Module 2:
"SOLID in Practice"

Agenda

- **Workshop A.1: Initial Setup and Inspection of Project**
- Discussion: Evaluating the Design
- *Pattern: Repository (with Entity Framework)*
- Workshop A.2: Data Access Layer with Repository
- Discussion: Evaluating the Design Again
- *(Optional) Automatic Testing*
- Workshop A.3: Test Domain and Change Data Access

Workshop A.1:
Initial Setup and Inspection of Project

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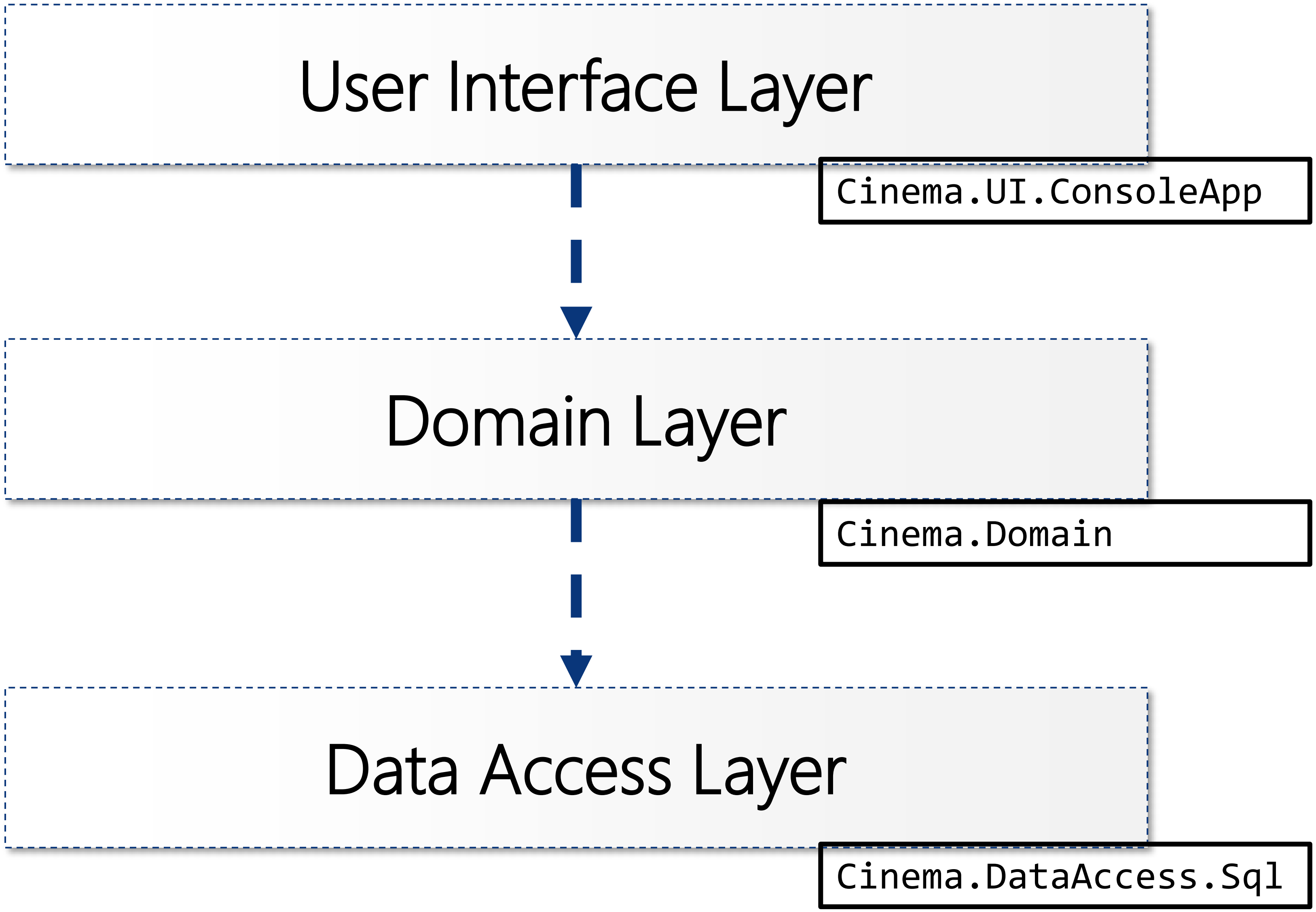
Beautiful Layered Design?



Discussion:
Evaluating the Design

- Can we change the UI Layer from Console to e.g. Web or WPF?
- Can we unit test the Domain Layer?
- Can we change the Data Access Layer?

Anti-Pattern: Entourage

- *When A depends upon B, and you group B and C in the same assembly, then if C depends upon D, in effect, you have equipped A with a dependency upon D.*

- Outline
  - If you keep the interfaces and implementations in the same assembly, you essentially inherit dependencies' dependencies.
  - Entourage means ask for one assembly and it gives all its assemblies.
  - Nuget packages are potentially evil!

- See:
  "Adaptive Code" (2nd Edition)
  Gary McLean Hall (2017)

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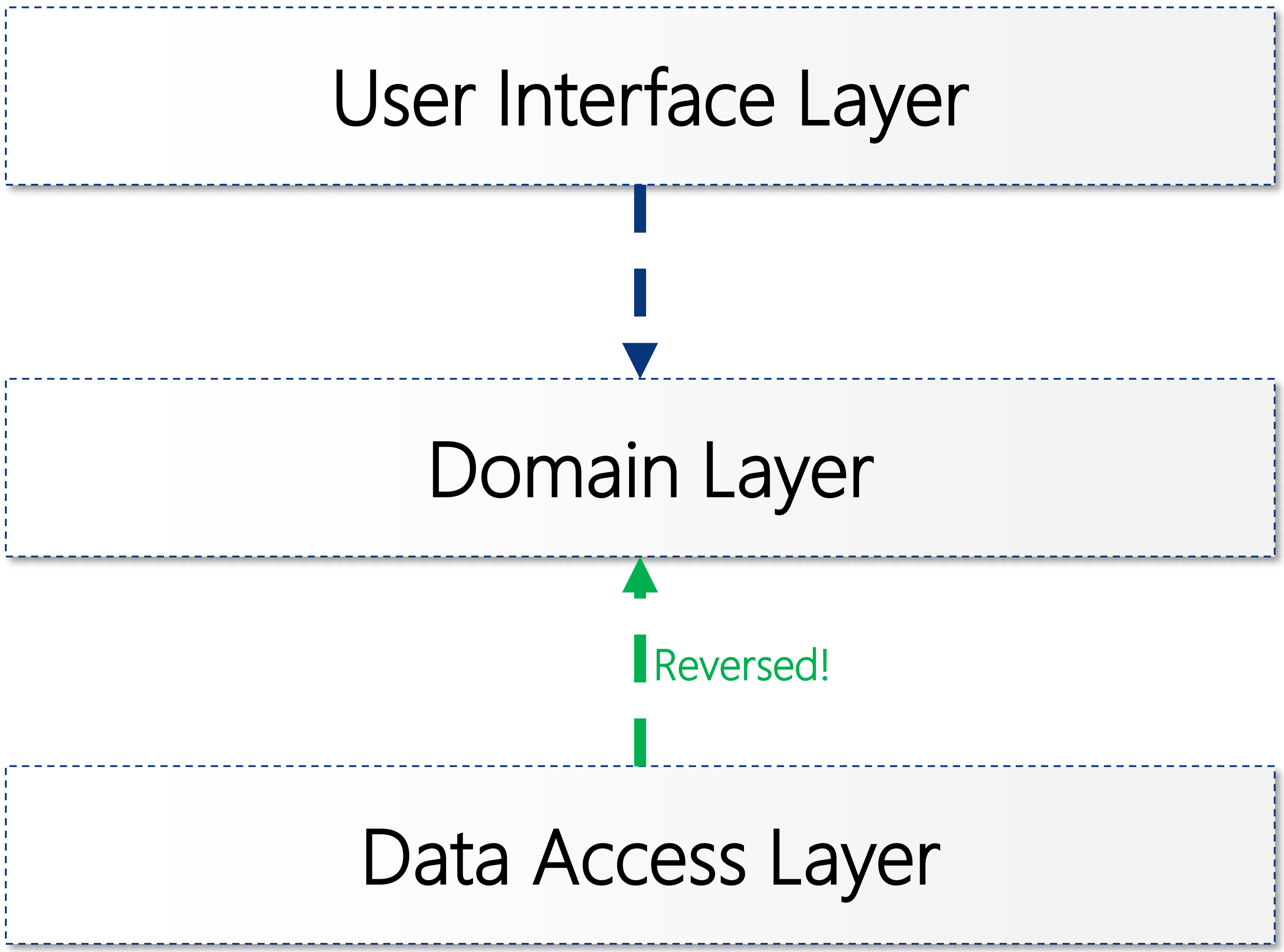
Better SOLID Design



Workshop A.2:
Data Access Layer with Repository

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Evaluating the Design

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Pattern: Stairway

- *Let your implementation packages depend upon packages that exclusively contain interfaces (or interface-like classes). Moreover, your packages should not depend other implementation packages.*

- Outline
  - This is essentially the "module" part of DIP
  - Avoids the Entourage anti-pattern
  - May not always be practically manageable

- See:
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Implications of Stairway

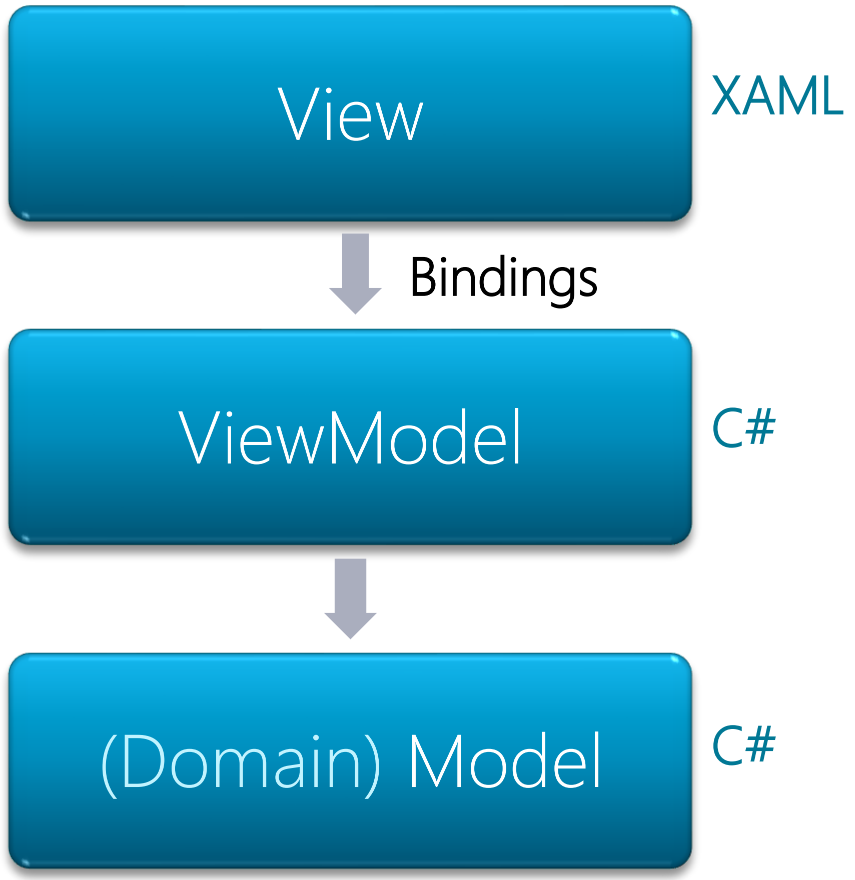
- Keep the interfaces and implementations in the different assemblies
  - Can vary the two independently
  - clients only need to make a single reference—to the interface assembly.
- Interfaces should not have any external dependencies
  - As far as possible, this should always be adhered to
- Interfaces should not have methods or properties that expose any data objects or classes defined in third-party references
  - A reference to infrastructural entities (i.e. third-party dependencies) should be avoided.

Unfortunately...

- Third party library such as Log4Net, NHibernate, and MongoDB are packaged using the Entourage anti-pattern.

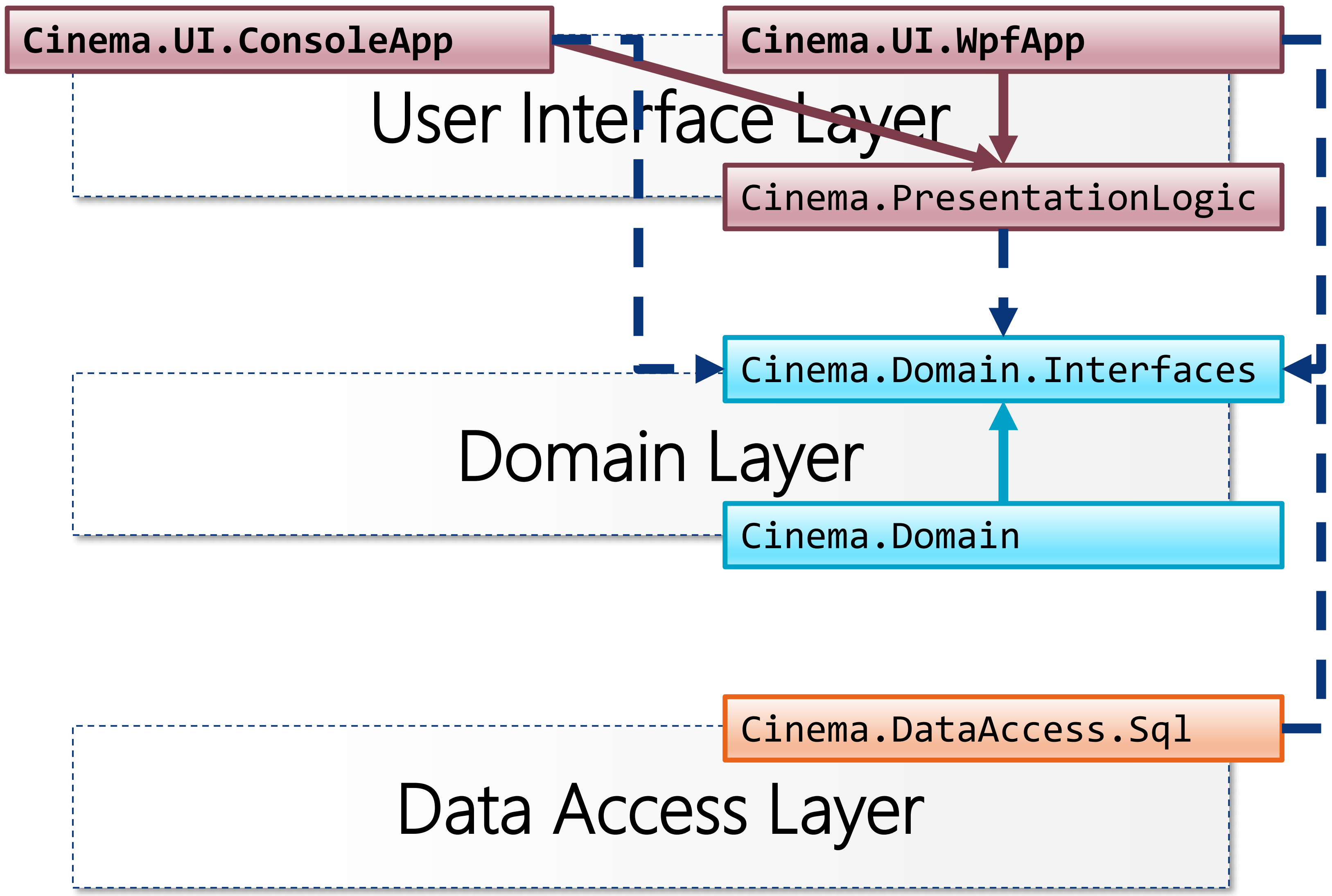
- Solution:
  To work around the above issue, make use of a simple interface that hides the third-party dependency behind a first-party dependency and an adapter

Pattern: Model-View-ViewModel



- Separation between presentation and application logic
- The ViewModel is an abstraction of the View
- Depends heavily on **data binding** and **command binding**

Stairway Design



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- ***(Optional) Automatic Testing***
- Workshop A.3: Change the Data Access Layer

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Workshop A.3: Change the Data Access Layer

Summary

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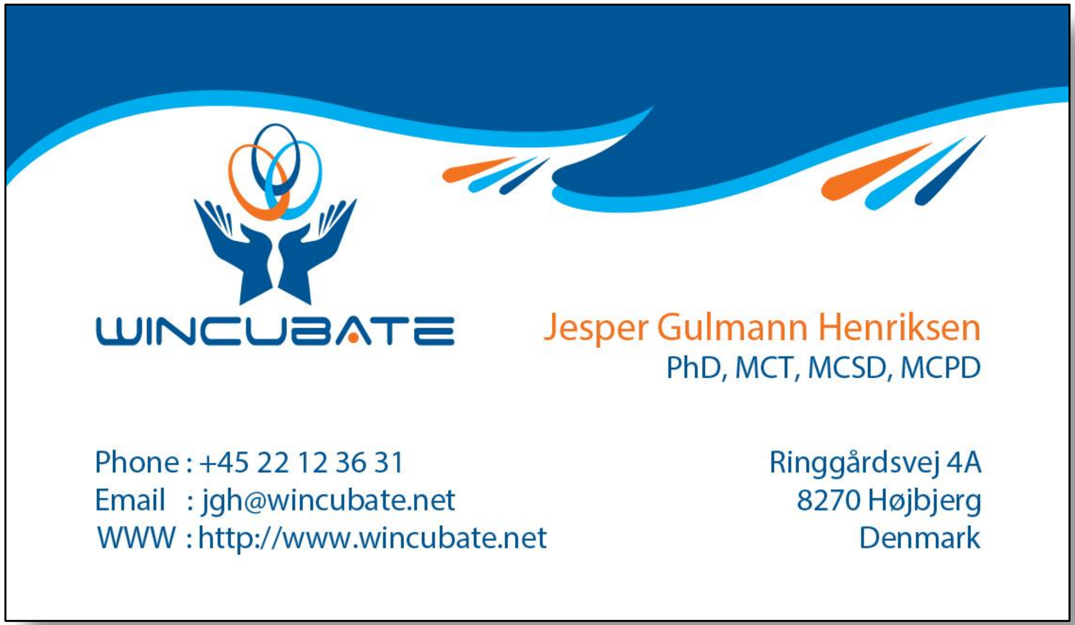

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