Expanding the Product Importer

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Overview

Organizing DI registrations

Specific situations

- Application configuration
- HttpClient

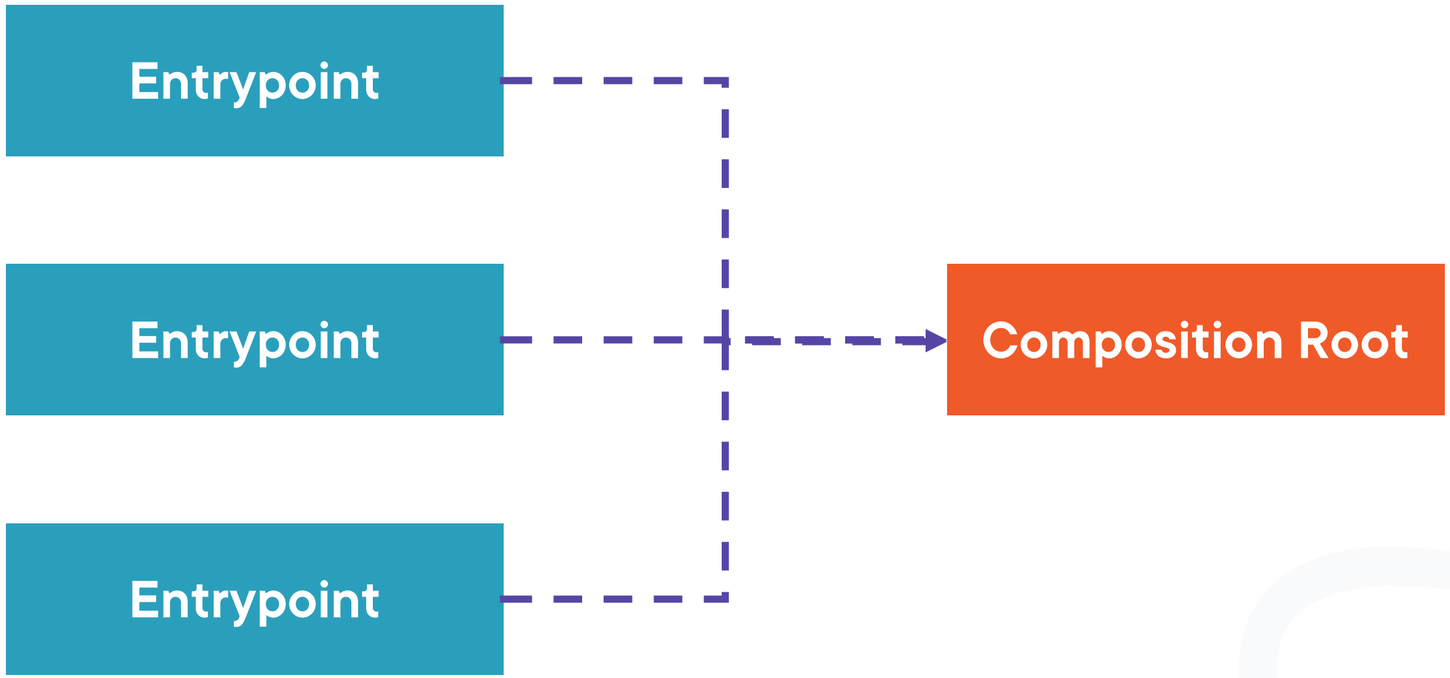
Service Locator pattern

DI and testability

Demo

Introducing a composition root

Composition Root and Entrypoints



Add vs. TryAdd

Add{Lifetime}

If there is an existing registration for the type, this will overwrite it

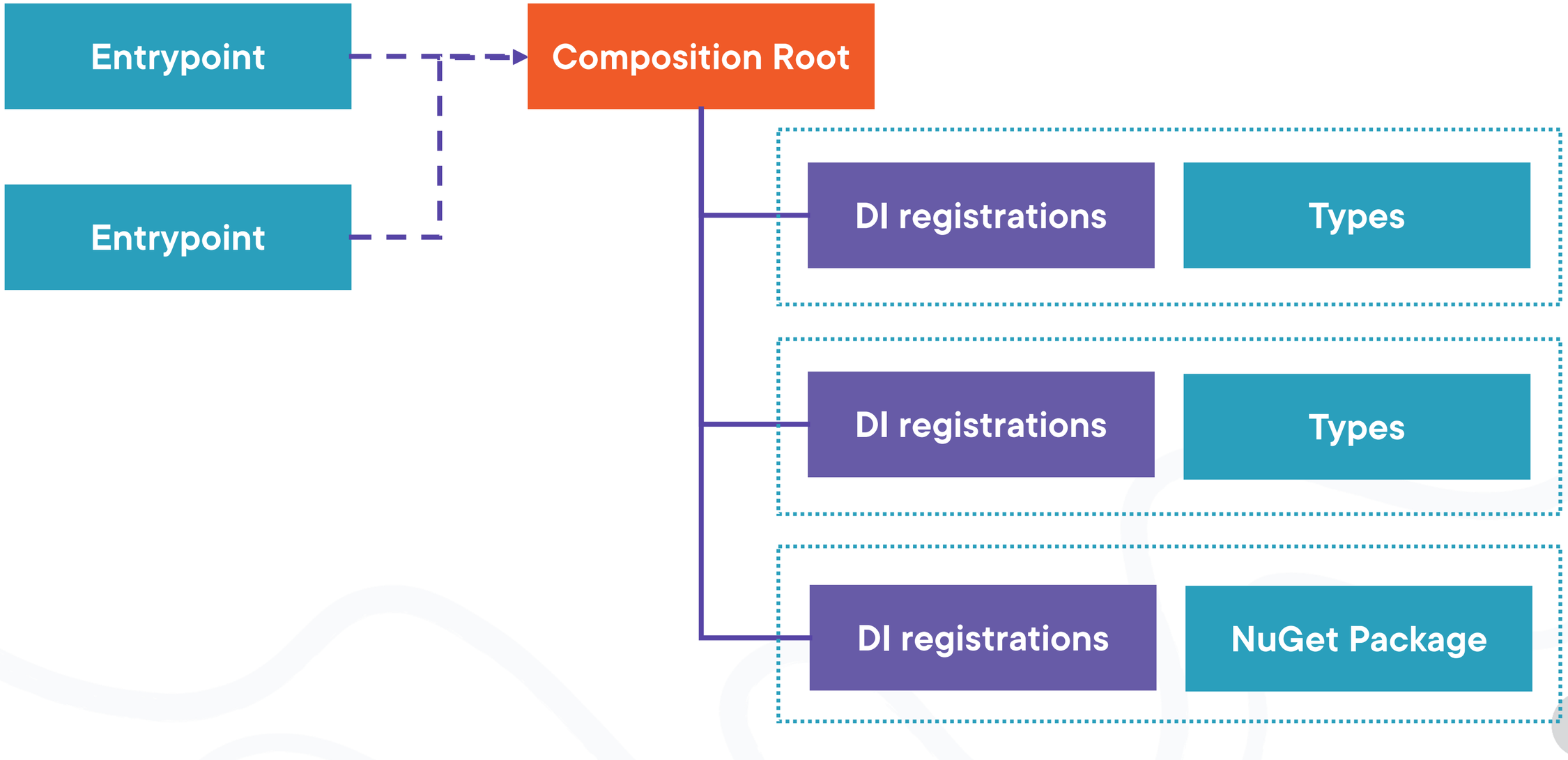
TryAdd{Lifetime}

If there is an existing registration for the type, this will do nothing

Demo

Organizing and grouping DI registrations

Composition Root and Entrypoints



Demo

Working with application configuration using the Options pattern

Demo

Injecting multiple implementing types under the same service type

Multiple Registrations

Resolving directly

The last registration is returned

Resolving IEnumerable

All registrations are returned

Demo

Injecting HttpClient from the DI container

Service Locator Pattern

Dependency Injection vs. Service Locator

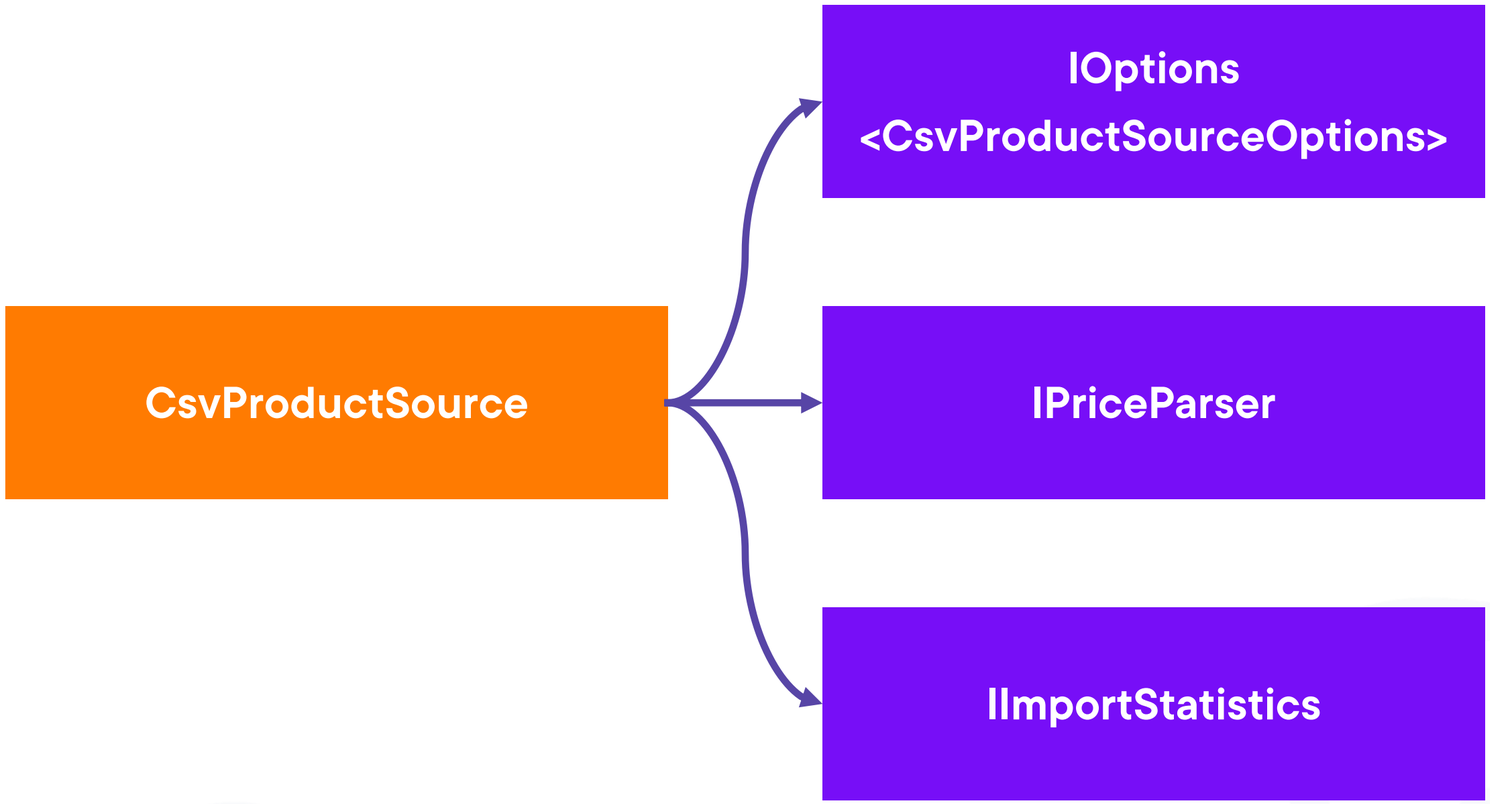
Dependency Injection

A class declares its dependencies, and they get provided somehow. A DI container is one way.

Service Locator

A class references a central services repository and requests the services it needs from there.

Dependency Injection



```
public CsvProductSource(
     IOptions<CsvProductSourceOptions> productSourceOptions,
     IPriceParser priceParser,
     IImportStatistics importStatistics)
{
    ...
}
```

Dependency Injection

A class declares its dependencies, and they get provided somehow. A DI container is one way.

Service Locator

```
public CsvProductSource()
{
    _productSourceOptions = Locator.getService<Ioptions<CsvProductSourceOptions>>;
    _priceParser = Locator.getService<IPriceParser>;
    _importStatistics = Locator.getService<IImportStatistics>;
}
```

Service Locator

A class references a central services repository and requests the services it needs from there.

```
public CsvProductSource(IServiceProvider serviceProvider)
{
    _productSourceOptions = serviceProvider.getService<Ioptions<...>>;
    _priceParser = serviceProvider.getService<IPriceParser>;
    _importStatistics = serviceProvider.getService<IImportStatistics>;
}
```

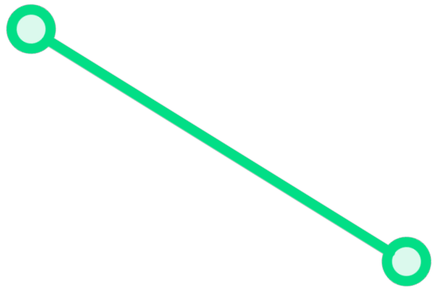
Service Locator Using a DI Container

You misuse the DI container as a Service Locator.

Dependency Injection vs. Service Locator

Testability

Classes that use a Service Locator are harder to test



Implicit Dependencies

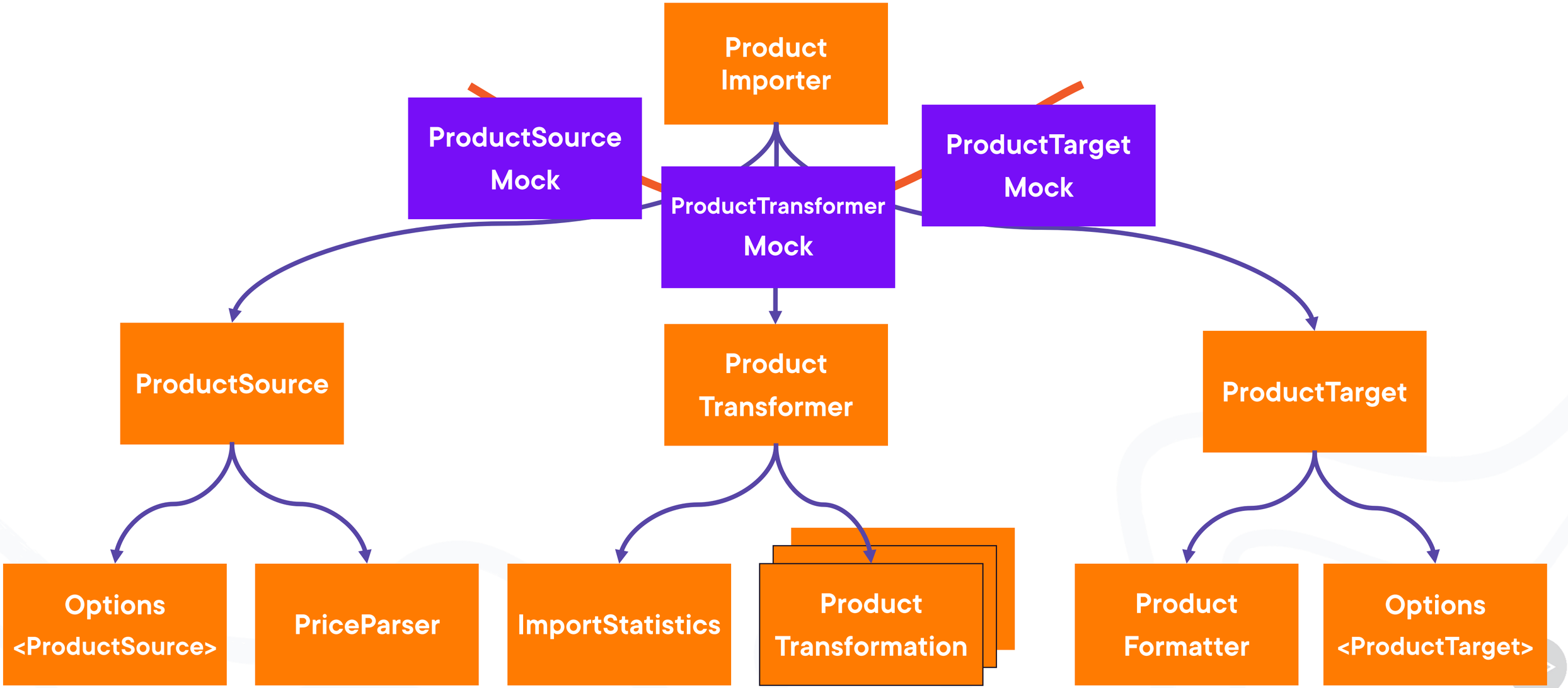
Dependencies are not clearly advertised, but implicit

The less you reference the container, the better!

Demo

DI enables unit testing

Dependencies, Dependencies, Dependencies



More Information

C# Unit Testing

Thomas Claudius Huber

Demo

Optional dependencies

Overview

Organizing DI registrations

- Using a composition root
- Organizing and reusing DI registrations

Specific situations

- Injecting configuration using Options<T>
- Injecting HttpClient
- Injecting multiple implementations

Service Locator pattern

- Injecting the container

Dependency Injection and unit testing

Up Next:

Common Pitfalls and Challenges