



OSGi – The μ Services Kernel

A high level technical introduction to OSGi

Once upon a time in 1998 ...

long before SOA ...

A JSR was born ...

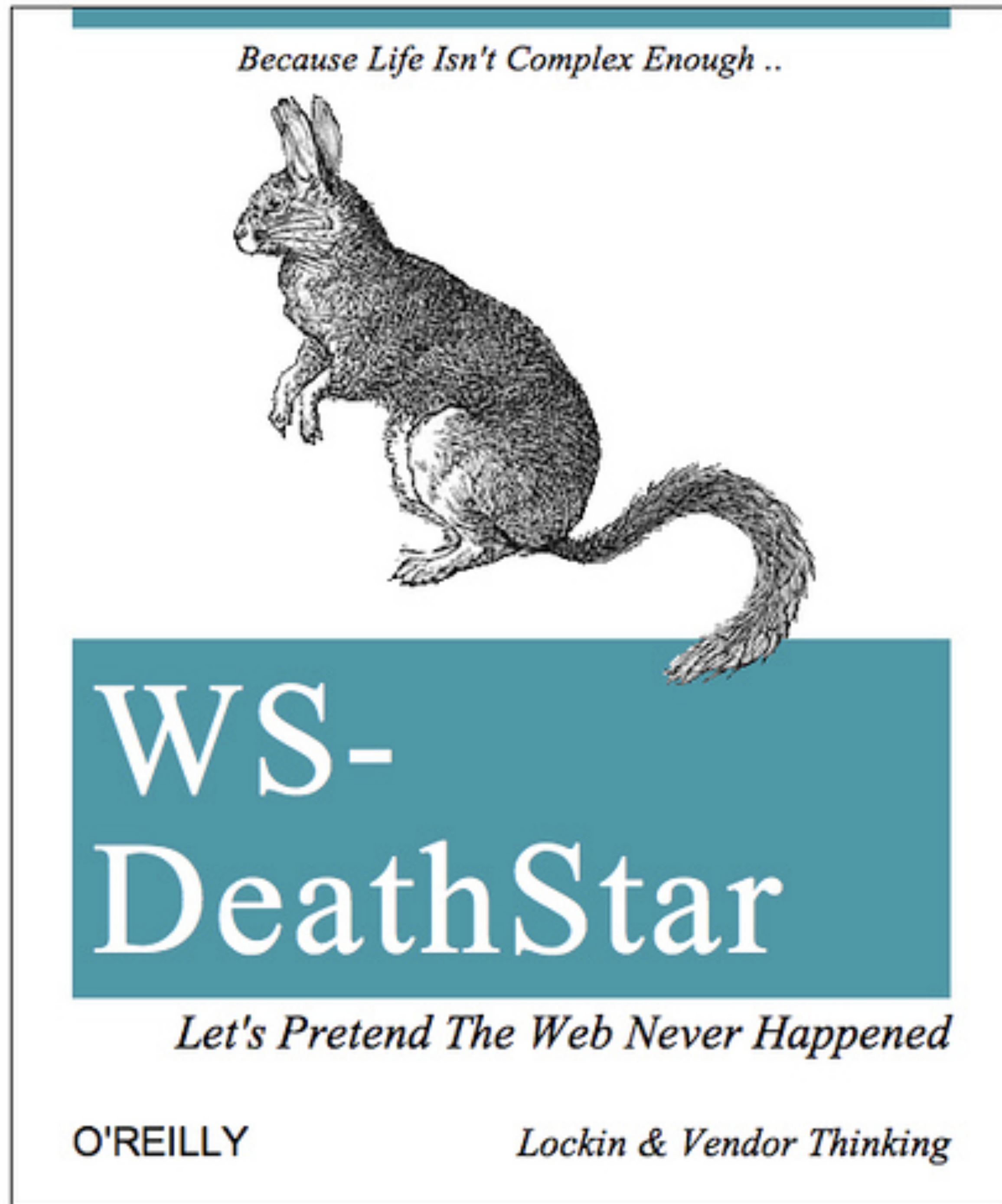
8

the OSGi Service Framework

Service

Service

S



ee

To prevent confusion, we coined
the term ...

micro-service

micro-service



they did it again ...

***μ*Service**

because we are worth it ...

Let's go back to the beginning

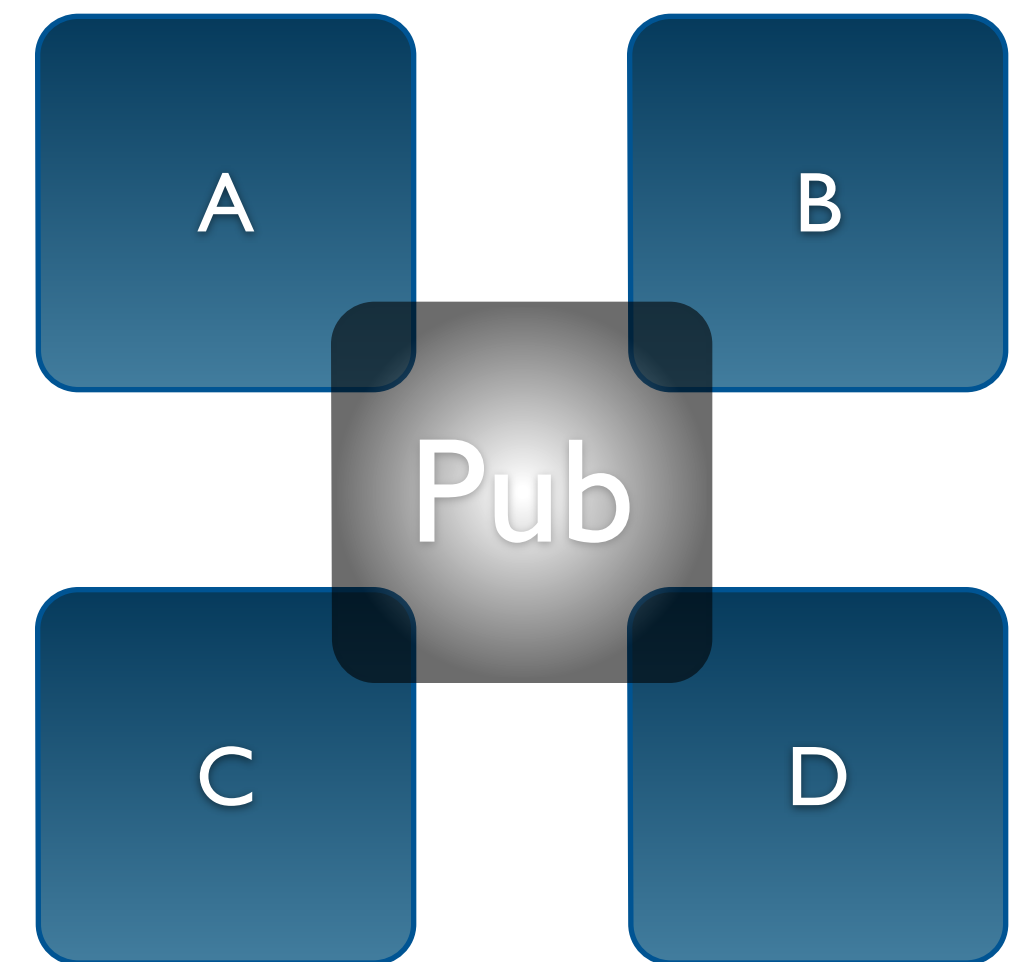
Modularity

- modules have a private space and share a public space
- modules limit their visibility and exposure
- complexity $:: \text{parts}^2$



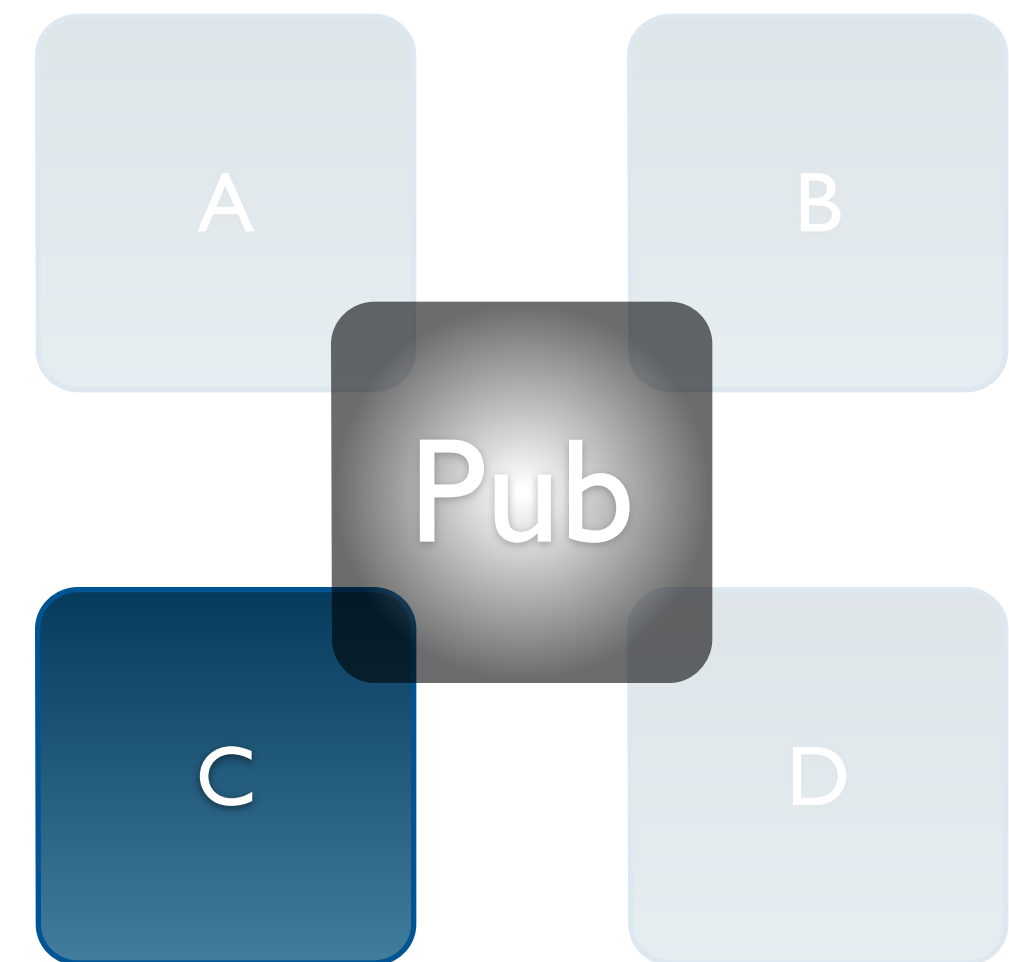
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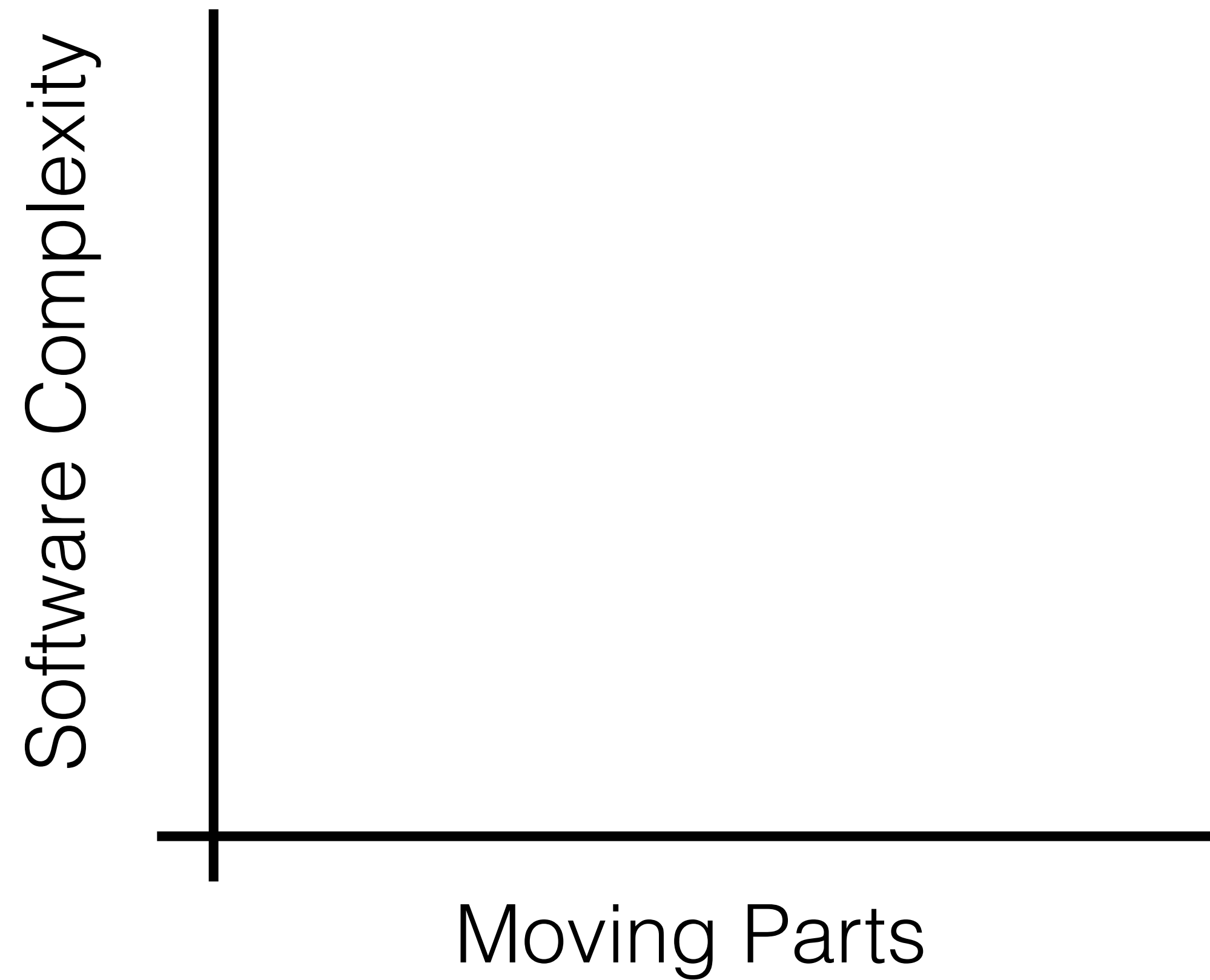


Modularity

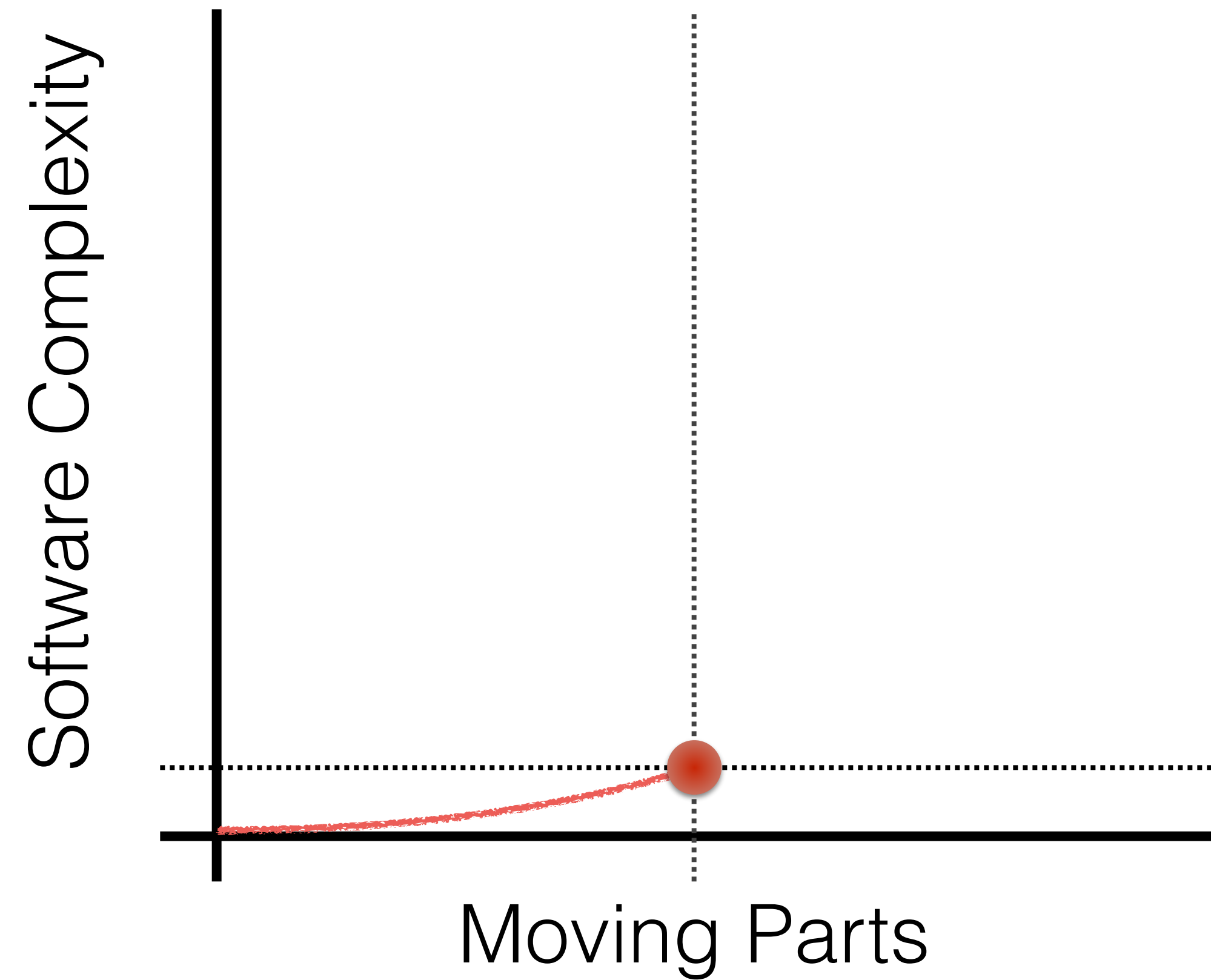
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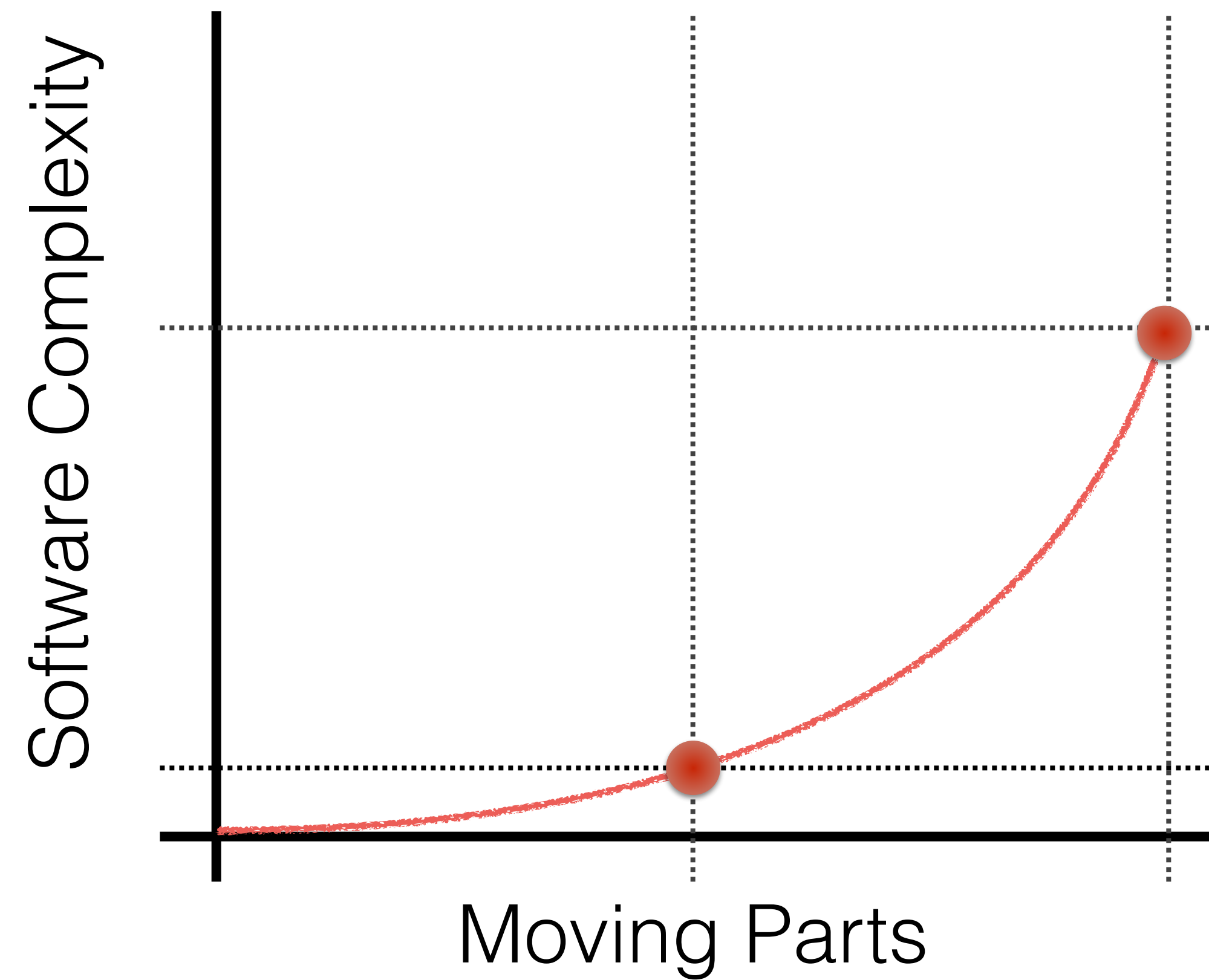
Modularity's Secret



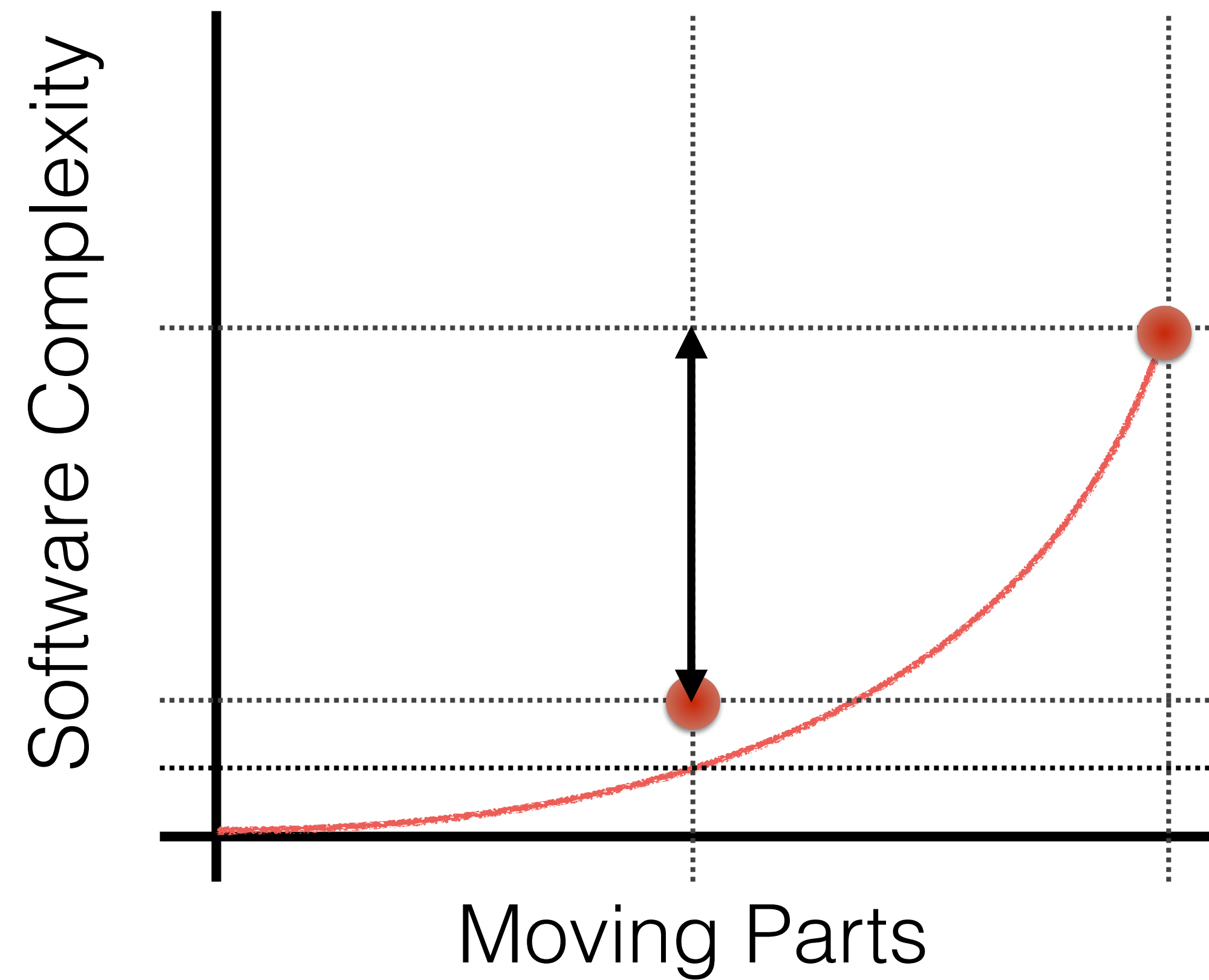
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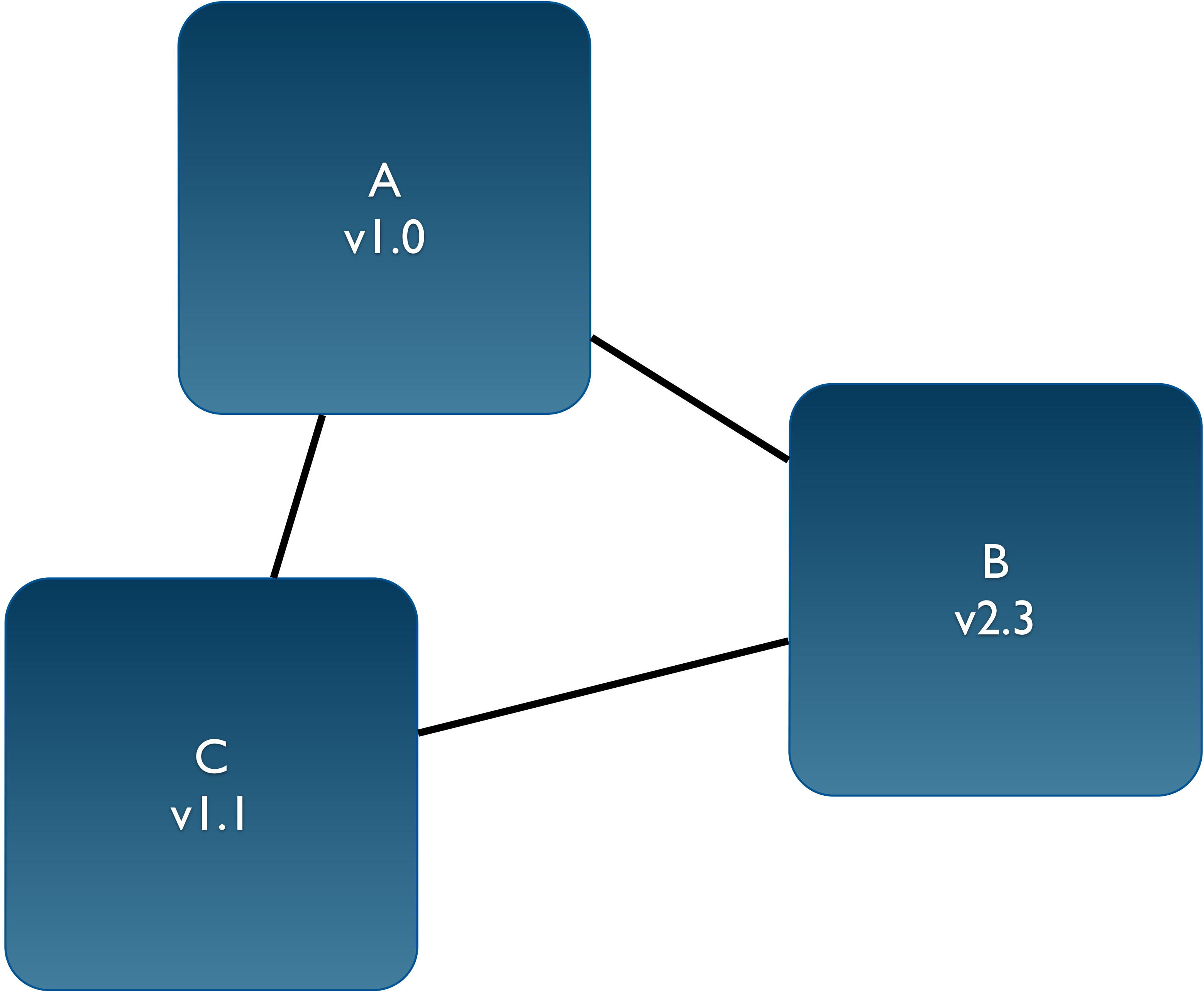


Modularity's Secret



Modularity's Secret





Done?

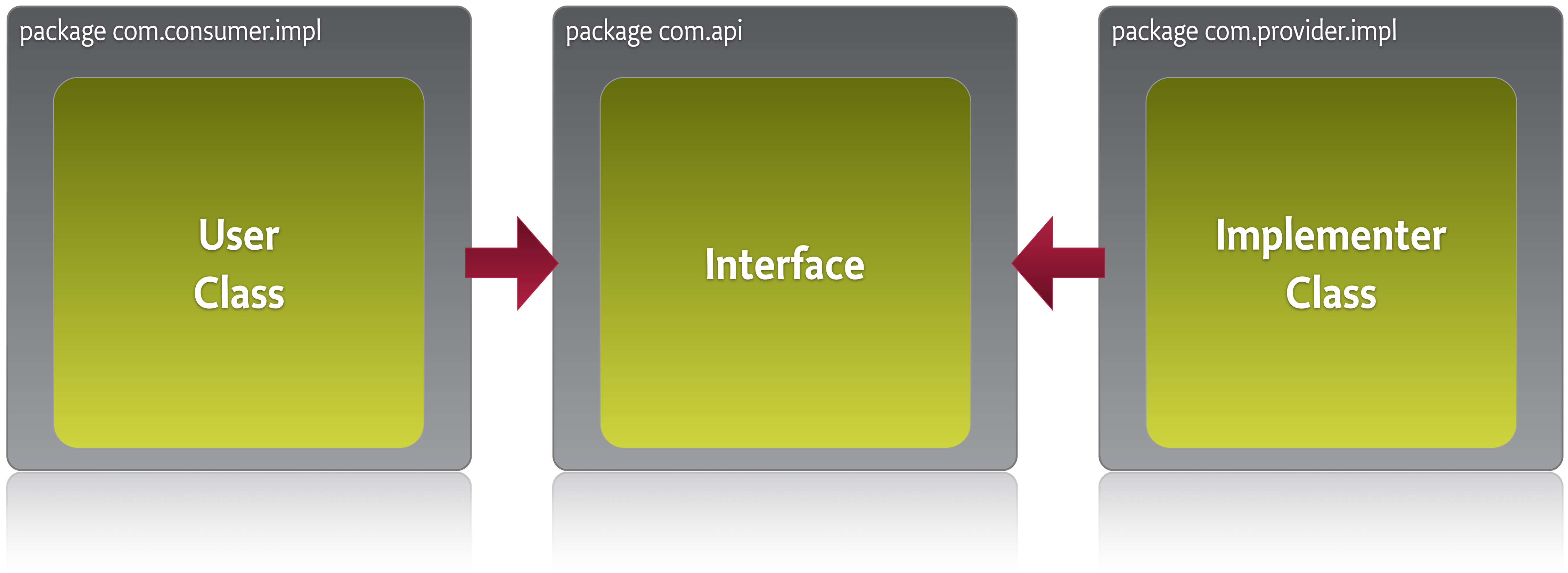
Interfaces/API



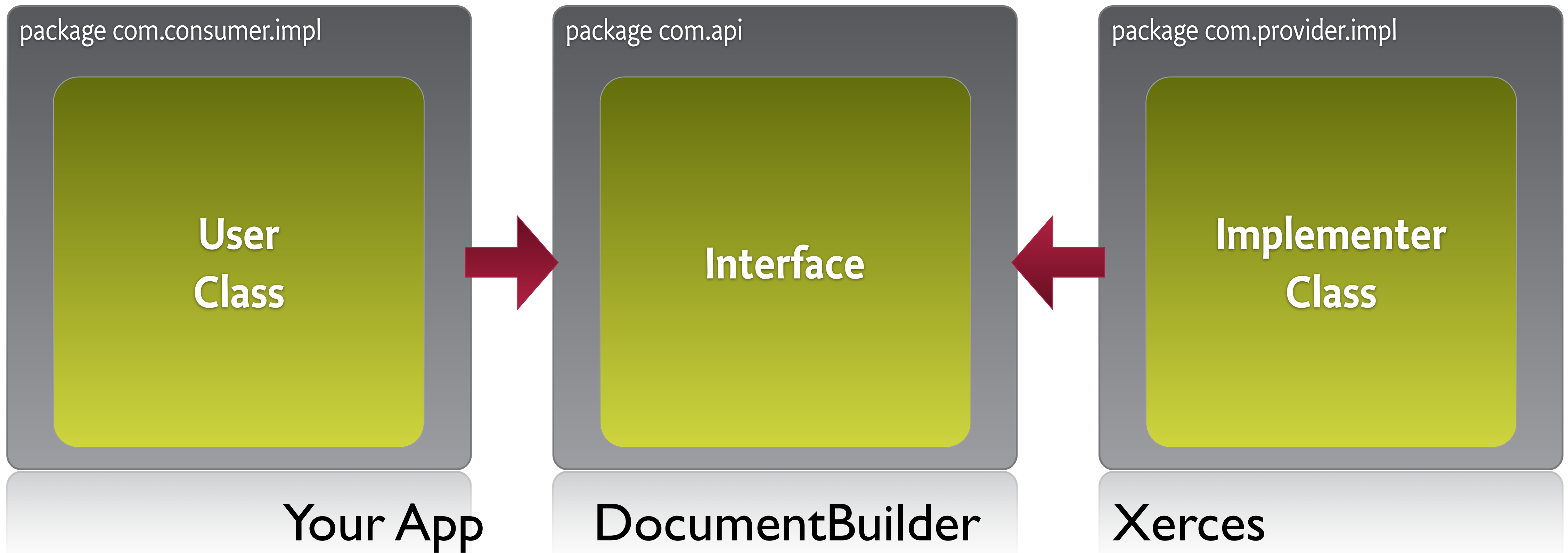
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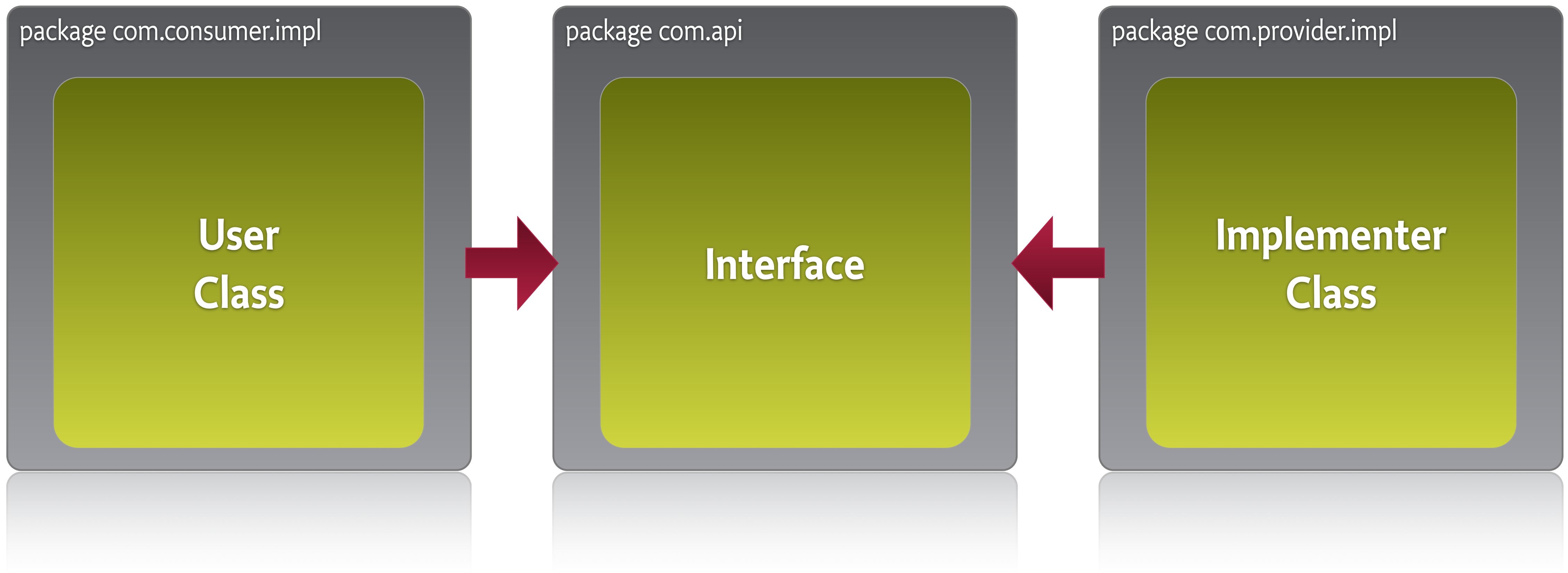
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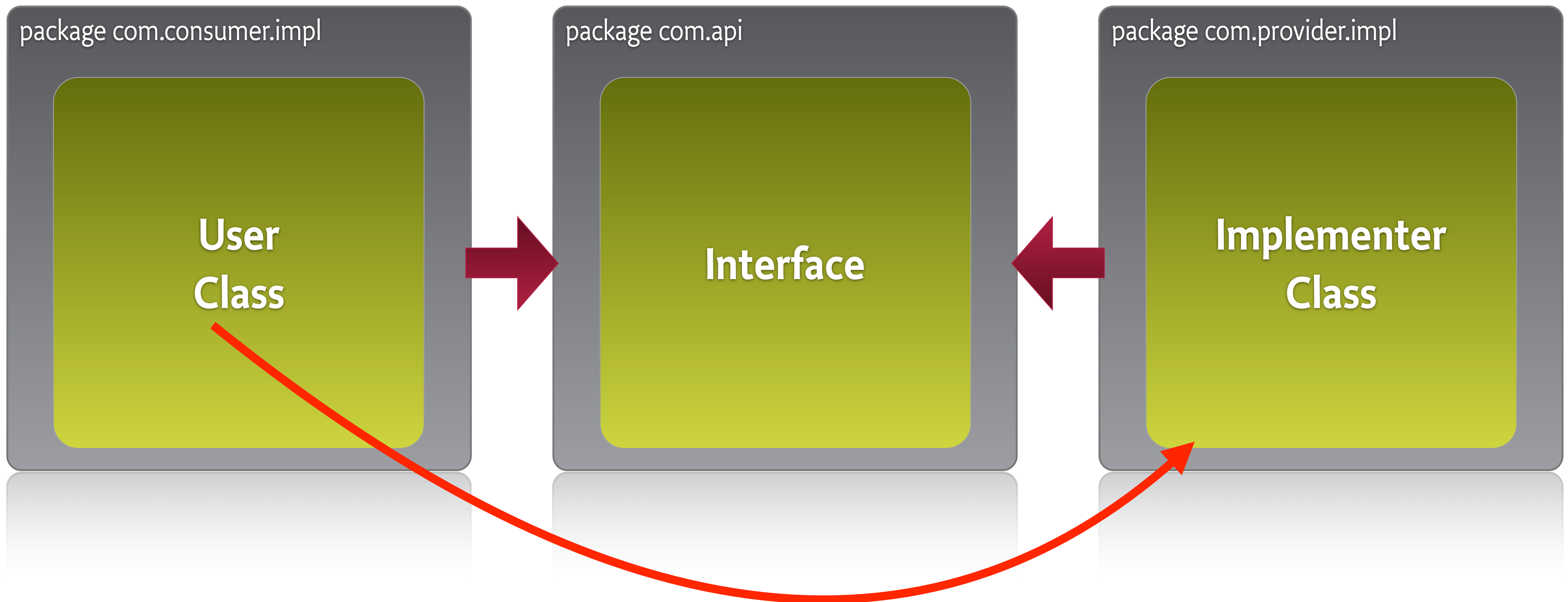
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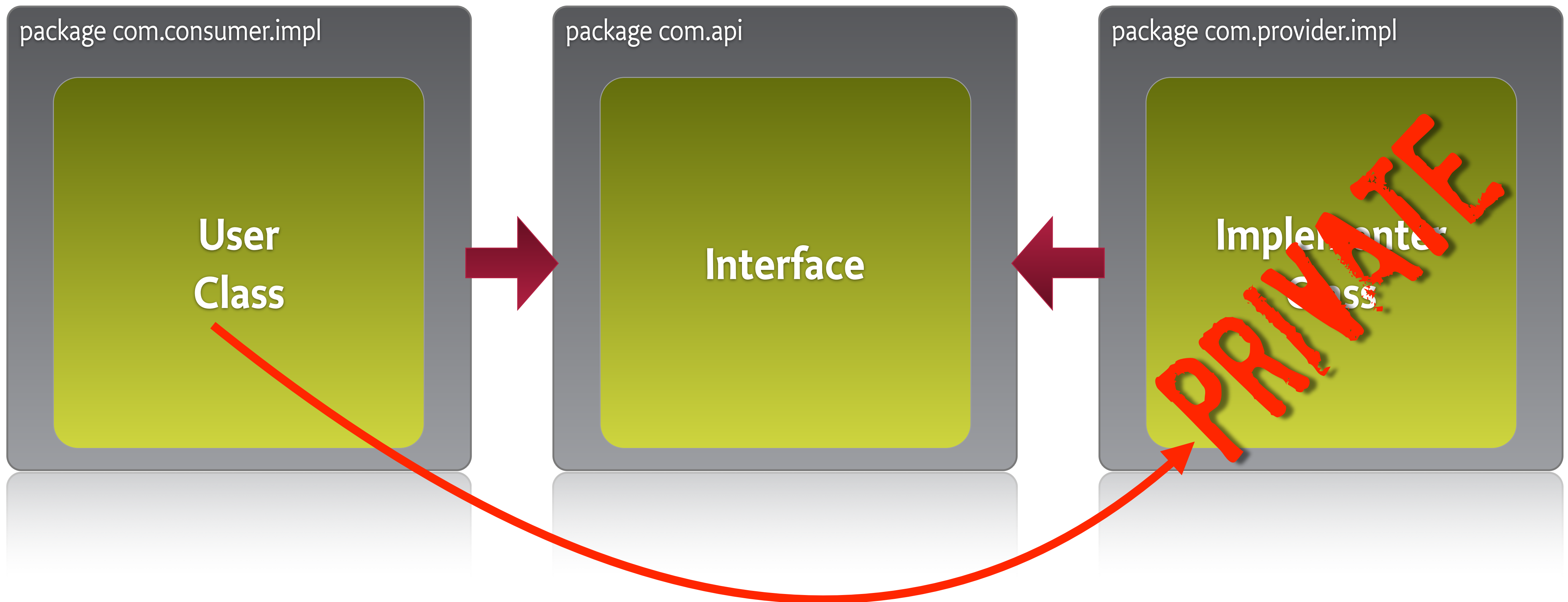
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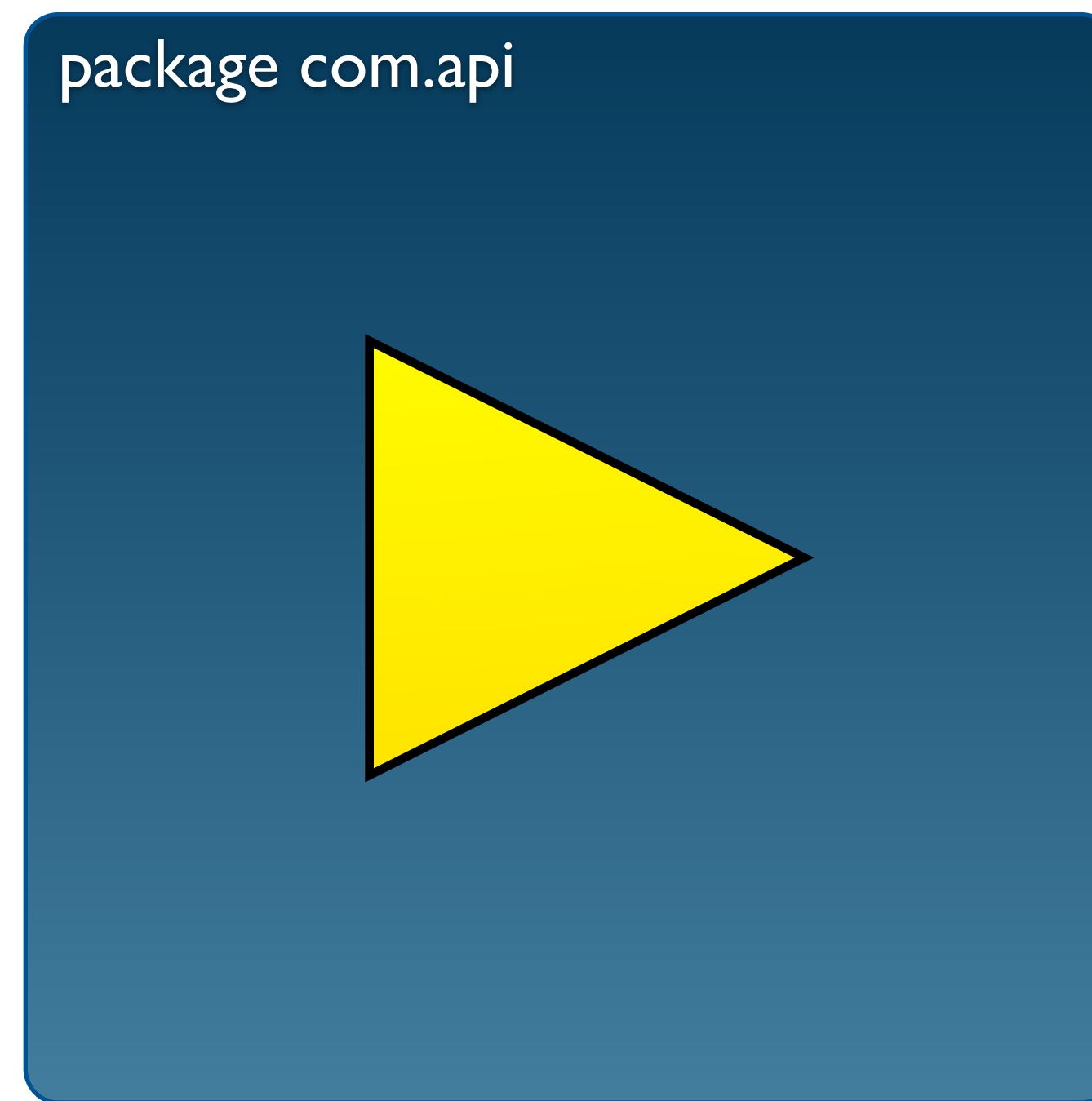
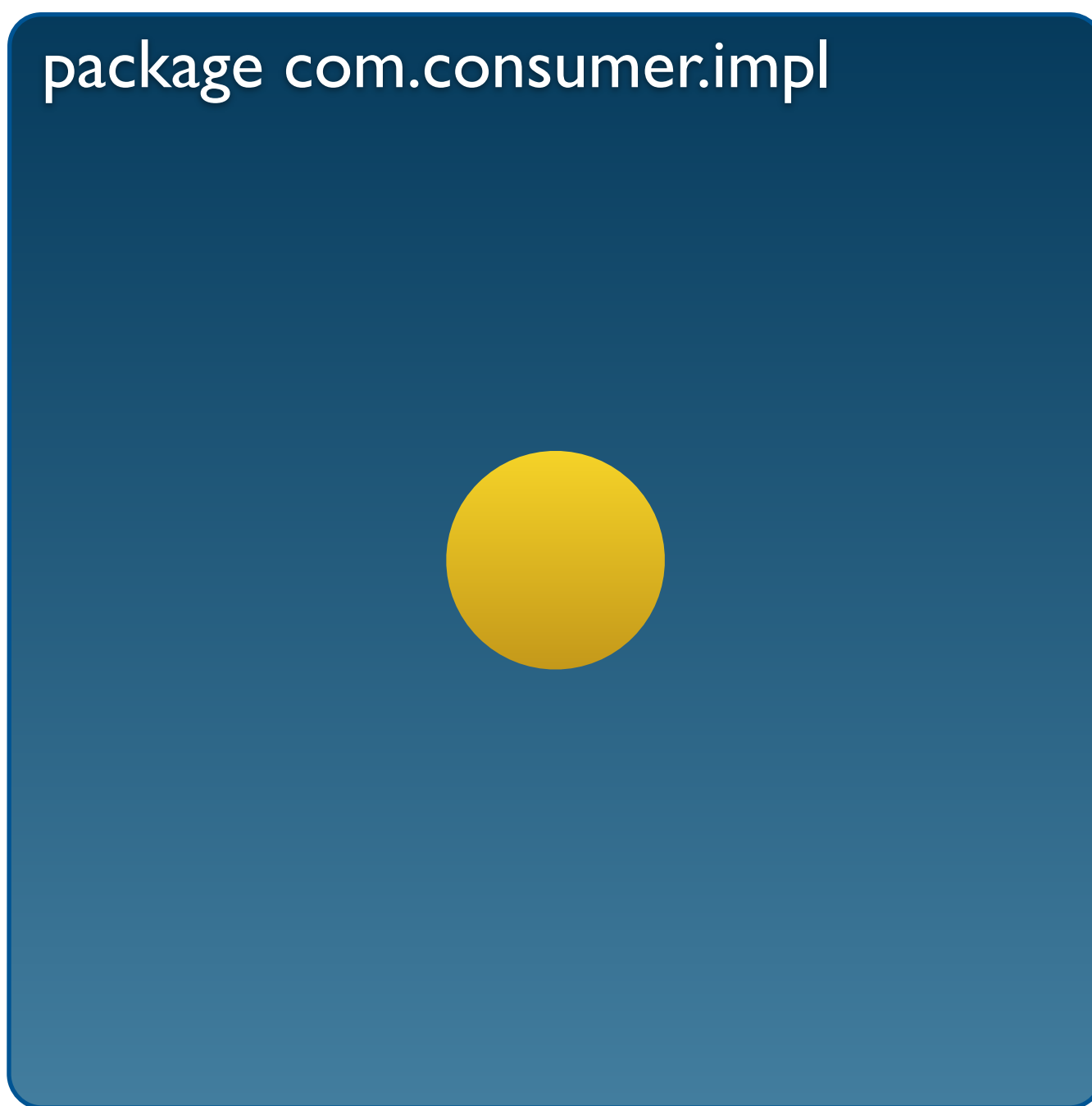
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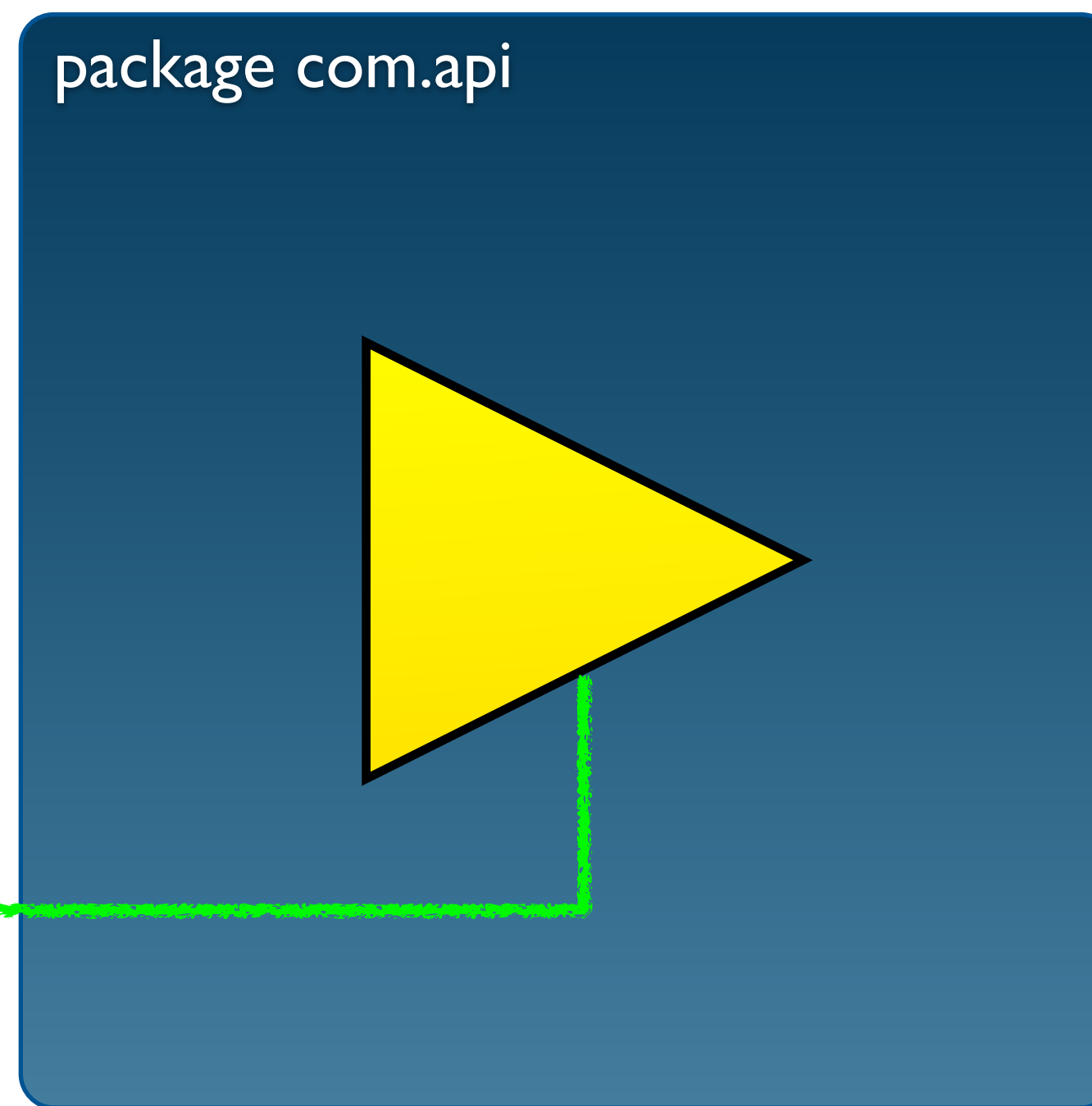
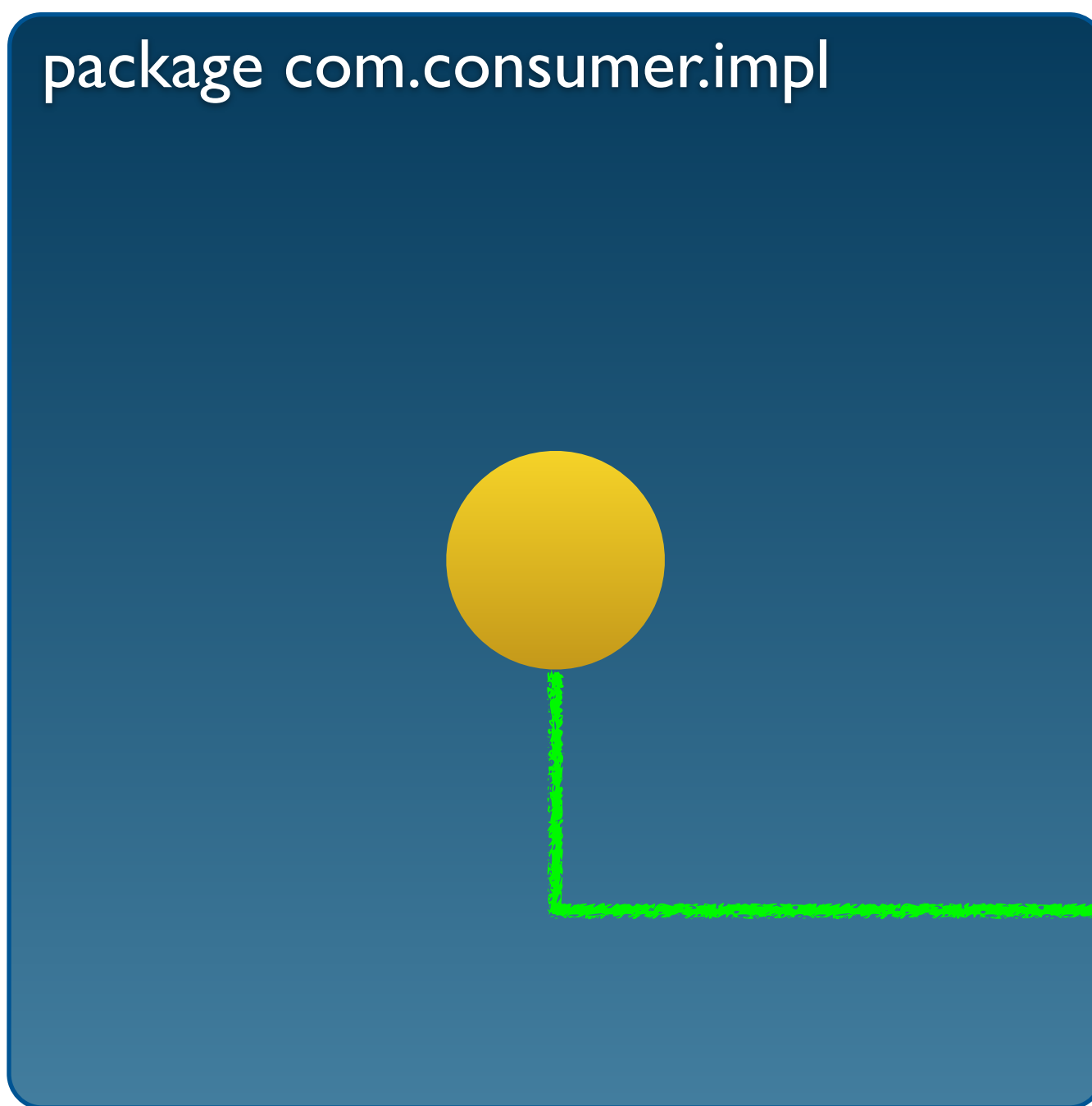


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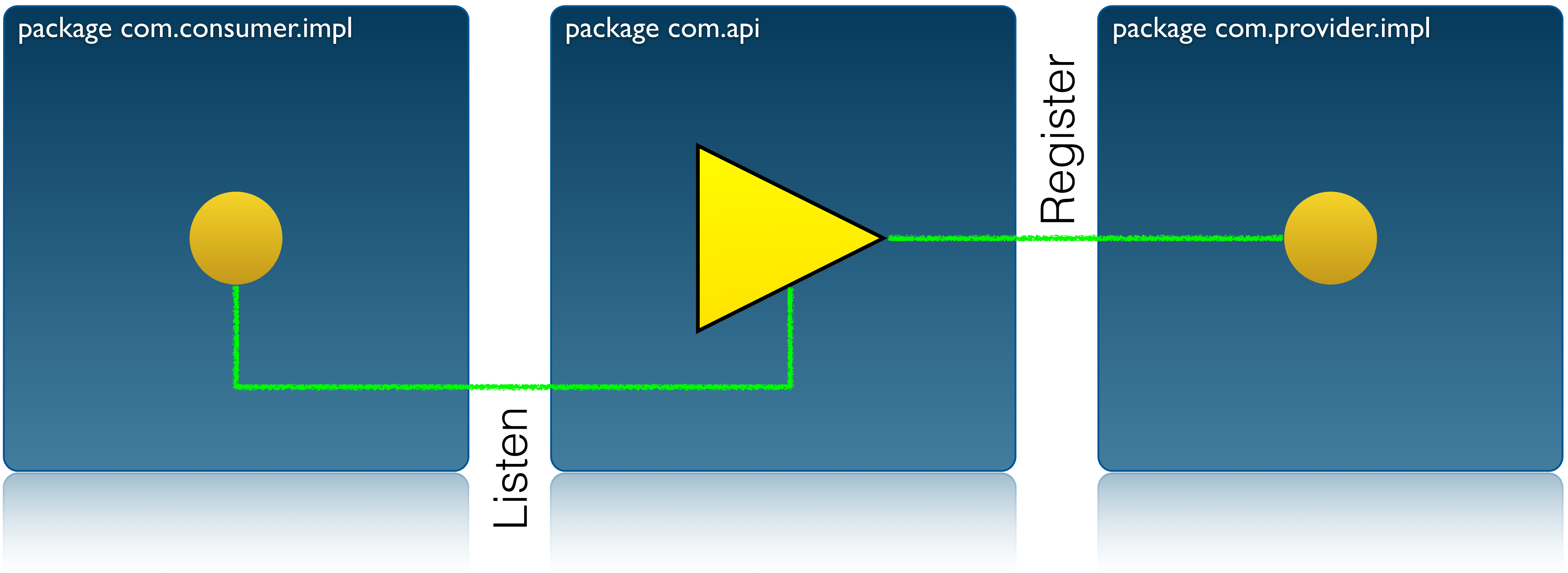


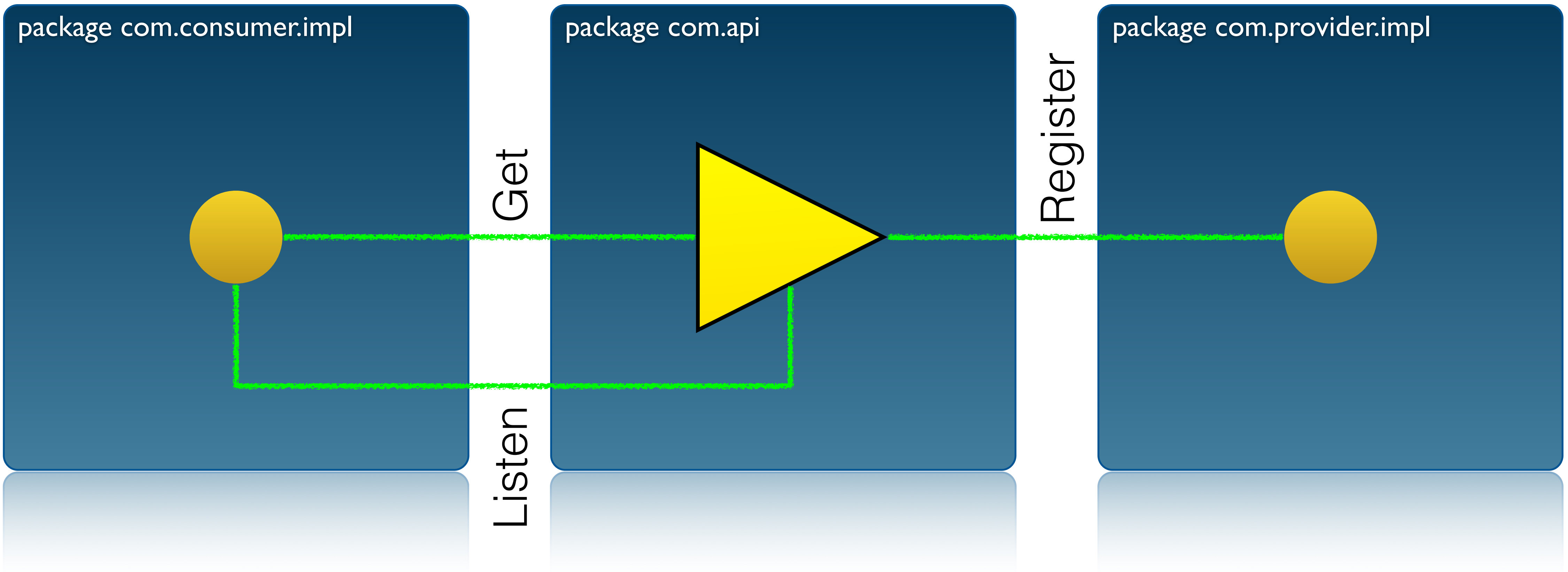
Now what?





Listen





An honest broker ...

Overhead?

μ Service call \equiv Method call

$\mu\text{Service} \equiv \text{object}$

Closer with less irritation ...

Because Life Isn't Complex Enough ..



WS- DeathStar

Let's Pretend The Web Never Happened

O'REILLY

Lockin & Vendor Thinking

Because Life Isn't Complex Enough ..



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~~WS-
DeathStar~~

REST

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Lockin & Vendor Thinking

SOA

Because Life Isn't Complex Enough ..



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SOA

“MICRO SERVICE”

Because Life Isn't Complex Enough ..



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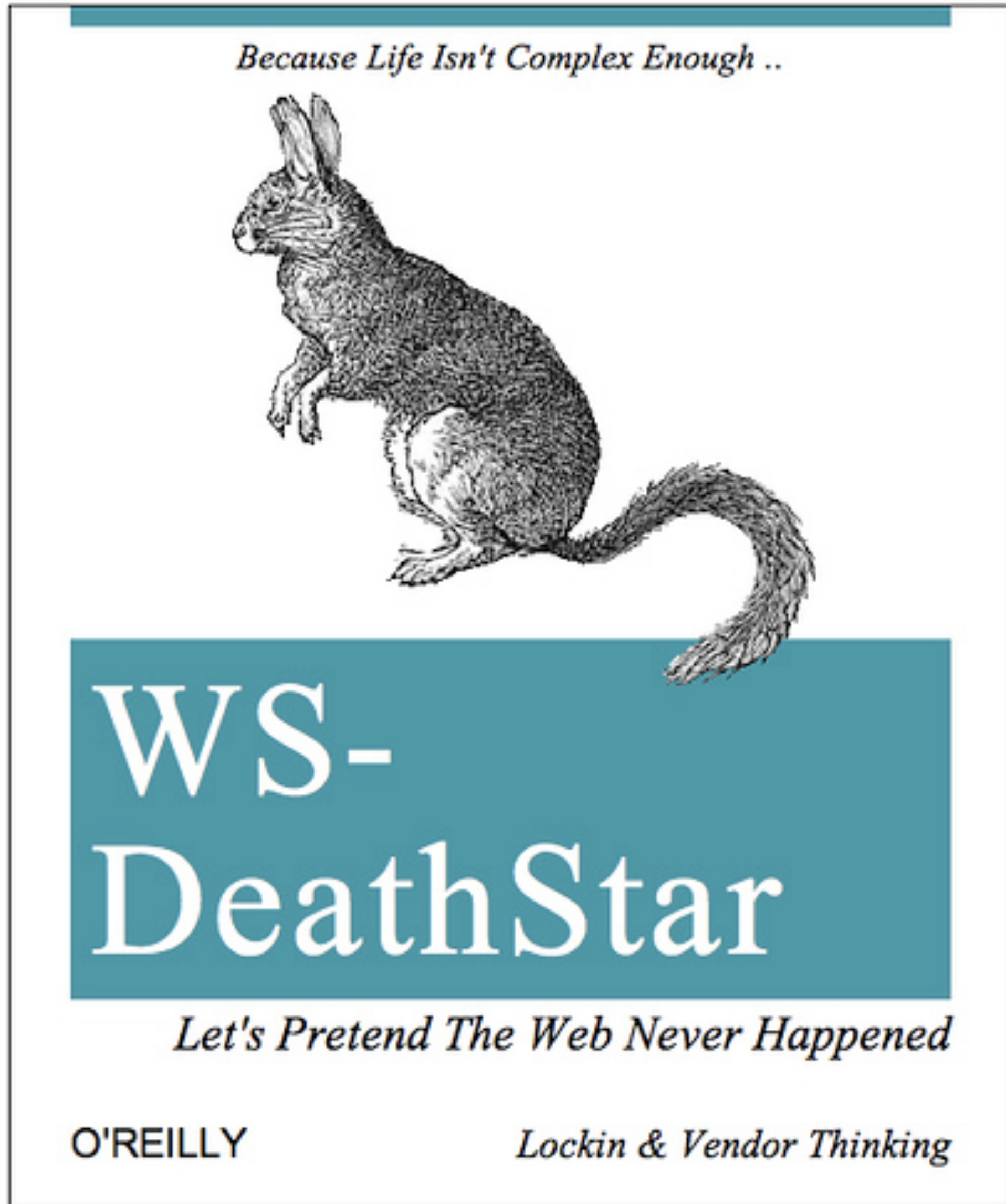
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Let's Pretend The Web Never Happened

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SOA



“MICRO SERVICE”

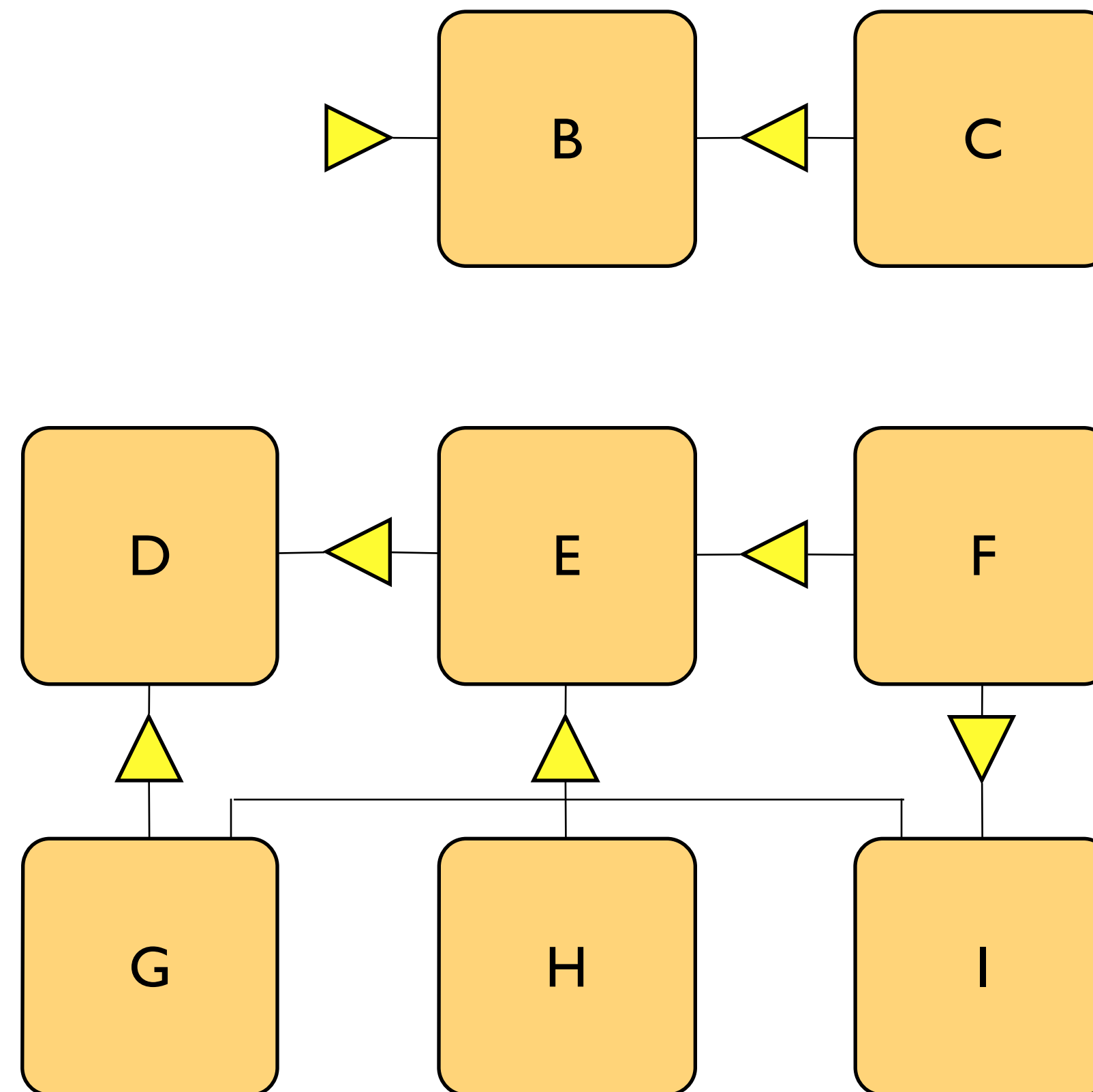


μSERVICE



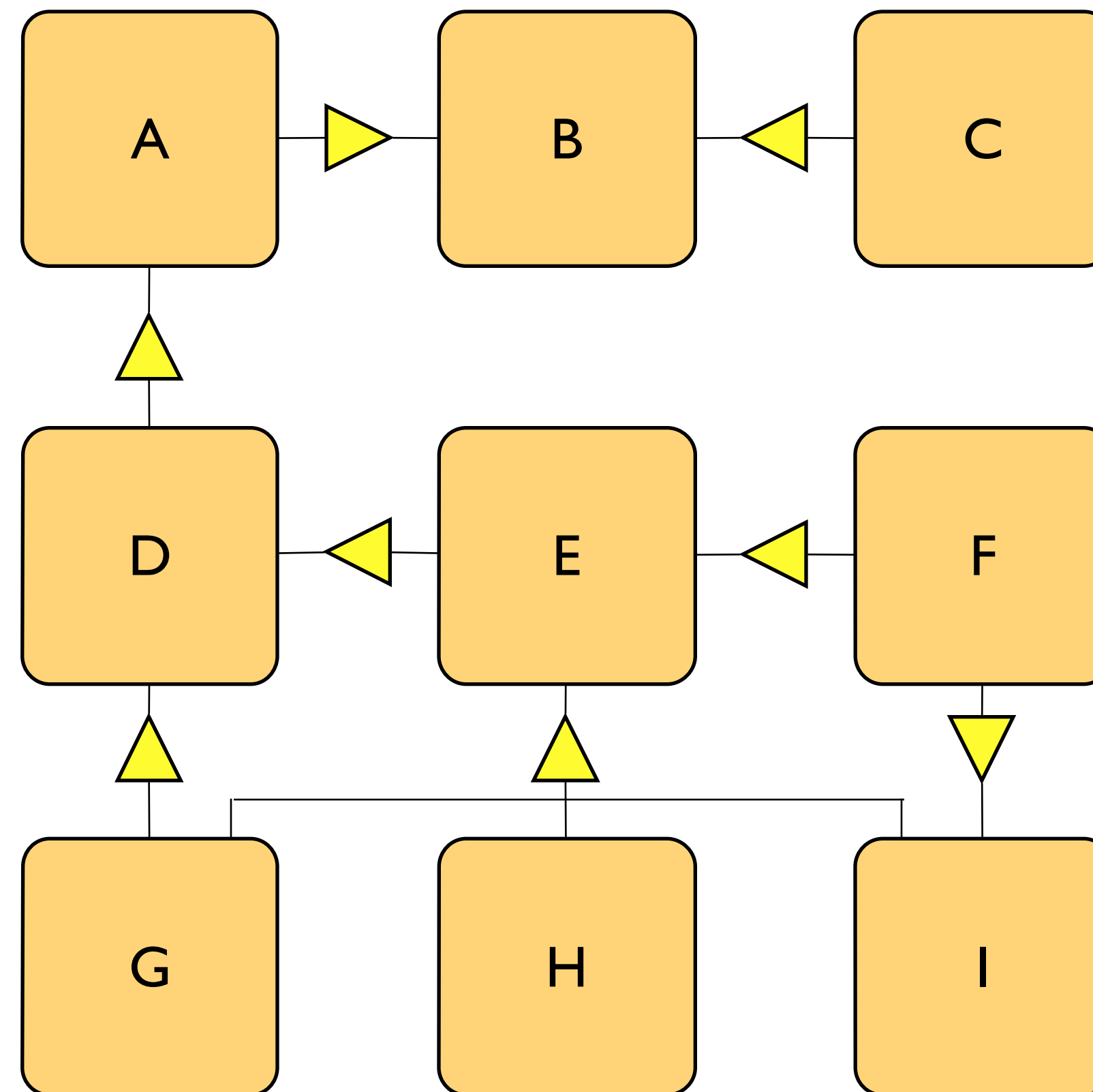
OSGi

- Adaptive
- Flexible
- Contracts
- Robust
- Secure
- Evolution
- Distributed



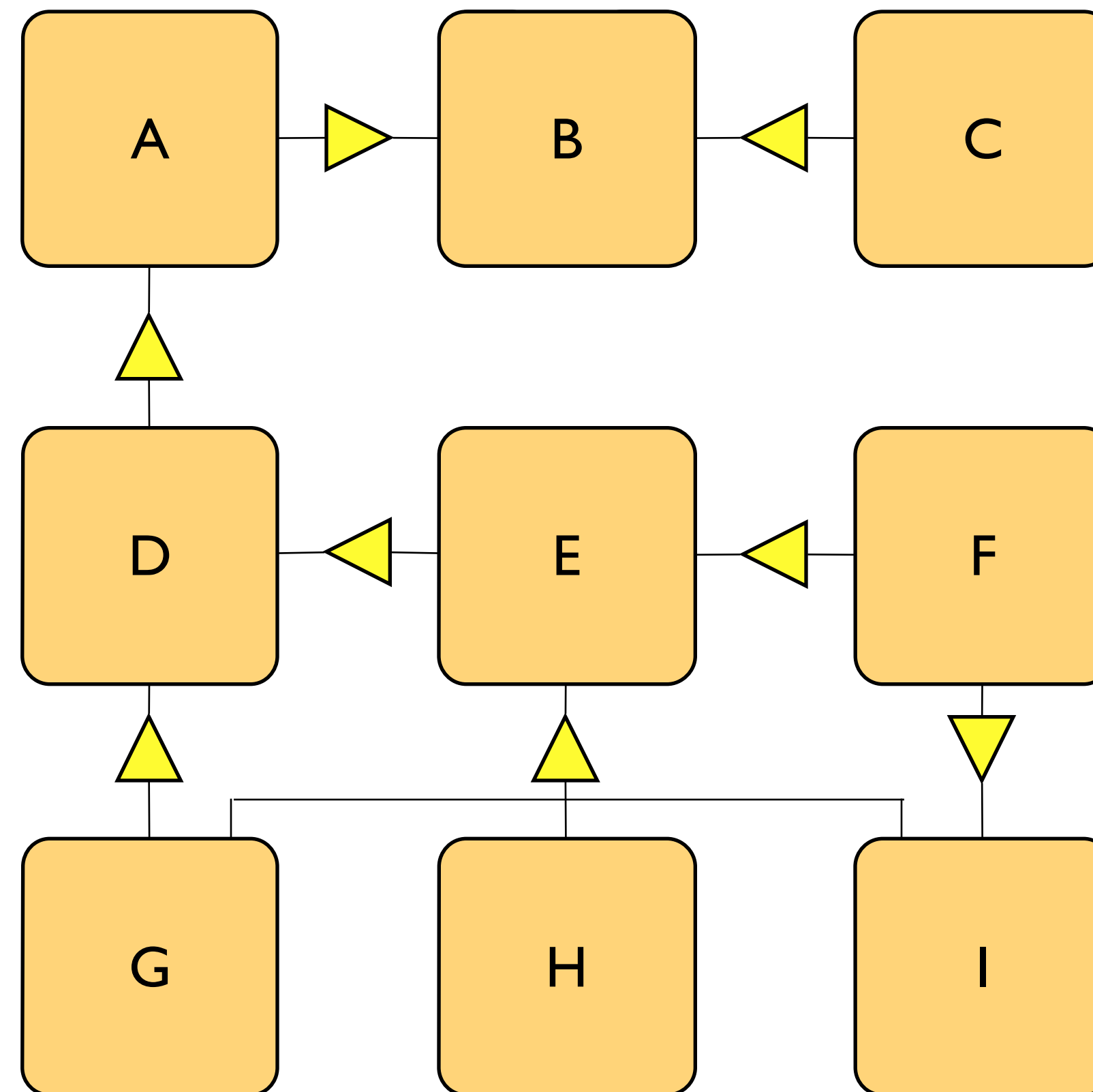
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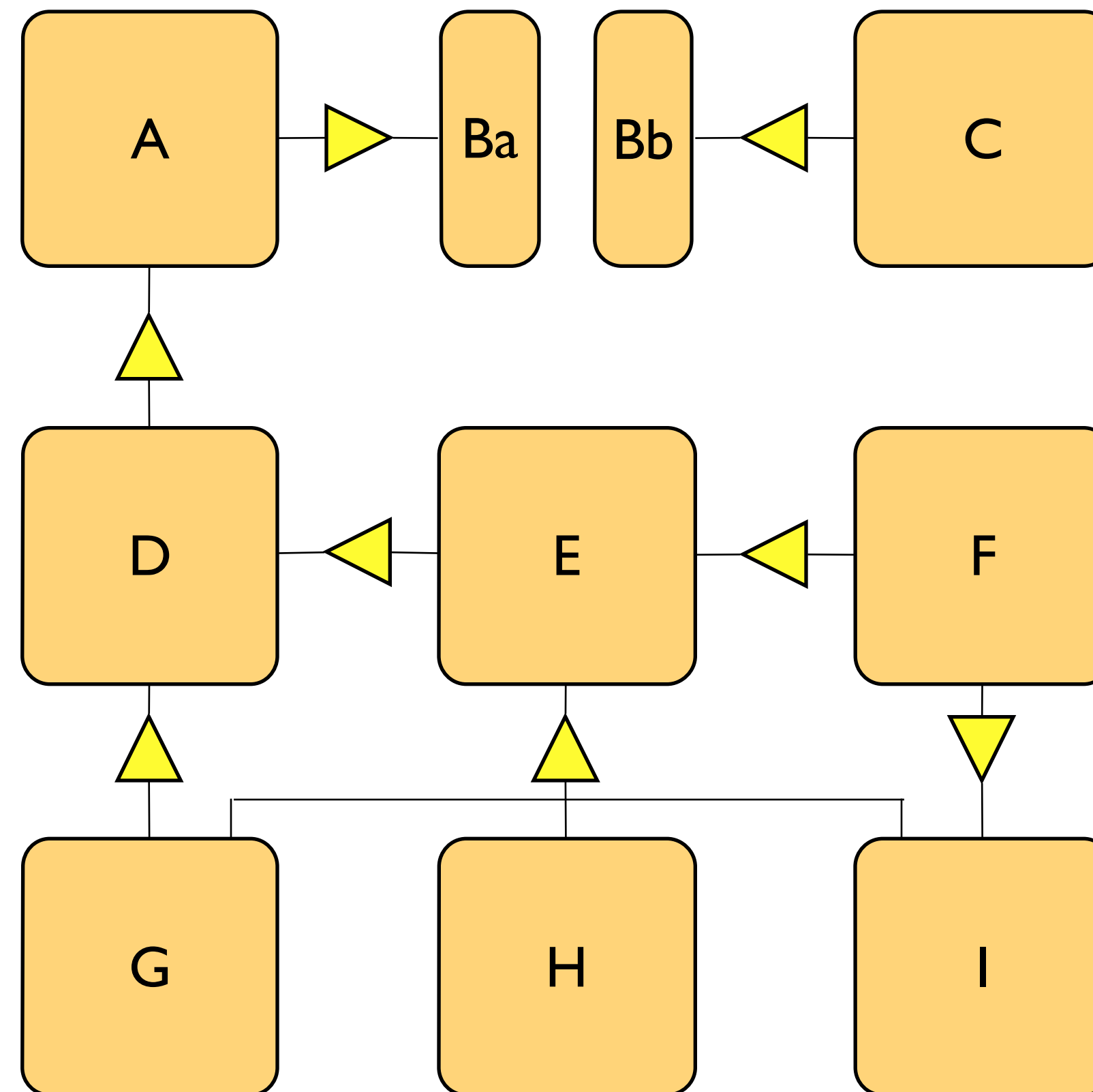
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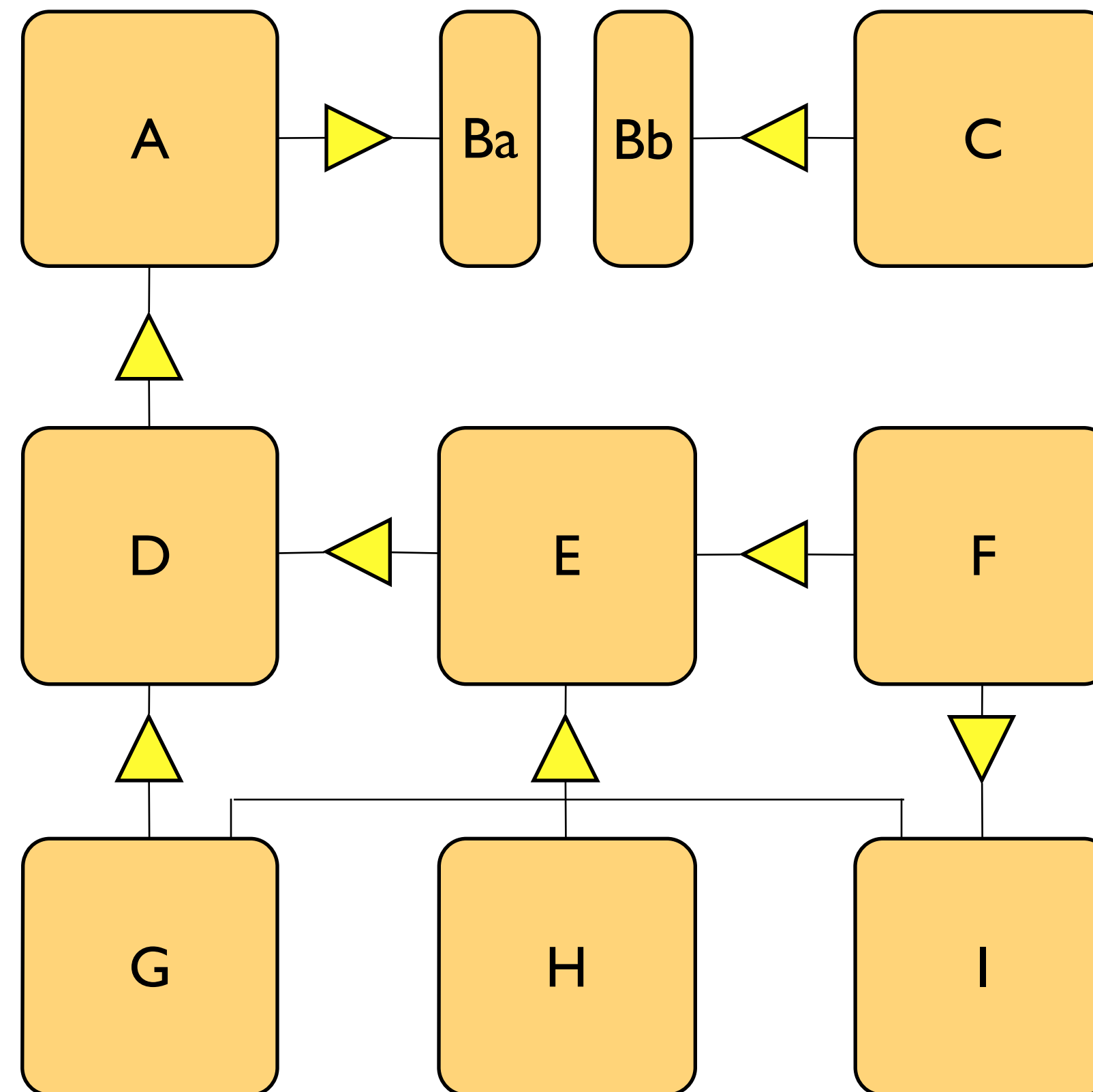
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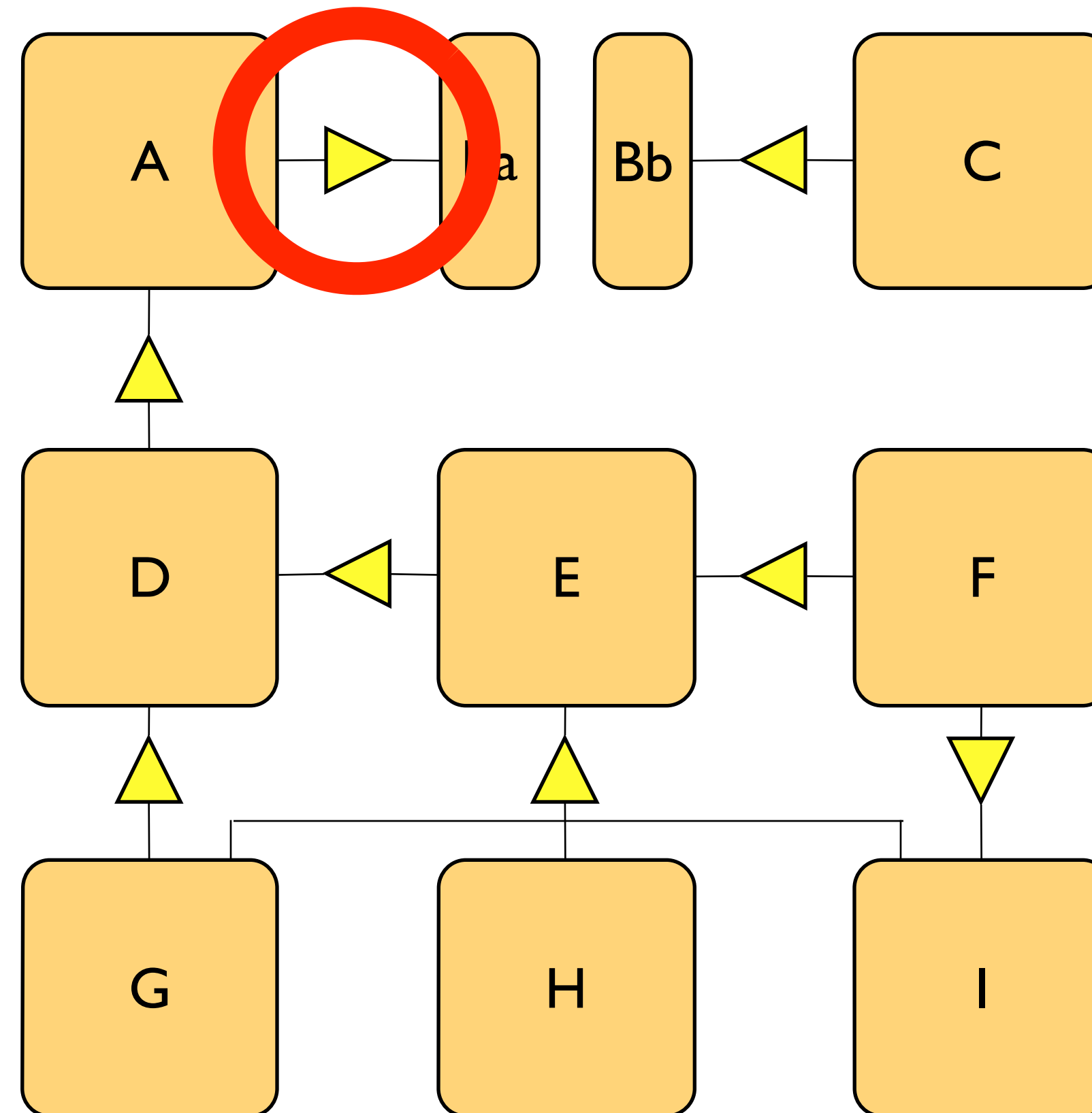
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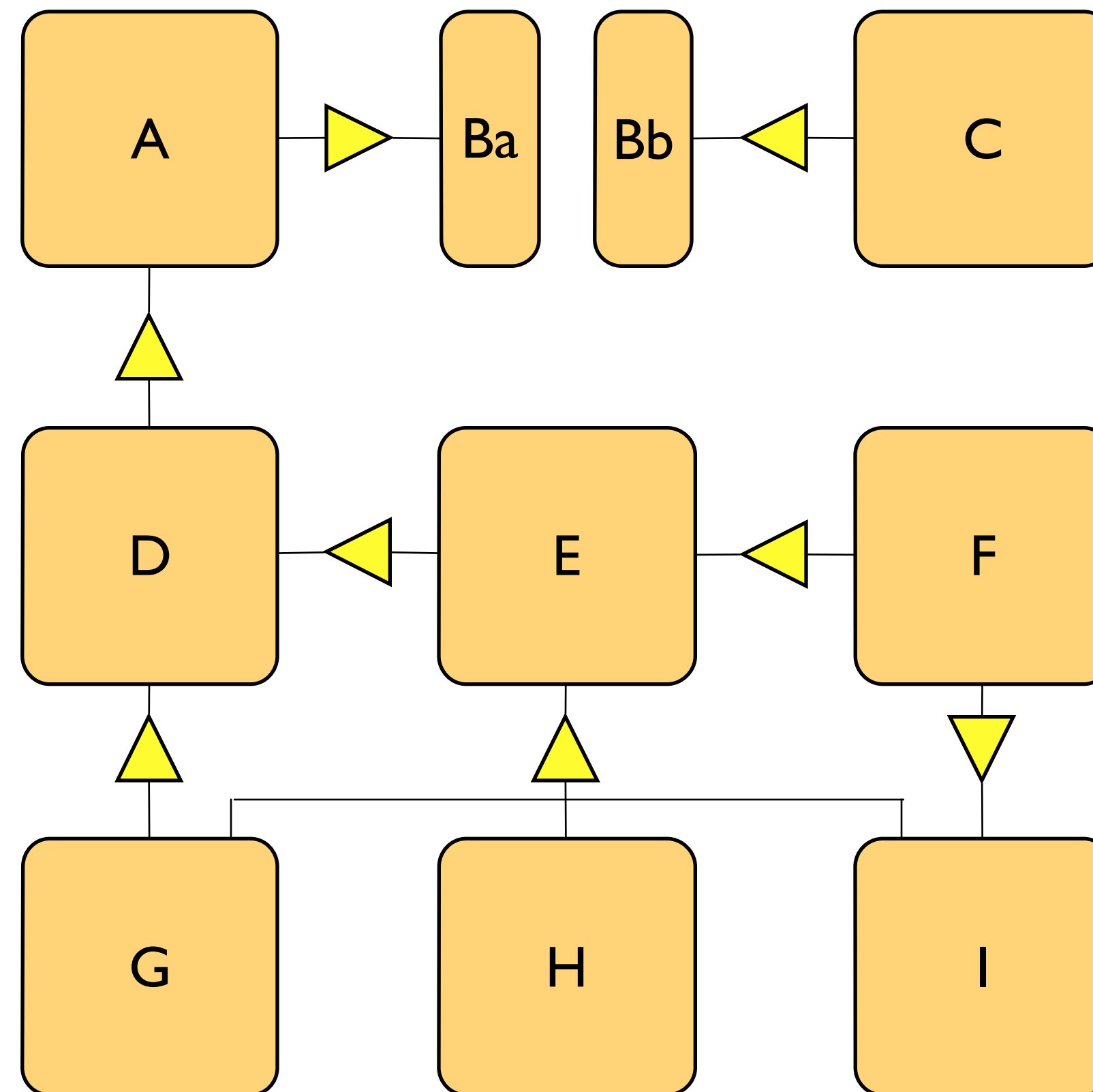
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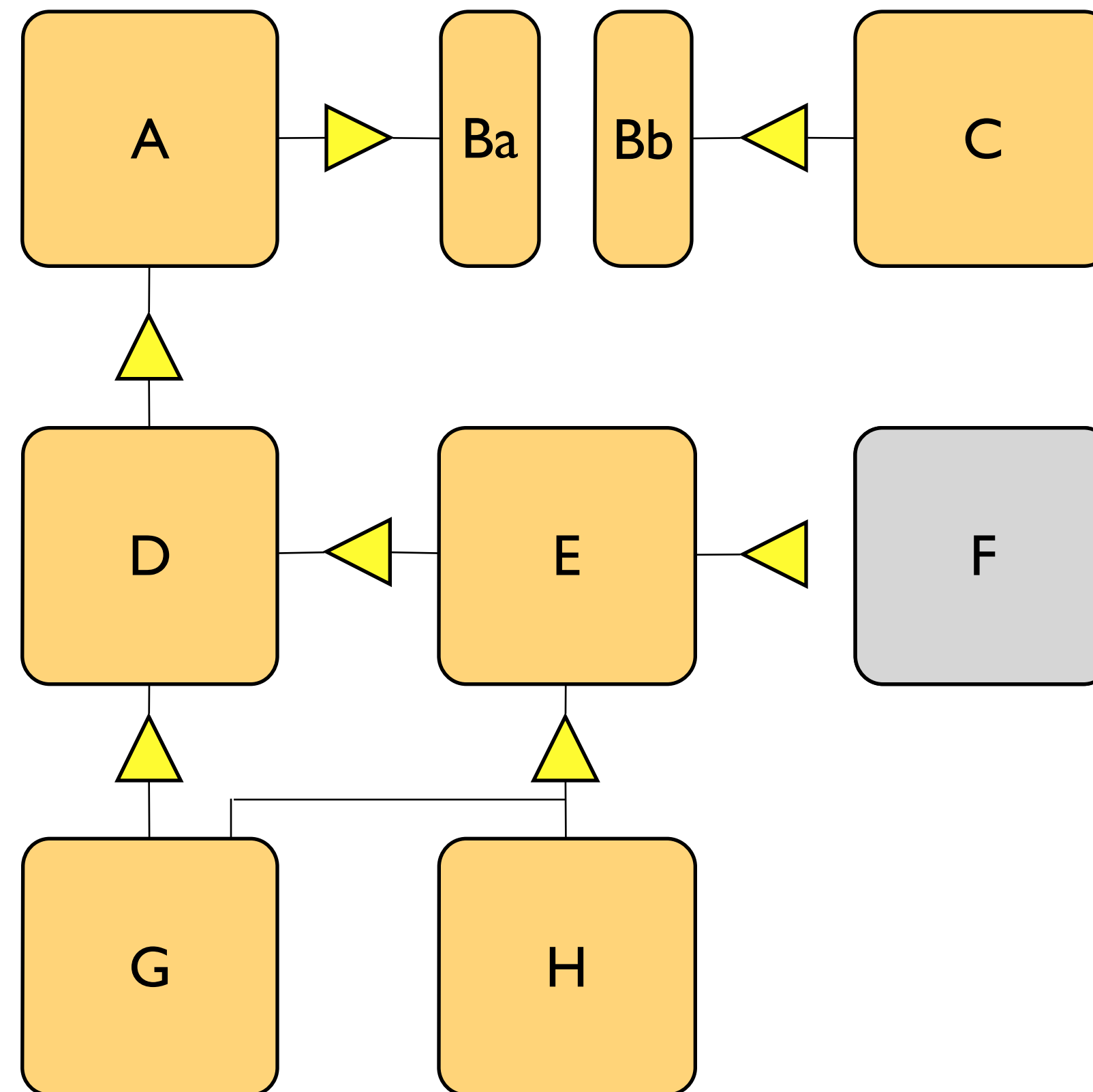
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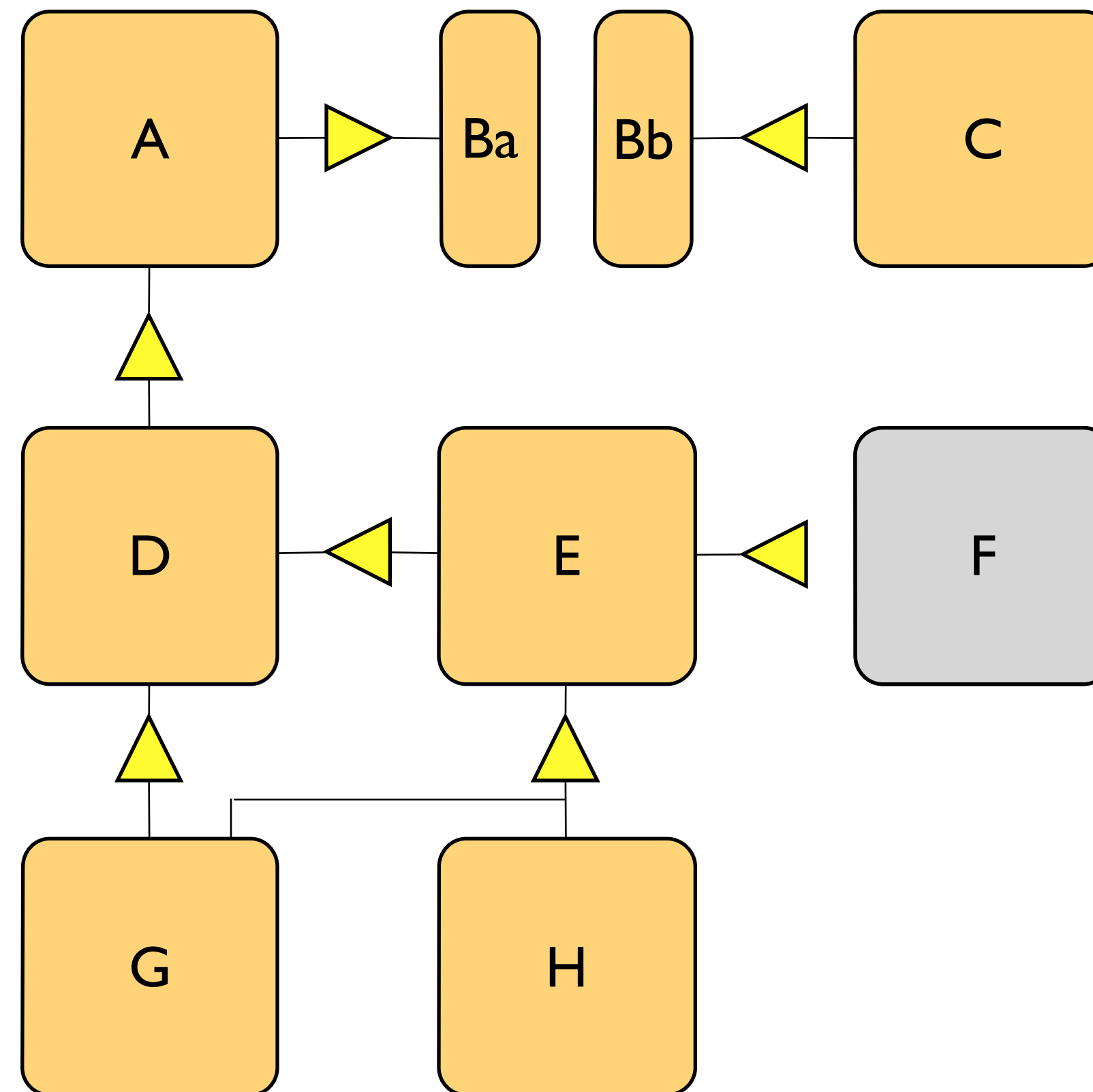
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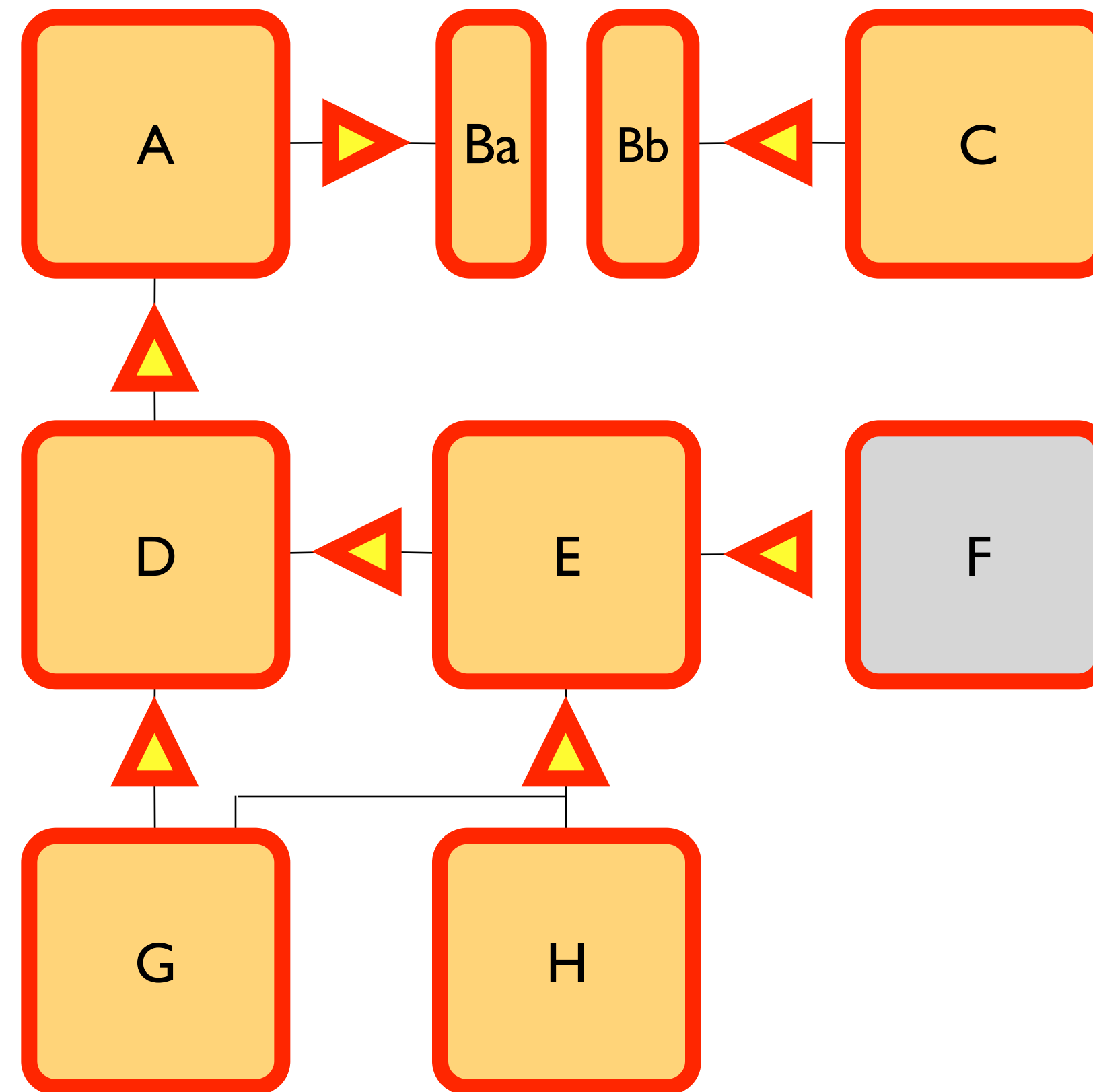
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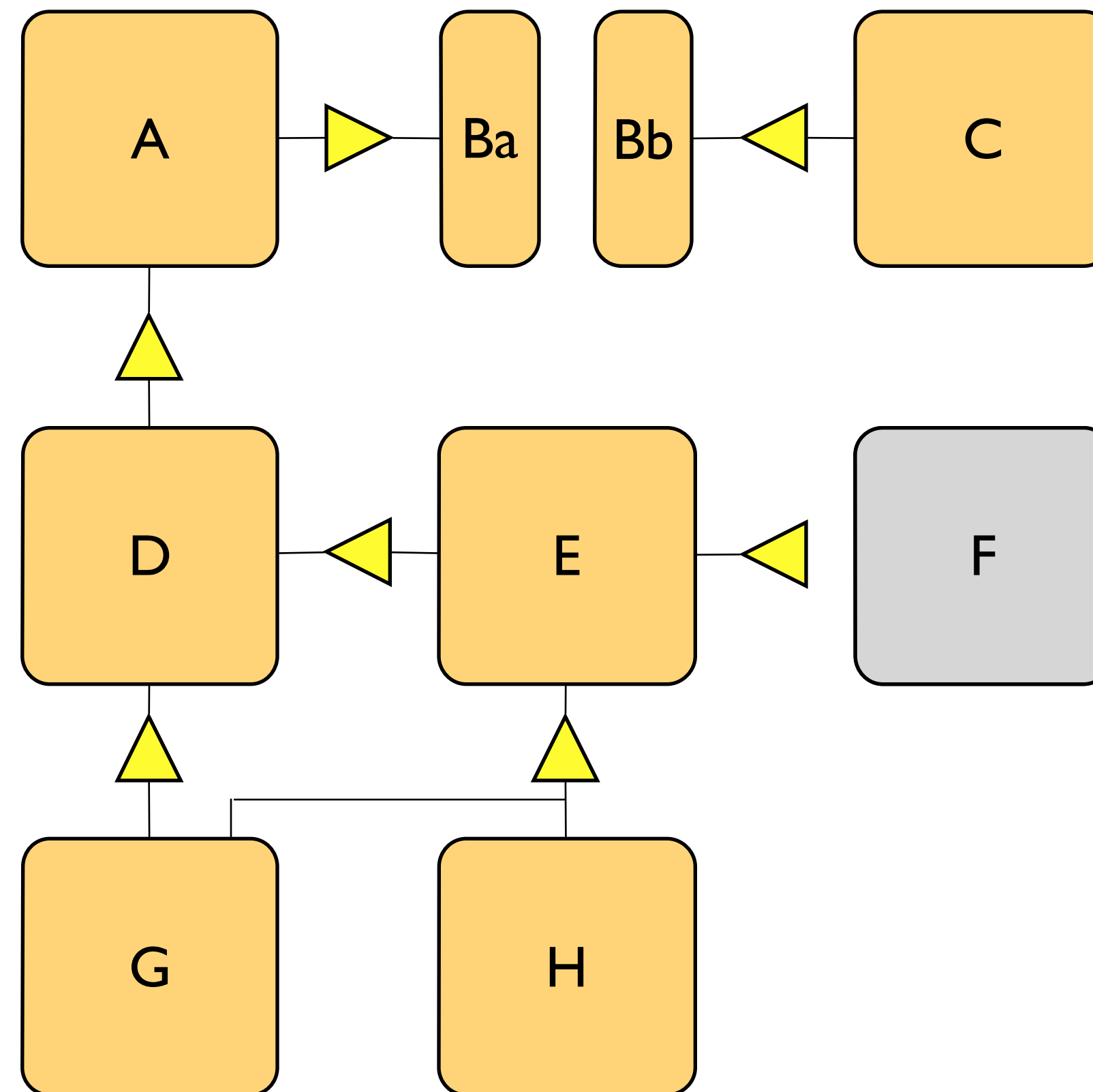
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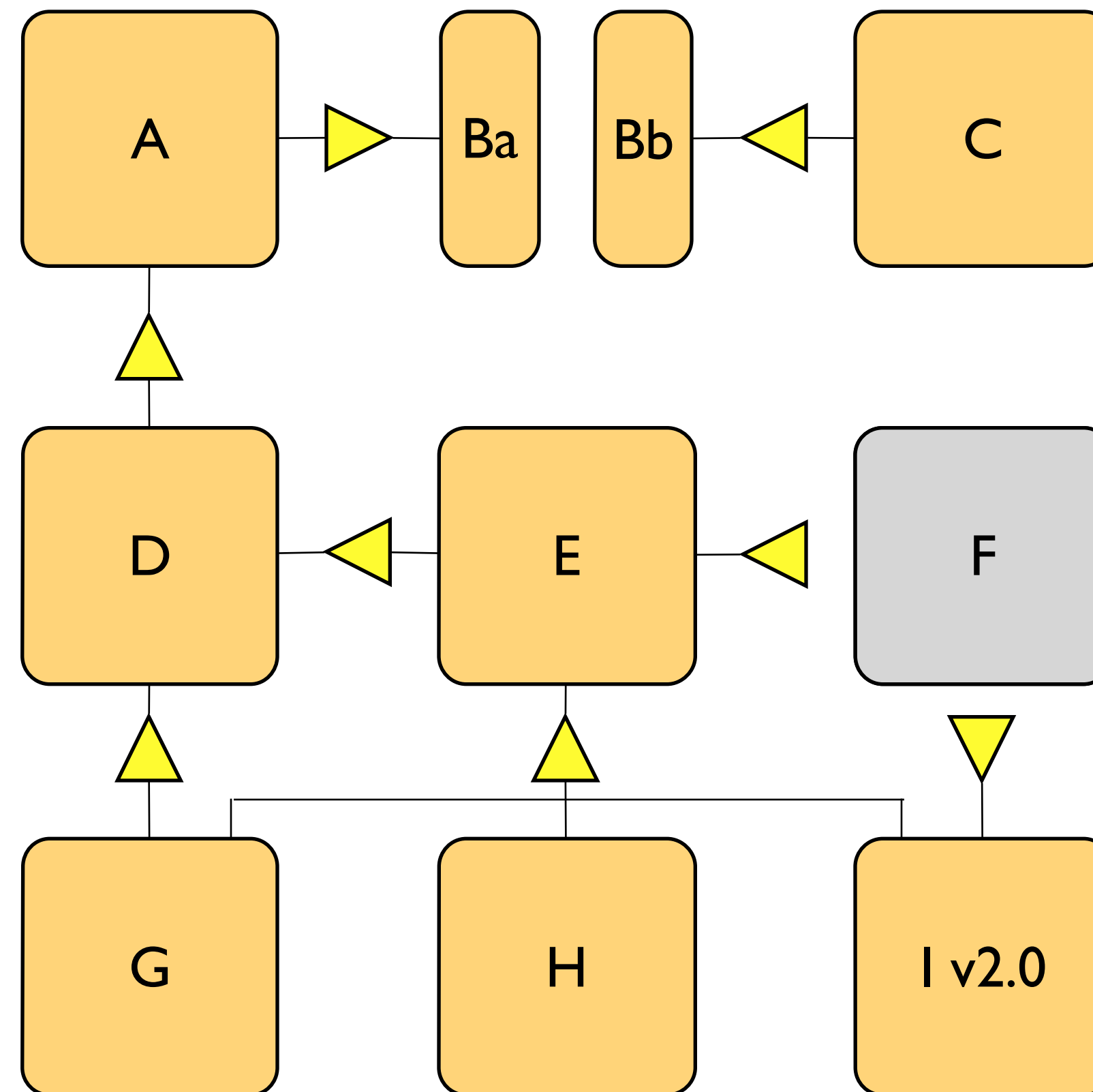
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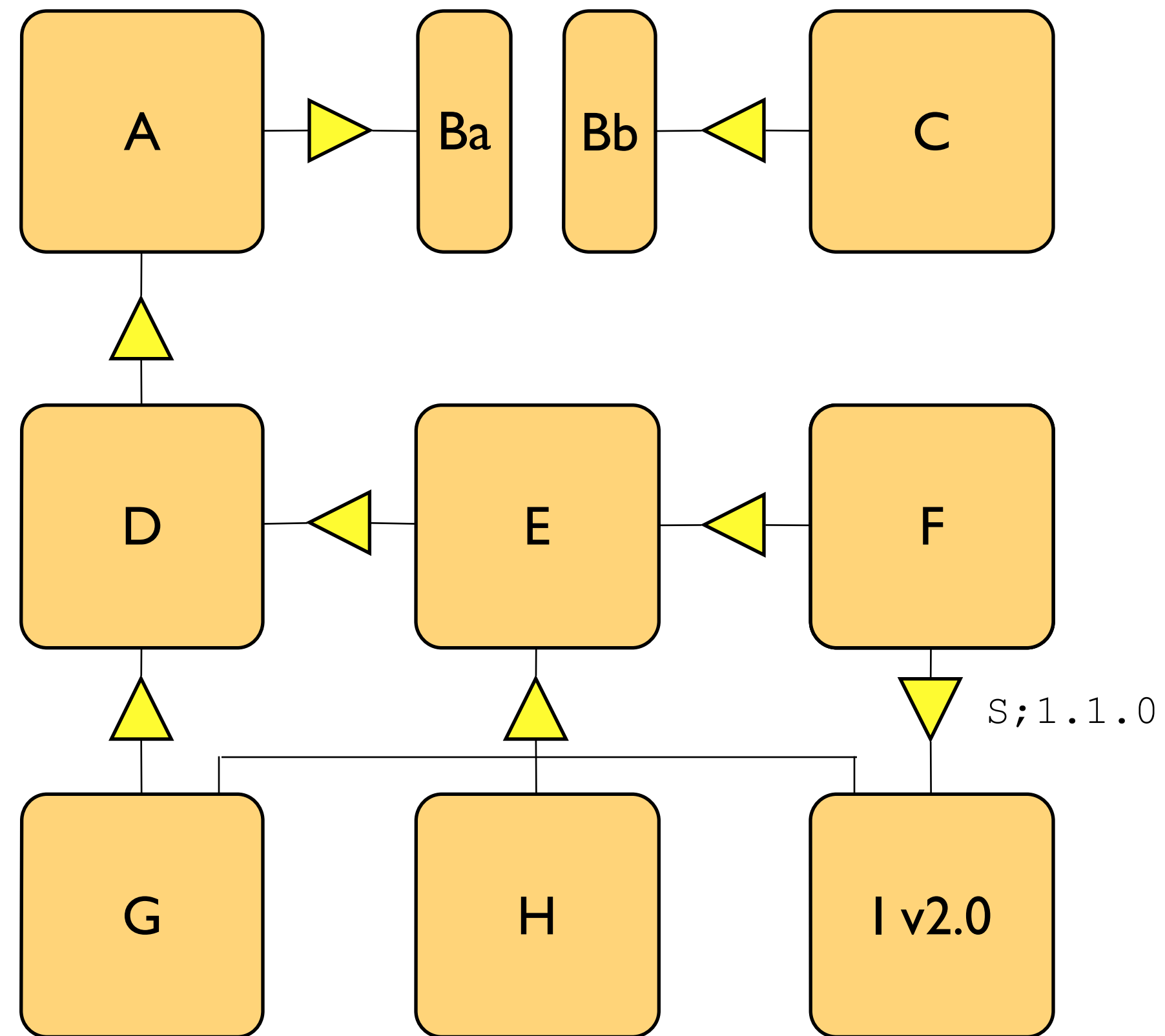
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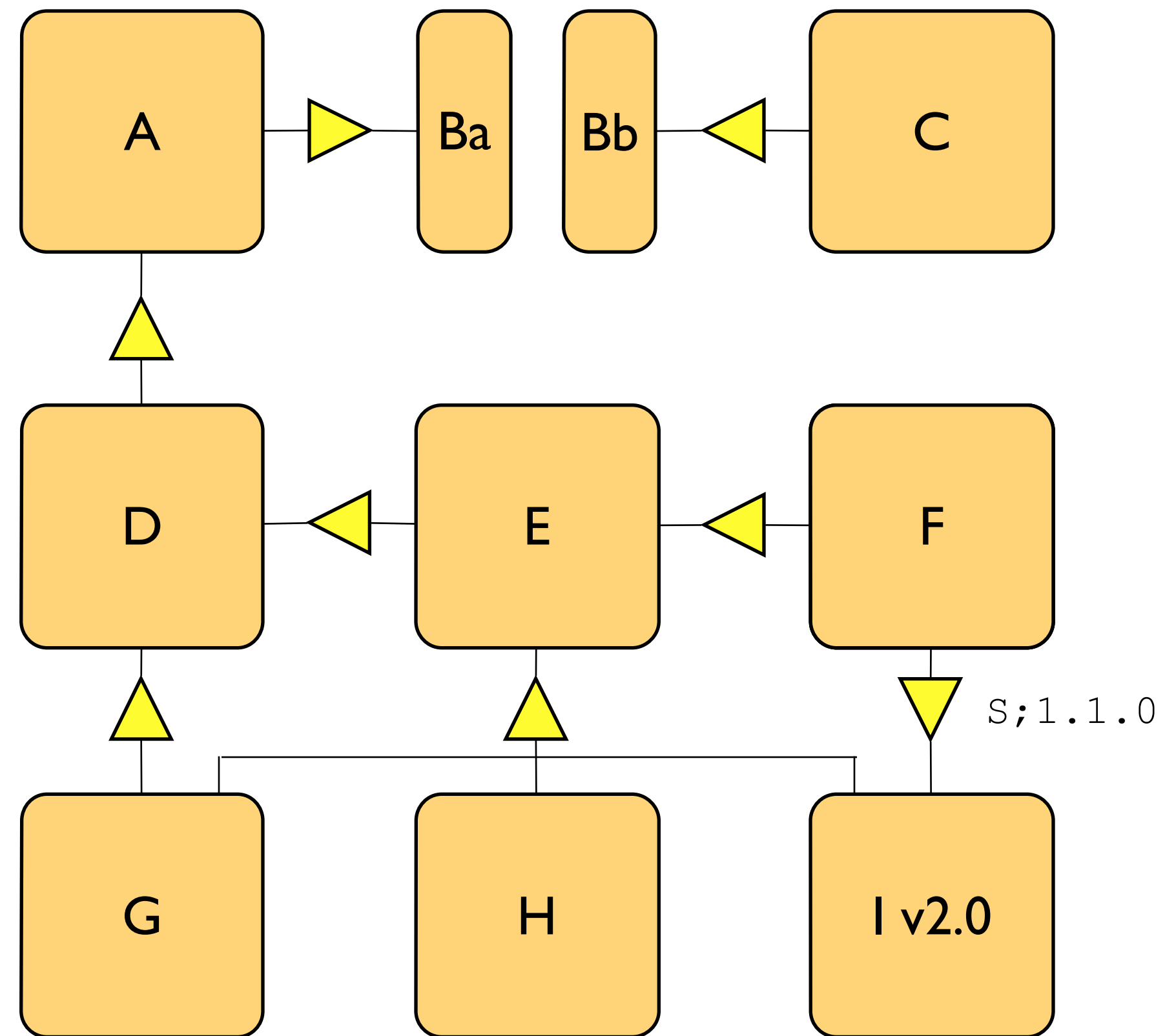
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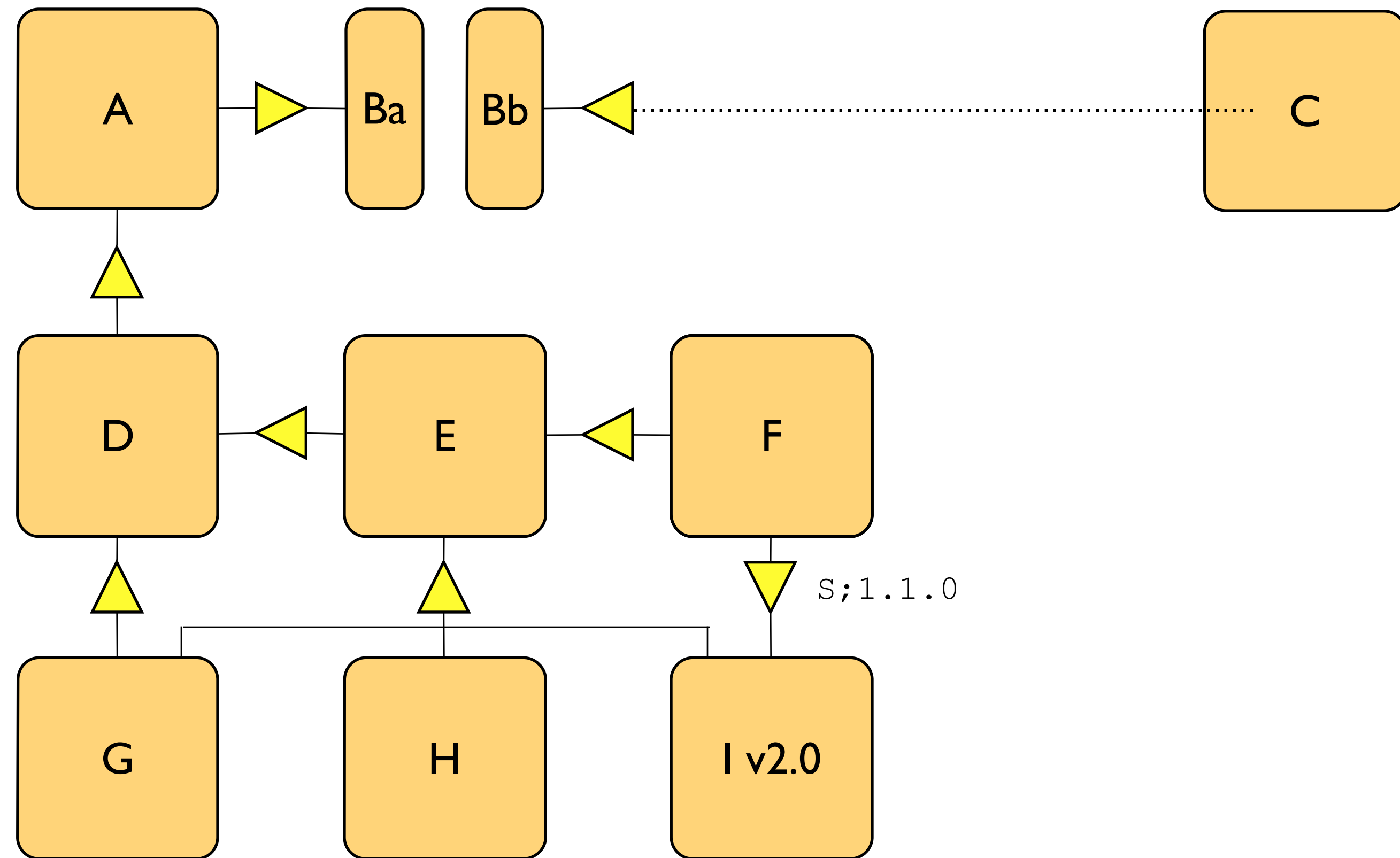
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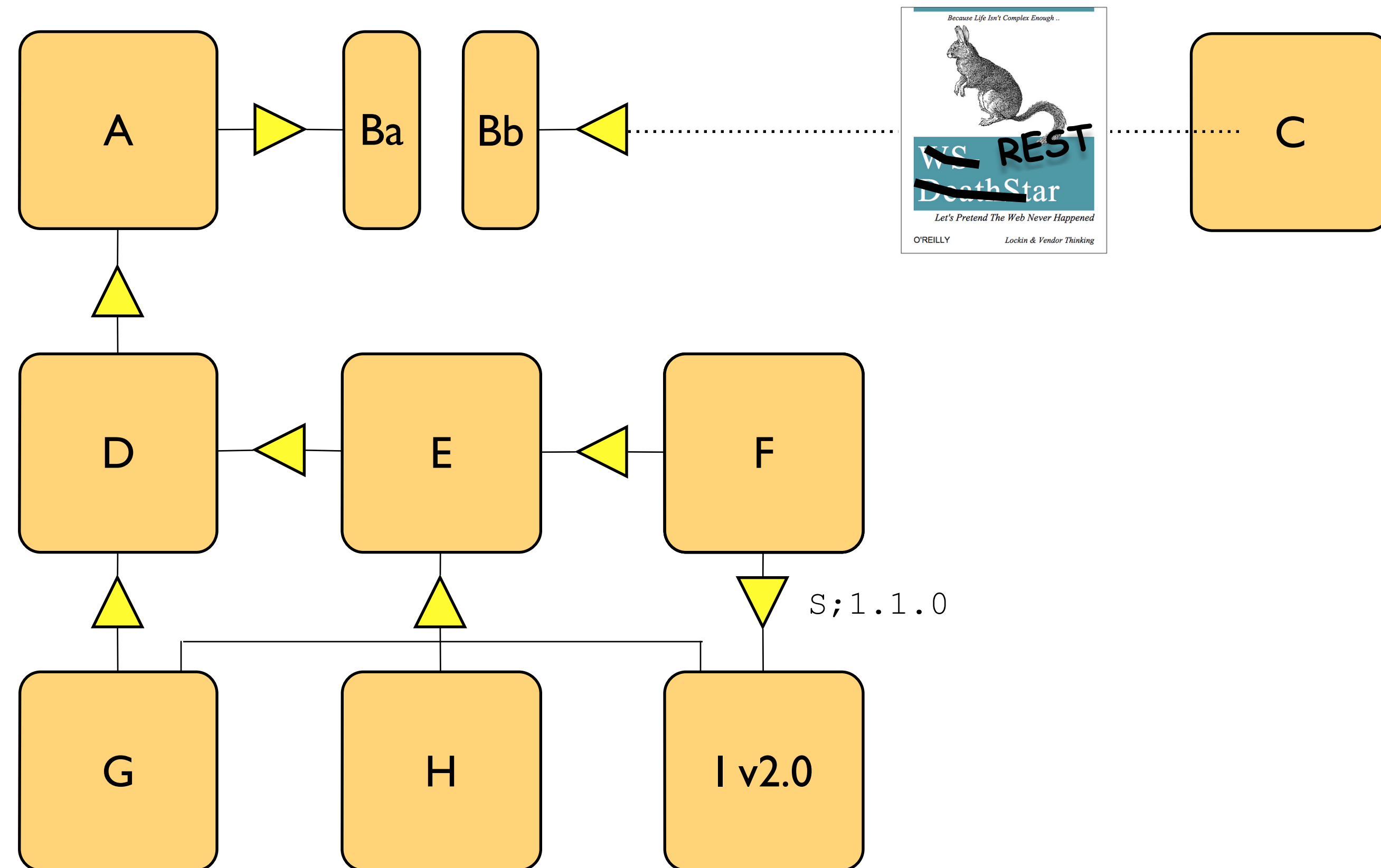
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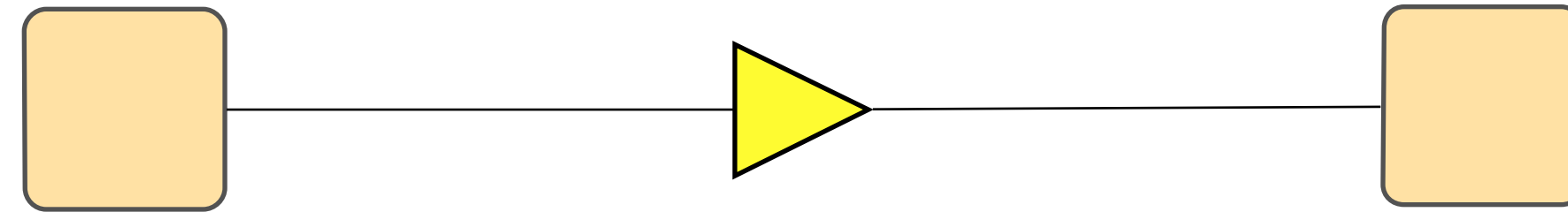


Service Patterns

- Factory
- Listener
- Discovery
- Distribution
- Dependencies

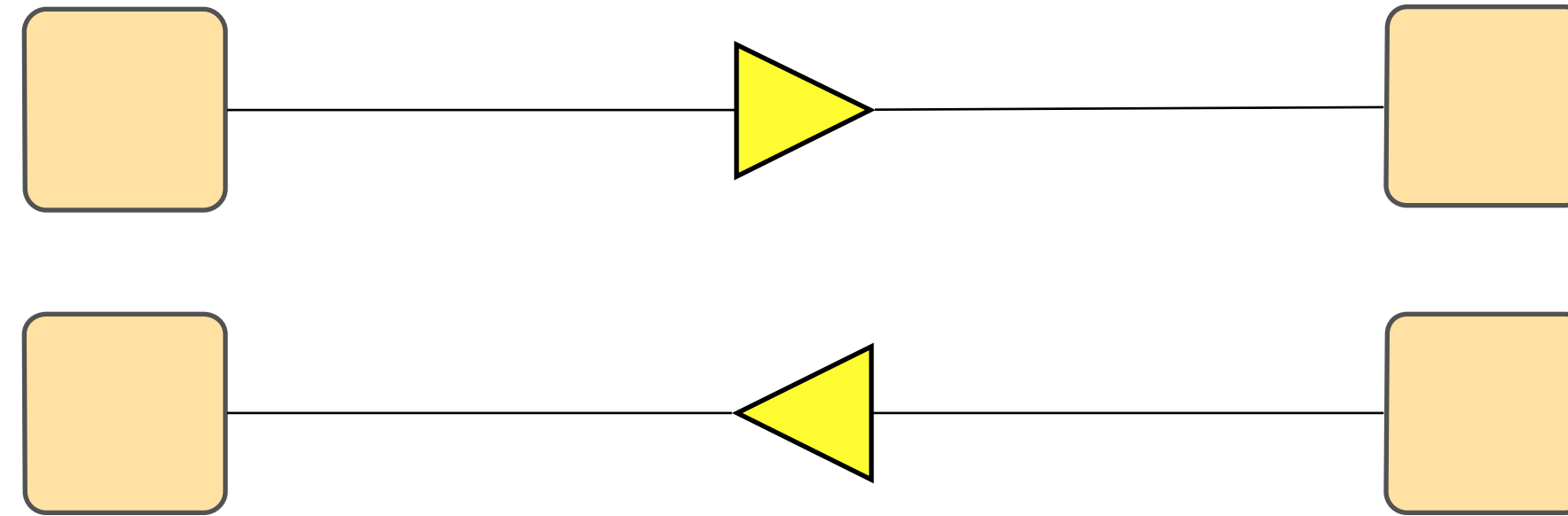
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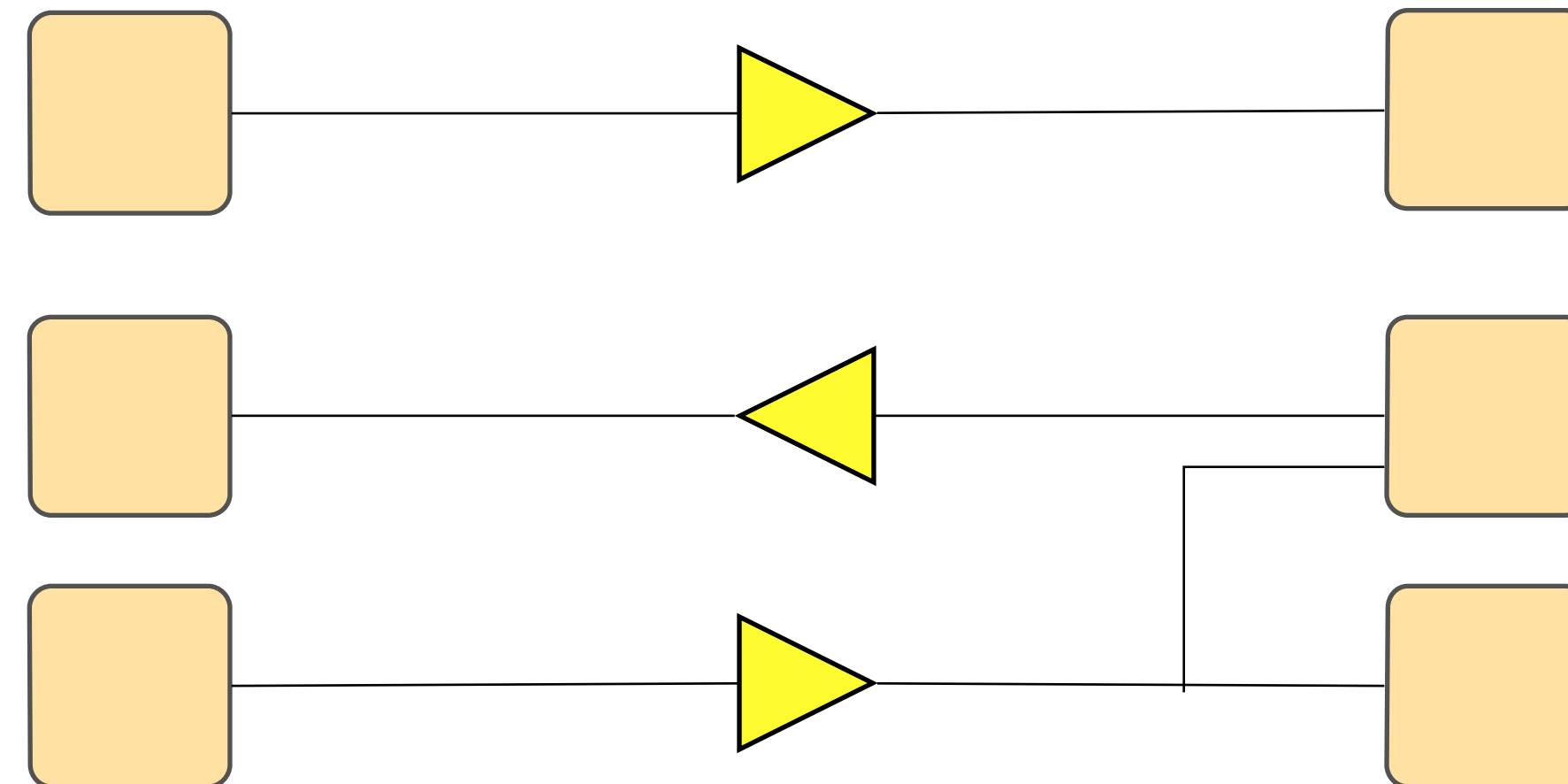
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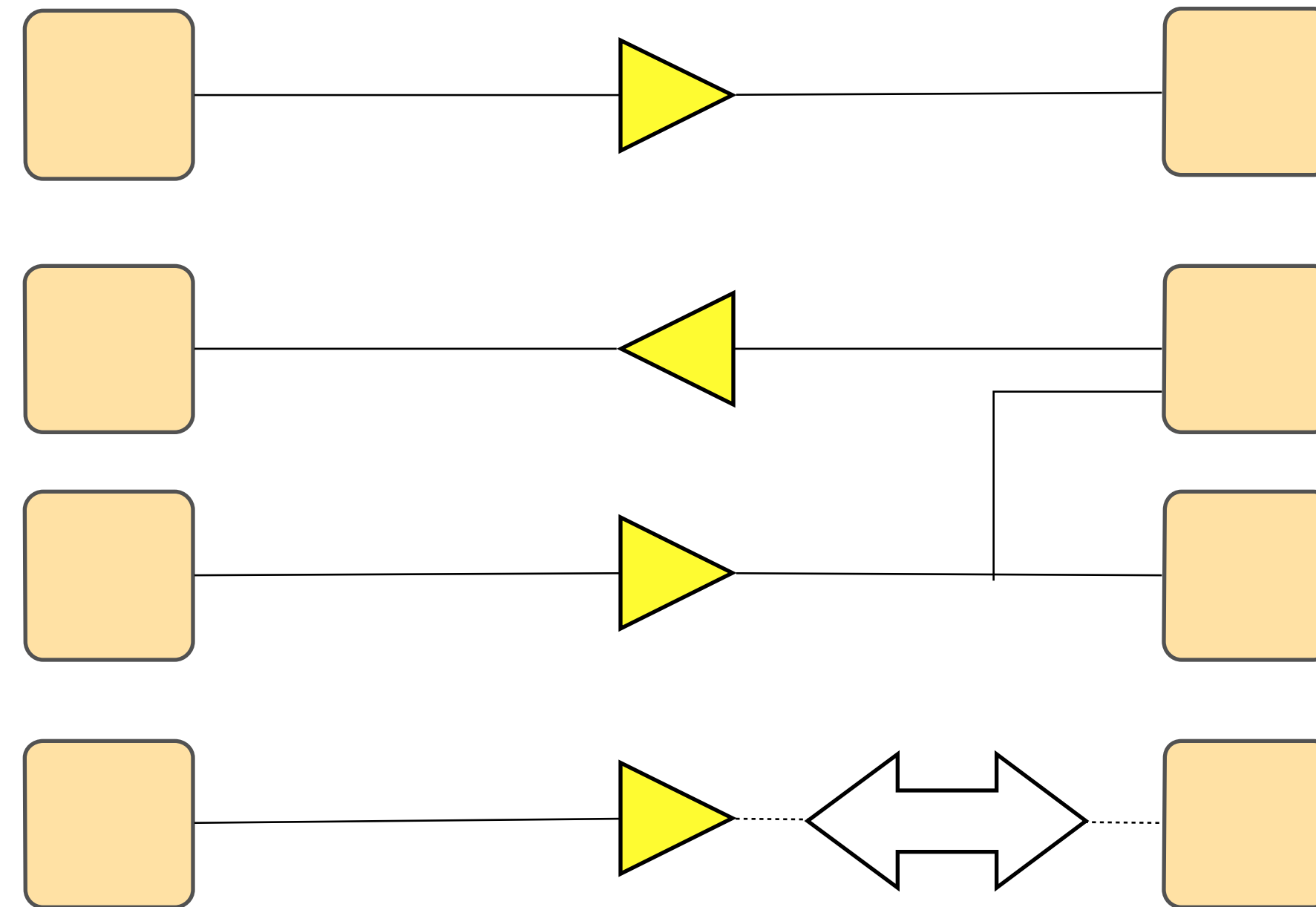
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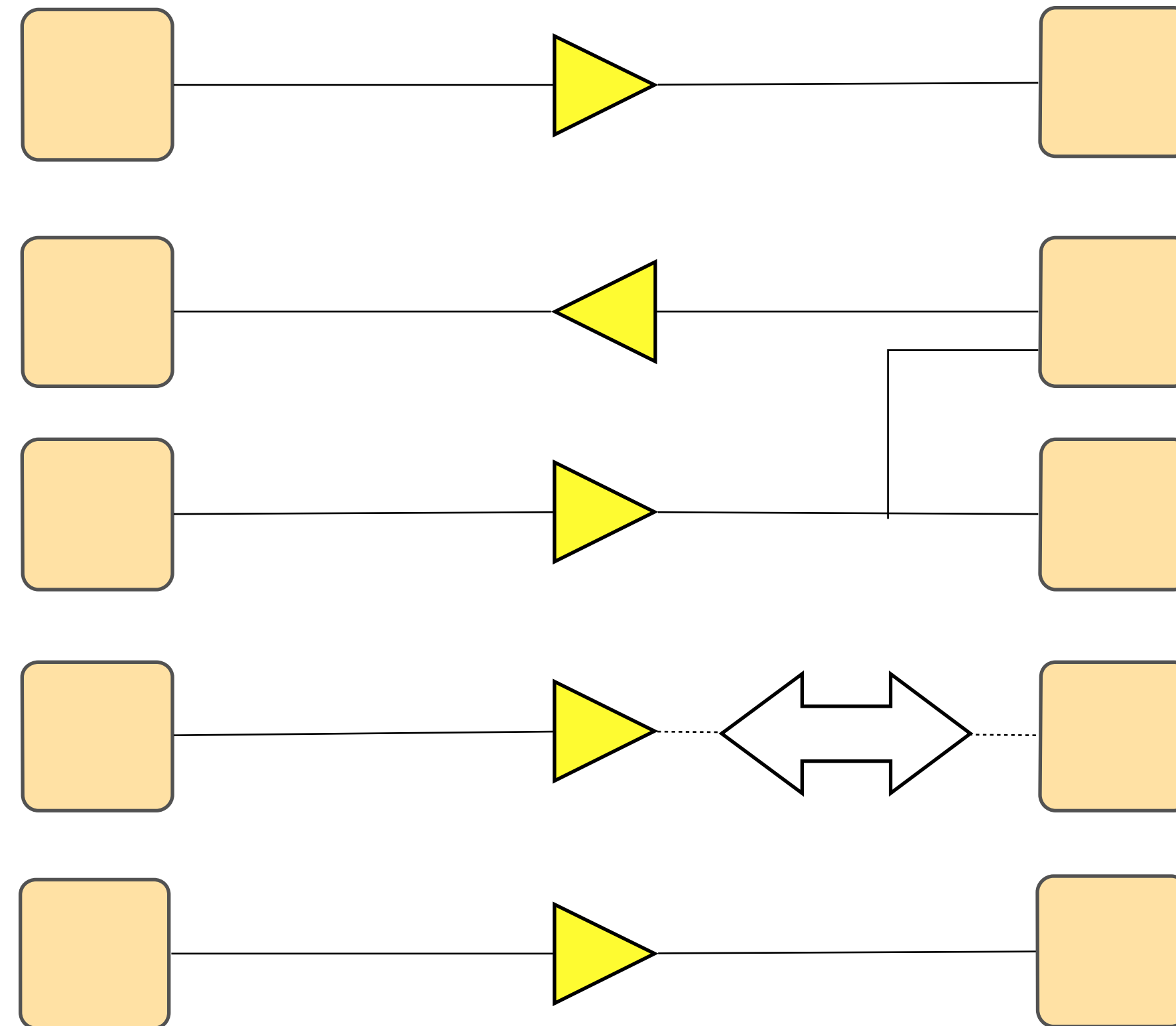
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Service Patterns

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But OSGi is so complicated!

Sigh ...

Complexity is in the eye of the
beholder

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beholder





The right tool for the job ...





18052011

The tool to bond them

meet
bnd(tools)

Package Explorer

- cnf
- com.acme.prime.speaker
 - src
 - com.acme.prime.speaker.api [1.0.0]
 - com.acme.prime.speaker.command
 - SpeakerCommand.java
 - com.acme.prime.speaker.provider
 - test
 - JRE System Library [Java SE 8 [1.8.0]]
 - Bnd Bundle Path
 - osgi.enroute.base.api-1.0.0.201403221410.jar - /Us
 - biz.aQute.junit-1.3.0.jar - cnf/cache/biz.aQute.junit
 - osgi.logger.provider-1.0.0.201404171642.jar - /Use
 - generated
 - api.bnd
 - bnd.bnd**
 - com.acme.prime.speaker.bndrun
 - command.bnd
 - debug.bndrun
 - provider.bnd
 - readme.md

Repositories

Enter search string

- Workspace temp
- Local
- Central
- Release

com.acme.prime.speaker

Project Build 3 warnings detected

Sub-bundles
If sub-bundles are enabled, then .bnd files other than "bnd.bnd" will be built as bundles.
 Enable sub-bundles

Build Path
The selected bundles will be added to the project build path for compilation.

- osgi.enroute.base.api 1.0
- biz.aQute.junit
- osgi.logger.provider 1.0

Build Operations

- Rebuild Project
- Clean Project

Build Run Source

Problems @ Javadoc Imports/Exports Terminal

0 errors, 3 warnings, 0 others

Description	Resource	Path	Location	Type
Warnings (3 items)				

bnd(tools)

- DS Component Annotation support
- Access to maven central and more
- Based on Capability model
- Extensive debugging with dynamic updating
- Executable JARs
- Release tool with semantic versioning
- Baselining
- Integration with Continuous Integration

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**SEE NEIL BARTLETT'S TALK
ON BNDTOOLS NEXT**

OSGi enRoute

OSGi enRoute

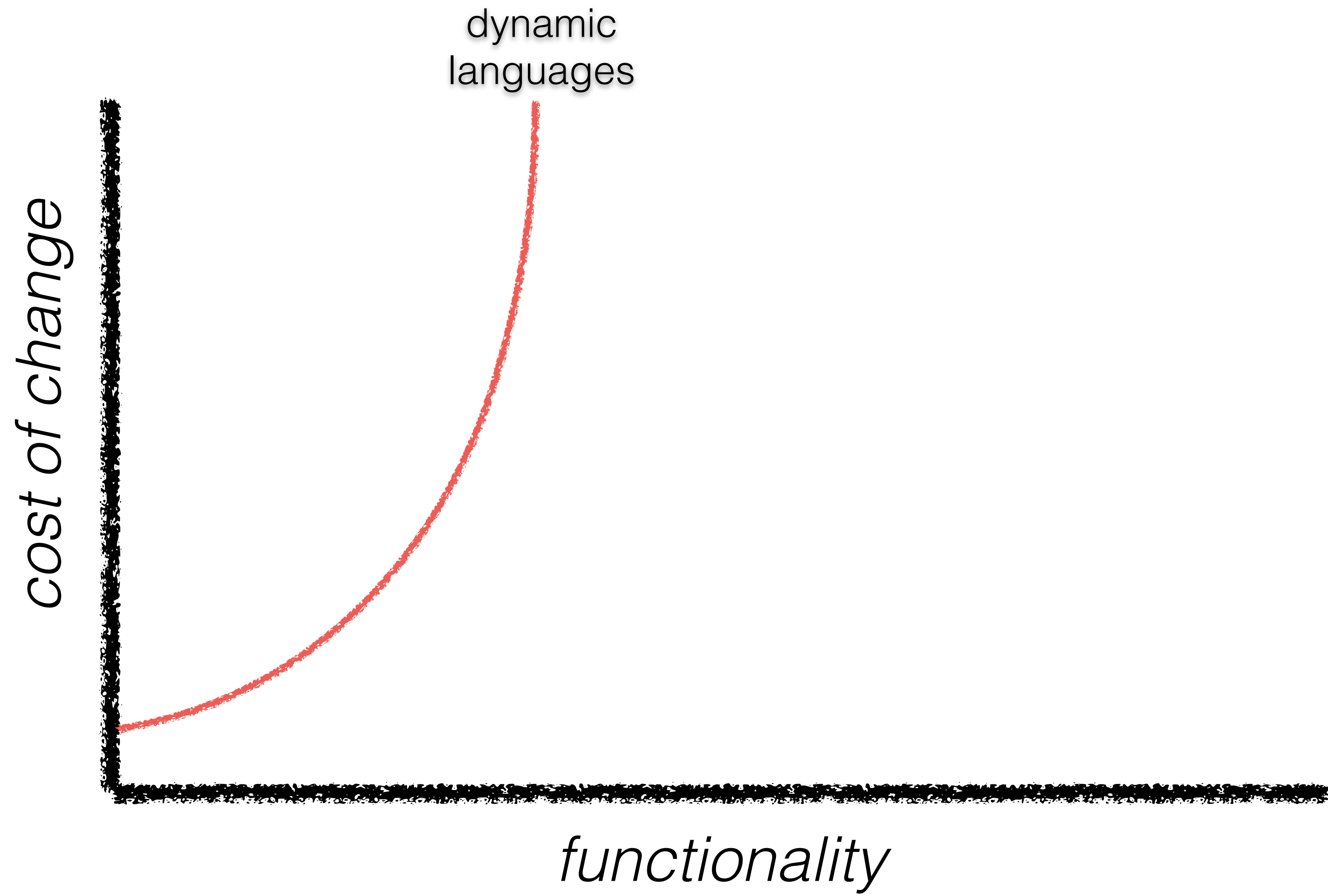


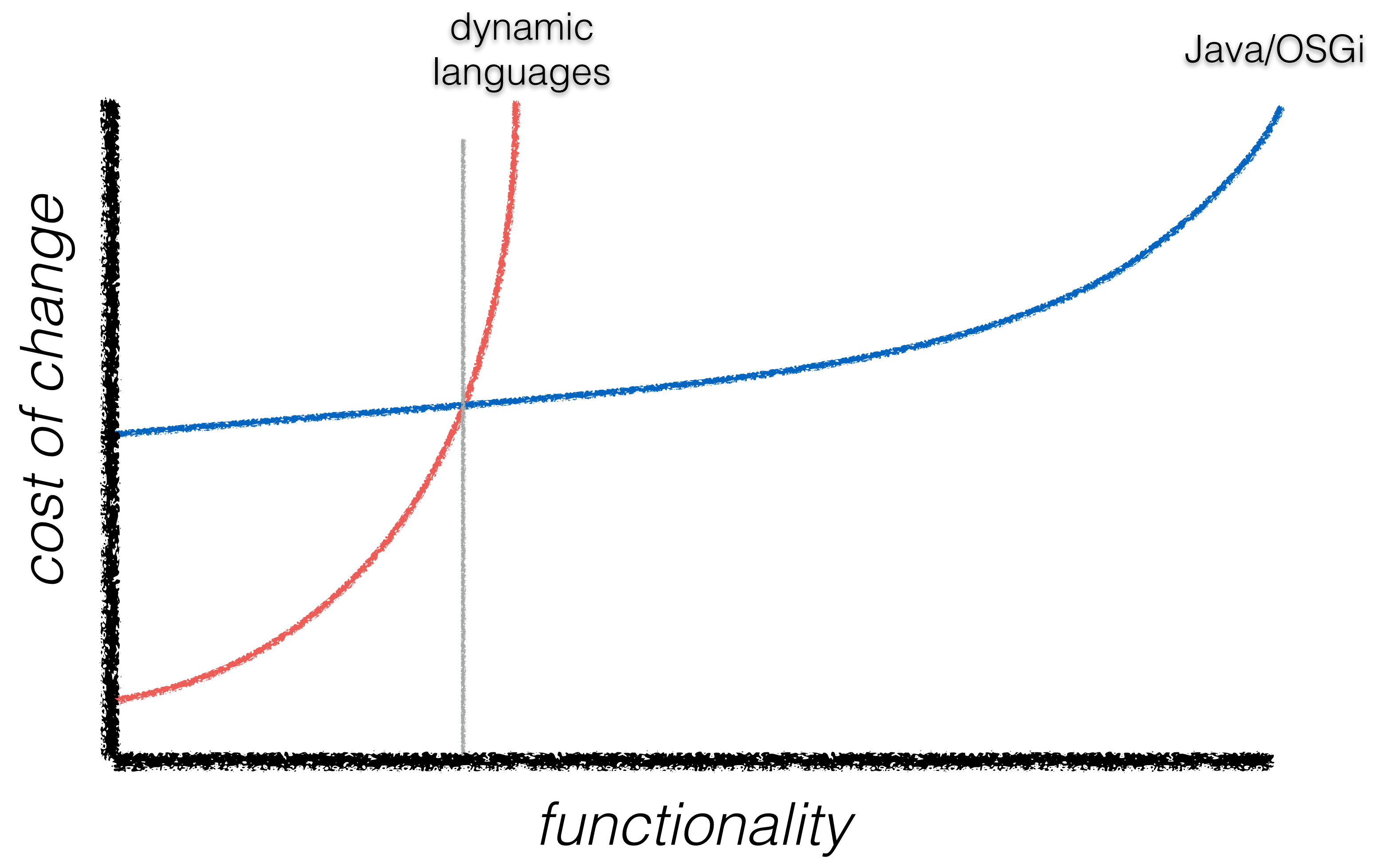


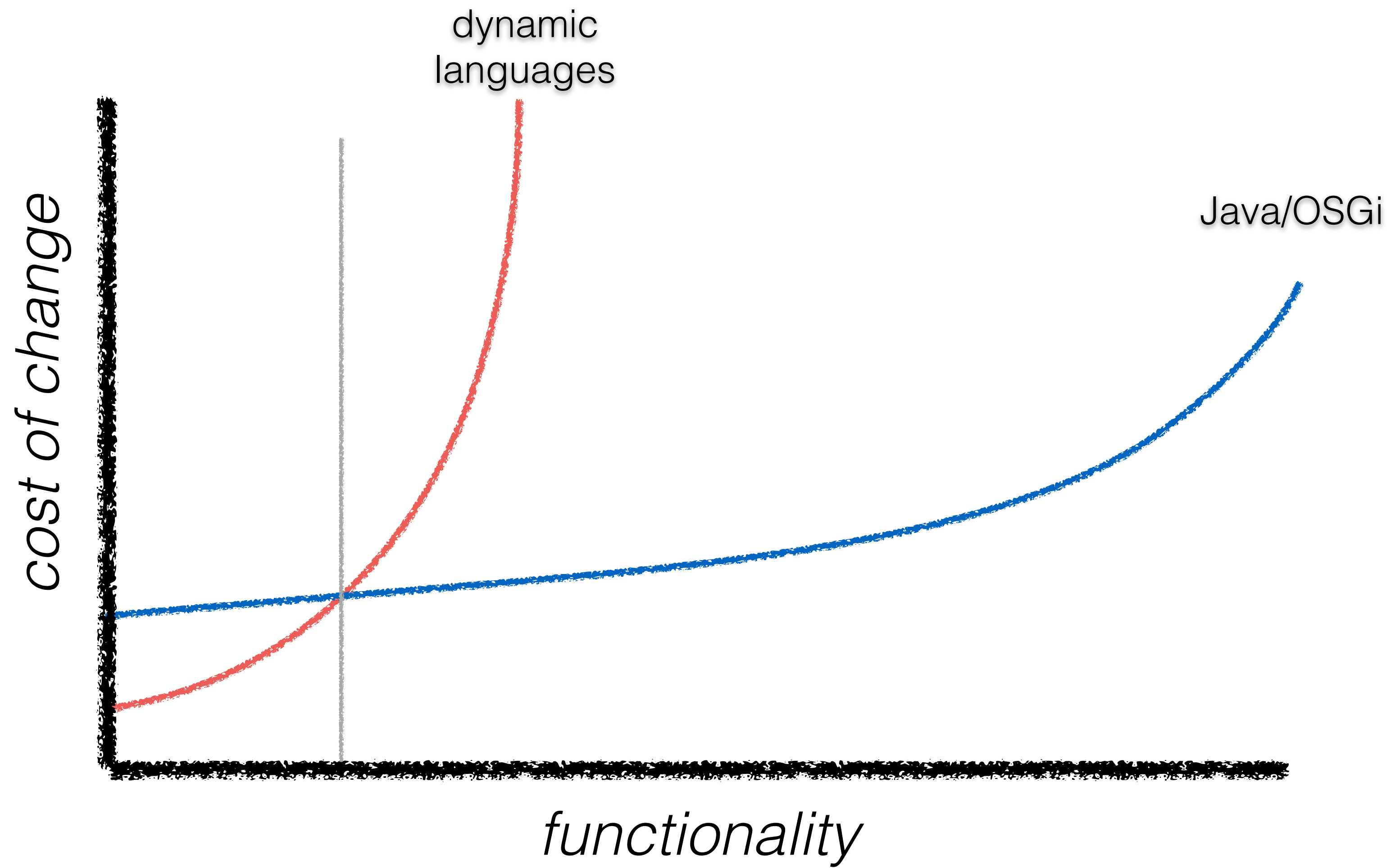
cost of change



functionality







In the end,
OSGi is *inevitable* ...

OSGi Release 6

- June 2nd the OSGi Core Release 6 Specification received its final approval and will be available this week to the public for downloading.
 - <http://www.osgi.org/Specifications/HomePage>
- The OSGi Board of Directors also approved the publication of an Early Draft Specification of OSGi Enterprise Release 6 for downloading.
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