Patterns You Already Use

Observer and Proxy

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pluralsight
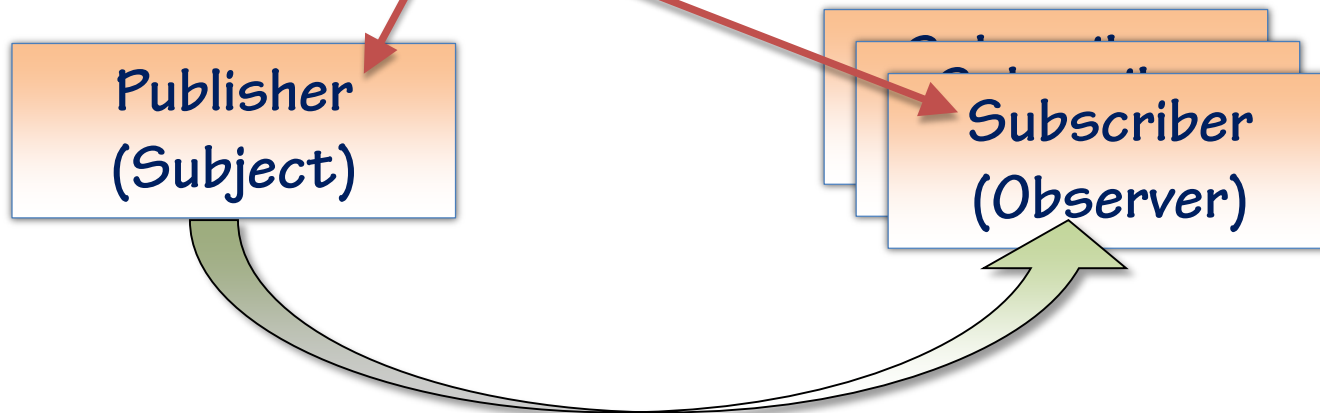hardcore developer training

Observer Pattern

Define a one-to-many dependency between objects so that when one object changes state, all its dependents are notified and updated automatically.

Gamma, et al, *Design Patterns*. Addison-Wesley, 1994.

Observer Translation

Define a one-to-many dependency between objects so that when one object changes state, all its dependents are notified and updated automatically.

Publish / Subscribe relationship

Publisher
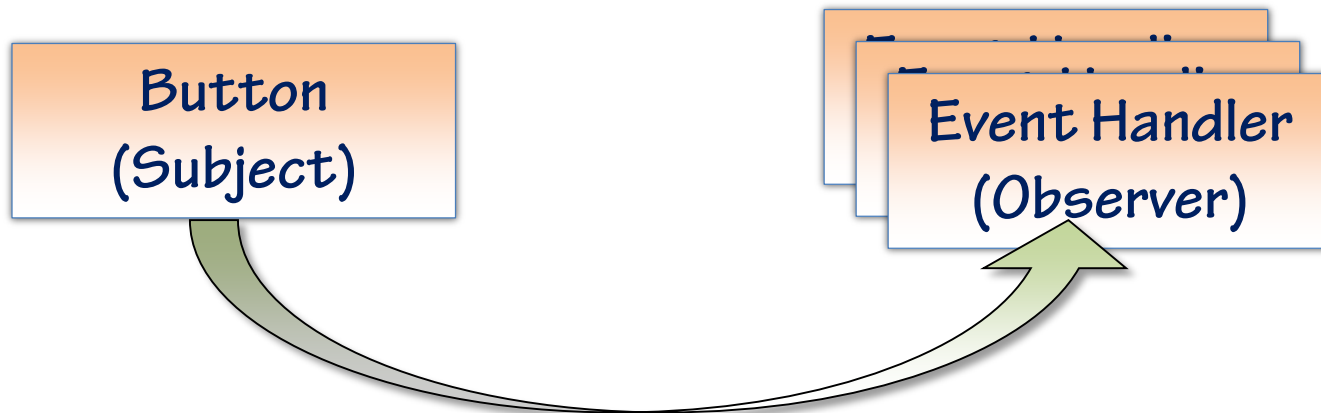(Subject)

Subscriber
(Observer)

Real World Observer

- Twitter

Observer with Events

Define a one-to-many dependency between objects so that when one object changes state, all its dependents are notified and updated automatically.

Publish / Subscribe relationship

Observer Consequences

- **Notification may never come**

- **Notification may come repeatedly**

- **Notification may come quickly**

- **Strong references may stop the Garbage Collector from disposing of objects**

Observer Review

Define a one-to-many dependency between objects so that when one object changes state, all its dependents are notified and updated automatically.

Publish / Subscribe relationship

Publisher
(Subject)

Subscriber
(Observer)
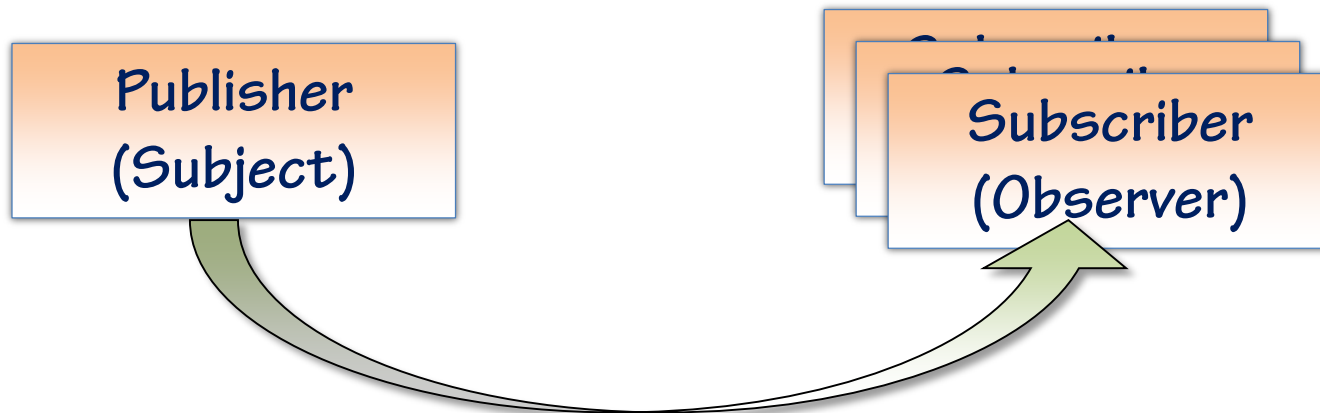
IObserver<T> and IObservable<T>

- **IObserver<T>**
  - OnNext(T value)
  - OnCompleted()
  - OnError(Exception exception)

- **IObservable<T>**
  - IDisposable Subscribe (IObserver<T> observer)

Proxy Pattern

Provide a surrogate or placeholder for another object to control access to it.

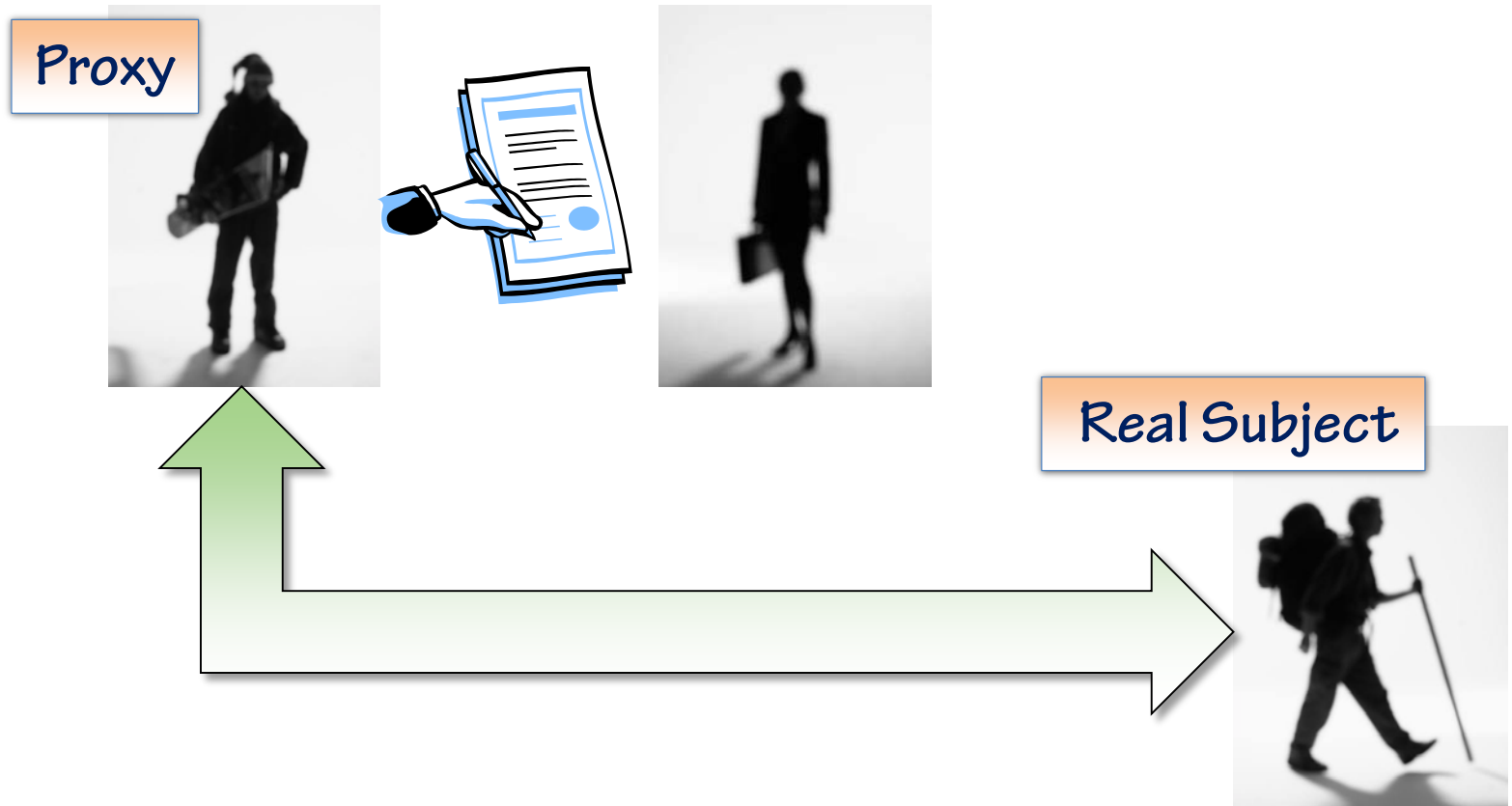Gamma, et al, *Design Patterns*. Addison-Wesley, 1994.

Proxy Translation

Provide a *surrogate* or placeholder for another *object* to control access to it.

Original Object (Real Subject)

Stand-In (Proxy)

Real World Proxy

- **Power of Attorney**

Proxy

Real Subject

Proxy Consequences

- A remote proxy can hide the fact that an object resides in a different process or across a network.

- The proxy must be kept synchronized with the real object.

Proxy Review

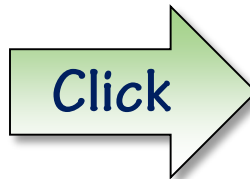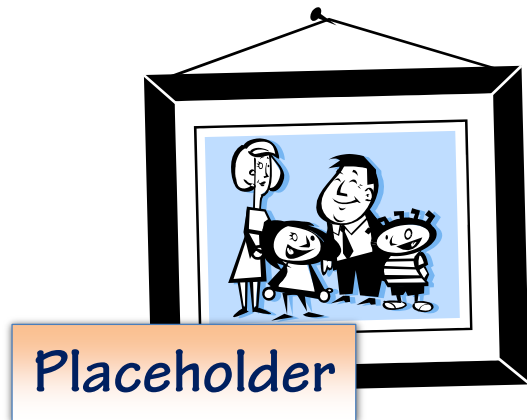Provide a **surrogate** or placeholder for another **object** to control access to it.

| Original Object (Real Subject) | Stand-In (Proxy) |

Service Proxy

Provide a surrogate or placeholder for another object to control access to it.

SOAP Service (Real Subject)	Service Proxy (Proxy)

SOAP Service (Real Subject) ◄┈┈┈┈┈┈ Service Proxy (Proxy)
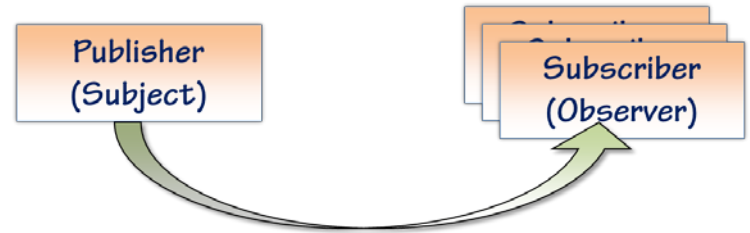
Interesting History

Placeholder

Click

Original
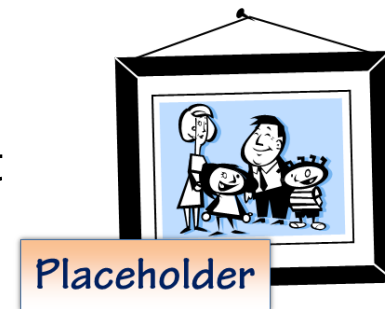
Summary

- **Observer**
  - Publish/Subscribe relationship
  - Everyday usage: Event Handlers
  - EventAggregator and IObservable<T>

- **Proxy**
  - Placeholder / Stand-in for an actual object
  - Everyday usage: SOAP Service Proxies

- **Next Up: Patterns You Already Use Iterator**