5.– 8. September 2011
in Nürnberg

Herbstcampus

Wissenstransfer
par excellence

Generisch vs. spezifisch

Das wiederkehrende Architekturdilemma

Stefan Tilkov

innoQ Deutschland GmbH

Herbstcampus

Stefan Tilkov | innoQ

Thoughts on the Generic vs. Specific Tradeoff

http://www.innoq.com

Stefan Tilkov
stefan.tilkov@innoq.com
@stilkov

Phases in a Developer's Life

1. The Enthusiastic Developer

"This stuff is cool - let's build programs! For real people!"

Create Customer	Create Product	Create Order
Find Customer	Find Product	Find Order
List Customers	List Products	List Orders
Edit Customer	Edit Product	Edit Order
Delete Customer	Delete Product	Delete Order

Boring, boring, boring.

2. The Disillusioned Developer

"Oh. Real people have boring problems."

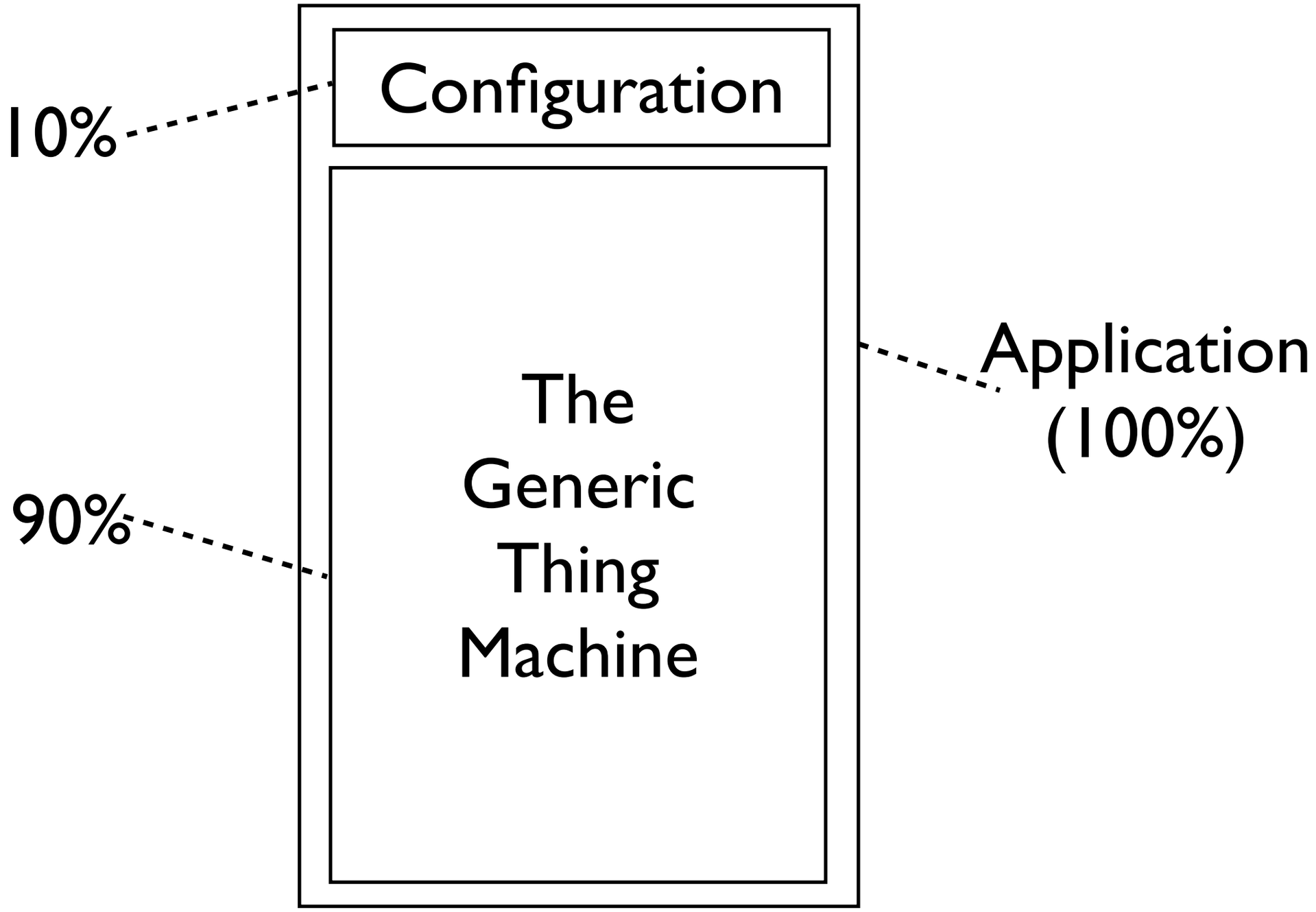
Create Customer	Create Product	Create Order
Find Customer	Find Product	Find Order
List Customers	List Products	List Orders
Edit Customer	Edit Product	Edit Order
Delete Customer	Delete Product	Delete Order

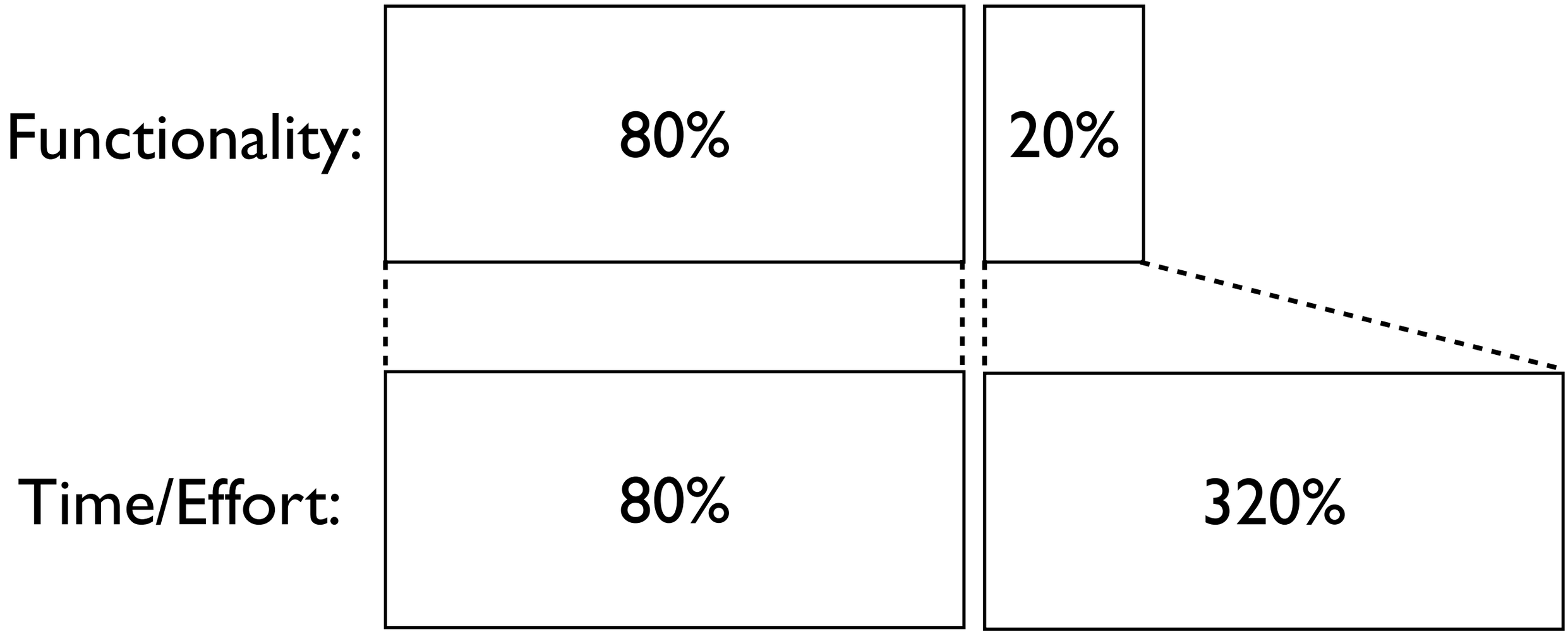
Create Thing
Find Thing
List Thing
Edit Thing
Delete Thing

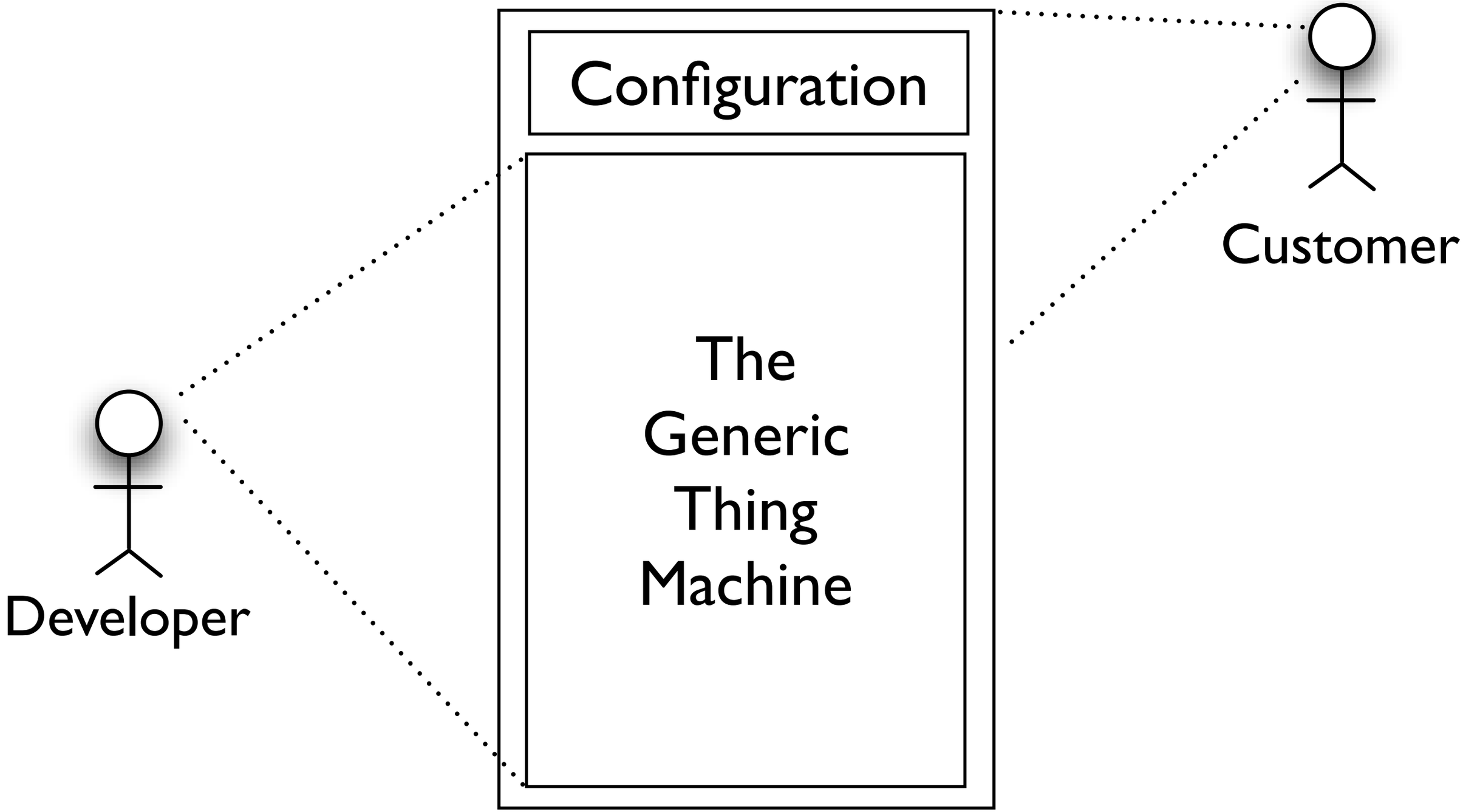
3. The Enthusiastic Architect

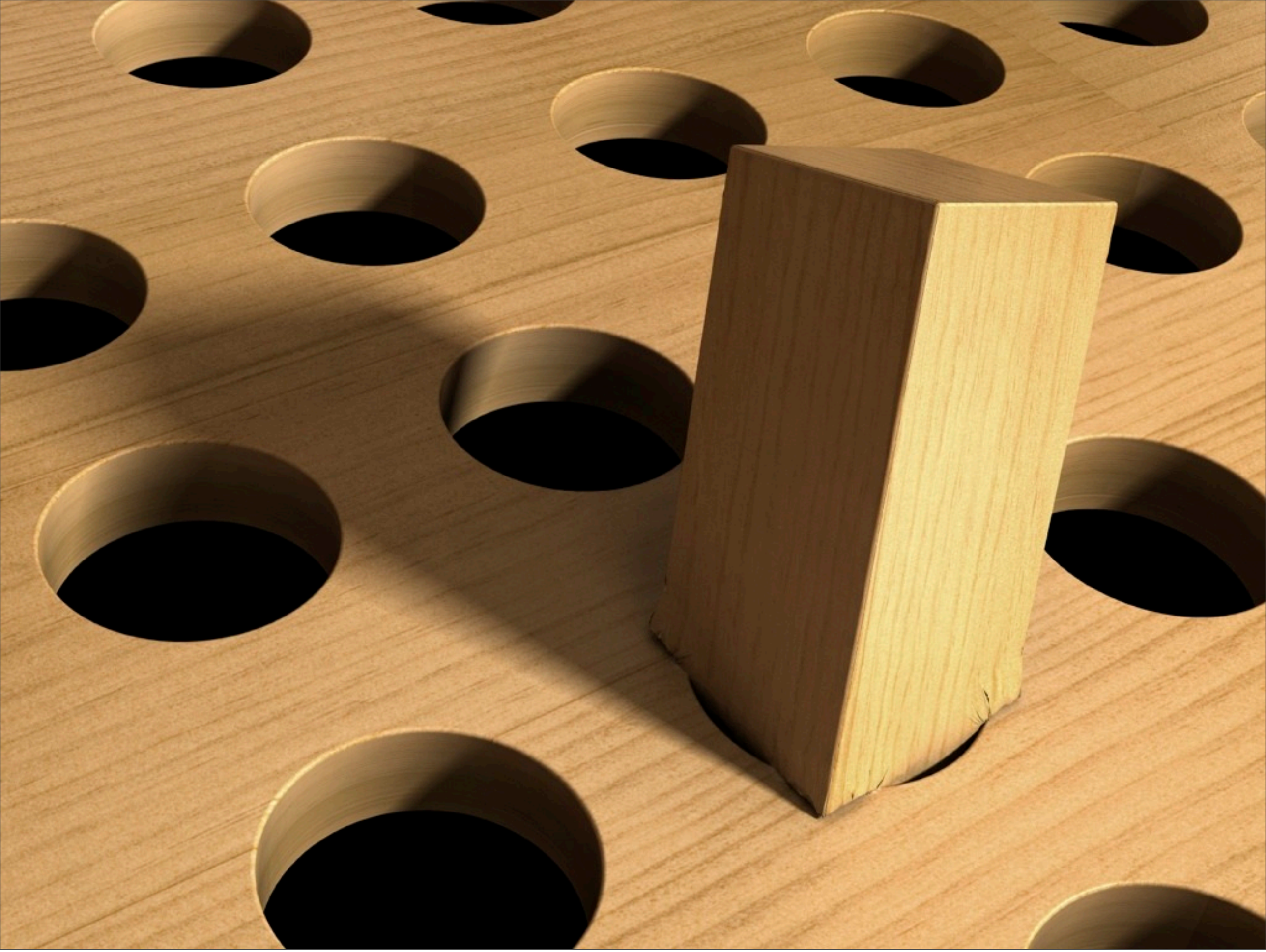
Create Thing
Find Thing
List Thing
Edit Thing
Delete Thing

"Generic solutions! Cool!"


Configuration
10%
The
Generic
Thing
Machine
90%
Application
(100%)


Functionality:
80%
20%
Time/Effort:
80%
320%


Configuration
The
Generic
Thing
Machine
Customer
Developer



4. The Disillusioned Architect

"Some programmers, when faced with a problem, turn to a generic solution … now they have two problems."

(with apologies to Jamie Zawinski)

YAGNI

KISS

Working software

5. The "Wise" Architect

Question: *

Answer: It depends.

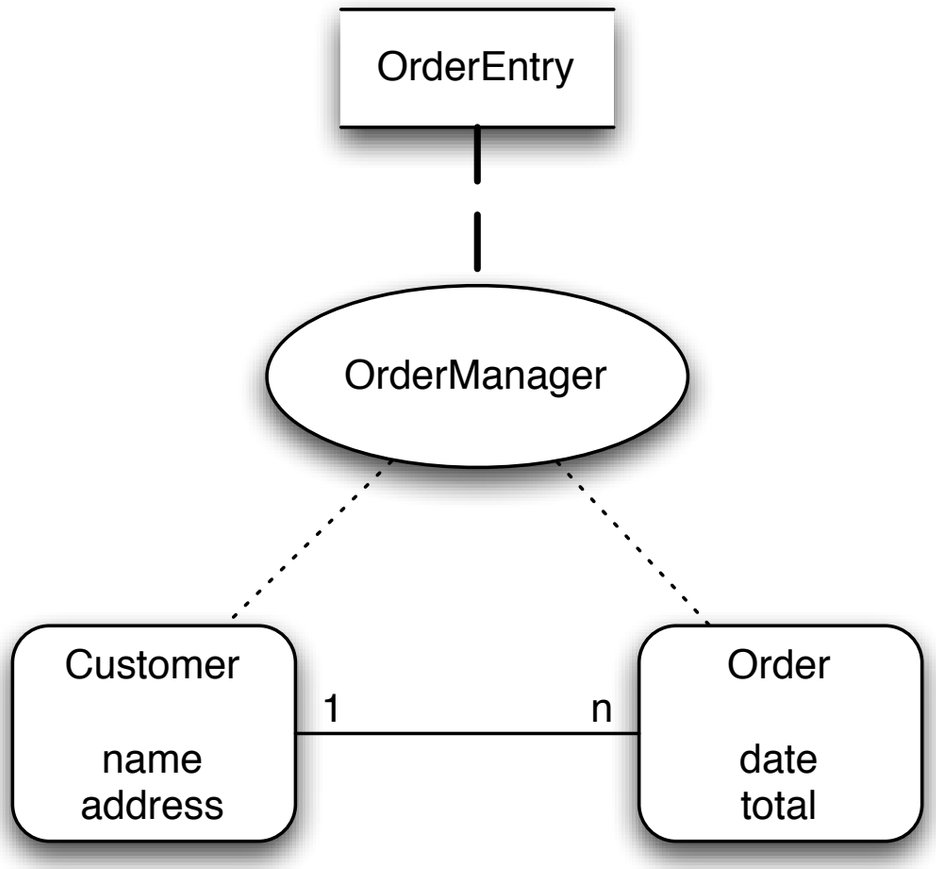
Examples

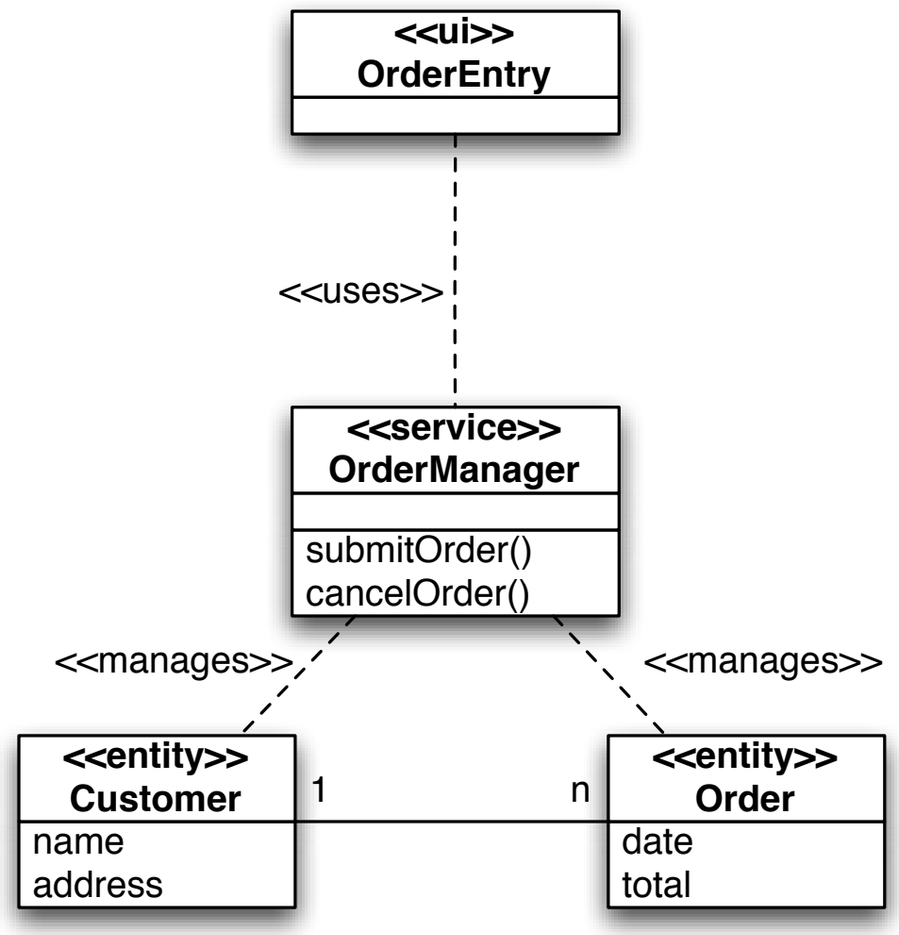
XML vs. HTML

```xml
<customer xmlns='http://example.com/schemas/crm'>
    <id>4711</id>
    <name>Schulze Systems AG</name>
    <city>Ratingen</city>
    <country>Germany</country>
</customer>
```

```html
<html>
  <head>
    <title>Customer Info</title>
    <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
  </head>
  <body>
    <div class="customer">
        <span class="id">4711</span>
        <span class="name">Schulze Systems AG</span>
        <span class="city">Ratingen</span>
        <span class="country">Germany</span>
    </div>
  </body>
</html>
```

DSM vs. UML


OrderEntry
OrderManager
Customer
name
address
1
n
Order
date
total


<<ui>>
OrderEntry
<<uses>>
<<service>>
OrderManager
submitOrder()
cancelOrder()
<<manages>>
<<manages>>
<<entity>>
Customer
name
address
1
n
<<entity>>
Order
date
total

External vs. Internal DSL

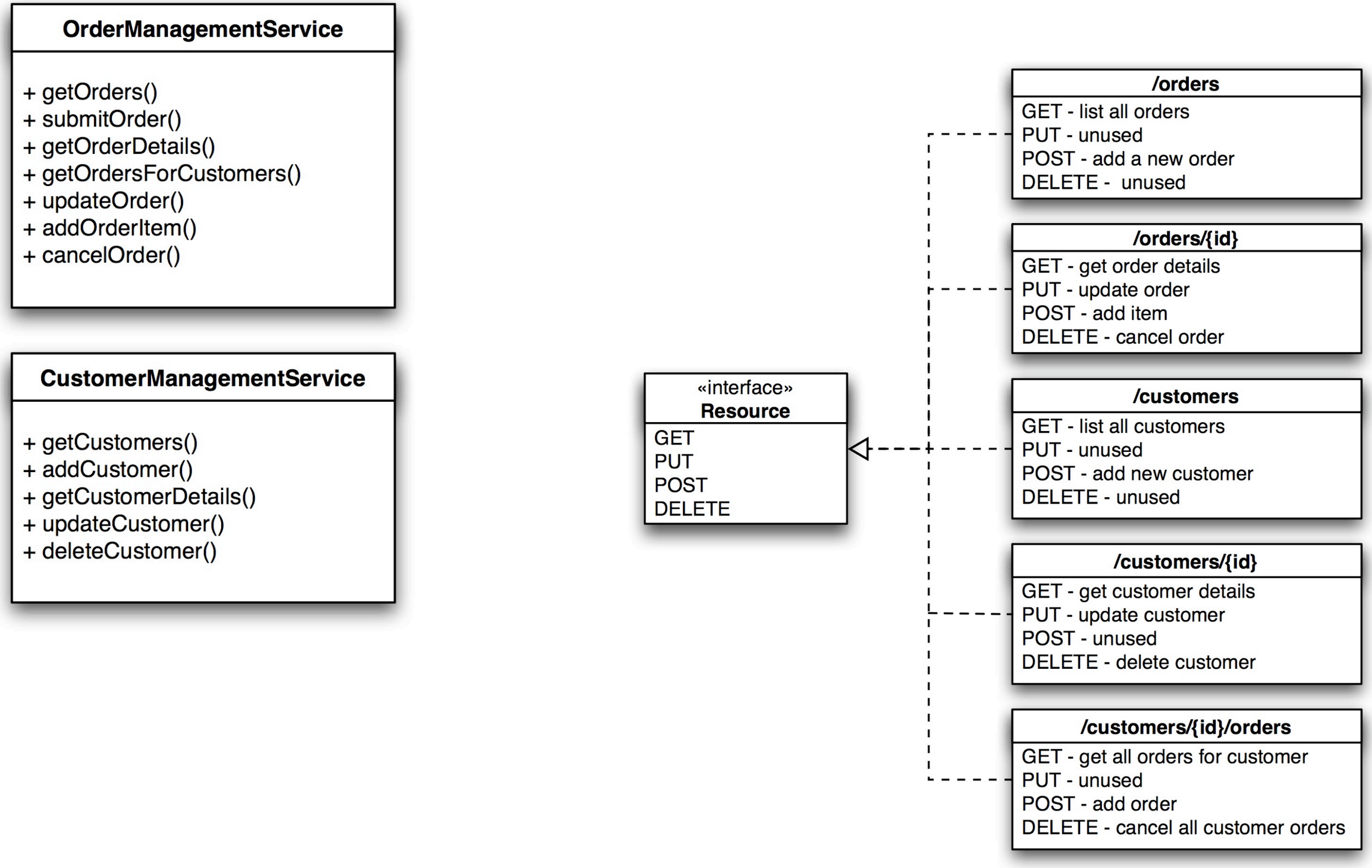
```
cancel:
 transitions from submitted to cancelled,

accept:
 transitions from received to accepted,
              from checking to checked
```

```
event :cancel do
   transitions :from => :submitted, :to => :cancelled
end

event :accept do
  transitions :from => :received, :to => :accepted
  transitions :from => :checking, :to => :checked
end
```

SOAP/WSDL vs. REST/HTTP



HTTP Verbs vs. POST Tunneling

```
PUT /xyz HTTP/1.1
<data>...</data>
```

```
POST /xyz HTTP/1.1
<update><data>...</data></update>
```

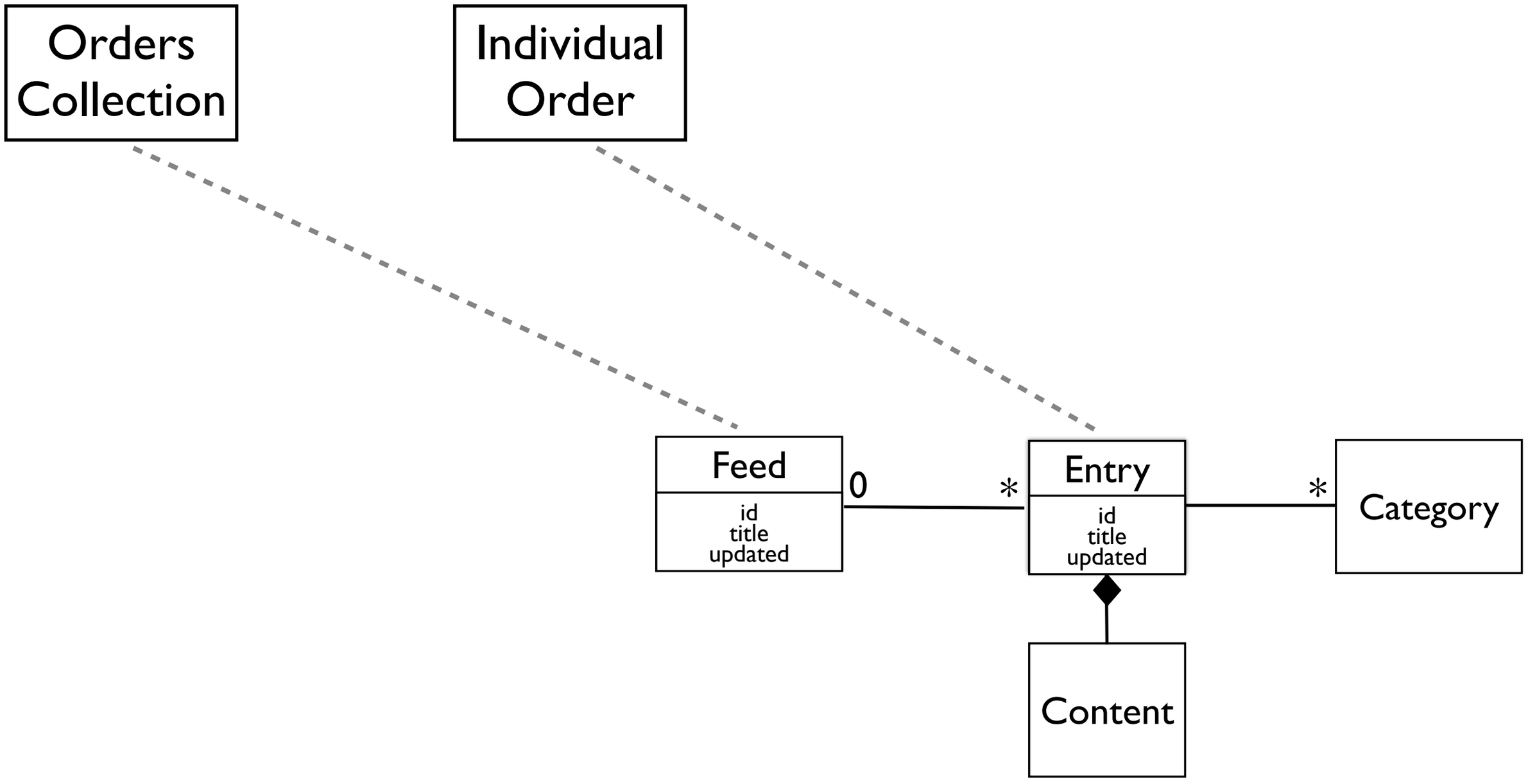
```
DELETE /xyz HTTP/1.1
```

```
POST /xyz HTTP/1.1
<delete>...</delete>
```

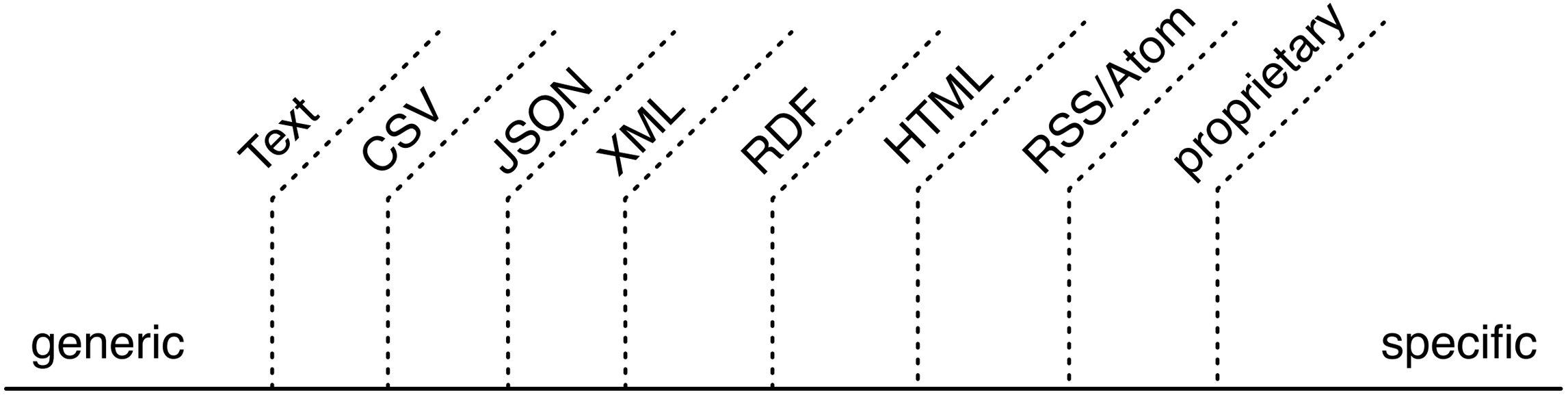
```
PATCH /xyz HTTP/1.1
<diff>...</diff>
```

```
POST /xyz HTTP/1.1
<diff>...</diff>
```

Custom Protocol vs. AtomPub



Formats Continuum



RDBMS Tables vs. Metatables

Customer

id	name	address	status

Order

id	date	amount	total	cust_id

Class

id	name
1	Customer
2	Order

Attribute

id	name	type	class_id
1	cust_no	int	1
2			

The List Goes on and on …

Smalltalk Image vs. Filebased IDEs

Custom-built Web App vs. CMS

Custom Protocols vs. Standards

Maven vs. Ant (vs. scripts)

Considerations

Problem/Solution

Congruence

Ramp-up Cost

Development Performance

Runtime Performance

Knowledge

Skill

Folklore

Ecosystem

XML

1. View it in tree rendering
2. Check for wellformedness
3. Run XSLT on it
4. Query with XPath
5. Process with XQuery
6. Validate against schema
7. Encrypt/Decrypt parts
8. Sign and verify signature
9. Archive it
10. Process w/ SAX/DOM

HTTP & URIs

1. Embed links in representations
2. Drive application flow
3. Expose Multiple Representations
4. Use curl/wget
5. Control access
6. Get indexed by Google (public or appliance)
7. Bookmark or email Links
8. Redirect
9. Use 404, 412, 409
10. Use Caches

SOAP/WSDL/WS-*

1. ESBs
2. Platforms
3. Tooling
4. Intermediaries
5. Standard software
6. Mainstream choice
7. People
8. Politics
9. Hype
10. Job security

RDBMS

1. Standard Query Language
2. Optimized access
3. Parallel processing
4. Scalability & Performance
5. Metadata management
6. Report generators & BI Tools
7. Hot backup
8. Portability
9. Program-independent storage
10. Caching

Files

1. Search
2. Backup
3. Debug
4. Diff
5. Edit
6. Version control
7. Import/Export
8. Convert
9. Generate
10. Process

UML

Concepts

Diagram types

CASE Tools

DSM/DSL

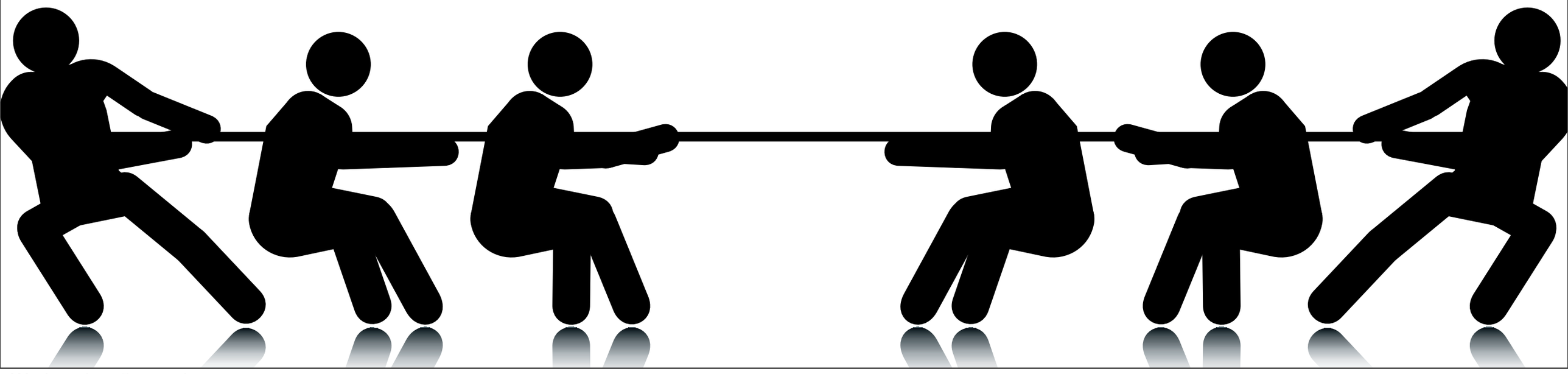
Eclipse EMF/Xtext

MS SW Factories/Oslo

Jetbrains MPS

?

Generic	Specific
Useful ecosystem	Niche needs
“Obvious” match	“Unique” problem
Existing skills	Performance
Static environment	Soft environment



Q&A

innoQ Deutschland GmbH
Halskestr. 17
D-40880 Ratingen
Phone: +49 21 02 77 172-100

innoQ Schweiz GmbH
Gewerbestr. 11
CH-6330 Cham
Phone: +41 41 02 743 01 11

www.innoq.com **info@innoq.com**

Stefan Tilkov
stefan.tilkov@innoq.com
http://www.innoq.com/blog/st/
@stilkov
Phone: +49 170 471 2625