Summer Term 2018

Software Engineering Design & Construction

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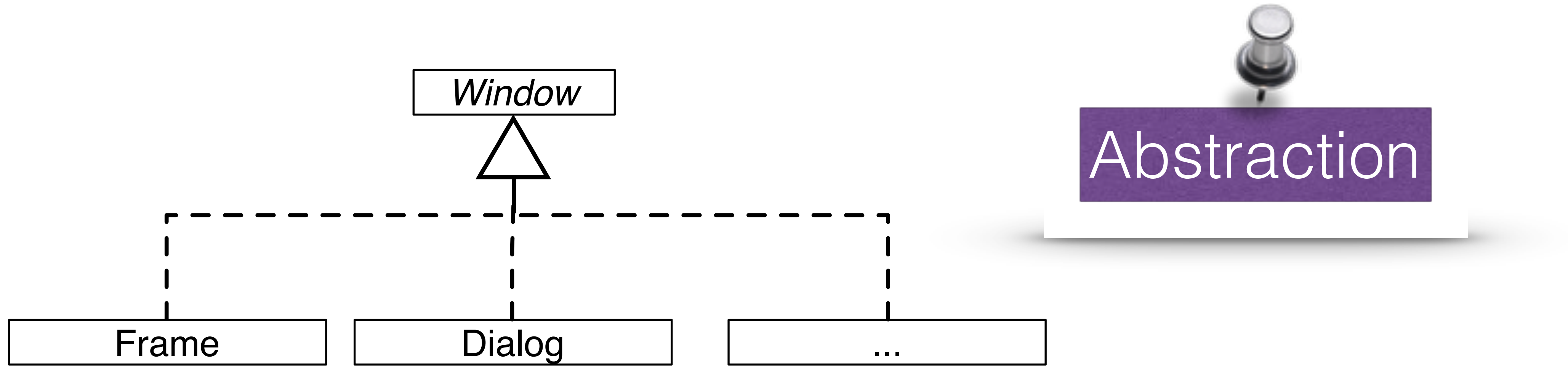
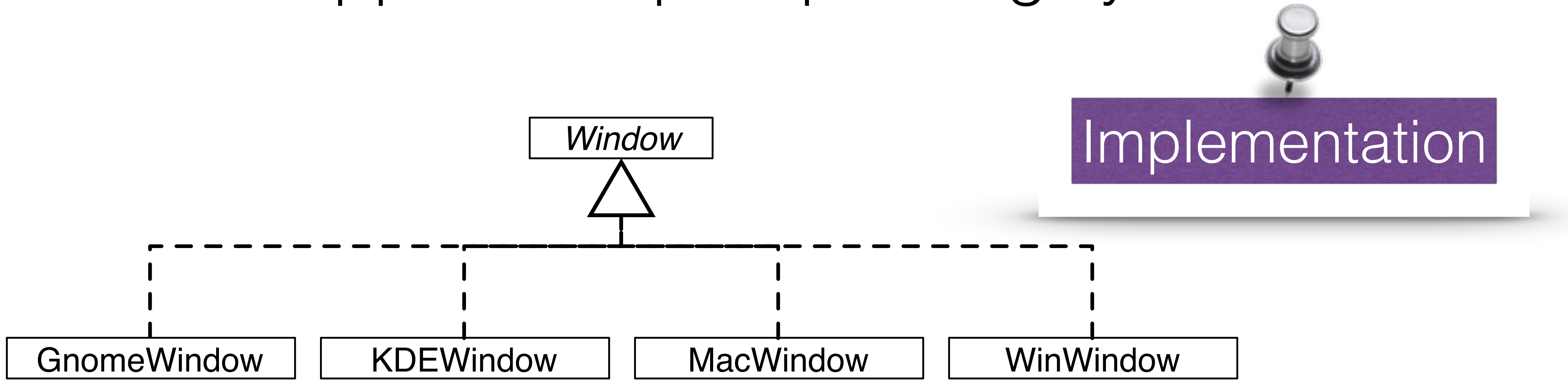
Bridge Pattern

Motivation by Example

We want to provide different types of windows:

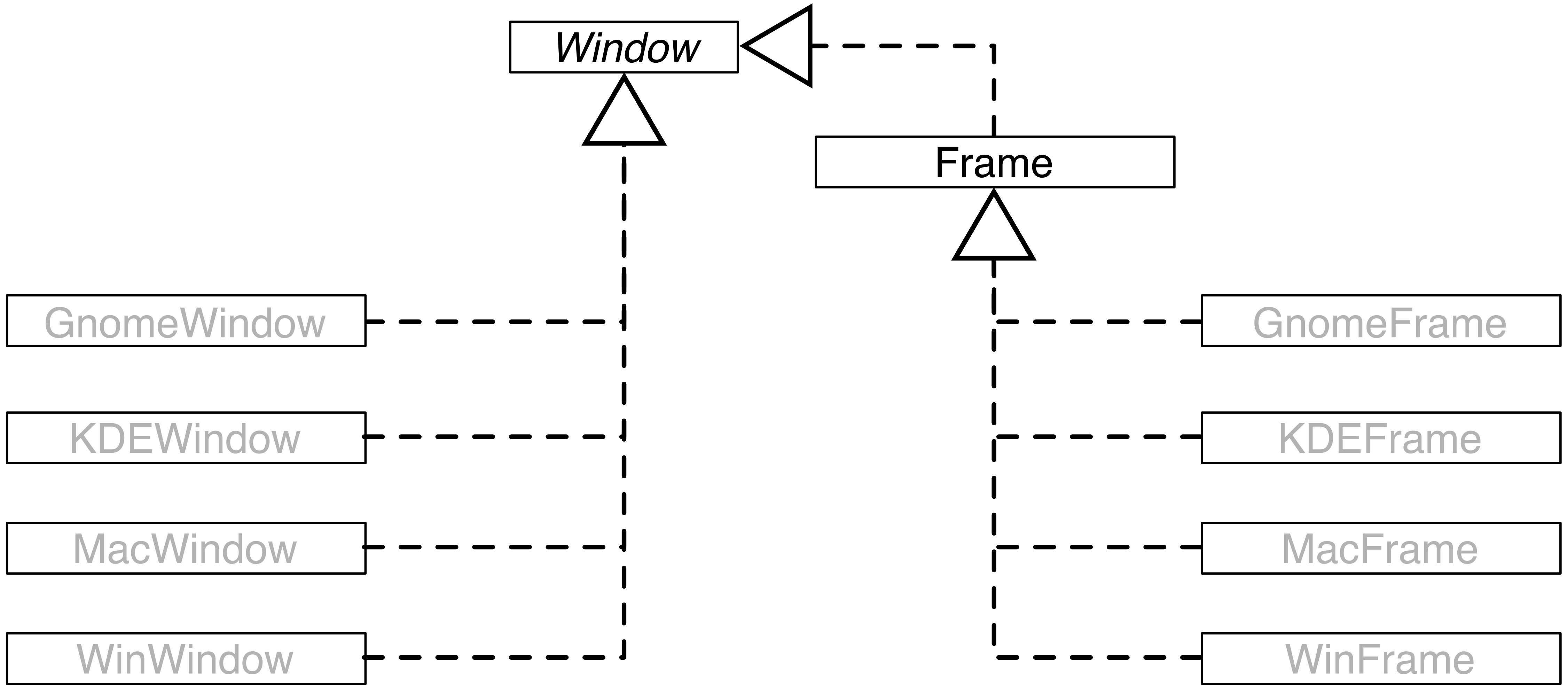


We want to support multiple operating systems:



Motivation by Example

Two dimensions of variability!

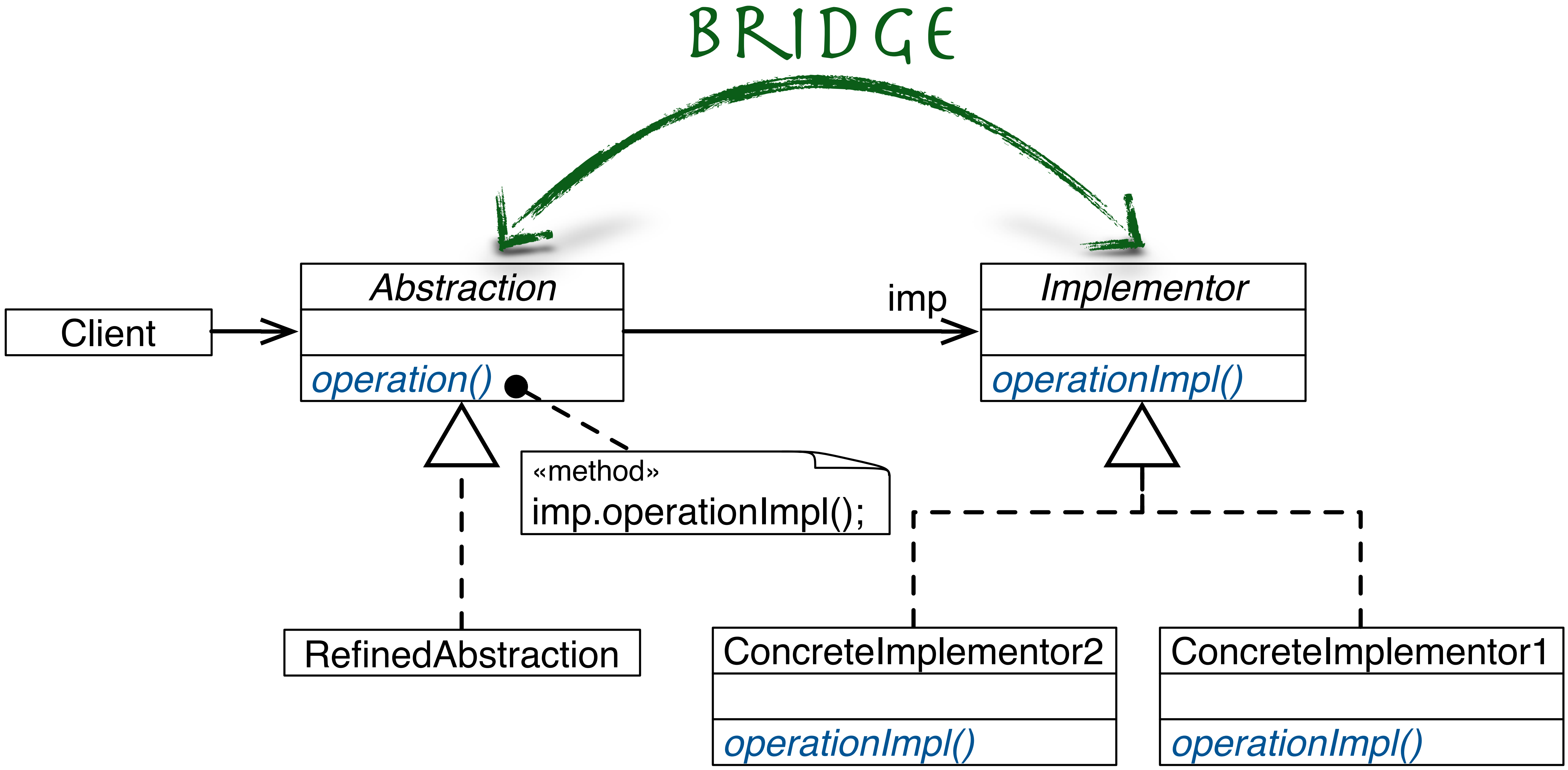


Can you imagine a better solution?

The Bridge Design Pattern

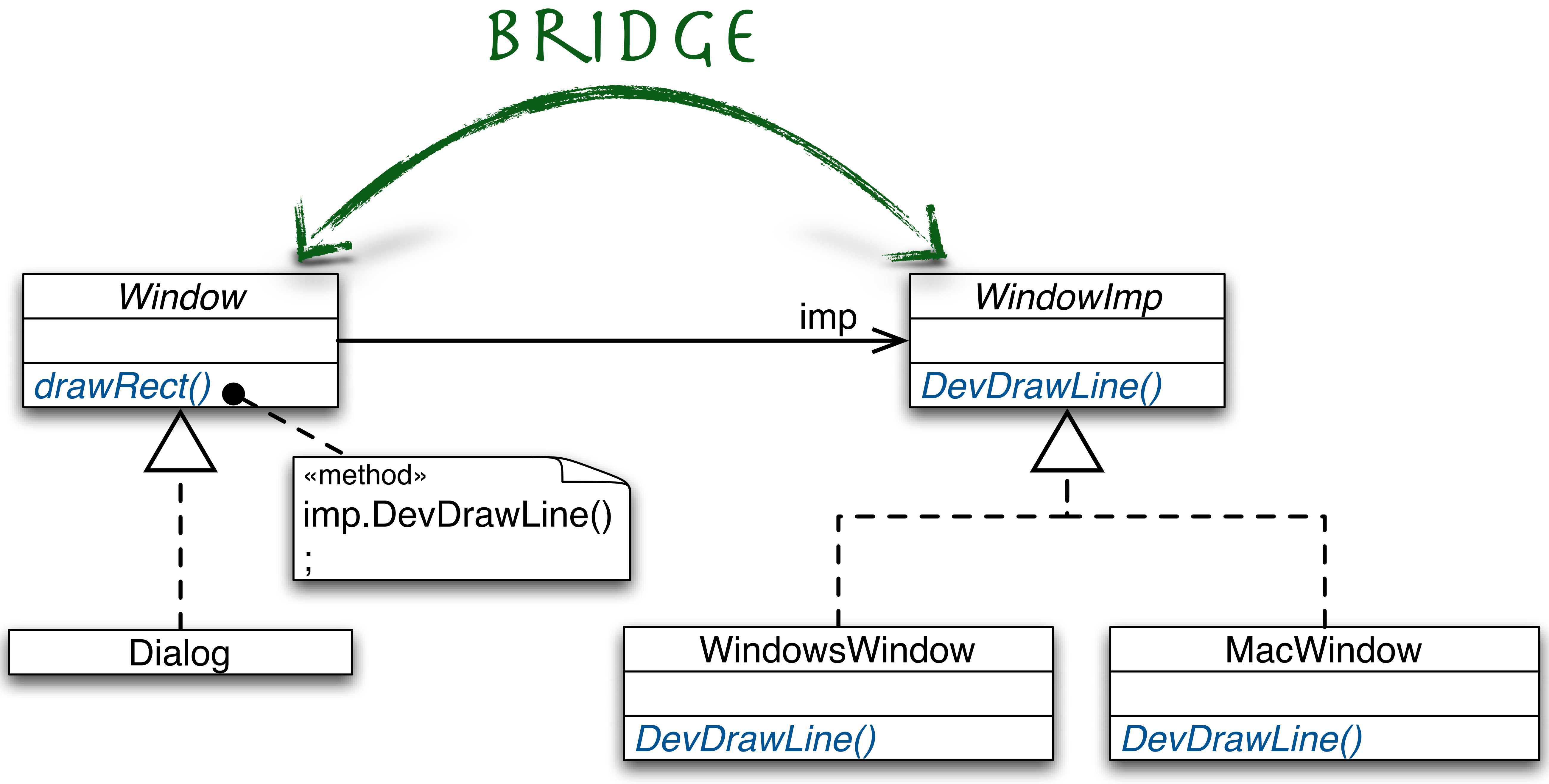
Decouple an **abstraction** from its **implementation**.
So that the two can vary independently.

Bridge Design Pattern - Structure



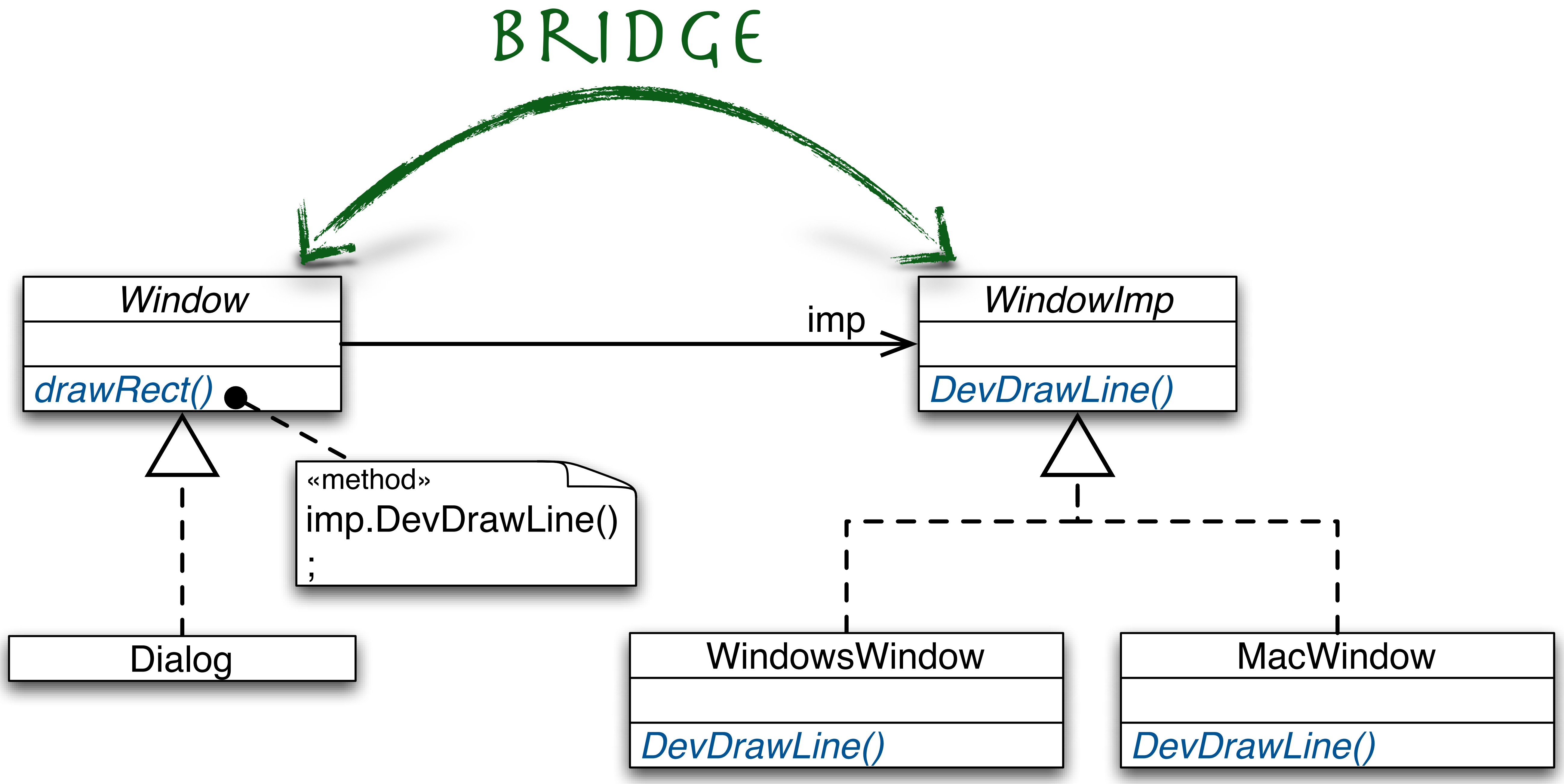
Combine inheritance and object composition.

Bridge Design Pattern - Illustrated



Ask yourself: Is there any relation to the DIP?

Bridge Design Pattern - Illustrated



Inheritance allows structural variation: adding of new field and methods.

Composition demands a fixed interface.

Takeaway

- The Bridge Pattern instructs to use object composition to bridge between two inheritance hierarchies when you need to combine two kinds of variations of an object type.

- The Bridge Pattern allows to vary an abstraction and its implementation independently of each other.

- Works well as long as there is no dependency between the implementation on abstraction variations, i.e., if they do not vary co-variantly.