



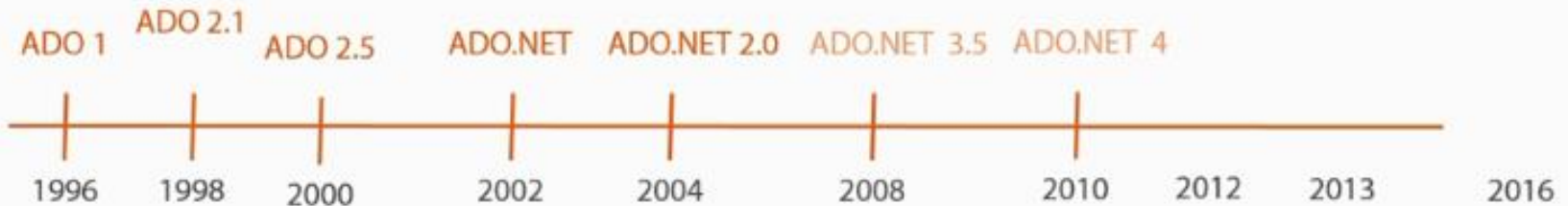
LINQ and Entity Framework

By Eman Fathi



ENTITY FRAMEWORK

Focus on your domain and EF will take care of Database work for you



```
string connectionString =
    "Data Source=(local);Initial Catalog=northwind;"
    + "Integrated Security=true";

// Provide the query string with a parameter placeholder.
string queryString =
    "SELECT ProductID, UnitPrice, ProductName from dbo.products "
    + "WHERE UnitPrice > @pricePoint "
    + "ORDER BY UnitPrice DESC;";

// Specify the parameter value.
int paramValue = 10;

// Create an instance of the SqlCommand class.
// ensures that the command will be executed
// when the connection is open.
using (SqlConnection connection =
    new SqlConnection(connectionString))
{
    // Create the SqlCommand object.
    SqlCommand command = new SqlCommand(queryString, connection);
    command.Parameters.AddWithValue("@pricePoint", paramValue);

    // Open the connection.
    // Create and execute the command, returning the result
    // set to the SqlDataReader object.
    try
    {
        connection.Open();
        SqlDataReader reader = command.ExecuteReader();
        while (reader.Read())
        {
            Console.WriteLine("{0}\t{1}\t{2}",
                reader[0], reader[1], reader[2]);
        }
        reader.Close();
    }
    catch (Exception ex)
    {
        Console.WriteLine(ex.Message);
    }
    Console.ReadLine();
}
```



<https://entityframework.codeplex.com/>



Entity Framework



```
public class Customer
{
    public int Id {get;set;}
    public string FirstName {get;set;}
    public DateTime DateOfBirth {get;set;}
}
```

← Relies on Data Model/Custom → Table Name: Customers

← Convention → Id (PK, int, not null)

← Custom Mapping → First_Name(nvarchar(30),not null)

← Convention → DateOfBirth(date, not null)

EF 5

EntityFramework.dll via Nuget

Code First
Model-less EF
POCOPOCOPOCOPOCO

DbContext
Simpler Access
Find, Local, Validation, etc...

EF Core APIs In .NET 4 & .NET 4.5

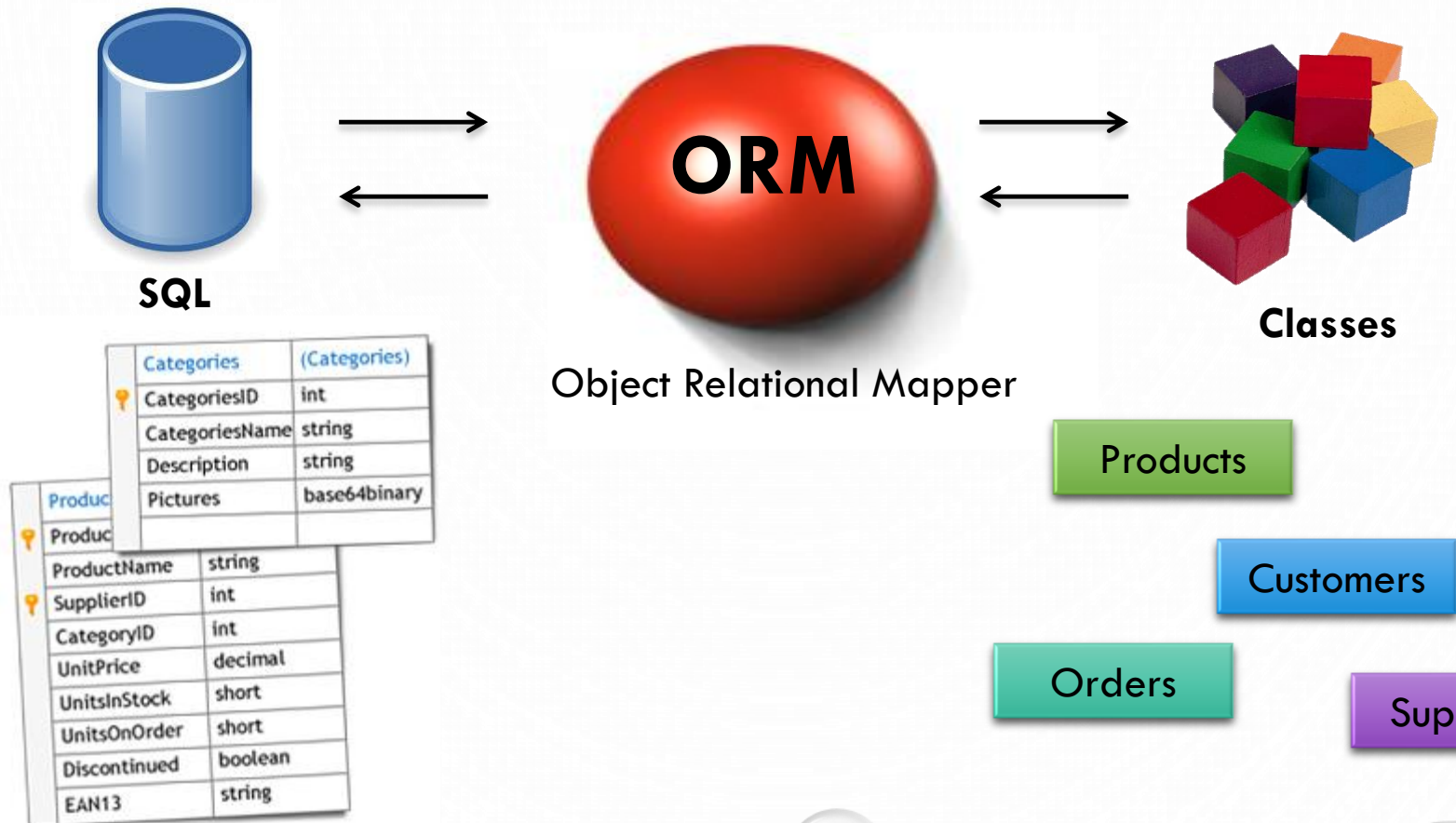
(Object Services API (ObjectContext) & EntityClient API)
(.NET 4.5 adds: Enum support, Geo Data, auto query cache)

Visual Studio
(2010/2012) EF Designer

Entity Framework Features

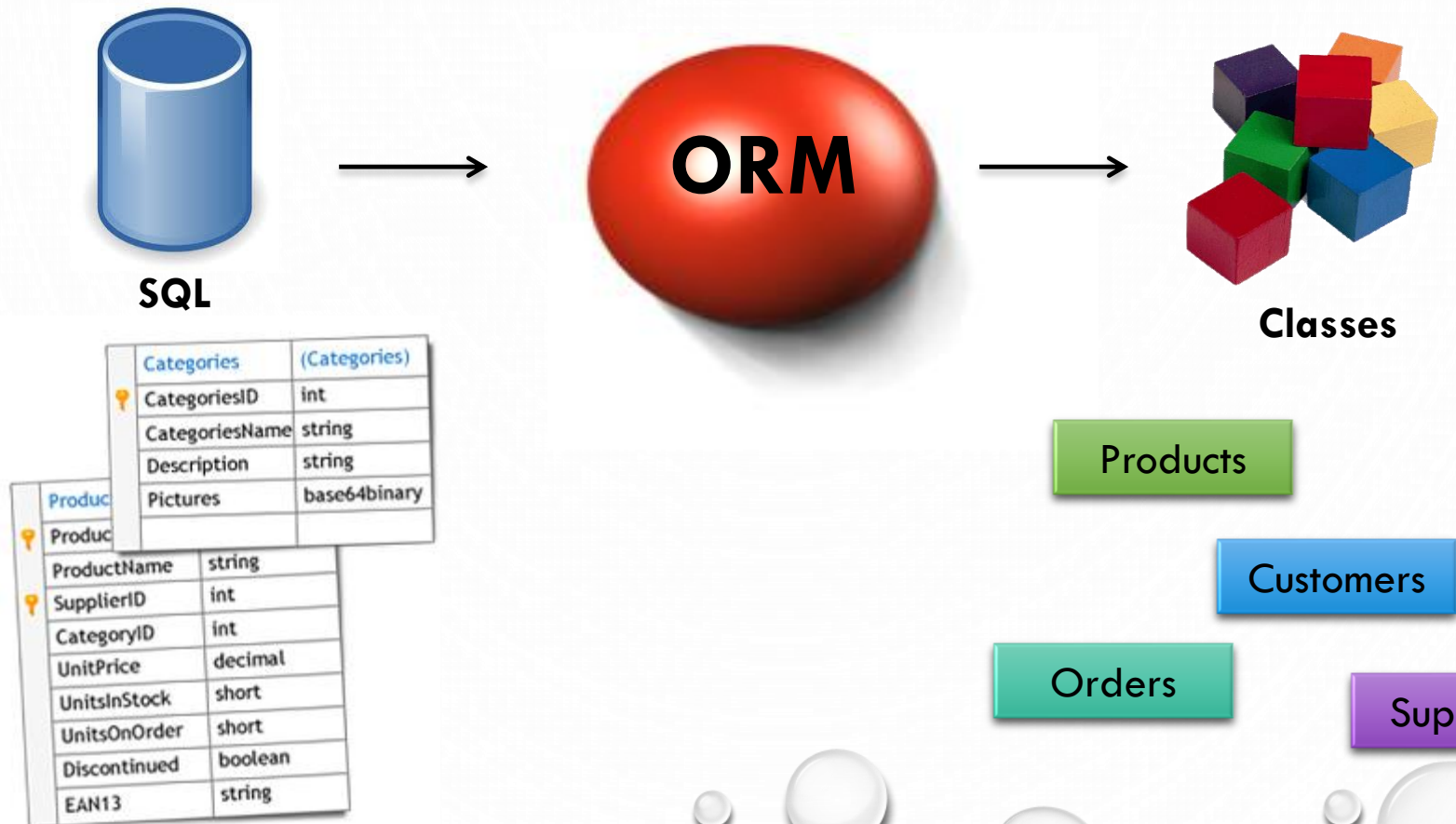
- ✓ Microsoft .net Tool
- ✓ Works with any Relational Database
- ✓ SQL command generation from Linq to Entities
- ✓ Track Changes to in-memory Objects
- ✓ Insert, Update, Delete command generation
- ✓ Work with visual model
- ✓ Stored procedure and function support

What Is Entity Framework



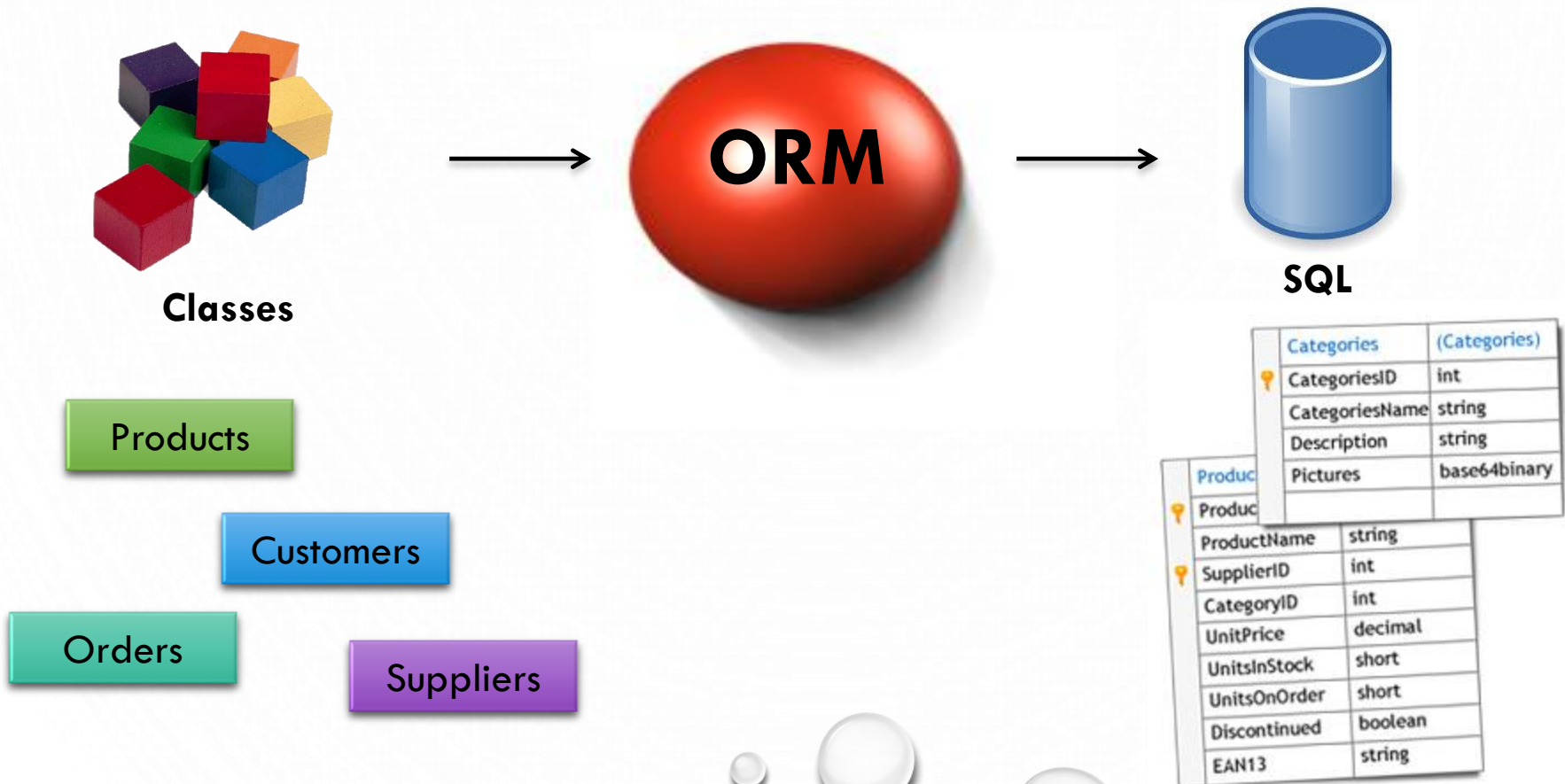
ORM Approaches

1- DataBase First



ORM Approaches

2- Model First or Code First



before EF 6

Visual Model



DB First Model
Empty Model

EF Models

Code-based

```
public class Customer : Contact
{
    public Customer(string firstName, string lastName, string email)
    {
        FullName = new FullName(firstName, lastName);
        EmailAddress = email;
        Status = CustomerStatus.Active;
    }

    public Customer() { }

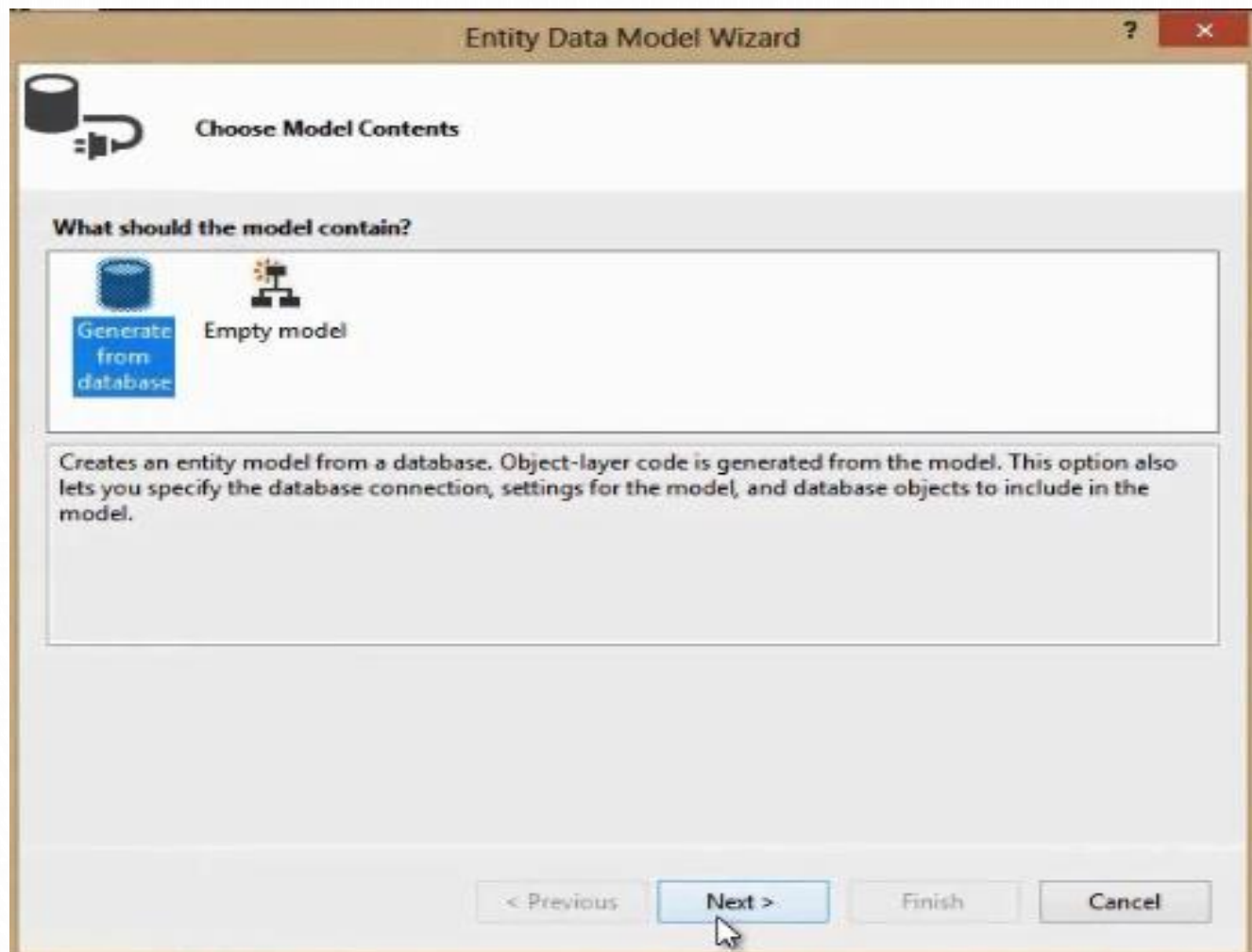
    public string SalesPersonId { get; private set; }
    public CustomerStatus Status { get; private set; }
    public Address ShippingAddress { get; private set; }
    public Address BillingAddress { get; private set; }
    public CustomerCreditCard CreditCard { get; private set; }
    public void SetShippingAddressBillingAddress()
    {
        ShippingAddress = new Address
        {
            Street = BillingAddress.Street,
            City = BillingAddress.City,
            PostalCode = BillingAddress.PostalCode
        };
    }

    public void CreateNewShippingAddress(string street, string city, string zip)
    {
        BillingAddress = new Address
        {
            Street = street,
            City = city,
            PostalCode = zip
        };
    }
}
```

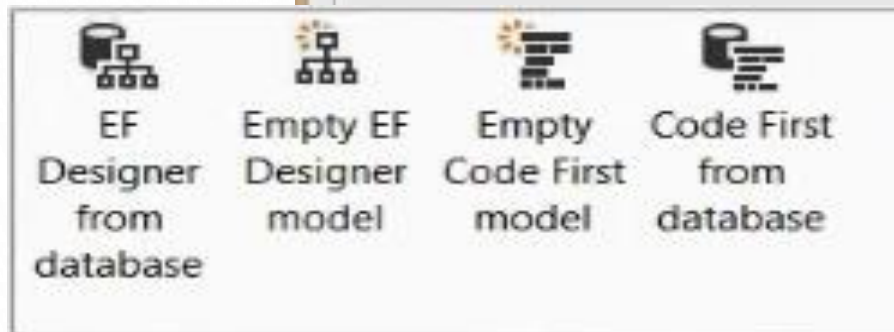
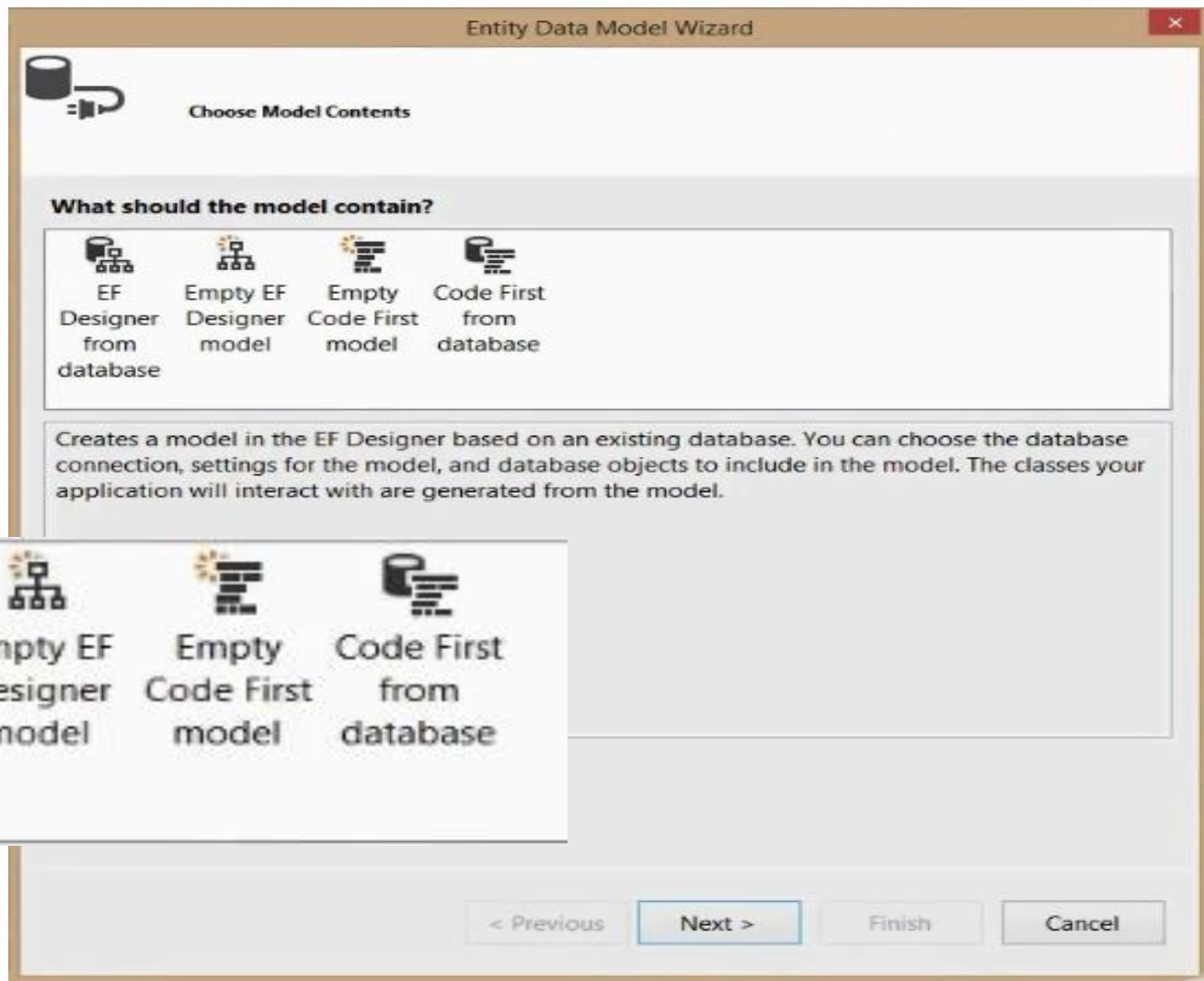
Code First from DB
Code First (Empty Model)

Entity Framework dll
Entity Framework Power tool

before EF 6



After EF 6



Not Supported Functions

- *Takewhile – Skipwhile*
- *Elementat-elementatordefault*
- *Last-lastordefault*
- *Datetime Methods*
- *Reverse*
- *Aggregate Function*