Workshop Agenda

Why Baker? (10 minutes)

Develop an Intuition for Baker (15 m.)

Implement a Web Shop Flow (25 m.)

Why Baker?

Our Challenge

Interact with 12 Different Systems (complex environment)

A Flow of 27 Steps (difficult to reason about the logic)

From 2 minutes to 6 hours (stateful...)

Requirements

TIBCO is contained

Java developers

State in two data-centres

Systems fail all the time

Current Account	Savings Account	Customer Onboarding
Verify Identity	Verify Identity	Verify Identity
Register Individual	Register Individual	Register Individual
Open *Current* Account	Open *Savings* Account	n/a
Issue Debit Card	n/a	n/a
Send Message	Send Message	Send Message
Register Ownership	Register Ownership	n/a

Baker is a Scala Library

Declare the Logic Like a Recipe

Visualize the Logic

Don't Worry About Retries and State

Re-use What's Already There

Recipes

Interactions

Ingredients

Events

What is an Interaction?

It's where you put your system calls

Capability, not a technical call

What is an Ingredient?

It's a container for data

Can be a primitive type or a POJO

What is an Event?

It's what happens

Sensory and System Events

Hands-On

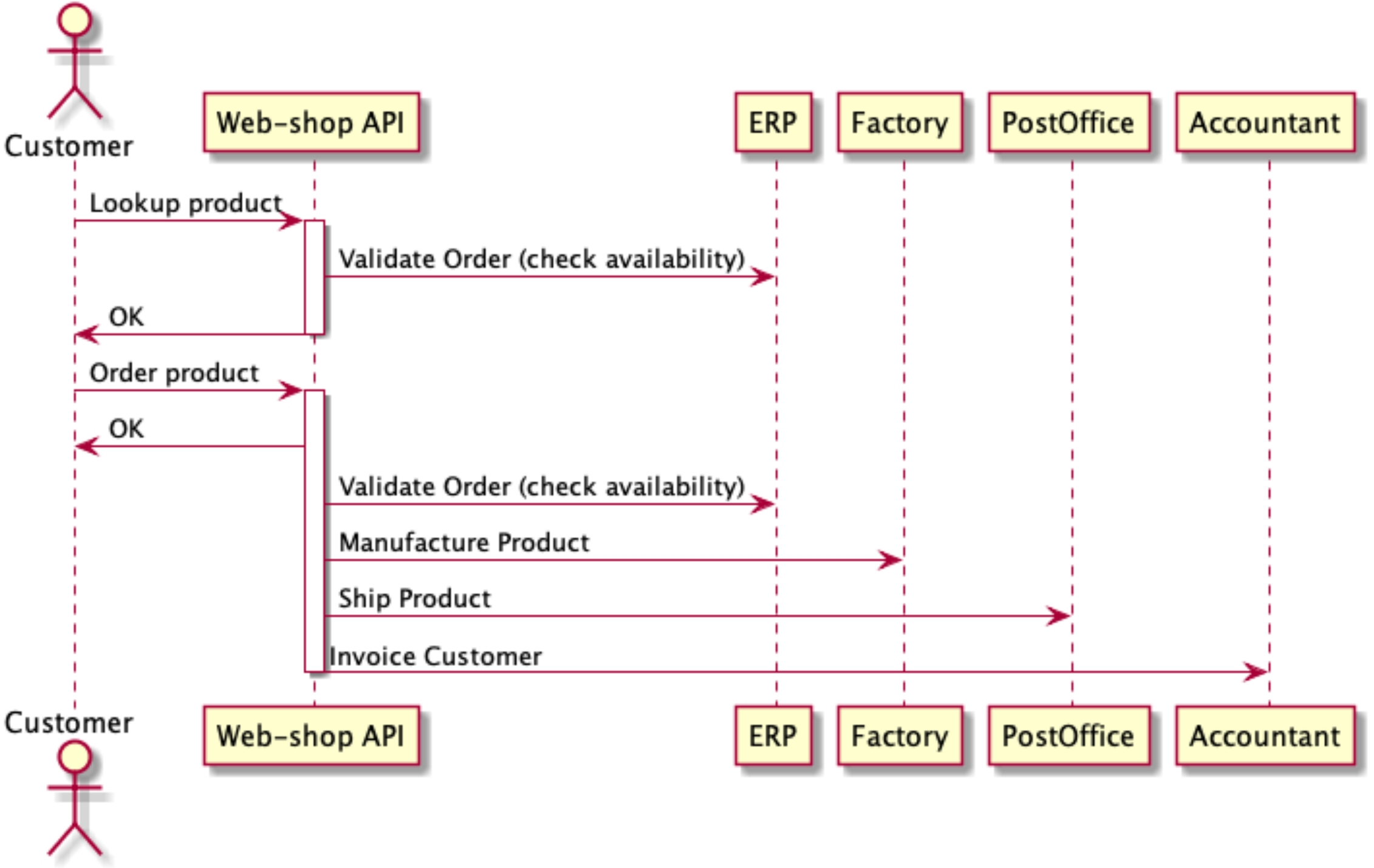
Setup Environment

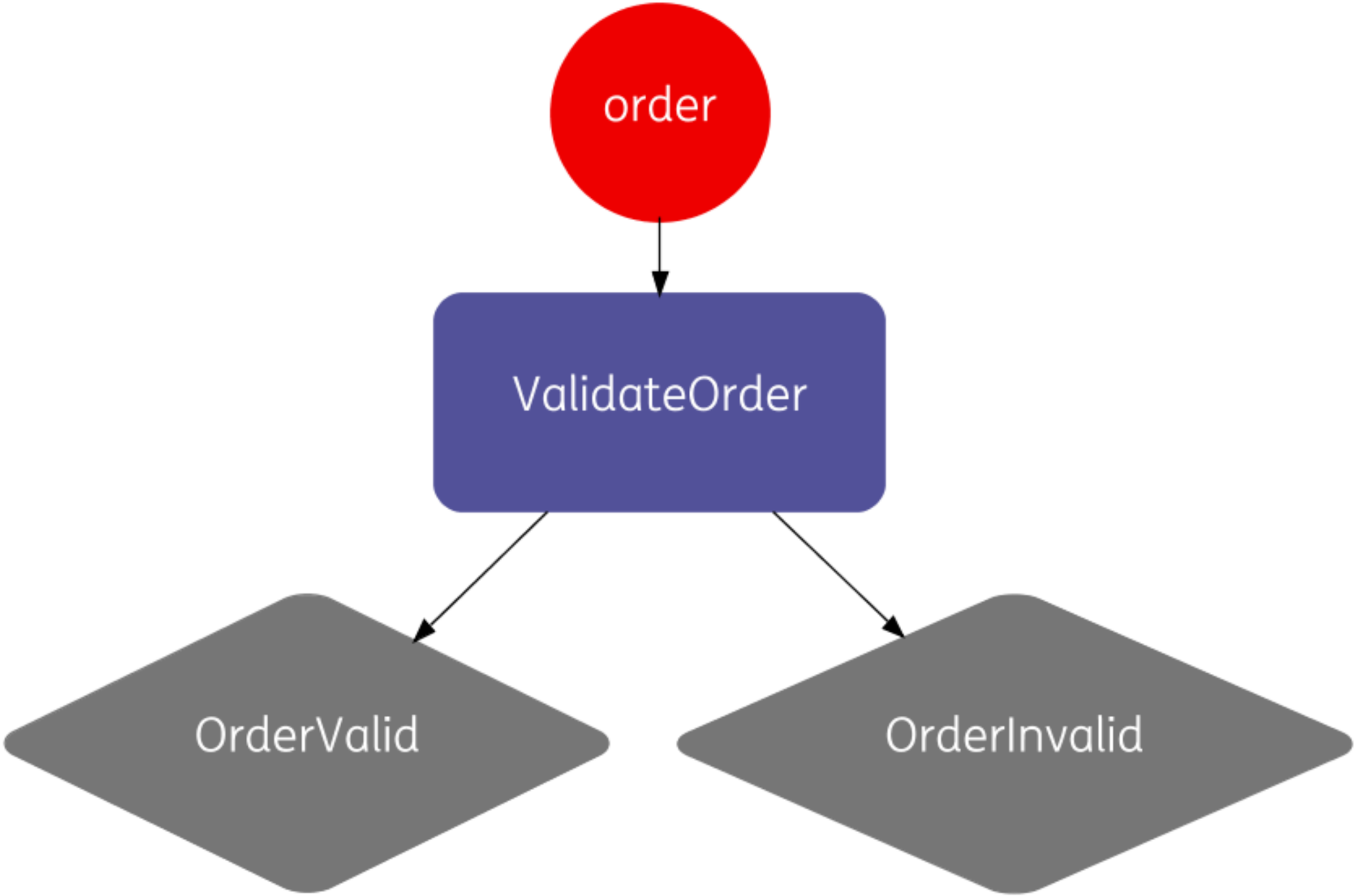
Explain the Web-shop Flow

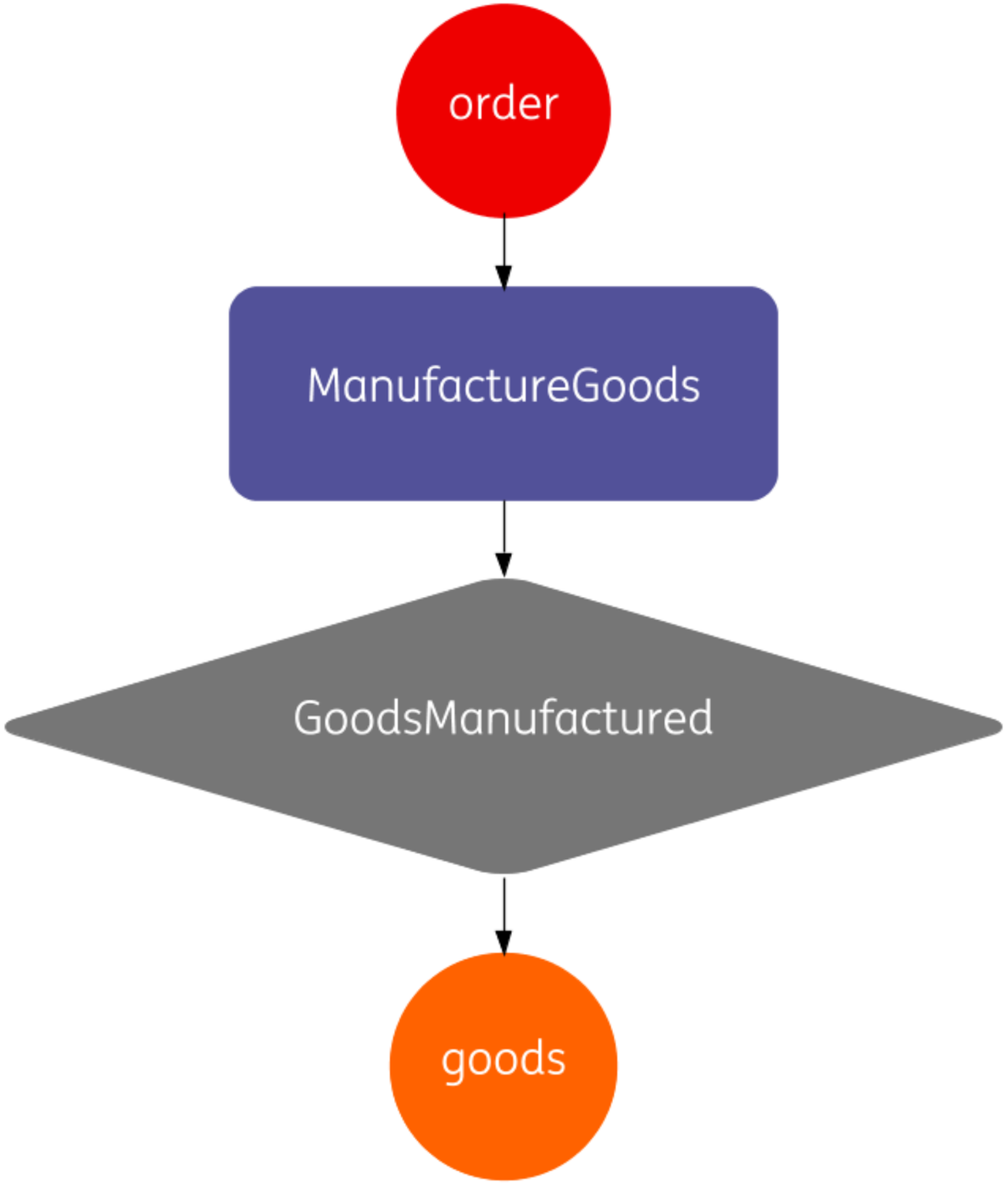
Exercise, Make Unit-tests Green

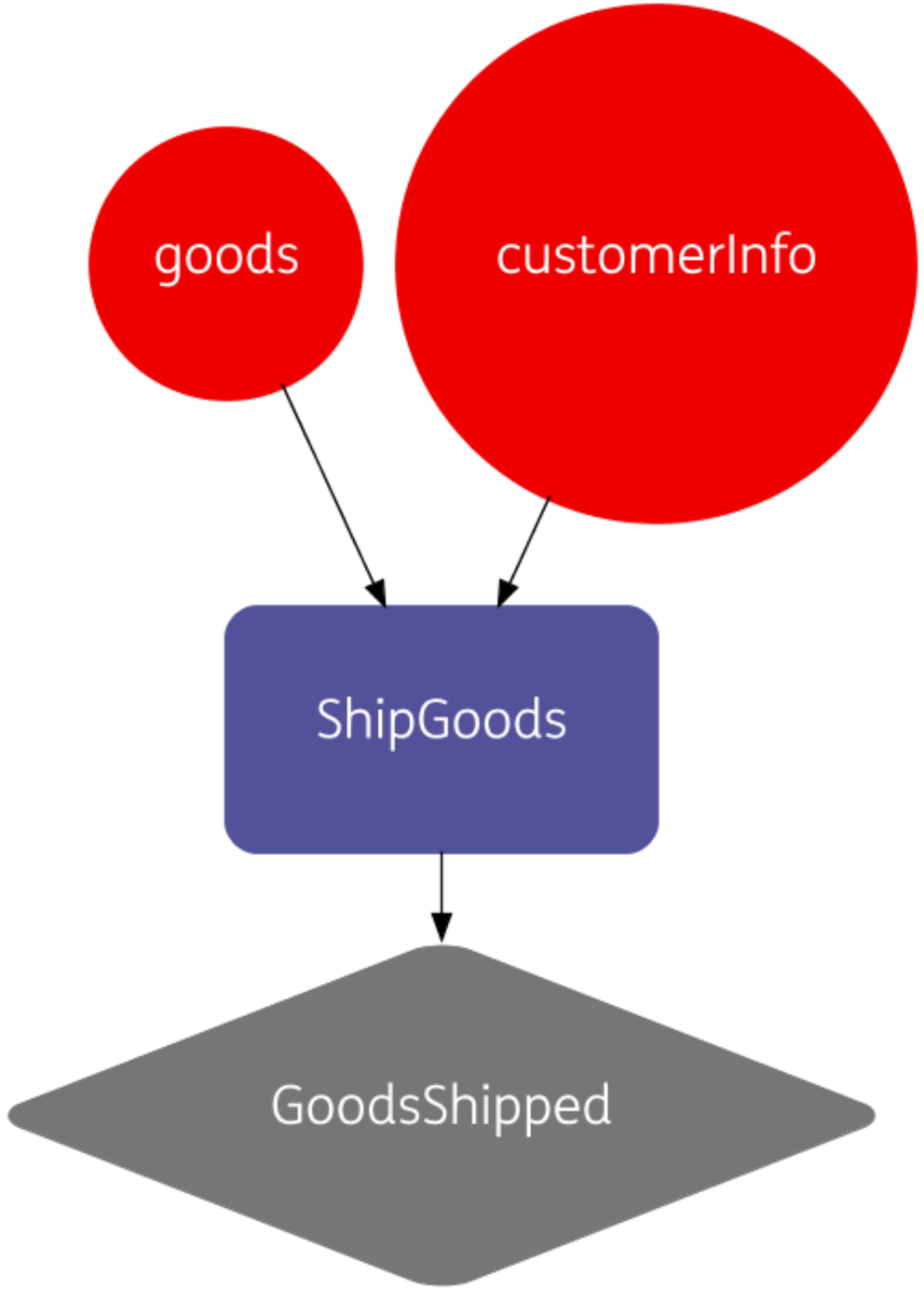
Setup Environment

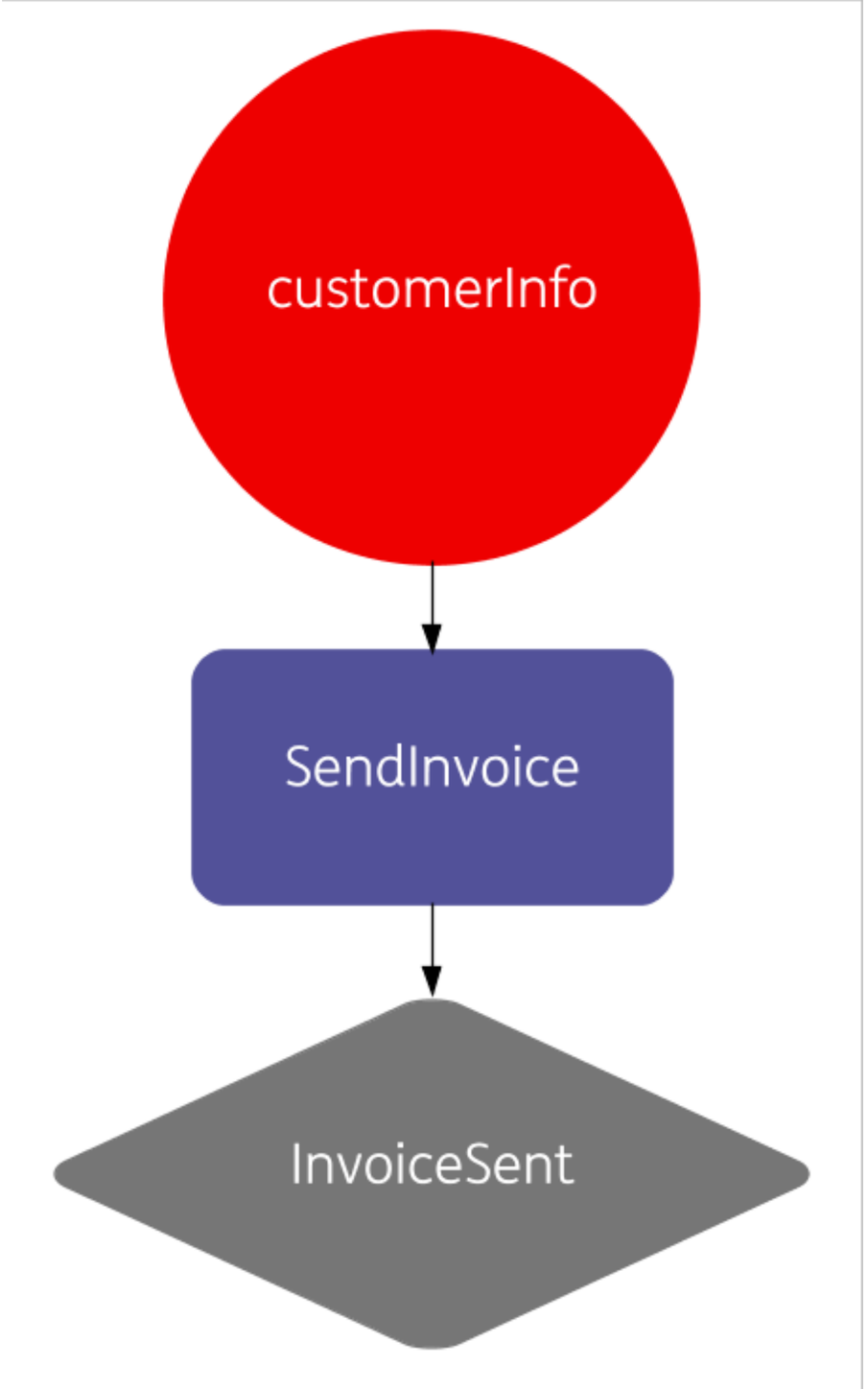
- clone https://github.com/nikolakasev/workshop-baker
- mvn clean test


Customer
Web-shop API
ERP
Factory
PostOffice
Accountant
Lookup product
Validate Order (check availability)
OK
Order product
OK
Validate Order (check availability)
Manufacture Product
Ship Product
Invoice Customer
Customer
Web-shop API
ERP
Factory
PostOffice
Accountant


order
ValidateOrder
OrderValid
OrderInvalid

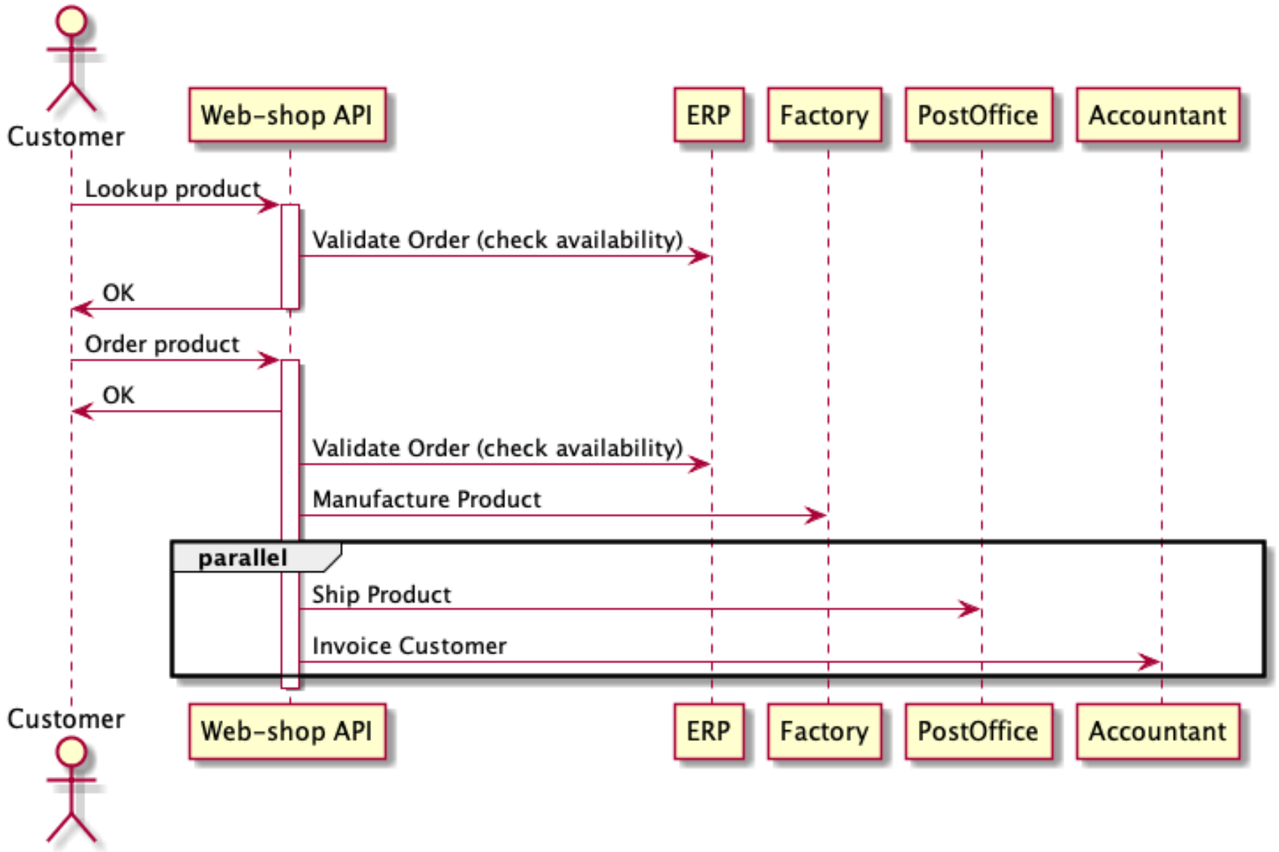

order
ManufactureGoods
GoodsManufactured
goods


goods
customerInfo
ShipGoods
GoodsShipped


customerInfo
SendInvoice
InvoiceSent

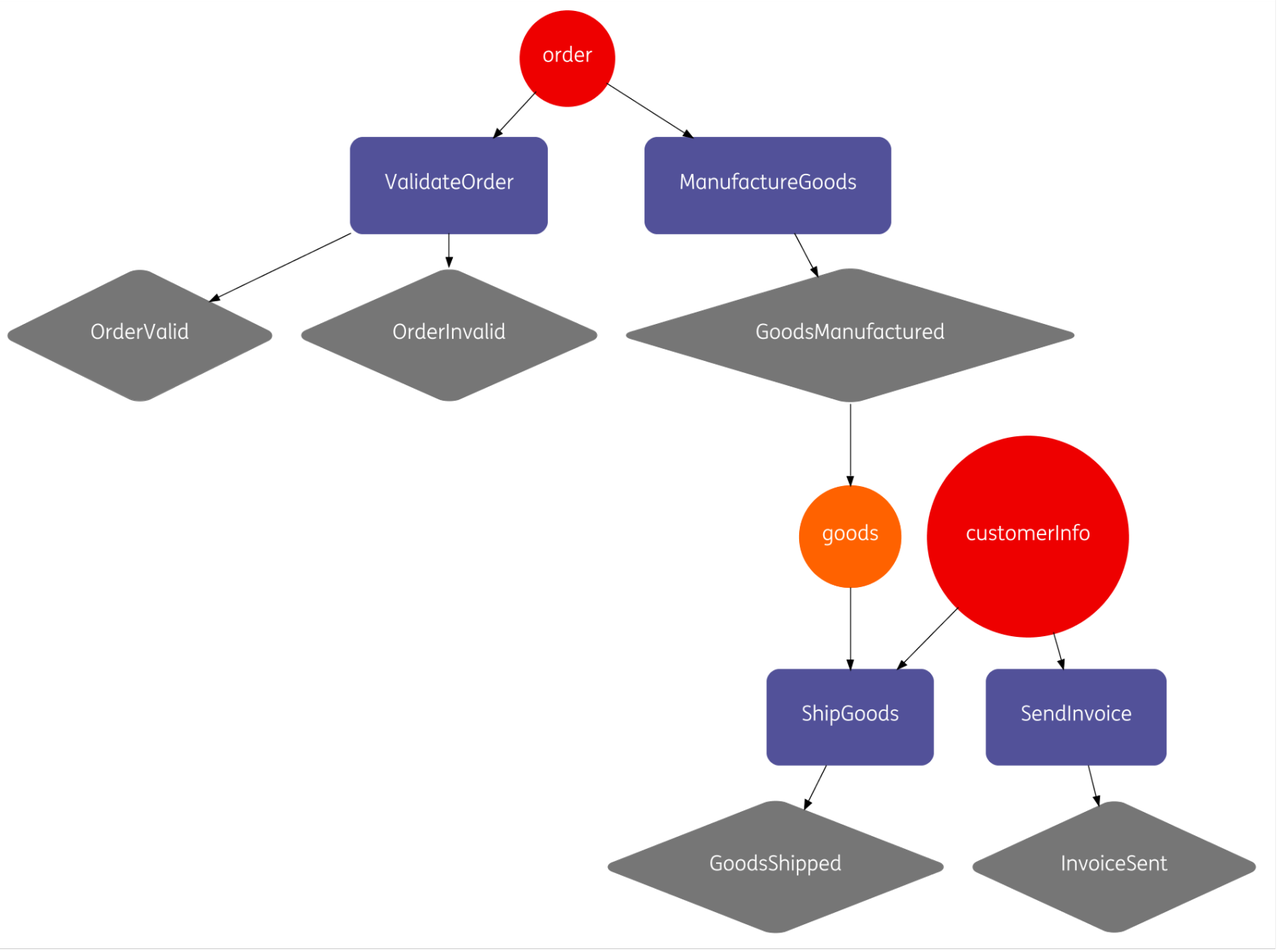
Exercises

1. Put all interactions in the recipe
2. Include sensory events in the recipe, use withSensoryEvents()
3. Add extra conditions when an interaction must be executed, use withRequiredEvent()
4. Change the customerInfo class from String to a POJO

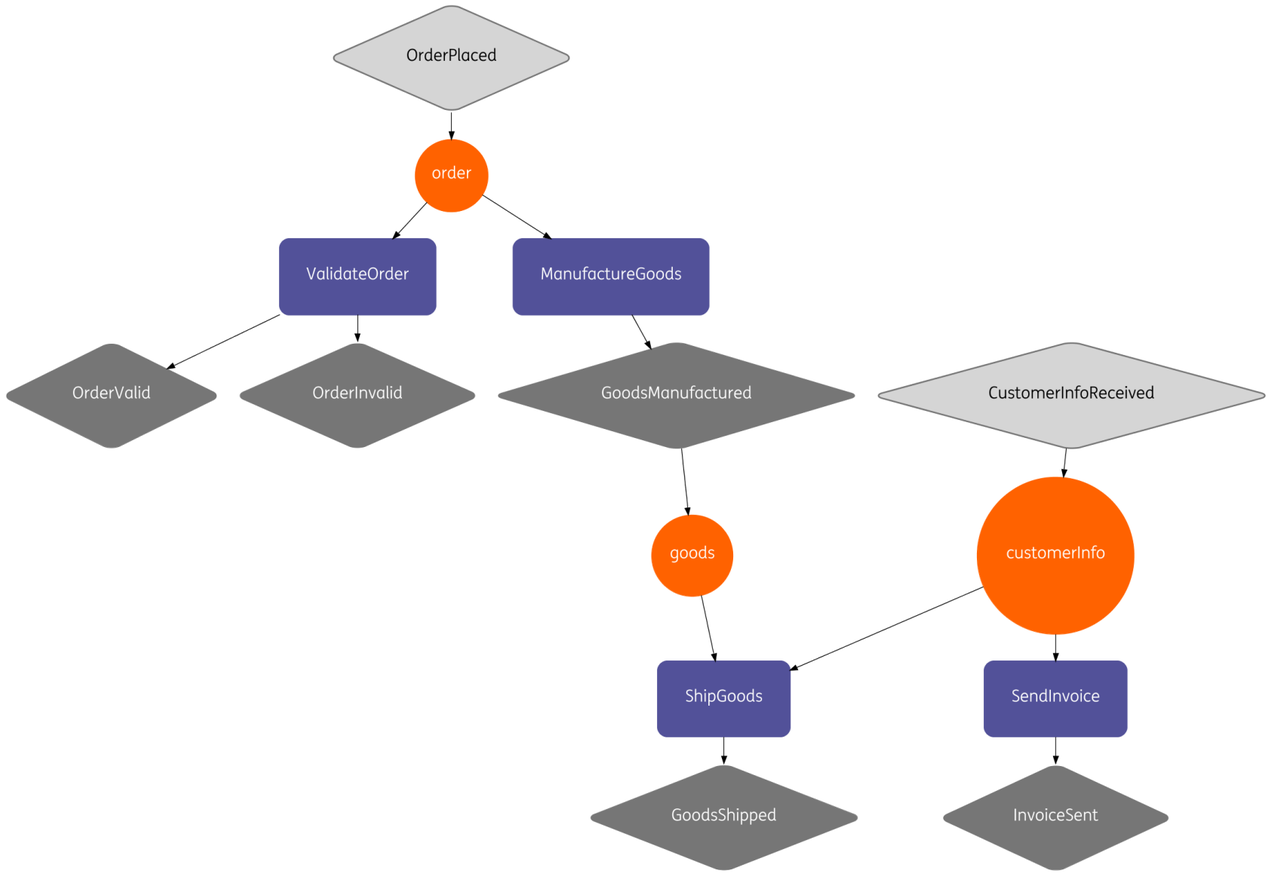


5. Call the Postoffice and Accountant Systems in parallel

What Can Go Wrong?

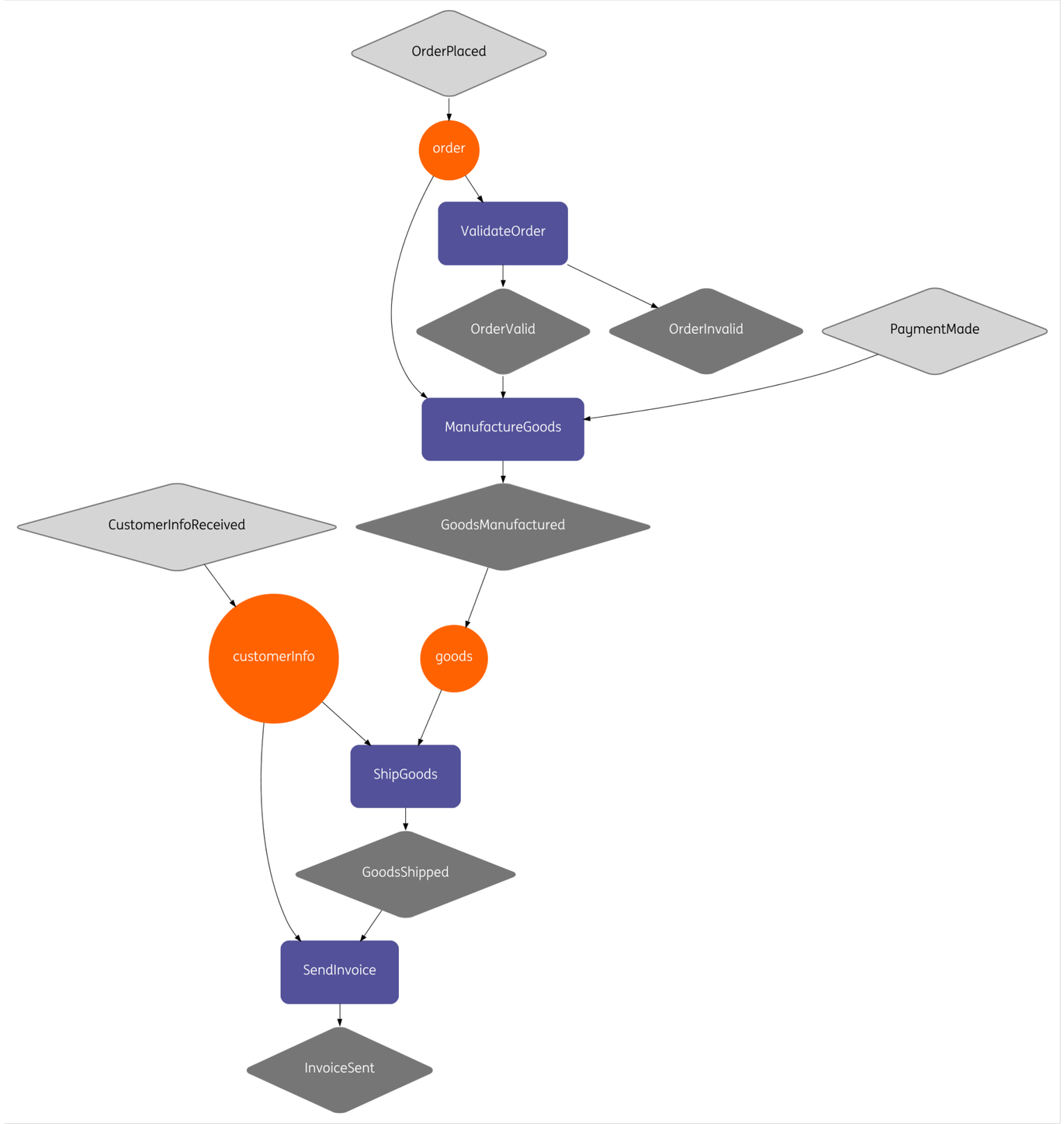


Recipe has no sensory input, Baker doesn't know where the data comes from



Which two interactions will be executed when the OrderPlaced event occurs? Is this the desired behavior?

Desired Recipe


OrderPlaced
order
ValidateOrder
OrderValid
OrderInvalid
PaymentMade
ManufactureGoods
CustomerInfoReceived
GoodsManufactured
customerInfo
goods
ShipGoods
GoodsShipped
SendInvoice
InvoiceSent

Food for Thought

- What to do when the order is invalid?
  - Baker helps developers think about rainy-day scenarios
- What if systems fails, what is desired?
  - See withFailureStrategy(), withDefaultFailureStrategy() methods and InteractionFailureStrategy class

Good to Know

Short-lived vs. long-running flows

State is taken care of:

- Cassandra for persistent storage
- Ingredients encrypted by default
- State recovered automatically
- Configurable Time-to-live

When failure occurs:

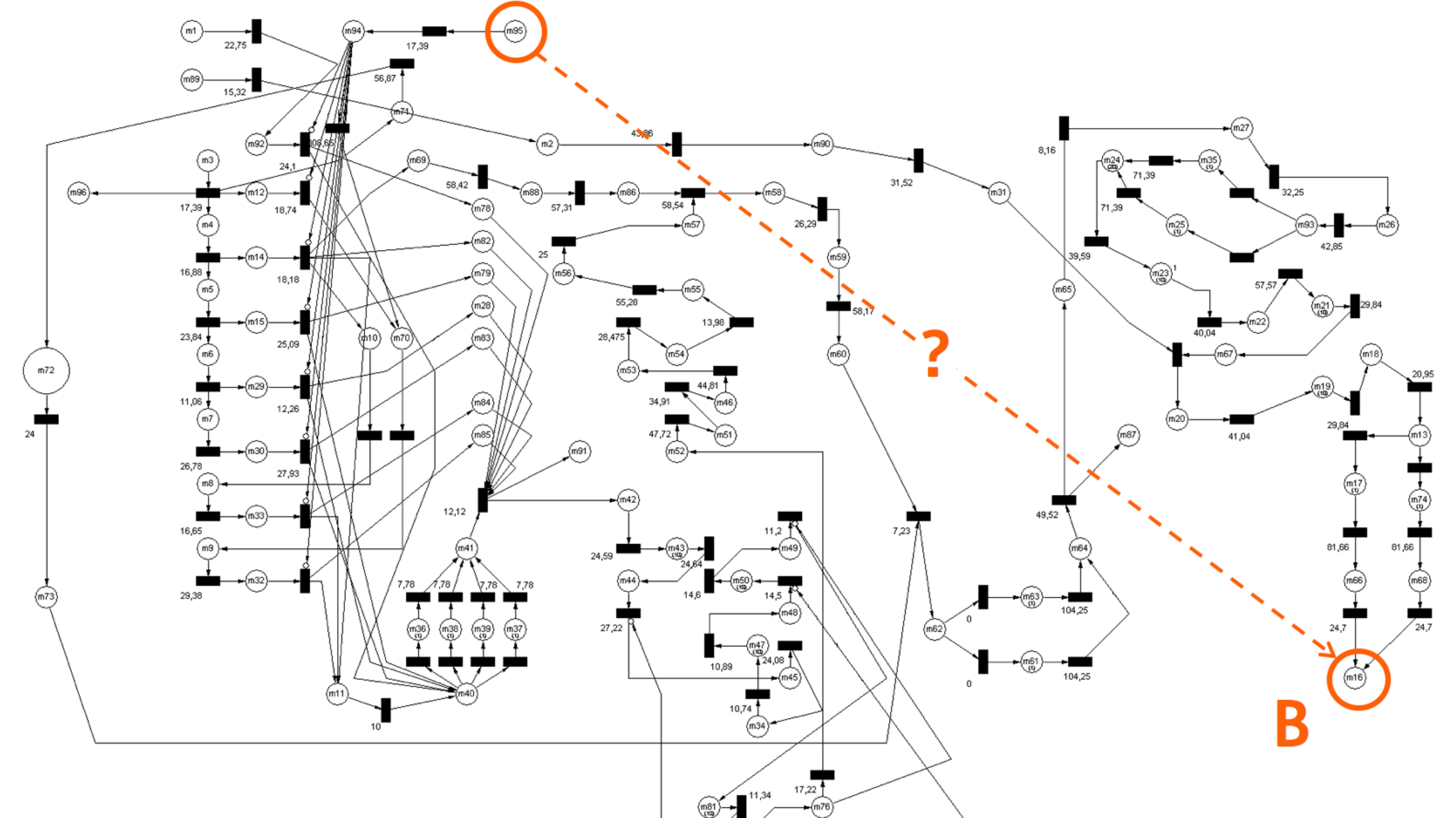
- Baker retries technical failures with exponential backoff
  - Any Java Exception thrown is a technical failure
  - Retrying works well with **idempotent** services
- Deal with functional failure in your recipe

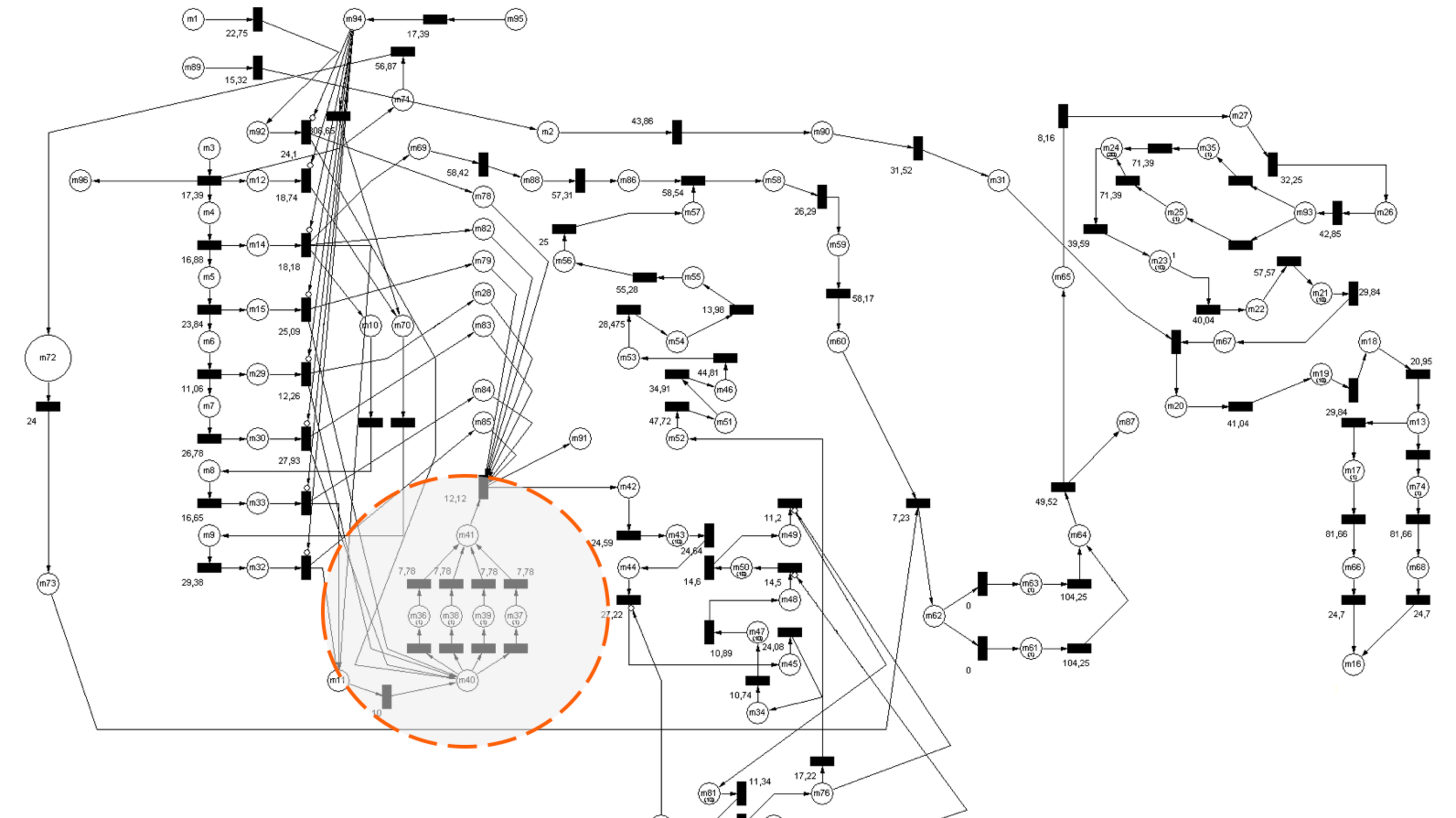
Baker Catalogue: Some Stats

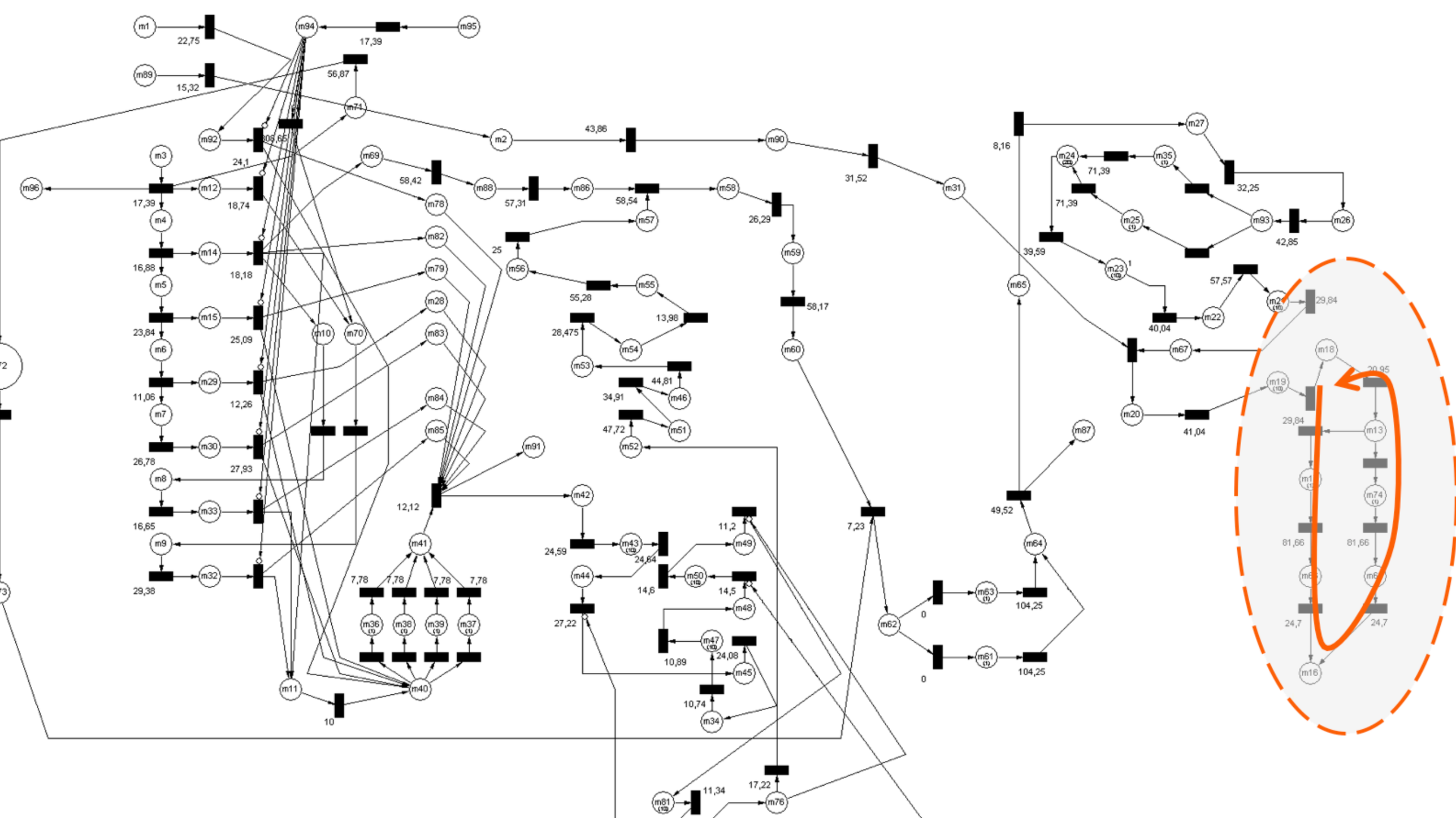
Internal ING library

80+ Re-usable Interactions

10+ Teams Using Baker


m1
22,75
m94
17,39
m95
m89
15,32
56,87
m74
m92
m2
m90
31,52
m31
m3
24,1
m69
58,42
m88
57,31
m86
58,54
m58
26,29
m96
17,39
m12
18,74
m78
m57
m4
m82
m14
18,18
m79
16,88
m56
25
55,28
m55
m5
m28
m15
25,09
m10
m70
m83
23,84
m54
28,475
13,98
m6
m53
m29
12,26
44,81
m46
34,91
m84
11,06
m7
m51
47,72
m85
m52
m30
27,93
m91
26,78
m8
m42
m33
12,12
16,65
m41
m9
24,59
m43
24,64
11,2
m49
m32
m44
m50
14,6
14,5
29,38
7,78
7,78
7,78
7,78
m48
27,22
m36
m38
m39
m37
m47
10,89
24,08
m45
m11
m40
10,74
m34
10
m72
24
m73
m81
11,34
17,22
m76
m62
7,23
m63
0
104,25
m61
0
104,25
m87
49,52
m64
8,16
m27
m24
71,39
m35
32,25
71,39
m25
m93
m26
42,85
39,59
m23
1
57,57
m21
29,84
40,04
m22
m65
58,17
m67
m18
20,95
m19
m20
41,04
29,84
m13
m17
m74
81,66
81,66
m66
m68
24,7
24,7
m16
?
B


m1
22,75
m94
17,39
m95
m89
15,32
56,87
m74
m92
306,65
m2
43,86
m90
31,52
m31
8,16
m27
32,25
m24
71,39
m35
71,39
m25
m93
42,85
m26
39,59
m23
1
40,04
m22
57,57
m21
29,84
m65
m67
m18
20,95
m19
29,84
m13
m20
41,04
m87
49,52
m64
m3
24,1
m69
58,42
m88
57,31
m86
58,54
m58
26,29
m59
58,17
m60
m96
17,39
m12
18,74
m78
m57
25
m56
55,28
m55
13,98
28,475
m54
m53
44,81
34,91
m46
47,72
m51
m52
m4
16,88
m14
18,18
m82
m79
m5
23,84
m15
25,09
m10
m70
m28
m83
m6
11,06
m29
12,26
m84
m7
26,78
m30
27,93
m85
m91
m8
16,65
m33
m9
29,38
m32
m72
24
m73
12,12
m41
m42
24,59
m43
24,64
m44
27,22
14,6
m50
14,5
11,2
m49
m48
10,89
m47
24,08
m45
10,74
m34
7,78
7,78
7,78
7,78
m36
m38
m39
m37
m40
m11
10
7,23
m62
0
m63
104,25
0
m61
104,25
81,66
81,66
m17
m74
m66
m68
24,7
24,7
m16
11,34
m81
17,22
m76


m1
22,75
m94
17,39
m95
m89
15,32
56,87
m74
m92
306,65
m2
43,86
m90
31,52
m31
8,16
m27
m24
71,39
m35
32,25
71,39
m25
m93
m26
42,85
39,59
m23
1
m65
57,57
m2
29,84
40,04
m22
m67
m18
20,95
m19
m20
41,04
29,84
m13
m1
m74
81,66
81,66
24,7
24,7
m16
m3
24,1
m69
58,42
m88
57,31
m86
58,54
m58
26,29
m59
58,17
m60
m96
17,39
m12
18,74
m78
m4
m82
m14
16,88
18,18
m79
m5
m28
m15
23,84
25,09
m10
m70
m83
m6
m29
11,06
12,26
m84
m7
m30
26,78
27,93
m85
m8
m33
16,65
m91
12,12
m42
m9
m32
29,38
m41
24,59
m43
24,64
m44
14,6
m50
14,5
27,22
m48
m47
10,89
24,08
m45
10,74
m34
11,2
m49
7,78
7,78
7,78
7,78
m36
m38
m39
m37
m11
10
m40
25
m56
55,28
m55
13,98
28,475
m54
m53
44,81
34,91
m46
47,72
m51
m52
7,23
m62
0
m63
104,25
0
m61
104,25
49,52
m64
m87
m81
11,34
17,22
m76

Baker vs. PEGA

Baker	PEGA
Computer	Computer + Human
Focused on APIs	Focused on processes
No License Costs	License Costs
No Usage Costs	Pay per Case Costs
For Java Developers	For PEGA Specialists
From ING	From PEGA