

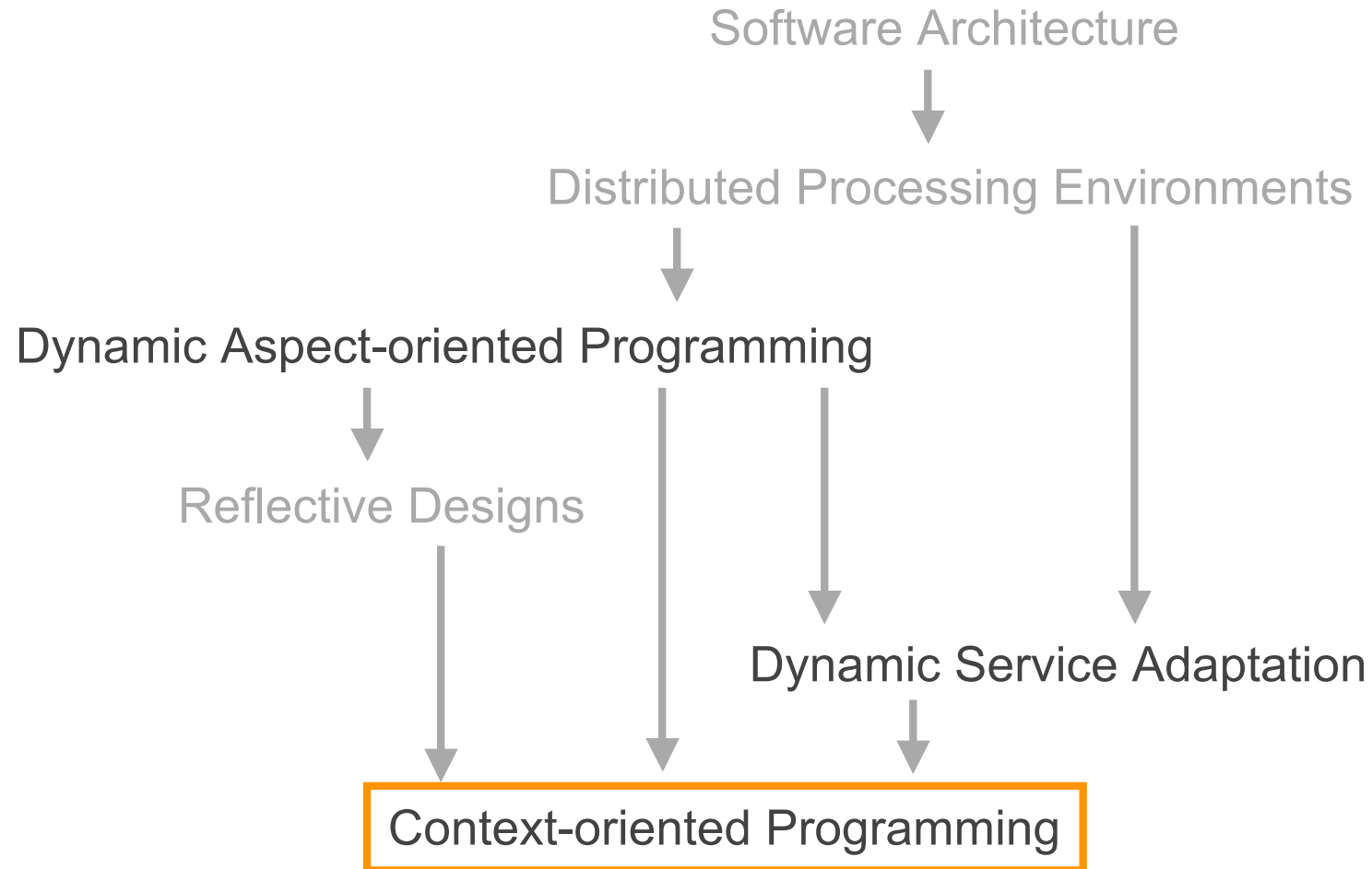
Modularizing Context-dependent Behavioral Variations with Context-oriented Programming

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GTTSE 2007, Braga, Portugal
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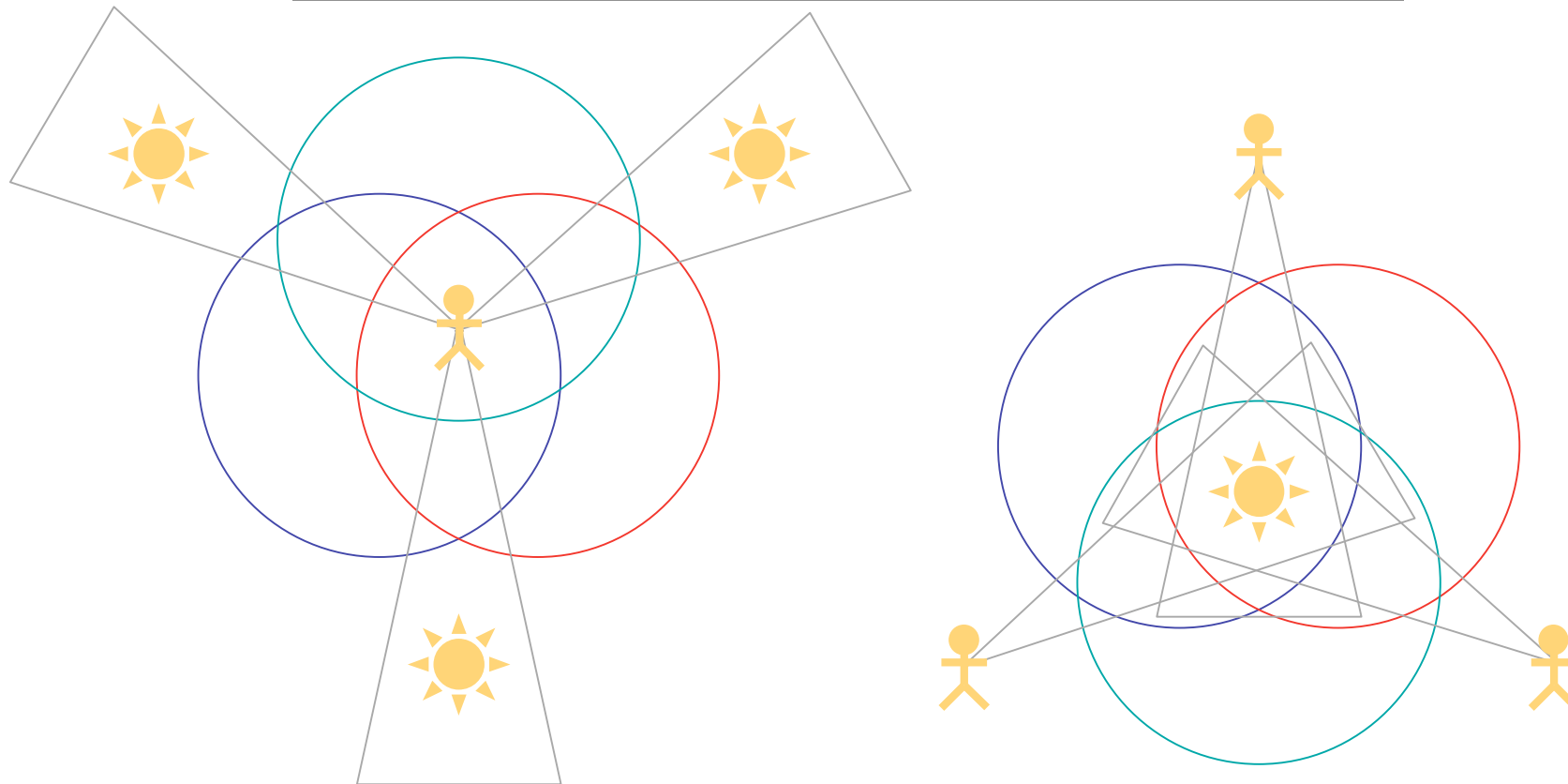
In collaboration with Pascal Costanza, Prog, VUB, Brussels

Outline

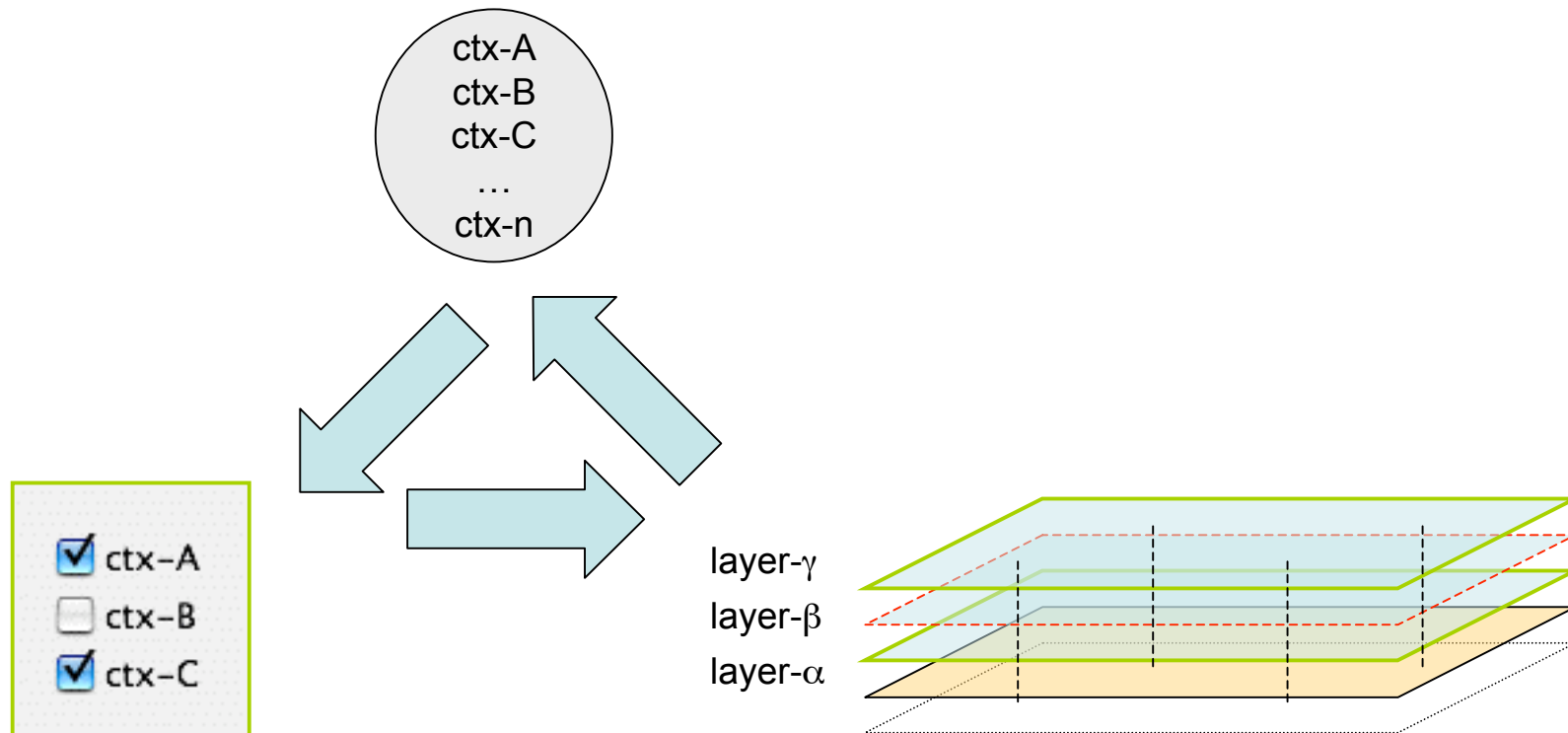


Context

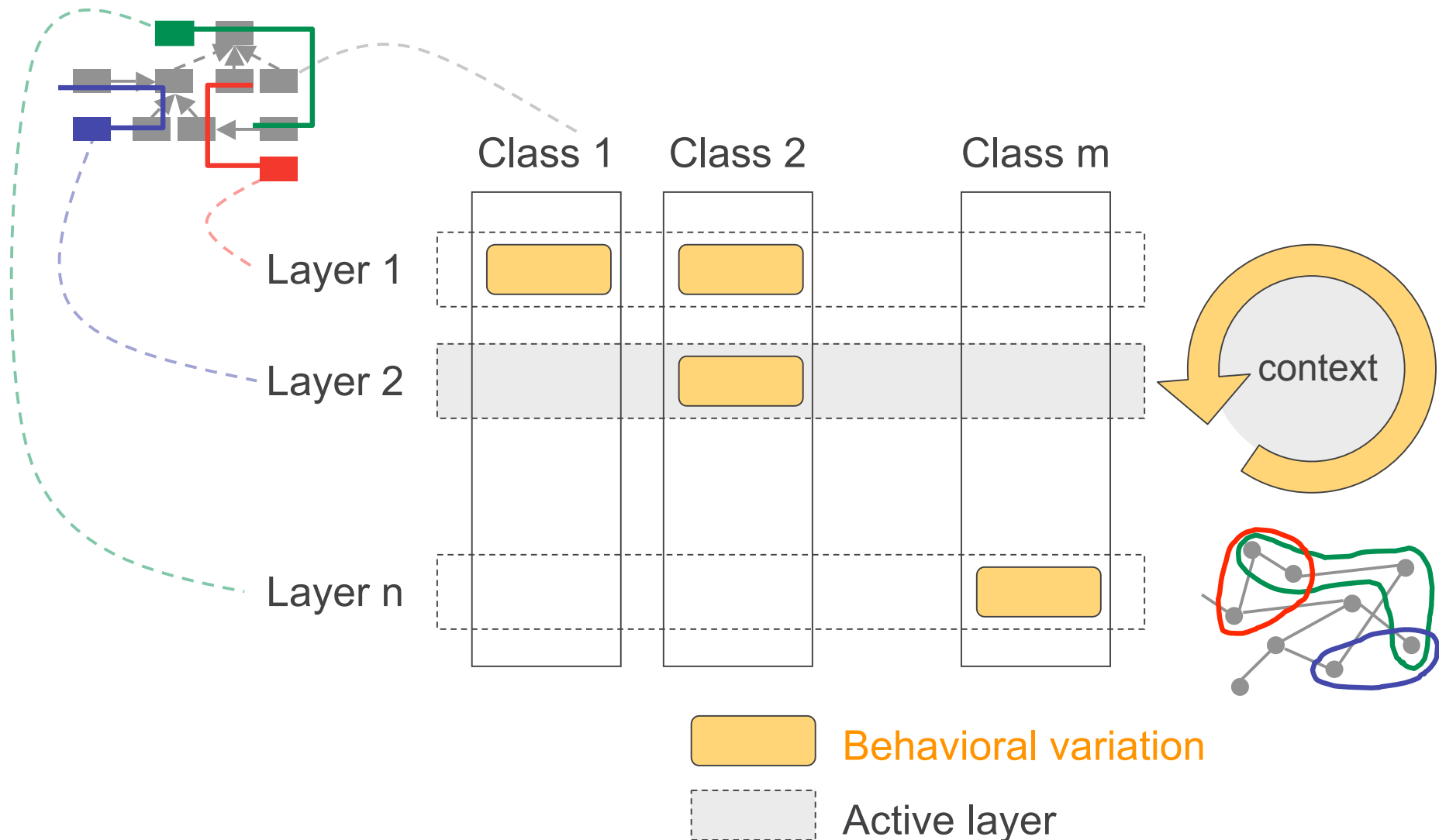
context = everything computationally accessible



COP: Contexts, Predicates, Layers



Partial Layer and Class Definitions



COP Basics

- **Behavioral variations**
 - Variations typically consist of new or modified behavior, but may also comprise removed behavior. They can be expressed as partial definitions of modules in the underlying programming model such as procedures or classes, with complete definitions representing just a special case.
- **Layers**
 - Layers group related context-dependent behavioral variations. Layers are first-class entities, so that they can be explicitly referred to in the underlying programming model.
- **Activation**
 - Layers aggregating context-dependent behavioral variations can be activated and deactivated dynamically at runtime. Code can decide to enable or disable layers of aggregate behavioral variations based on the current context.
- **Context**
 - Any information which is computationally accessible may form part of the context upon which behavioral variations depend.
- **Scoping**
 - The scope within which layers are activated or deactivated can be controlled explicitly. The same variations may be simultaneously active or not within different scopes of the same running application.

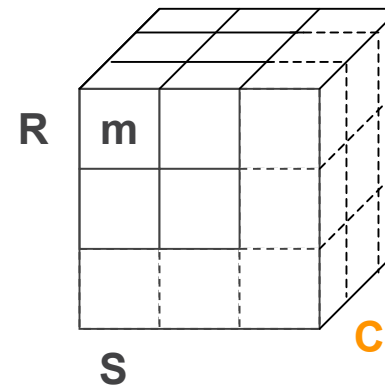
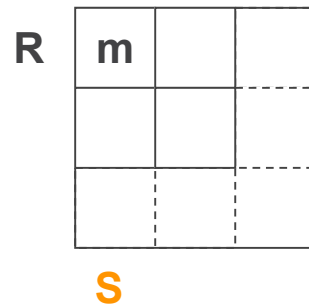
1/2/3/4D-Dispatch

Procedural Programming

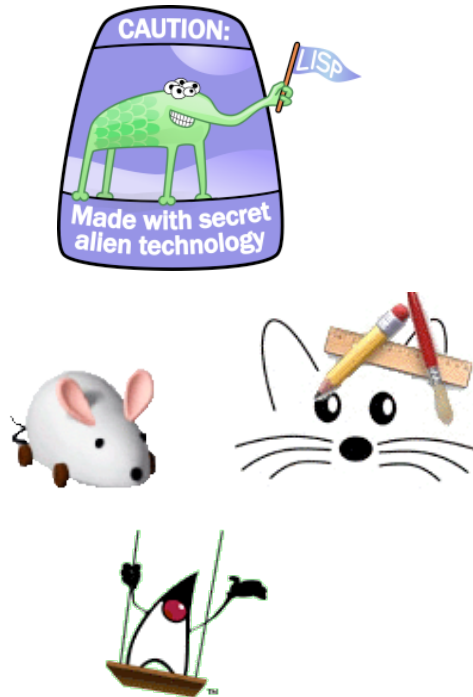
Object-oriented Programming

Subjective Programming

Context-oriented Programming



COP Implementations



- ContextL
- ContextS
- ContextJ(*)
- ContextR
- ContextPy
- PyContext
- Context#
- ...

ContextS

```
[ { CsUsageIndicationLayer new. } ]
```

↑ **asLayersFor:** [...aTetrisBoard newGame...]

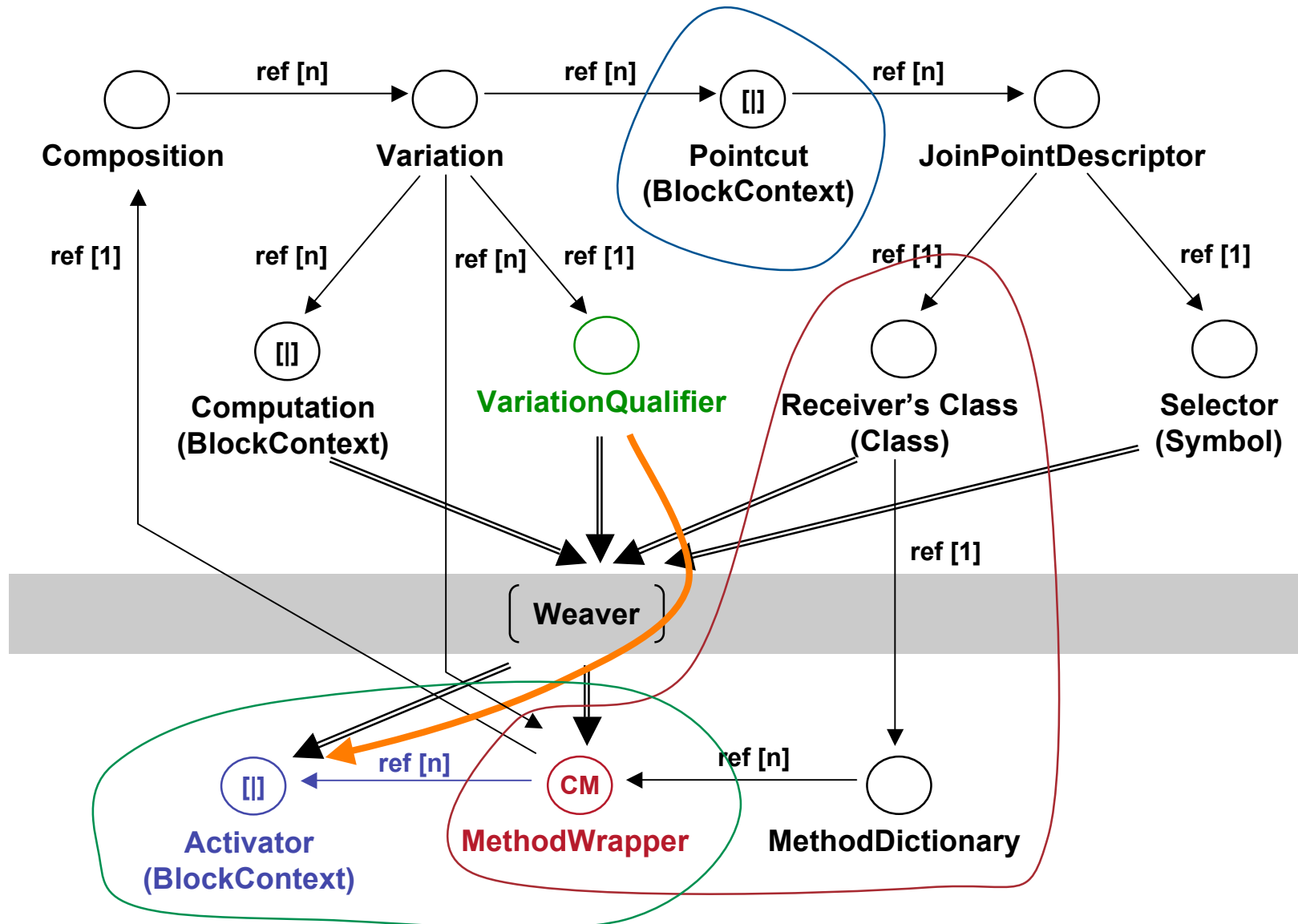
```
[specialOffer
```

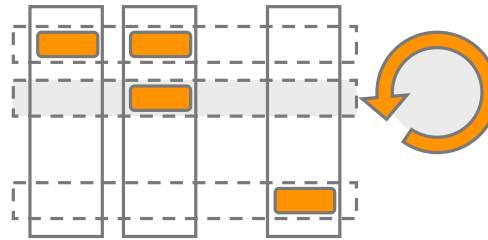
↑ ifTrue: []

ifFalse: [{ CsUsageIndicationLayer new. }]]

↑ **useAsLayersFor:** [
...aTetrisBoard newGame...]

ContextS Weaving





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Wednesday 14:15-15:00 & Thursday 14:45-15:30

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