CS 635 Advanced Object-Oriented Design & Programming
Spring Semester, 2001
Doc 22 Mediator

Contents

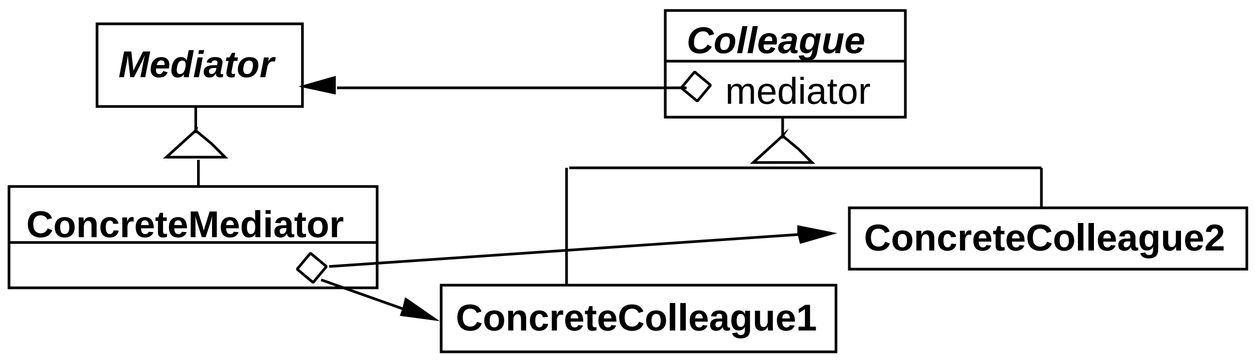
References

Design Patterns: Elements of Resuable Object-Oriented Software, Gamma, Helm, Johnson, Vlissides, Addison Wesley, 1995, pp. 273-282

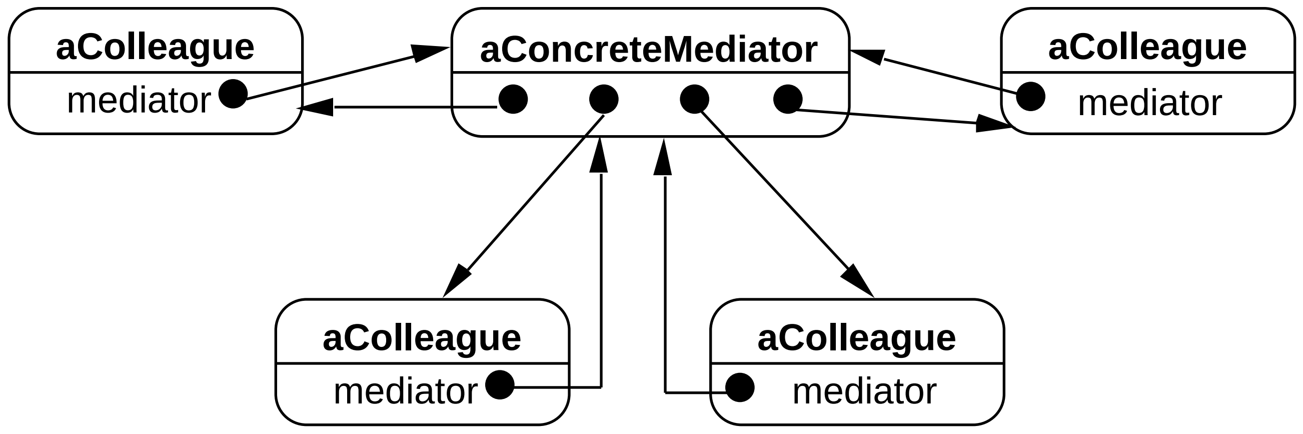
Mediator

A mediator is responsible for controlling and coordinating the interactions of a group of objects (not data structures)

Structure
Classes



Objects



Participants

Mediator

Defines an interface for communicating with Colleague objects

ConcreteMediator

Implements cooperative behavior by coordinating Colleague objects

Knows and maintains its colleagues

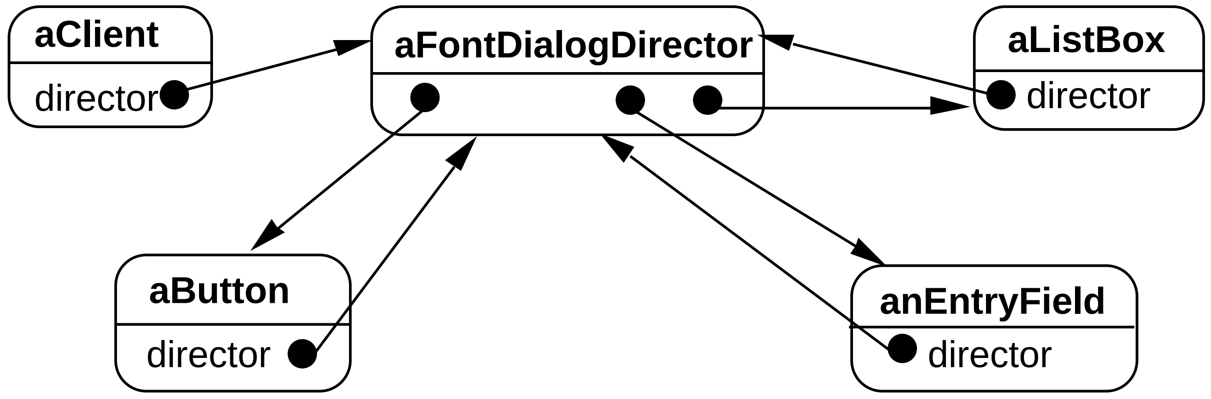
Colleague classes

Each Colleague class knows its Mediator object

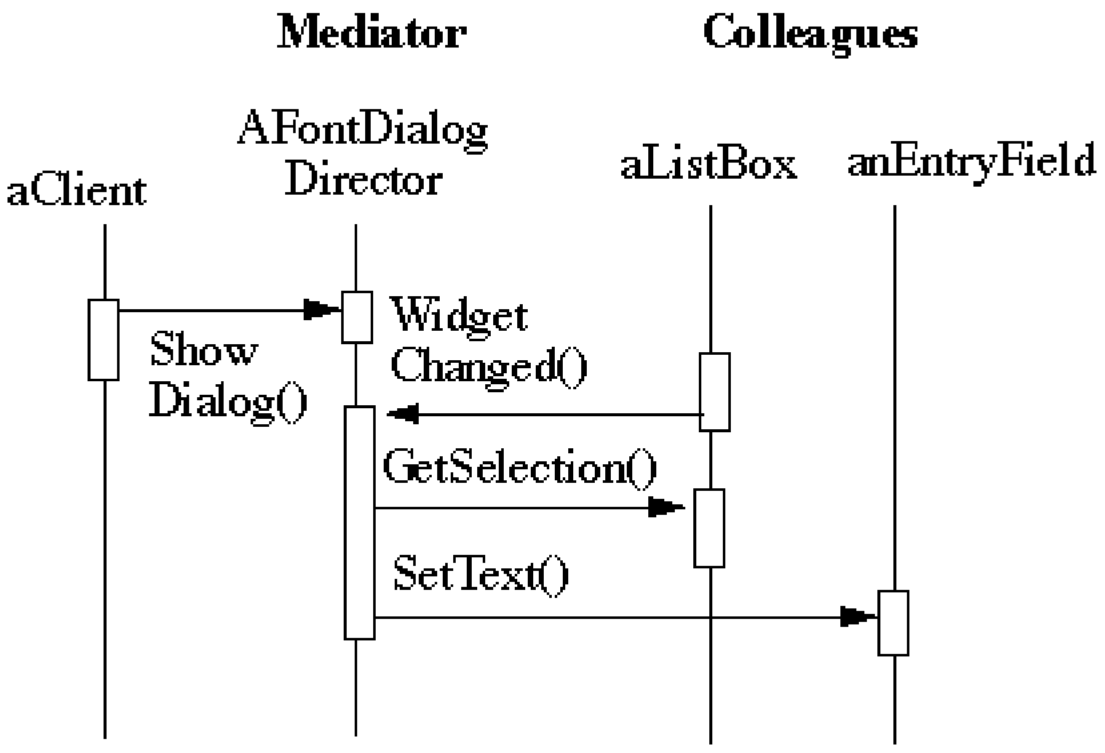
Each colleague communicates with its mediator whenever it would have otherwise communicated with another colleague

Motivating Example
Dialog Boxes

Objects



Interaction



How does this differ from a God Class?

When to use the Mediator Pattern

When a set of objects communicate in a well-defined but complex ways

When reusing an object is difficult because it refers to and communicates with many other objects

When a behavior that's distributed between several classes should be customizable without a lot of subclassing

Issues
How do Colleagues and Mediators Communicate?

1) Explicit methods in Mediator

```
class DialogDirector
   {
   private Button ok;
   private Button cancel;
   private ListBox courses;

   public void ListBoxItemSelected() { blah}

   public void ListBoxScrolled() { blah }
   etc.
   }
```

2) Generic change method

```
class DialogDirector {
   private Button ok;
   private Button cancel;
   private ListBox courses;

   public void widgetChanged( Object changedWidget) {
      if ( changedWidget == ok )                 blah
      else if (  changedWidget == cancel )       more blah
      else if (  changedWidget == courses )      even more blah
   }
}
```

3) Generic change method overloaded

```
class DialogDirector
   {
   private Button ok;
   private Button cancel;
   private ListBox courses;

   public void widgetChanged( Button changedWidget)
      {
      if ( changedWidget == ok )
         blah
      else if (  changedWidget == cancel )
         more blah
      }

   public void widgetChanged( ListBox changedWidget)
      {
      now find out how it changed and
      respond properly
      }
   }
```

Differences from Facade

Facade does not add any functionality, Mediator does

Subsystem components are not aware of Facade

Mediator's colleagues are aware of Mediator and interact with it