

# Module 2:

## "SOLID in Practice"

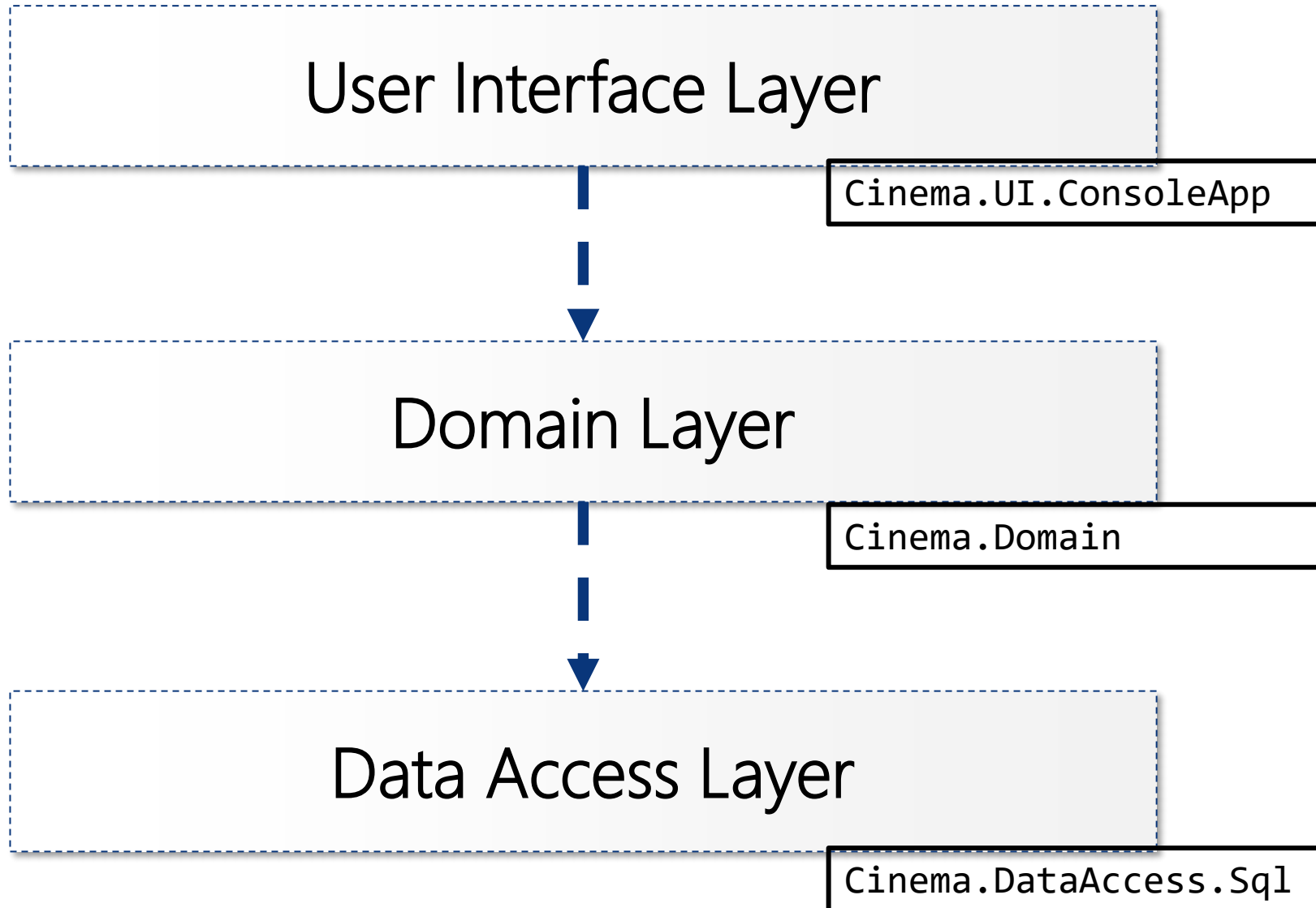


**TEKNOLOGISK**  
**INSTITUT**

# Agenda

- ▶ **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

# 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" (2<sup>nd</sup> Edition)  
Gary McLean Hall (2017)

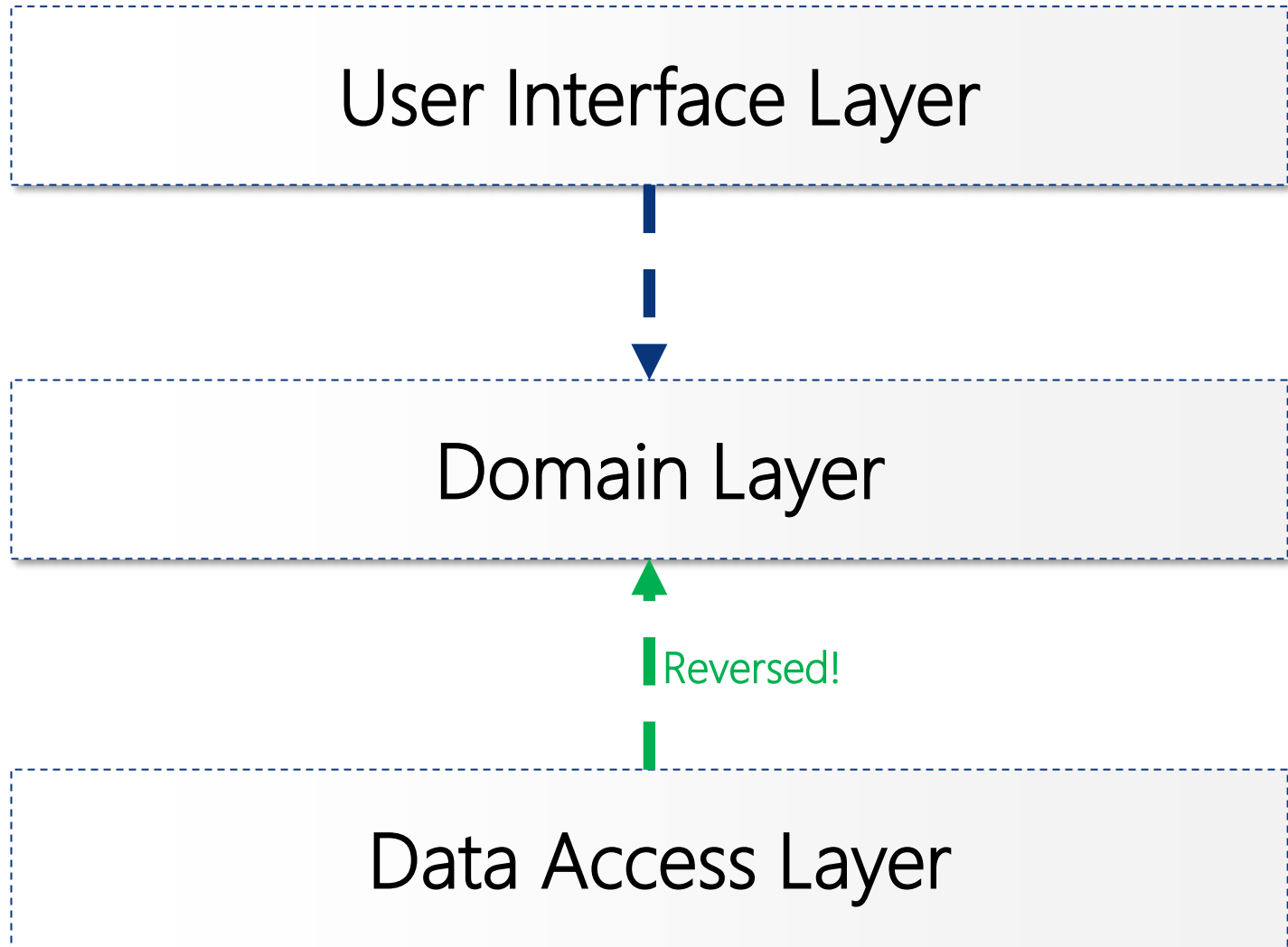
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# Better SOLID Design





# Workshop A.2: Data Access Layer with Repository



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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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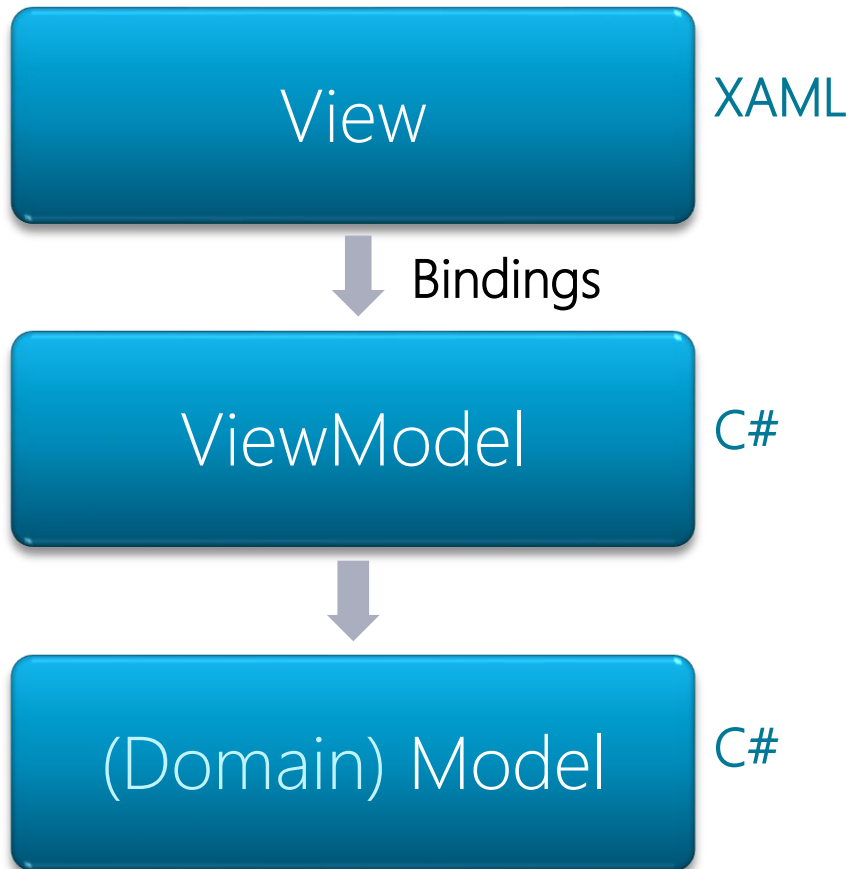
# Implications of Stairway

- ▶ 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



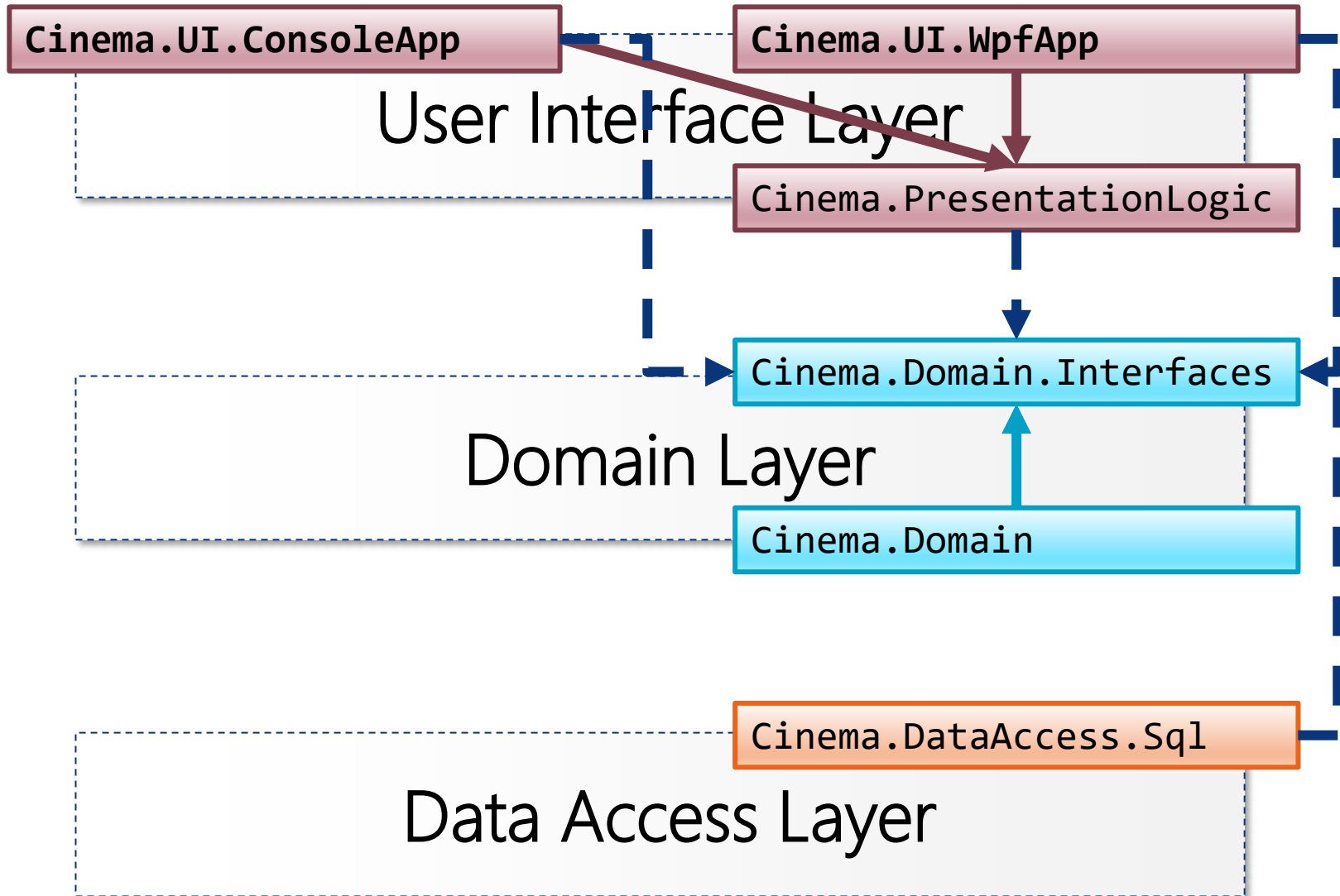
- ▶ Separation between presentation and application logic

- ▶ The ViewModel is an abstraction of the View

- ▶ Depends heavily on **data binding** and **command binding**



# Stairway Design





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- ▶ Workshop A.3: Change the Data Access Layer

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- ▶ **Workshop A.3: Test Domain and Change Data Access**



# Workshop A.3: Change the Data Access Layer



# Summary

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