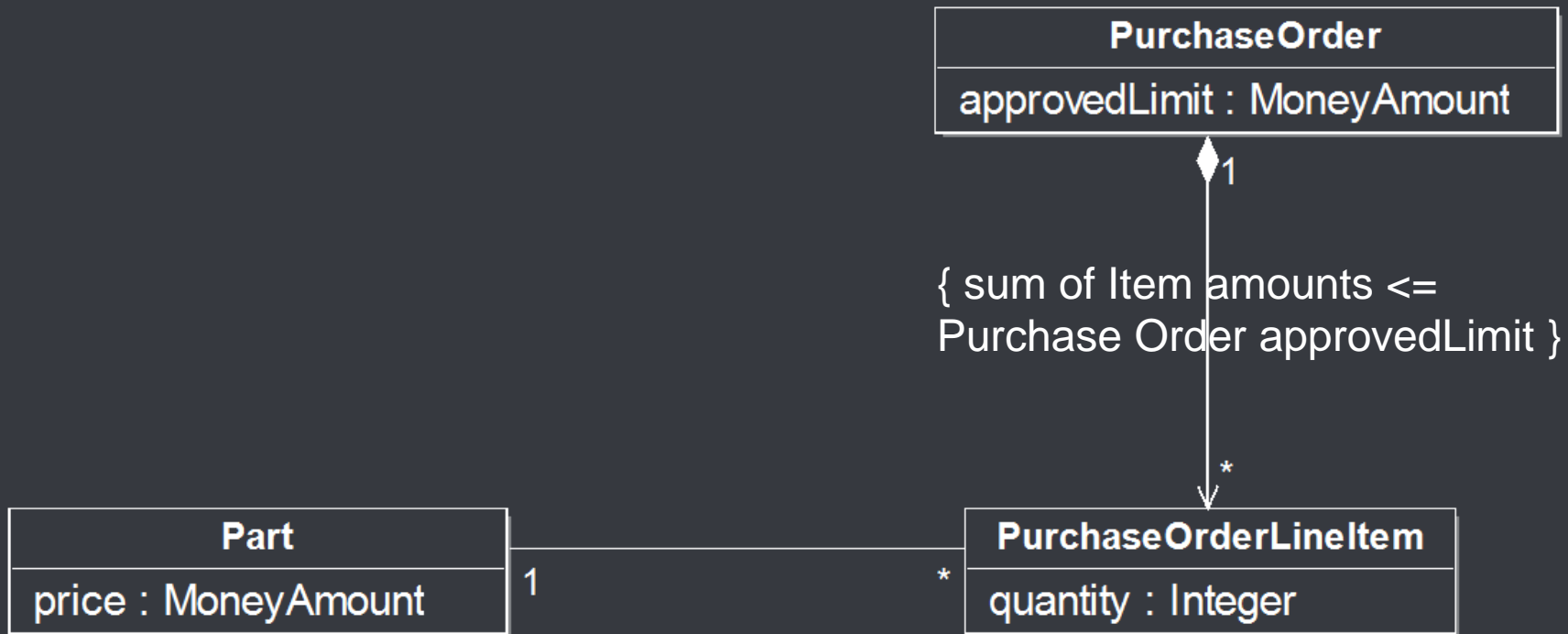




Aggregate = Geflecht von Entities & VOs

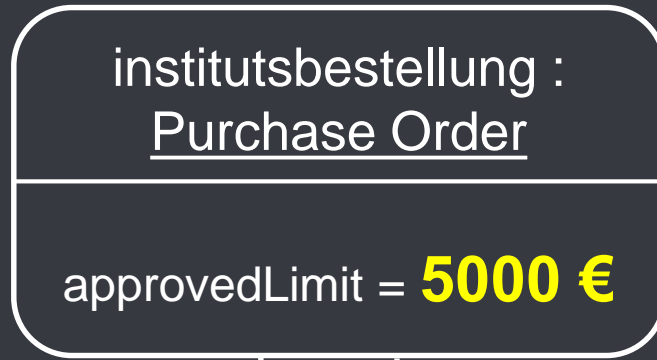
- enger (fachlicher) Zusammenhang
- Invarianten
- Root-Entity mit globaler Identität
- Queries und Verweise nur auf Root
- Aggregate als Ganzes gelöscht





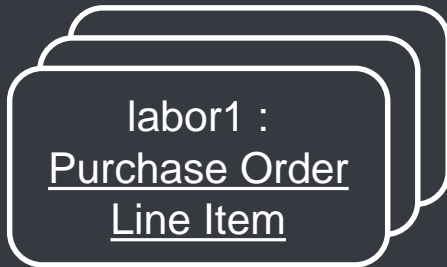


Guido



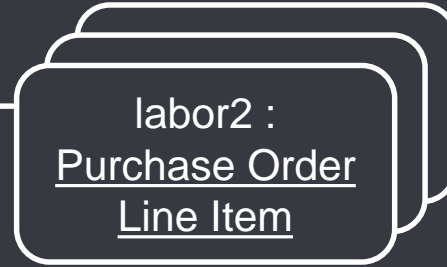
Fabian

4800€



3000€

1800€



1200€

2



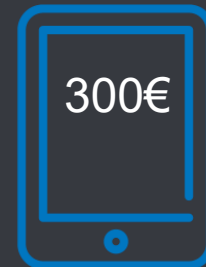
300€

2



1200€

1

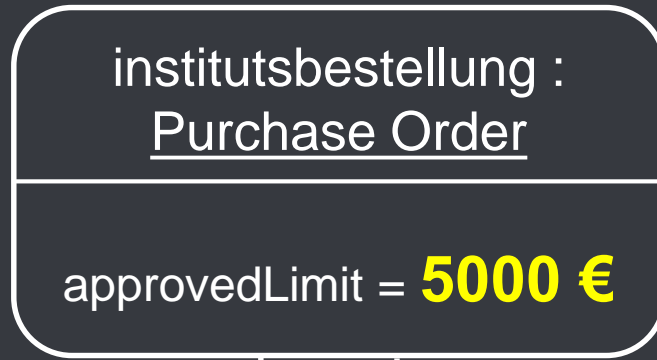


300€

2

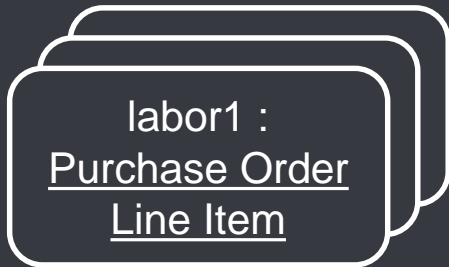


Guido

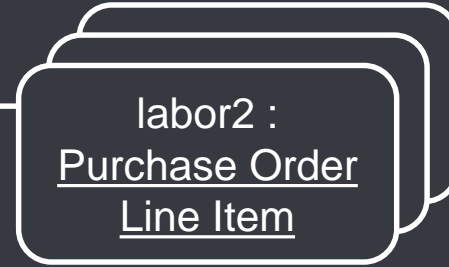


Fabian

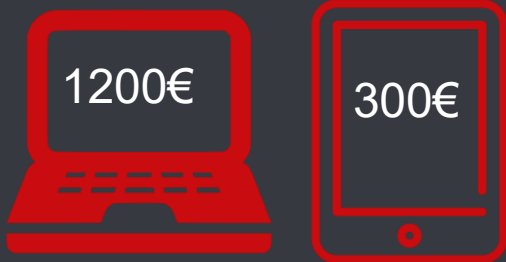
4800€



3000€



1800€



2

2



1

2

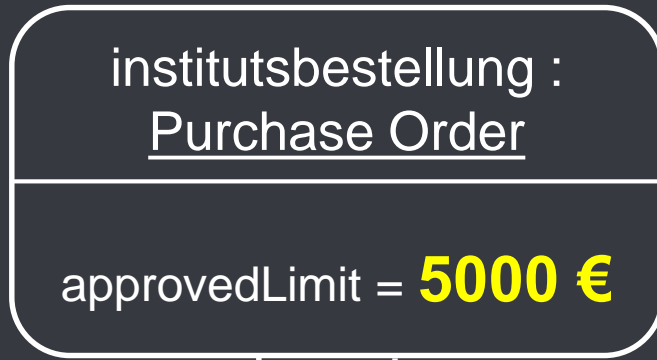


Prof. Dr.
Gernot
Gierig





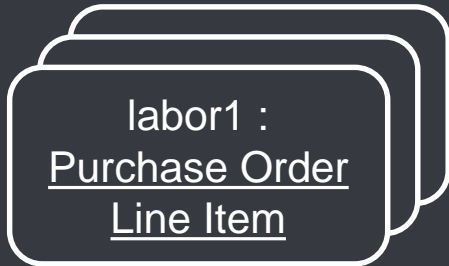
Guido



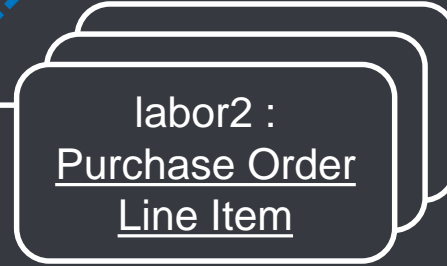
4800€



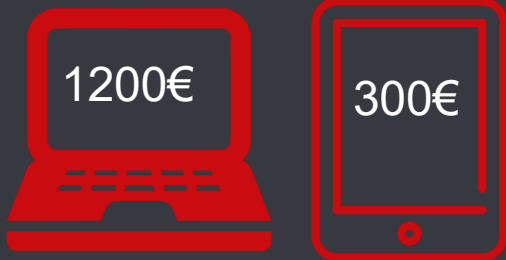
Fabian



3000€



1800€



2

2



1

2

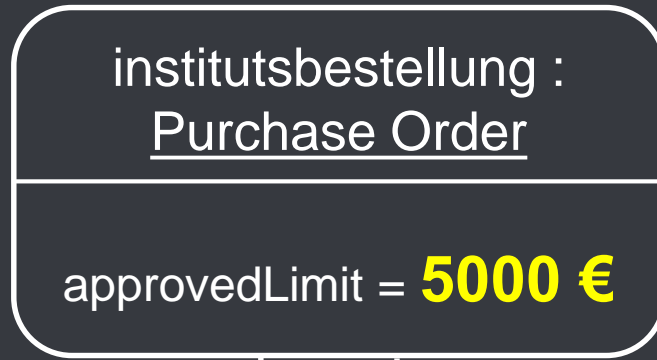
+1



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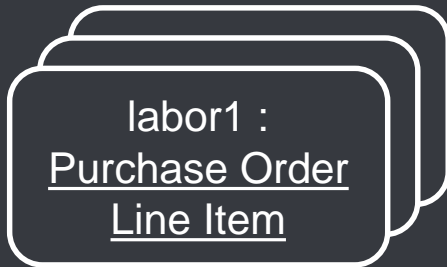


Guido

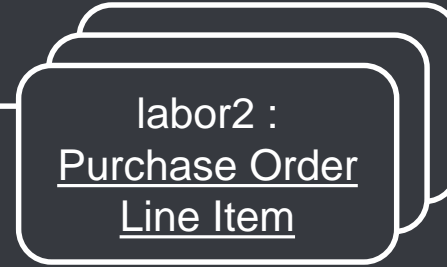


Fabian

4800€



3000€



1800€



1200€

2



300€

2



1200€

1



300€

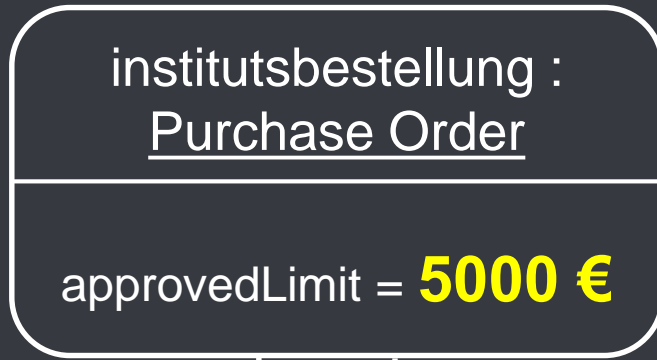
3



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Gierig

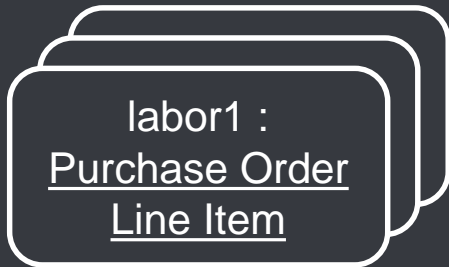


Guido

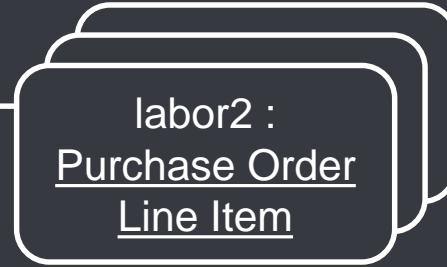


Fabian

4800€



3000€



2100€



1200€

2



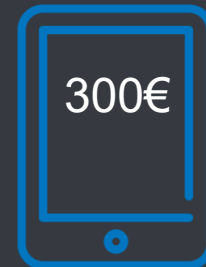
300€

2



1200€

1



300€

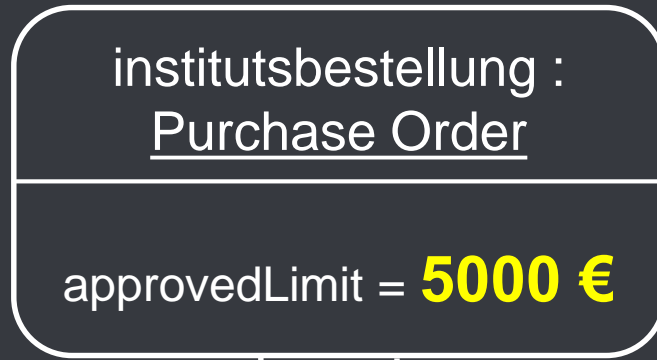
3



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Gierig

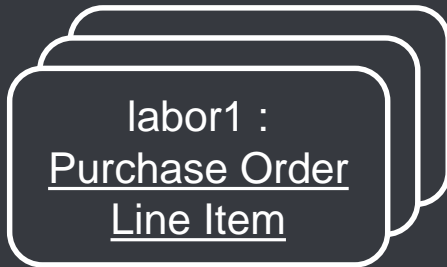


Guido

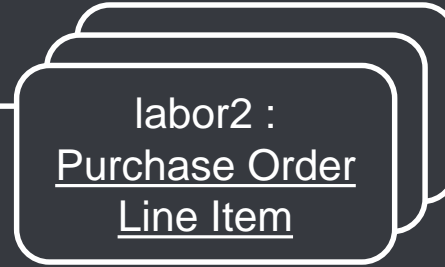


Fabian

5100€



3000€



2100€



1200€

2



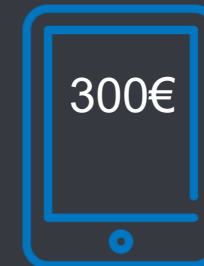
300€

2



1200€

1

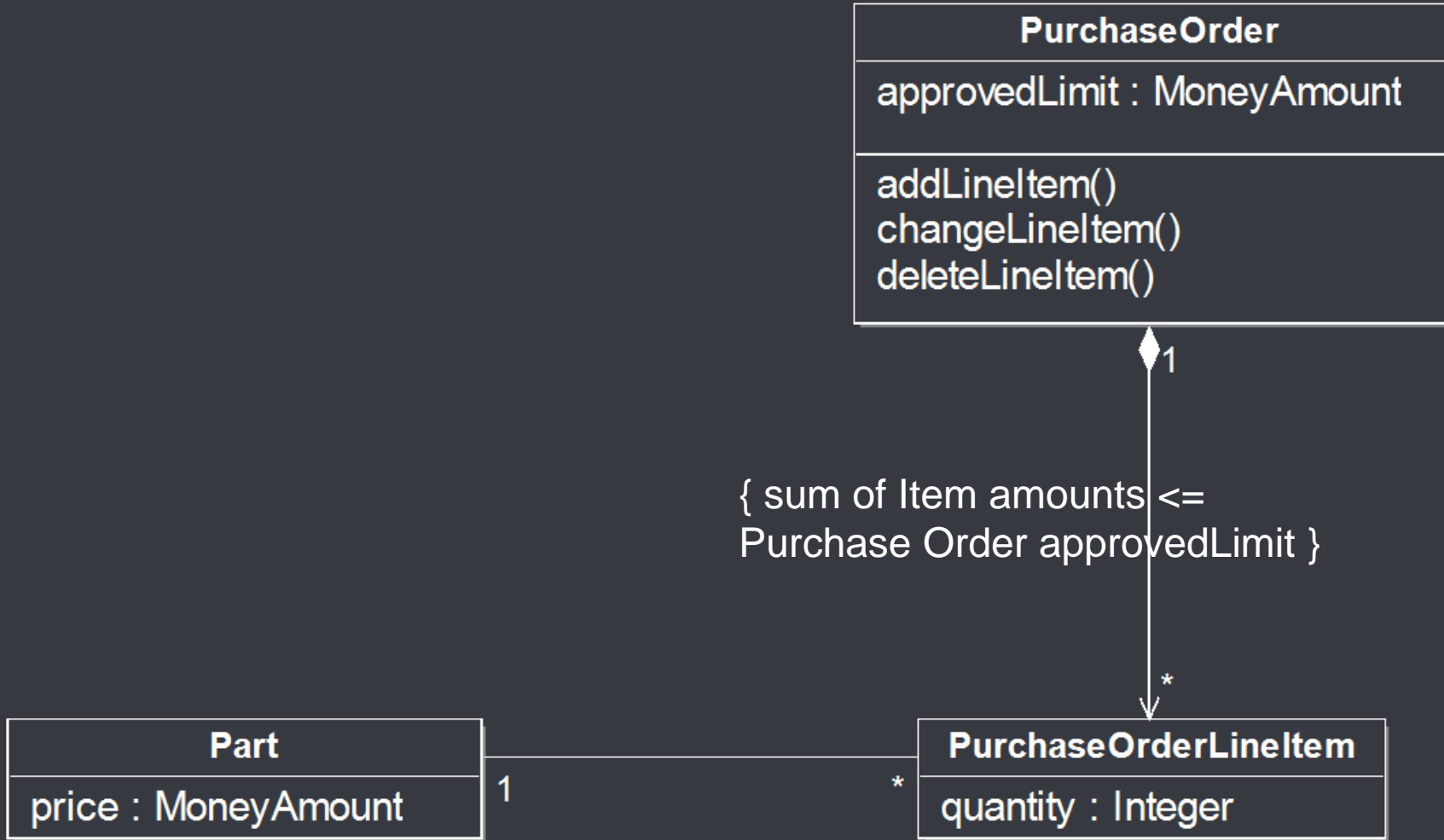


300€

3



Prof. Dr.
Gernot
Gierig





Guido

institutsbestellung : <u>Purchase Order</u>
approvedLimit = 5000 €
changeLineItem(...)



Fabian



Prof. Dr.
Gernot
Gierig

4800€

labor1 : <u>Purchase Order</u> <u>Line Item</u>

3000€

labor2 : <u>Purchase Order</u> <u>Line Item</u>

1800€



1200€

2



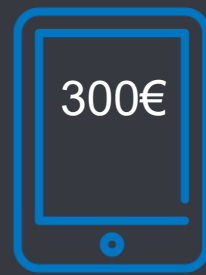
300€

2



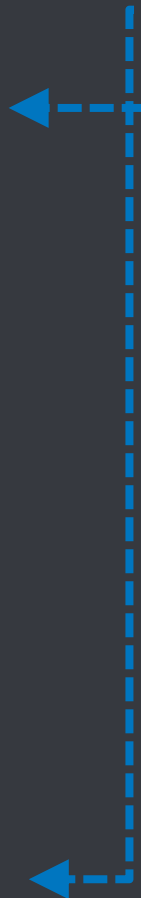
1200€

1



300€

2





Guido

institutsbestellung :
Purchase Order

approvedLimit = **5000 €**

changeLineItem ("2T => 3T")



Fabian



Prof. Dr.
Gernot
Gierig

4800€

labor1 :
Purchase Order
Line Item

3000€

labor2 :
Purchase Order
Line Item

1800€



1200€

2



300€

2



1200€

1



300€

2



Guido

institutsbestellung :
Purchase Order

approvedLimit = **5000 €**

changeLineItem ("2T => 3T")



Fabian



Prof. Dr.
Gernot
Gierig

labor1 :
Purchase Order
Line Item

3000€

4800€

1800€

labor2 :
Purchase Order
Line Item



1200€

2



300€

2



1200€

1



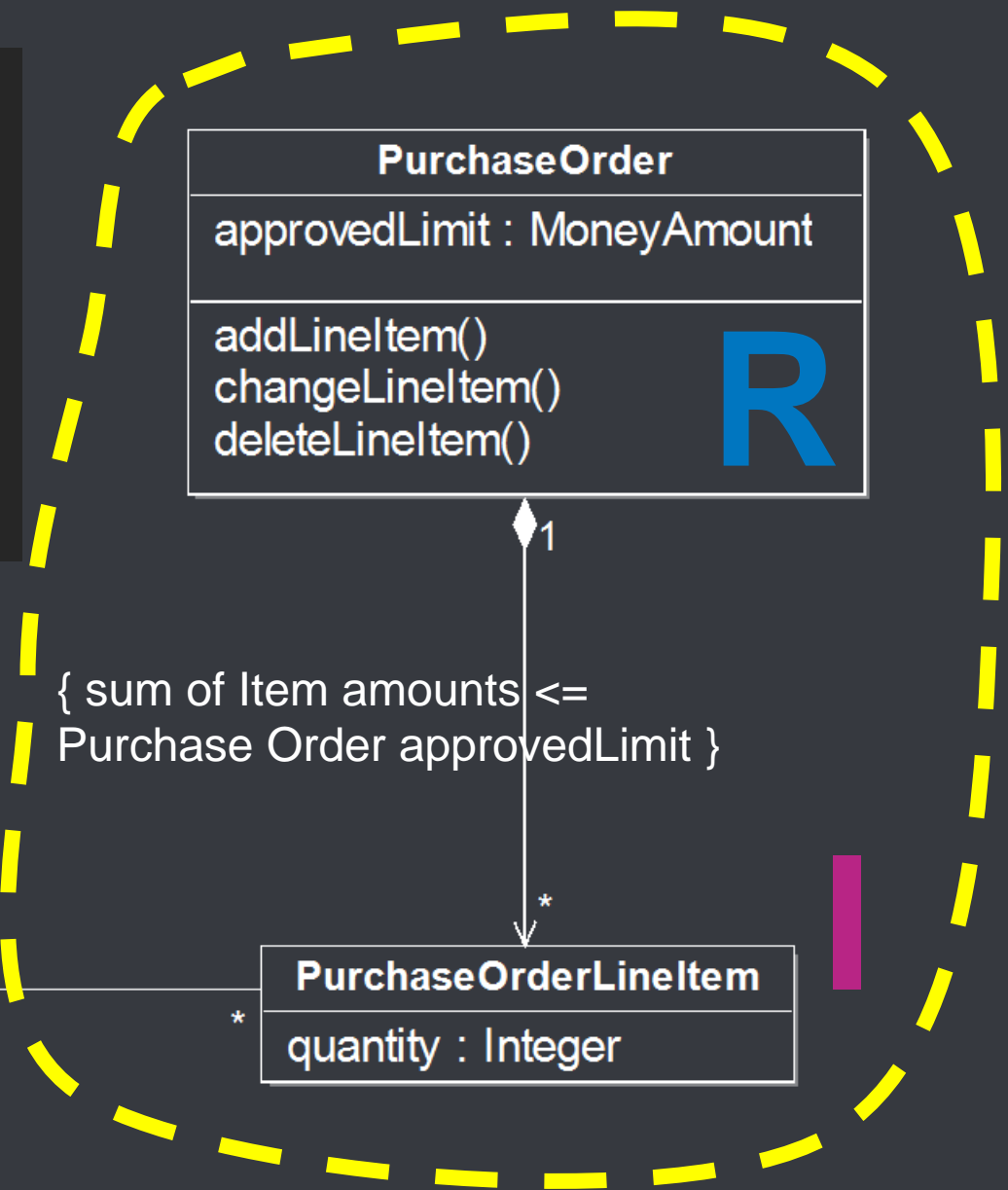
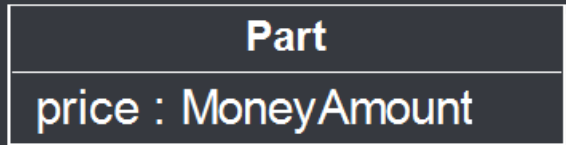
300€

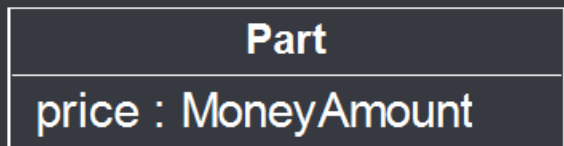
2

Checkliste für Aggregate-Grenzen

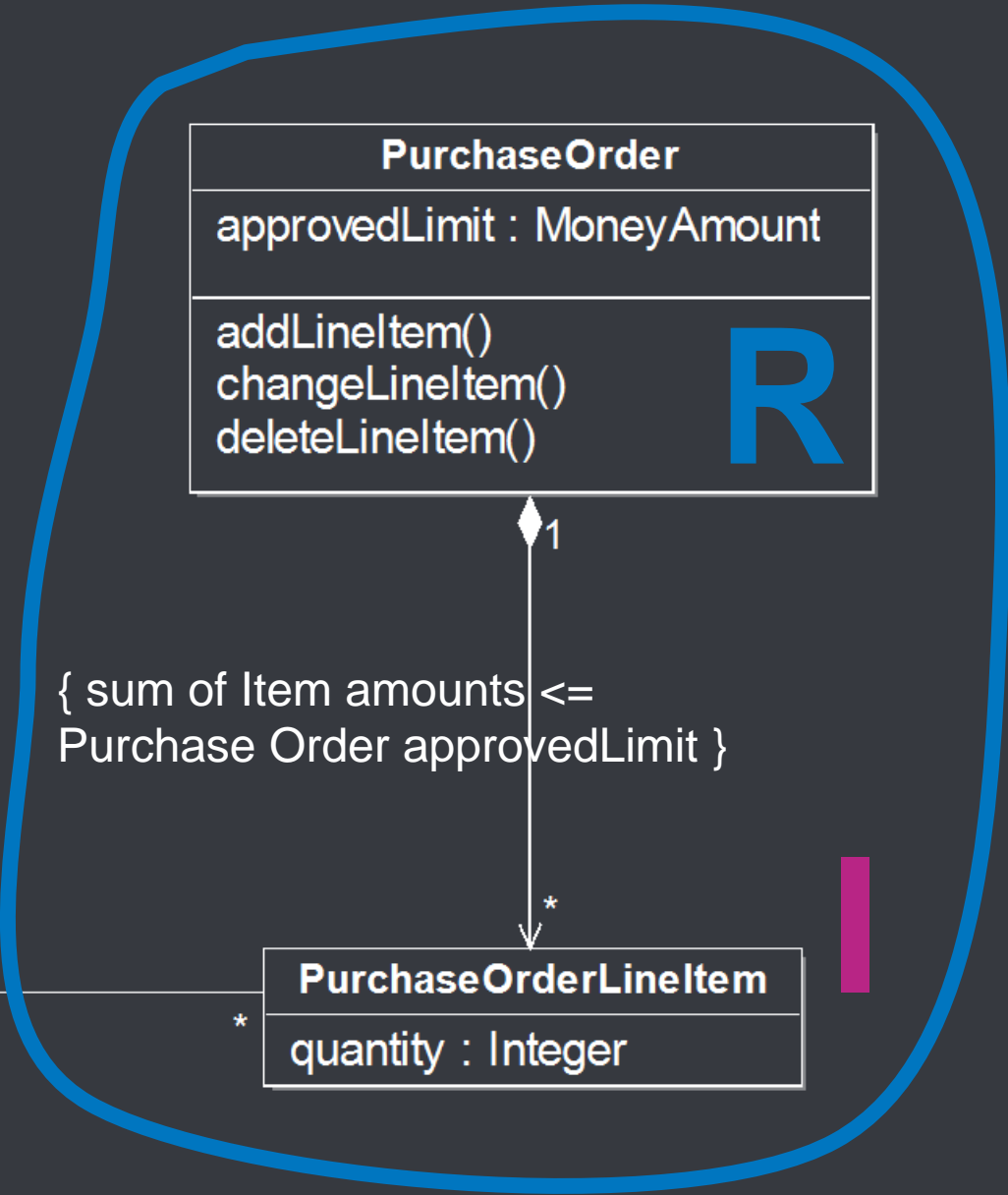
- **I** tritt immer zusammen mit **R** auf.
 - Es gibt keine Query nach **I**, außer zusammen mit einer Query nach **R**.
- Alle Zugriffe auf **I** erfolgen via **R**.
- **R** gelöscht \Rightarrow **I** gelöscht
- (*Opt.*) Invarianten zwischen **R** und **I**

- ✓ I immer zusammen mit R
- ✓ Alle Zugriffe auf I via R
- ✓ R gelöscht => I gelöscht
- ✓ (Opt.) Invarianten





1



1

*

*

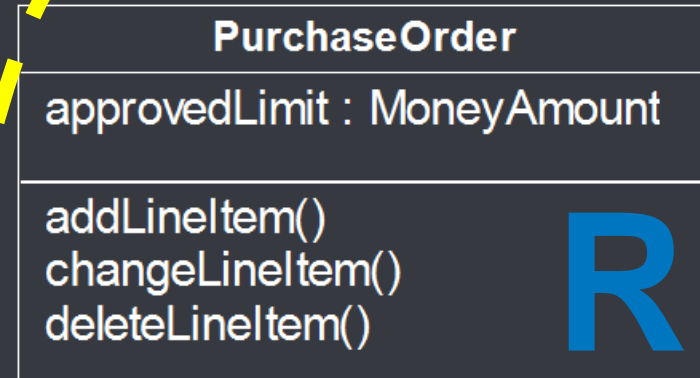


I immer zusammen mit R

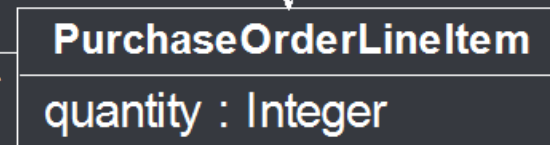
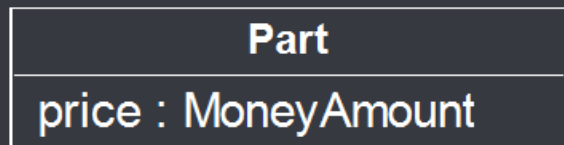
Alle Zugriffe auf I via R

R gelöscht => I gelöscht

(Opt.) Invarianten

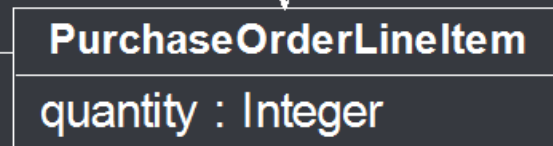


{ sum of Item amounts <= Purchase Order approvedLimit }



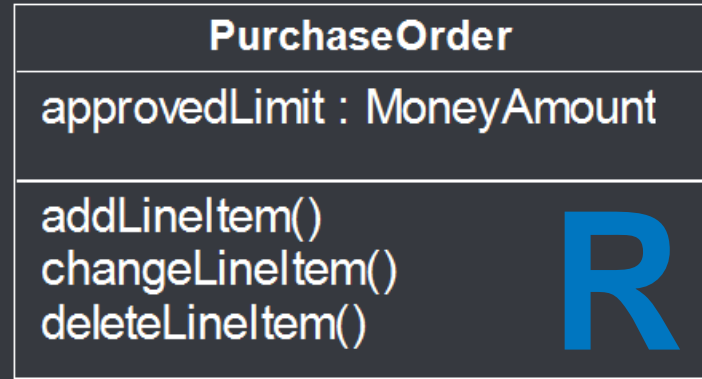


1



*

{ sum of Item amounts <= Purchase Order approvedLimit }



R

1

*

Sechs Regeln für Aggregates

1. Keine Referenzen von außen auf inneres Entity
 - a. Zugriffe auf innere Entities nur über Methoden des Aggregate Root
2. Ausgehende Referenzen sind ok
 - a. auch für innere Entities
3. Entities können in max. einem Aggregate sein
4. Value Objects können in mehreren Aggregates sein
5. „Alleinstehendes“ Entity => Aggregate Root
6. Beim Löschen des Aggregate Root werden alle inneren Entities auch gelöscht



ArchiLab

www.archi-lab.io

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