

```
<xs:complexType name="CategoryType">
```

```
<xs:sequence>
```

```
<xs:element name="description" type="xs:string" />
```

```
<xs:element name="category" type="CategoryType"  
minOccurs="0" maxOccurs="unbounded"/>
```

```
<xs:element name="books">
```

```
<xs:complexType>
```

Software System Architectures (NSWI130)

Scalability

```
<xs:element name="book" type="BookType"  
minOccurs="0" maxOccurs="unbounded"/>
```

```
</xs:sequence>
```

```
</xs:complexType>
```

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Charles University in Prague



Scalability Quality Attribute

- ability of system to handle tasks as the system grows

Scalability Quality Attribute

- ability of system to handle tasks as the system grows

Scalability Quality Attribute

- ability of system to handle tasks as the system grows
- system growth = increasing number/volume of
 - users
 - requests per time period
 - data
 - required features

Scalability Quality Attribute

- ability of system to handle tasks as the system grows

Scalability Quality Attribute

- ❑ ability of system to handle tasks as the system grows in size
- ❑ ability of system to keep its quality attributes as the system grows in size

Scalability Quality Attribute

- ability of system to handle tasks as the system grows in size
- ability of system to keep its quality attributes as the system grows in size
- ability of system to keep its performance as the system grows in size

Scalability Quality Attribute

- ❑ ability of system to handle tasks as the system grows in size
- ❑ ability of system to keep its quality attributes as the system grows in size
- ❑ ability of system to keep its performance as the system grows in size
- ❑ ability of system to keep its availability and performance as the system grows in size

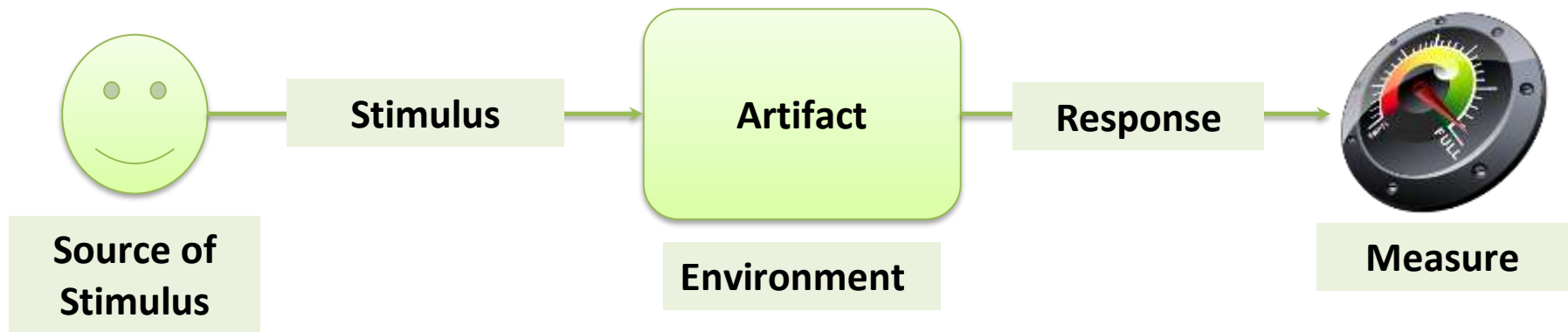
Scalability Quality Attribute

- ❑ ability of system to handle tasks as the system grows in size
- ❑ ability of system to keep its quality attributes as the system grows in size
- ❑ ability of system to keep its performance as the system grows in size
- ❑ ability of system to keep its availability and performance as the system grows in size
- ❑ ability of system to keep its availability, performance and modifiability as the system grows in size

Scalability Quality Attribute

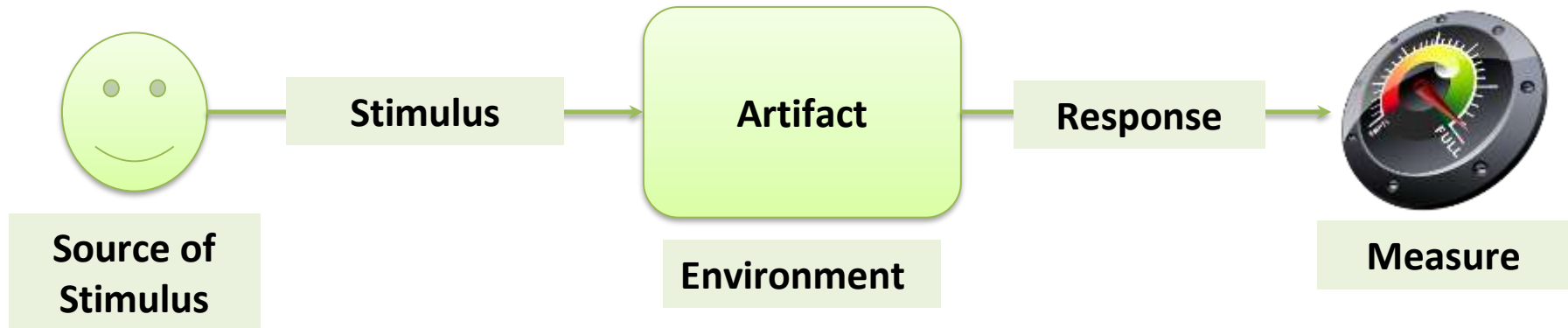
Generic definition	handle tasks
Idealistic definition	keep its quality attributes
Practical definition	keep its availability and performance
Even more practical definition	keep its availability, performance and modifiability

Scalability Requirement Scenario



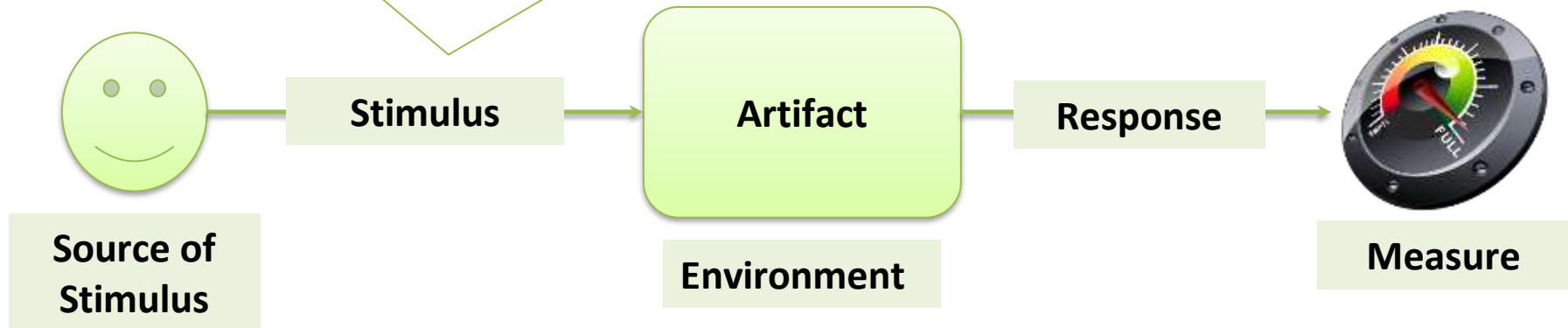
Availability Requirement Scenario

- what needs to scale (system or its part)



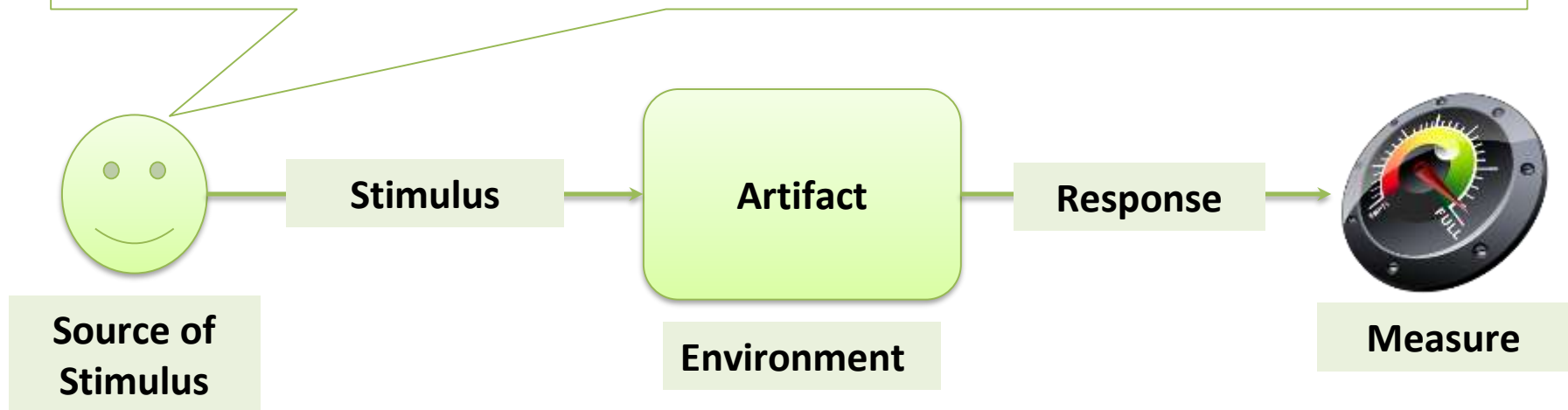
Availability Requirement Scenario

- what grows (number of users or requests, amount of data, required features)



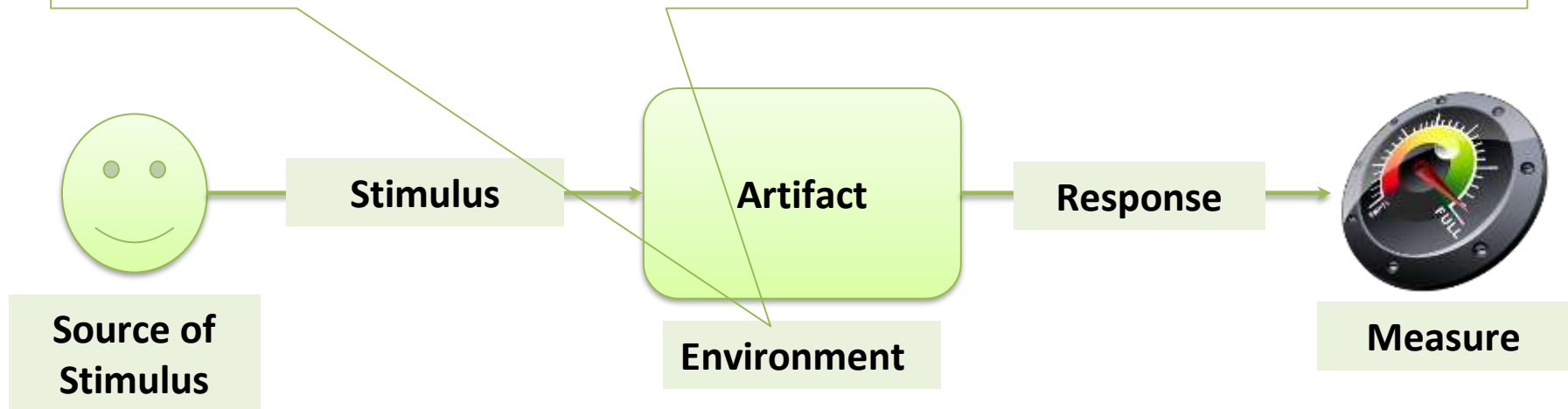
Availability Requirement Scenario

- who or what is the source of growth (users base, domain complexity, functional requirements, business environment)



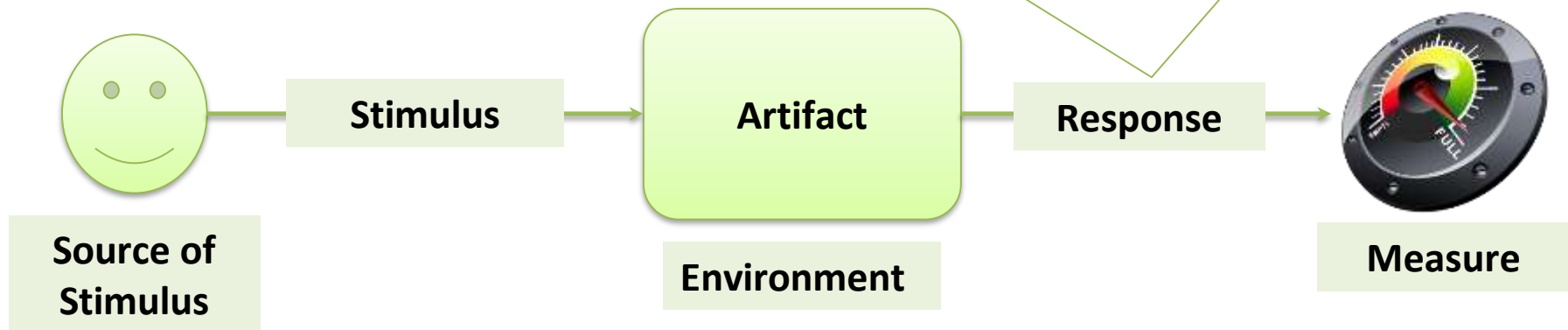
Availability Requirement Scenario

- when the scaling needs to be done (runtime, build time, initiation time, design time ...)



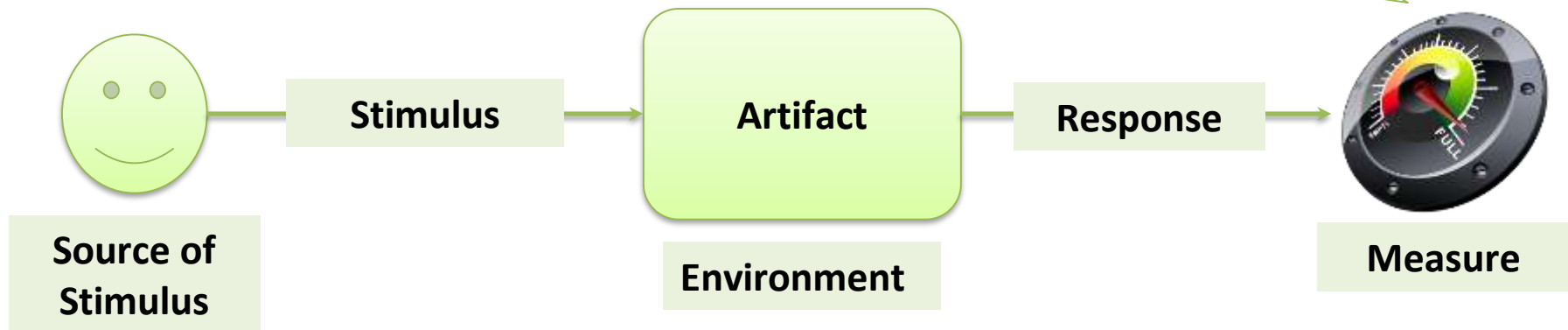
Availability Requirement Scenario

- artifact is scaled

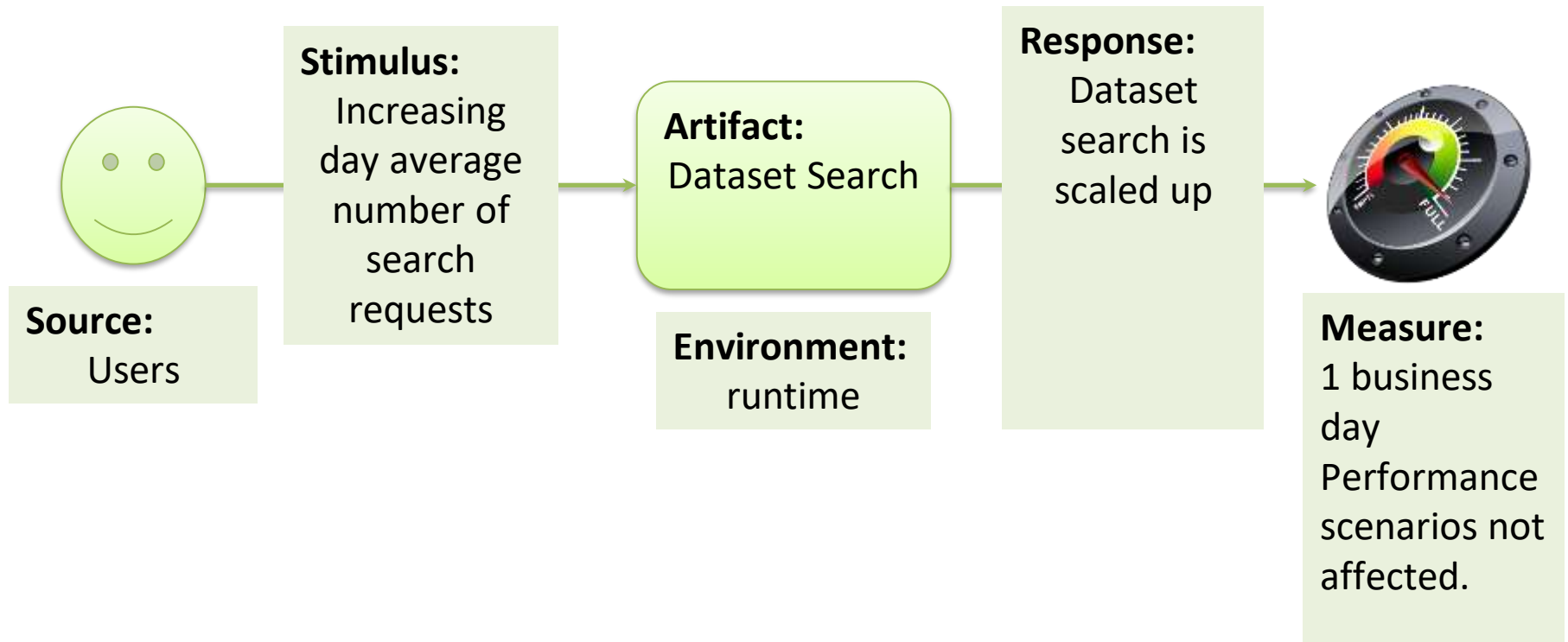


Availability Requirement Scenario

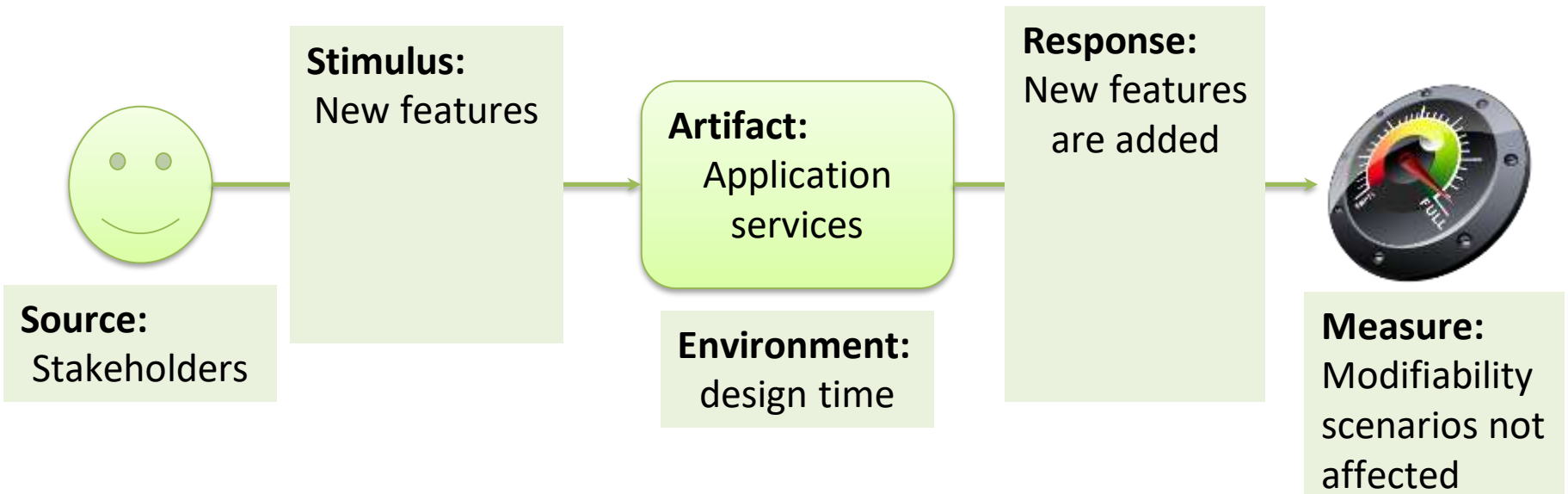
- ❑ certain quality scenarios not affected
- ❑ cost in time or money to scale the artifact



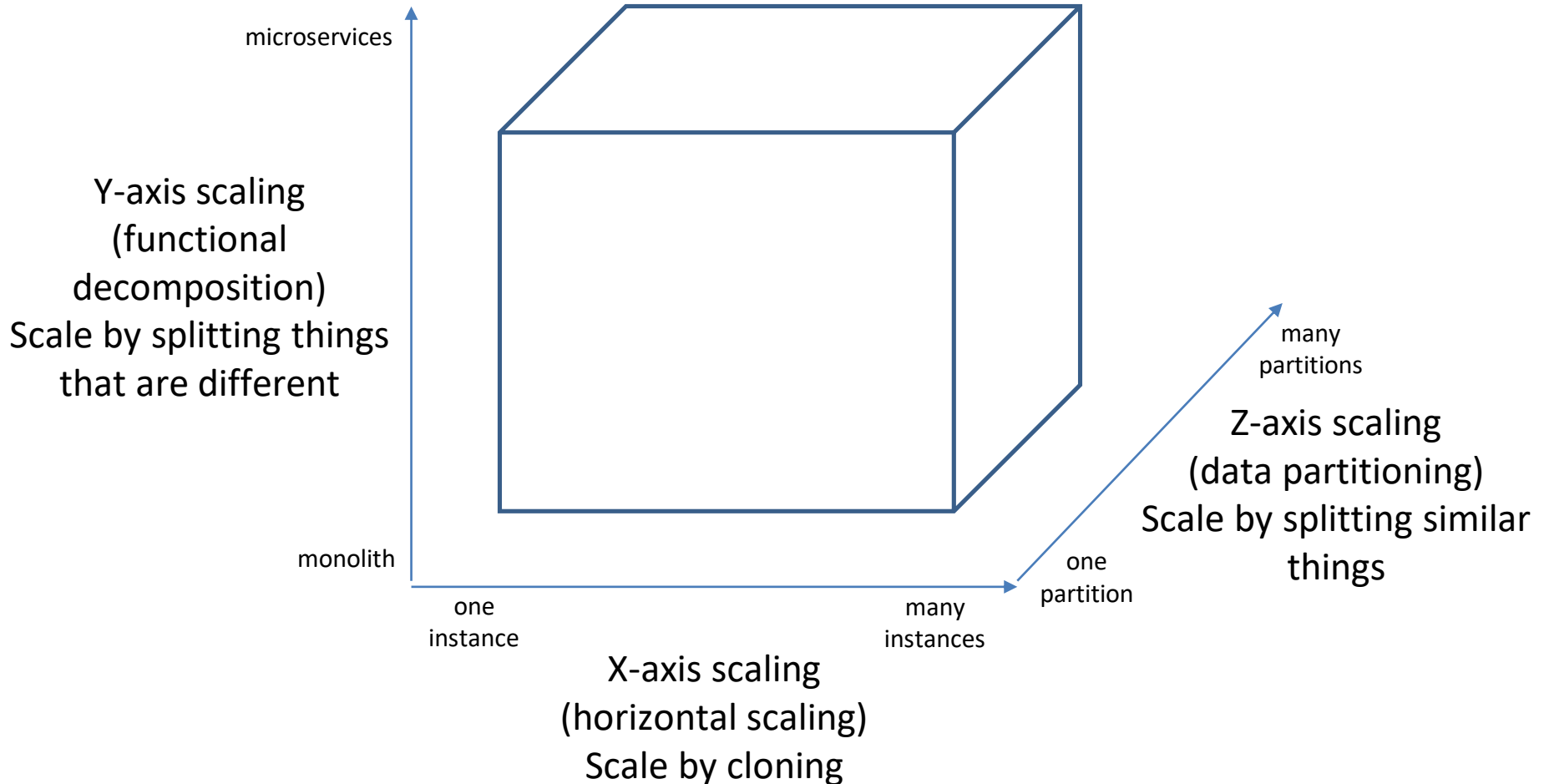
Scalability Quality Attribute



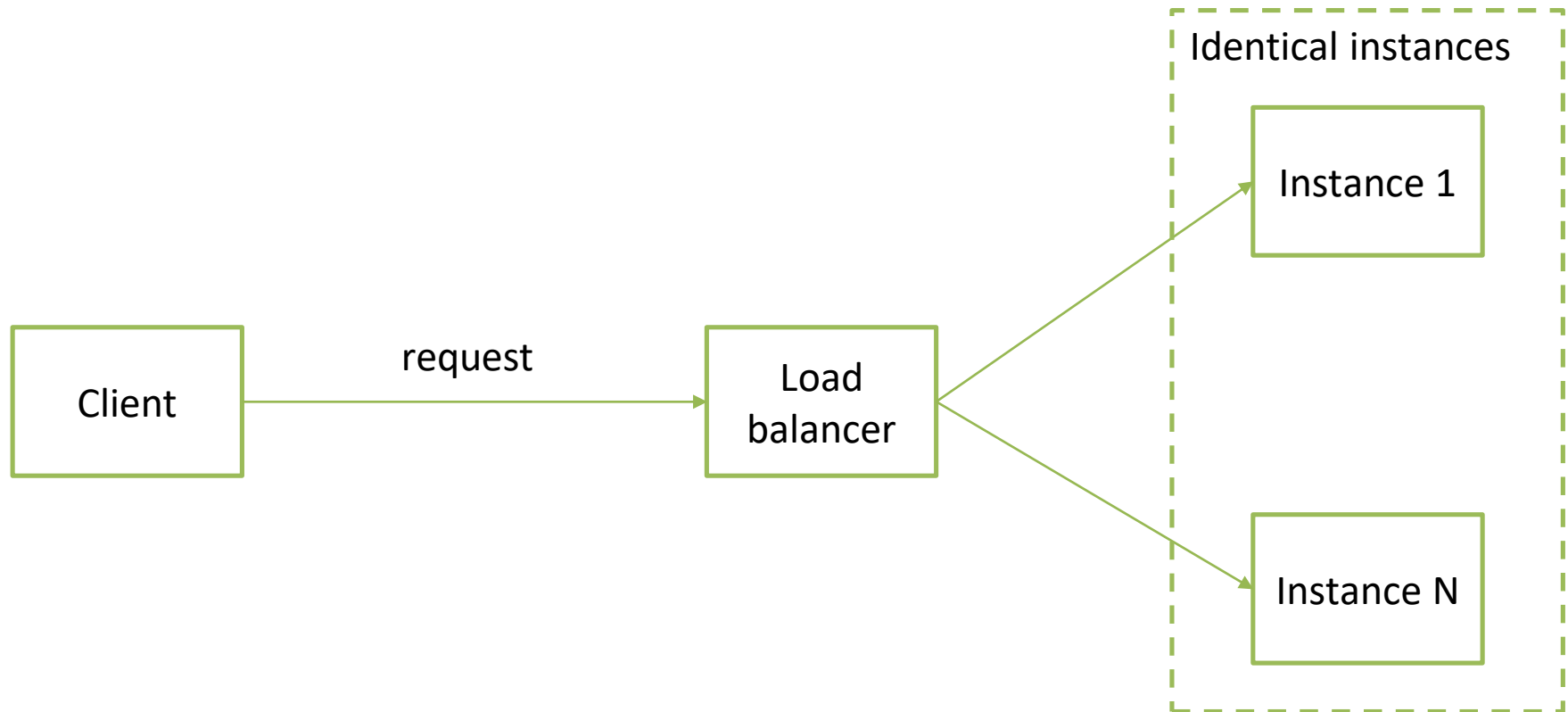
Scalability Quality Attribute



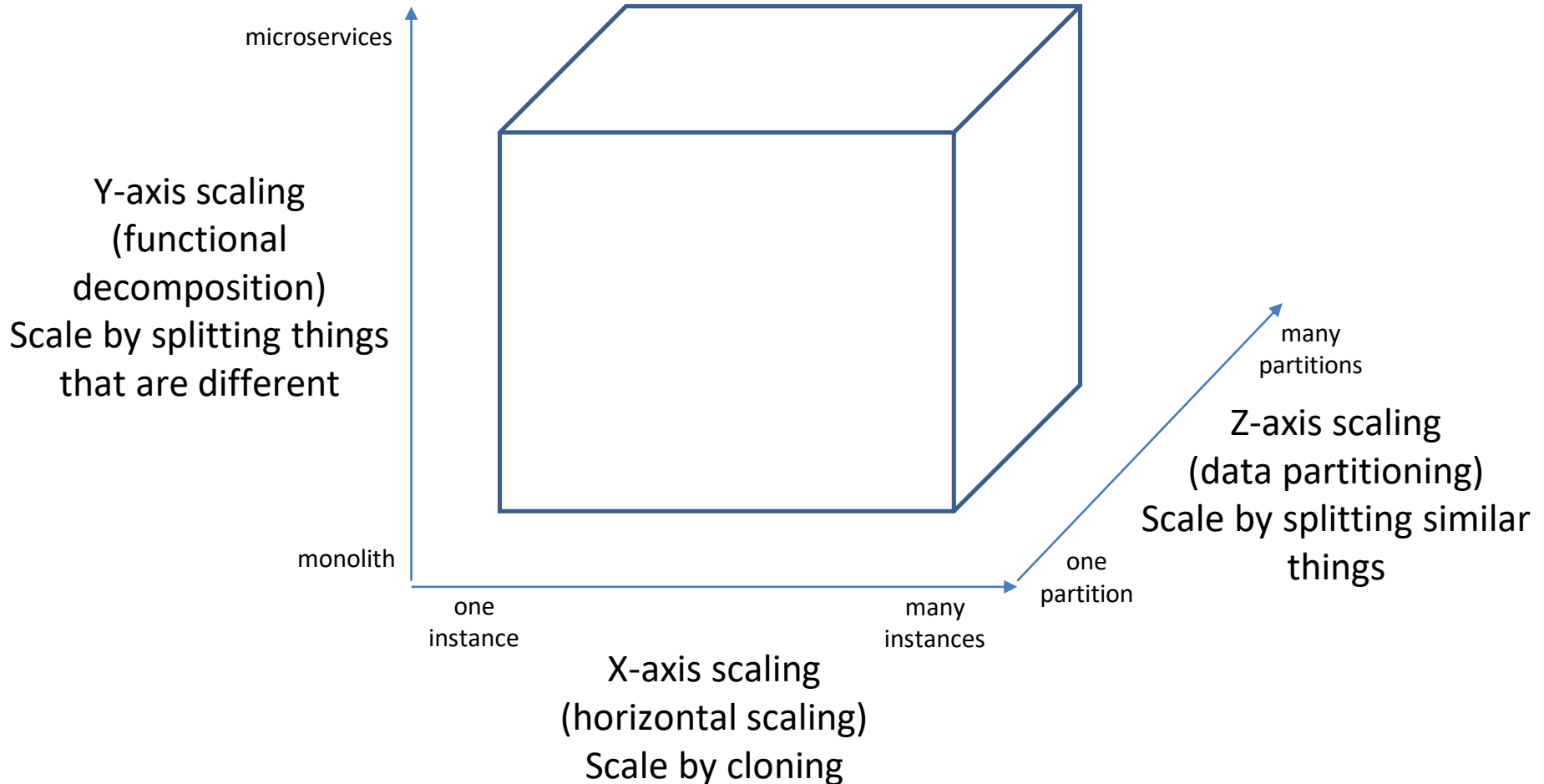
Scalability Tactics – Scalability Cube



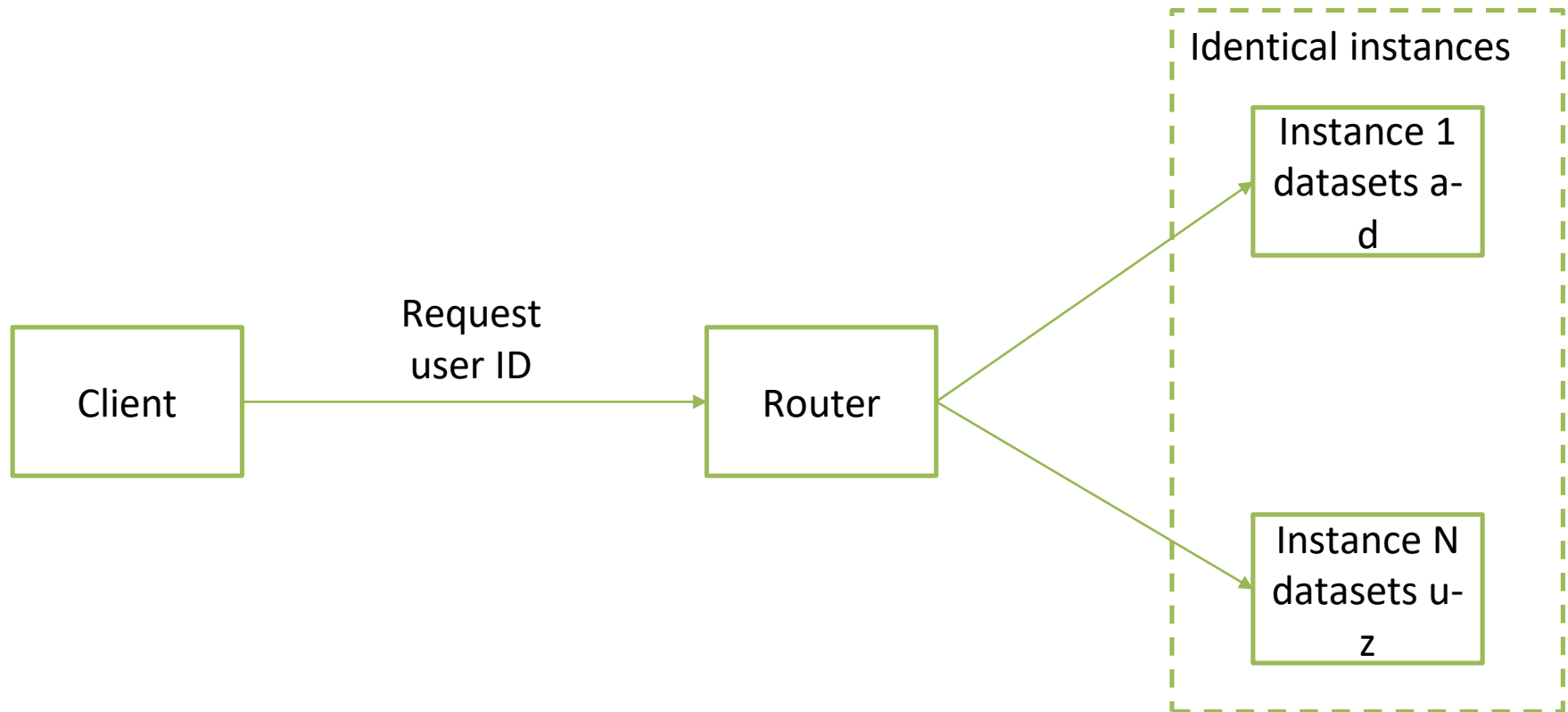
Scalability Cube X-axis



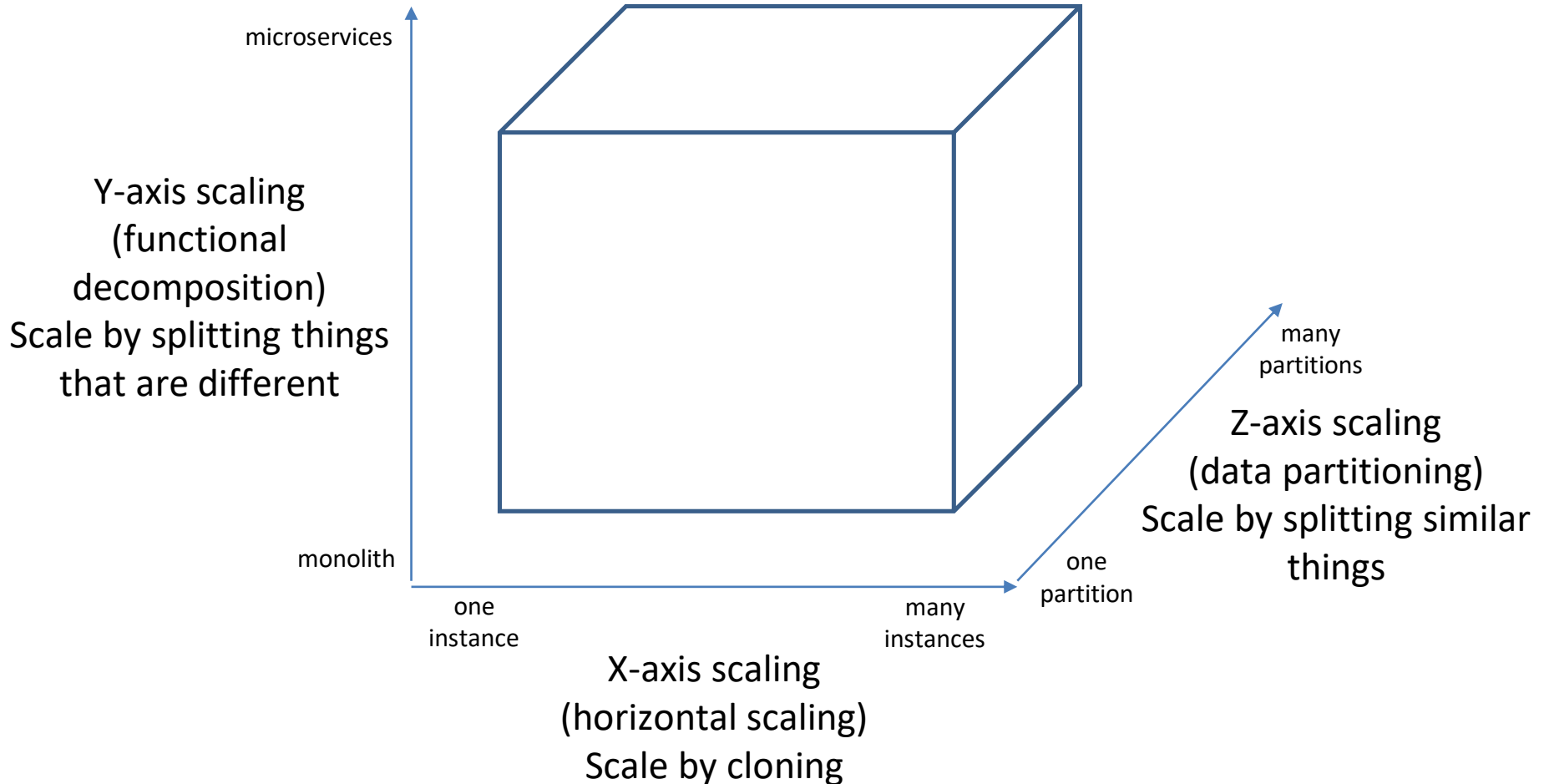
Scalability Tactics – Scalability Cube



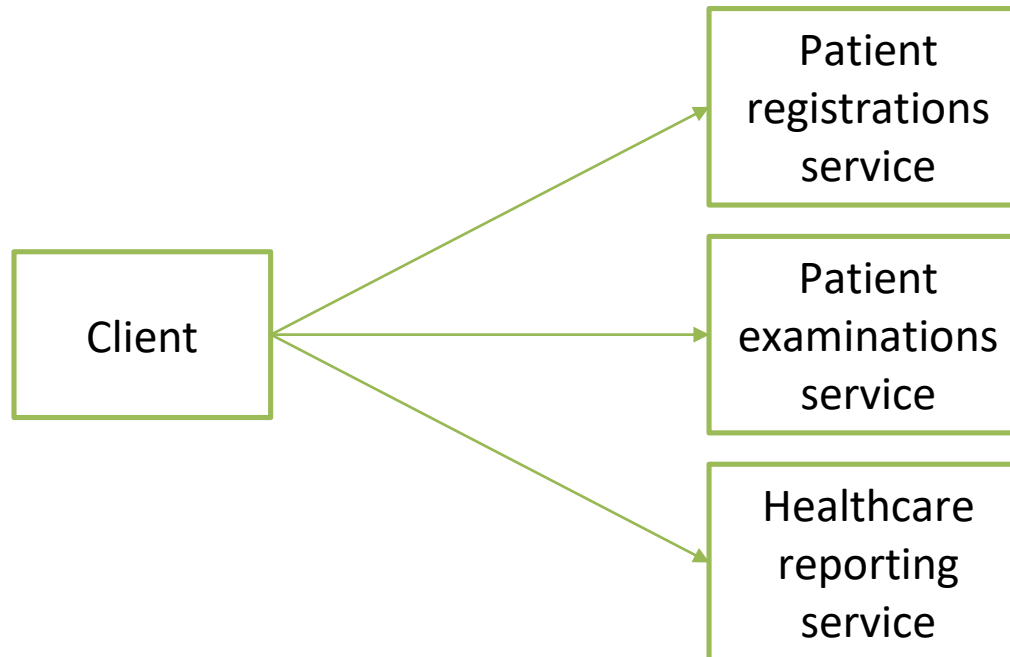
Scalability Cube Z-axis



Scalability Tactics – Scalability Cube



Scalability Cube Y-axis



Scalability Cube X,Y, Z-axis

