

RAWDATA SECTION 2

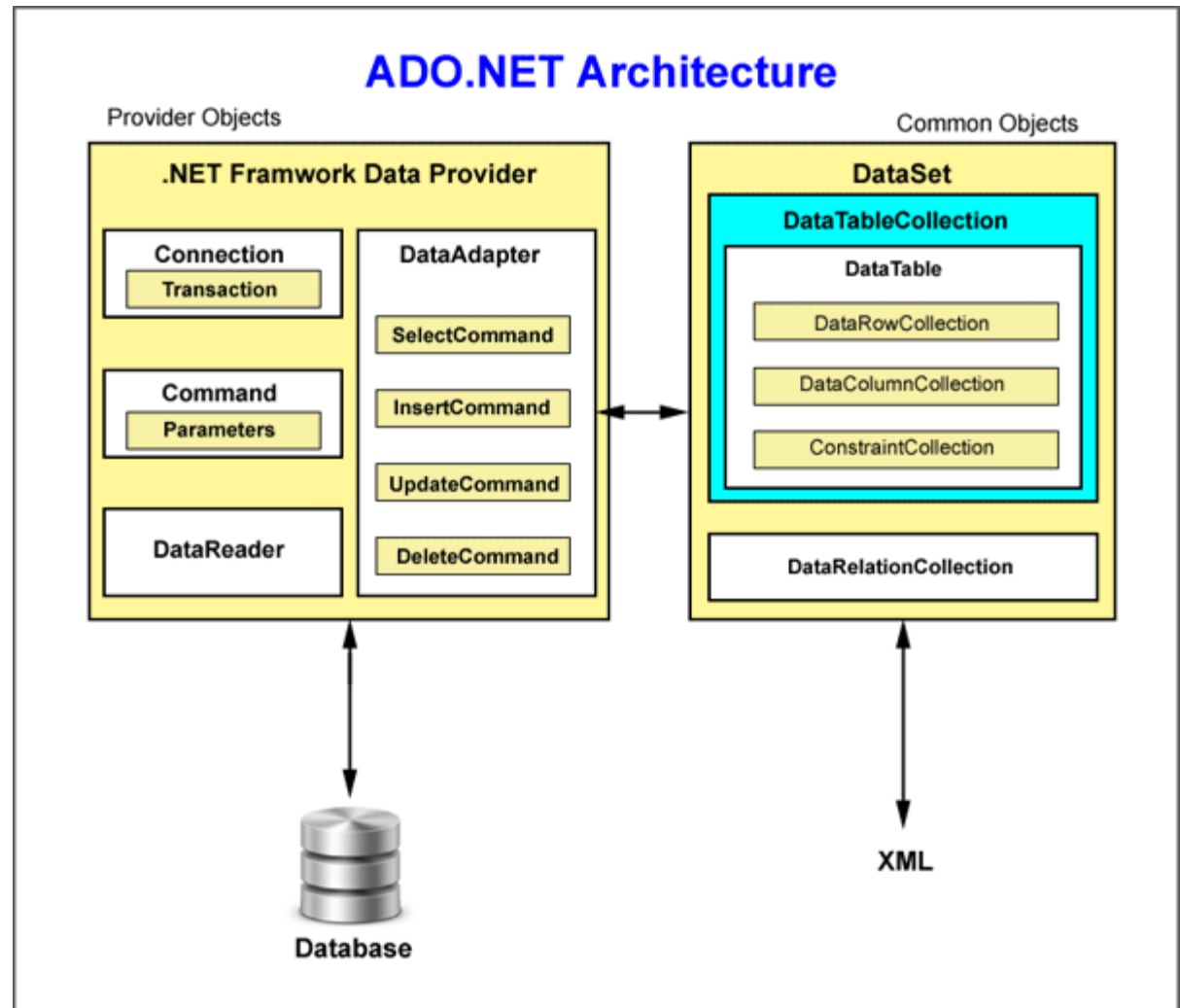
Troels Andreassen & Henrik Bulskov



ADO



ADO.NET



ADO.NET EXAMPLE

```
using System;
using Npgsql;

namespace AdoEx
{
    – references | Henrik Bulskov Styltsvig, 2 days ago | 1 author, 1 change
    class Program
    {
        – references | Henrik Bulskov Styltsvig, 2 days ago | 1 author, 1 change
        static void Main(string[] args)
        {
            var connStr = "host=localhost;db=northwind;uid=bulskov;pwd=henrik";
            using (var conn = new NpgsqlConnection(connStr))
            {
                conn.Open();
                using (var cmd = new NpgsqlCommand())
                {
                    cmd.Connection = conn;
                    cmd.CommandText = "select * from categories";

                    using (var reader = cmd.ExecuteReader())
                    {
                        while (reader.Read())
                        {
                            Console.WriteLine($"Id={reader.GetInt32(0)}, Name={reader.GetString(1)}");
                        }
                    }
                }
            }
        }
    }
}
```

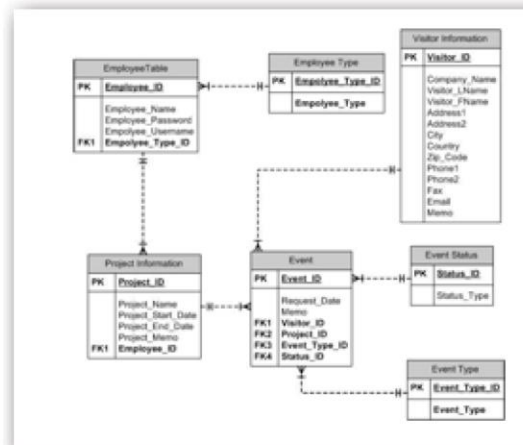
Language INtegrated Query

LINQ

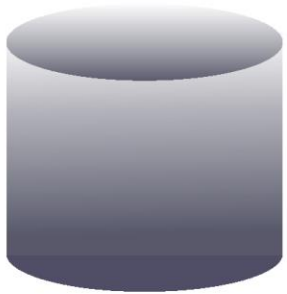


LINQ

Database



Data



Query

Collection

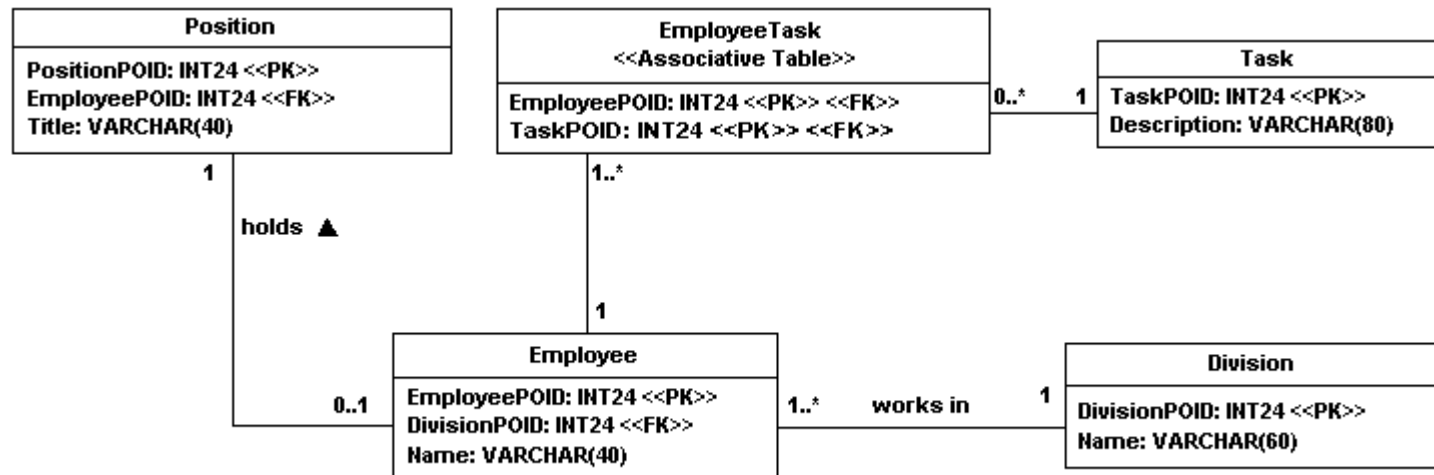
```
IEnumerable<T>
```

OBJECT- RELATIONAL MAPPING

- Object-relational mapping (ORM, O/RM, and O/R mapping tool) is a programming technique for converting data between incompatible type systems in object-oriented programming languages.

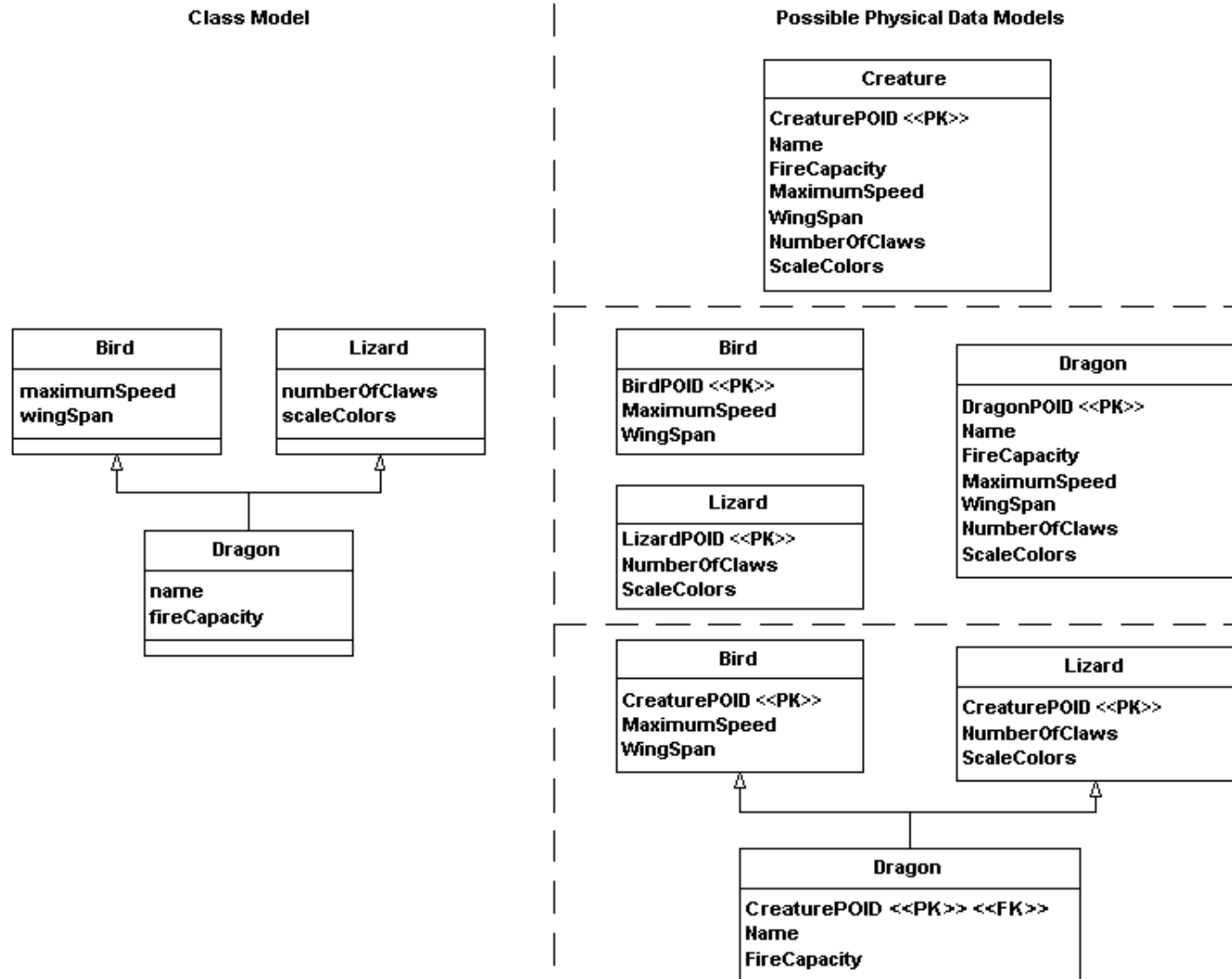
MAPPING OBJECT RELATIONSHIPS

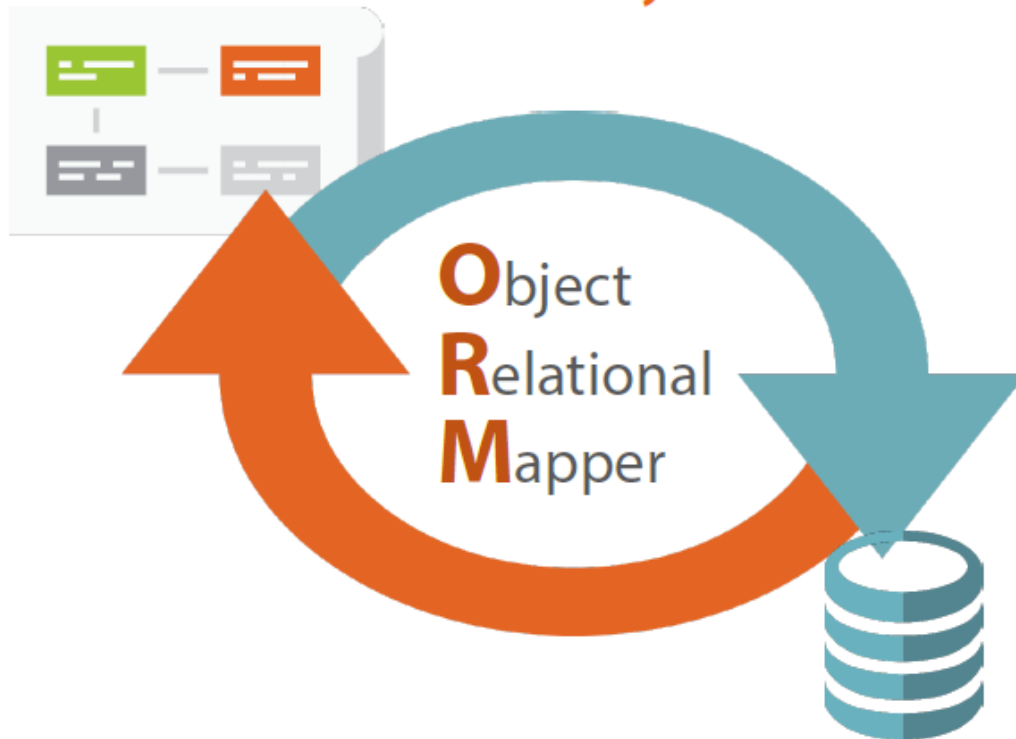
- One-to-one relationships
- One-to-many relationships
- Many-to-many relationships



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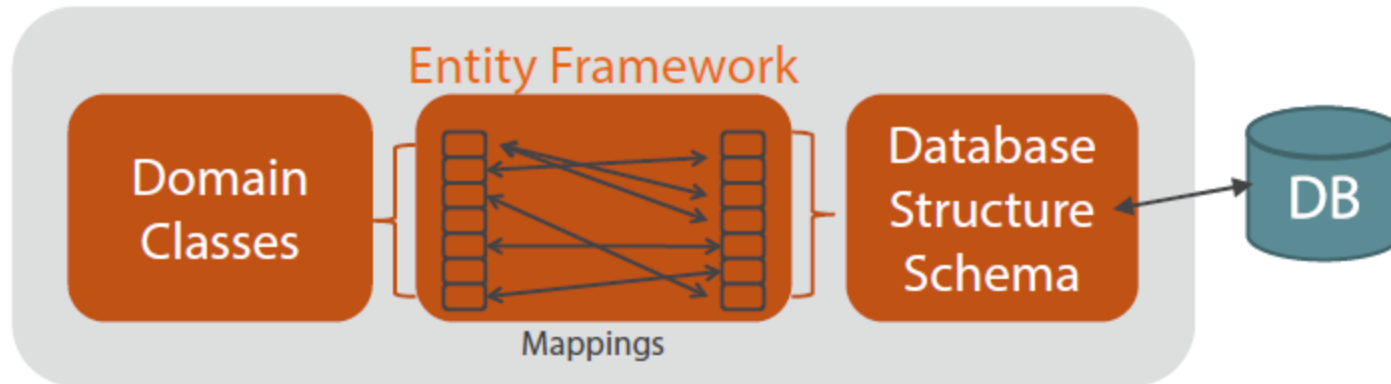
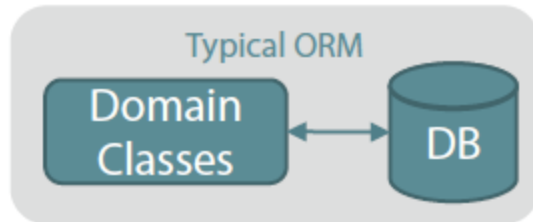
MAPPING INHERITANCE STRUCTURES





**WHAT IS
ENTITY
FRAMEWORK**

ENTITY FRAMEWORK VS. OTHER ORMS



WHY ENTITY FRAMEWORK?

Developer
Productivity

First Class Member
of
Microsoft .NET
Stack

Consistent query
syntax with
LINQ to Entities

Focus on domain.
Not on DB,
connections,
commands, etc.

WHY ENTITY FRAMEWORK CORE?

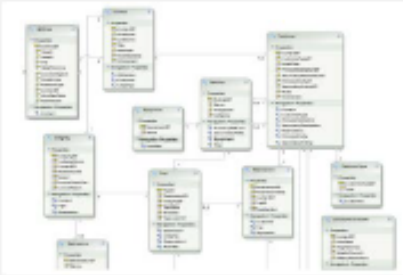
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Your Classes



(via *Designer + Code Gen*
or *Your Code*)

Entity Framework API

Map
Classes
to
Database
Schema

Translate
&
Execute
Queries

Track
Changes

Infer
&
Execute
Updates

Relational DB



HOW EF WORKS

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

Conventional Mapping

Column Name="First_Name", Length=30

Conventional Mapping

Table Name: Customers

Id (PK, int, not null)

First_Name(nvarchar(30),not null)

DateOfBirth(date, not null)

MAPPINGS

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BASIC WORKFLOW

Define model



Express & execute query

```
(from p in
people select
p).ToList()
```

EF determines
& executes SQL

```
Select * from
people
```

EF transforms results
into your types

3	Ms.	Dennis	F.	Carroll
4	Ms.	Isabel	M.	Gates
5	Mr.	Lucy	NULL	Harrington
6	Mr.	Isaac	J.	Carroll
7	Mr.	Dennis	P.	Gosh
10	Ms.	Kathleen	M.	Goss
11	Ms.	Kathleen	NULL	Harding
12	Mr.	Johnny	A.	Caprio
15	Mr.	Christopher	B.	Beck
18	Mr.	David	L.	Liu
19	Mr.	John	A.	Becker

Target started, provide us with the following information:

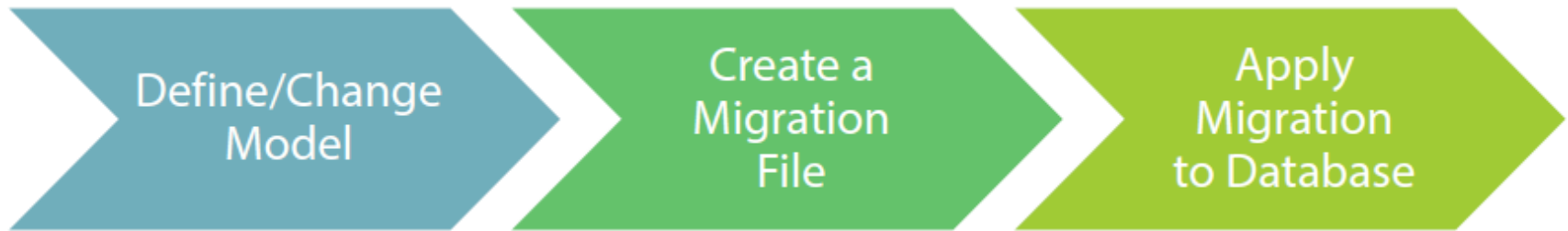
First name:	<input type="text"/>	Last name:	<input type="text"/>
Company:	<input type="text"/>	Phone:	<input type="text"/>
How did you hear about us?	<input type="text"/>	Comments:	<input type="text"/>

Modify data

EF determines & executes SQL

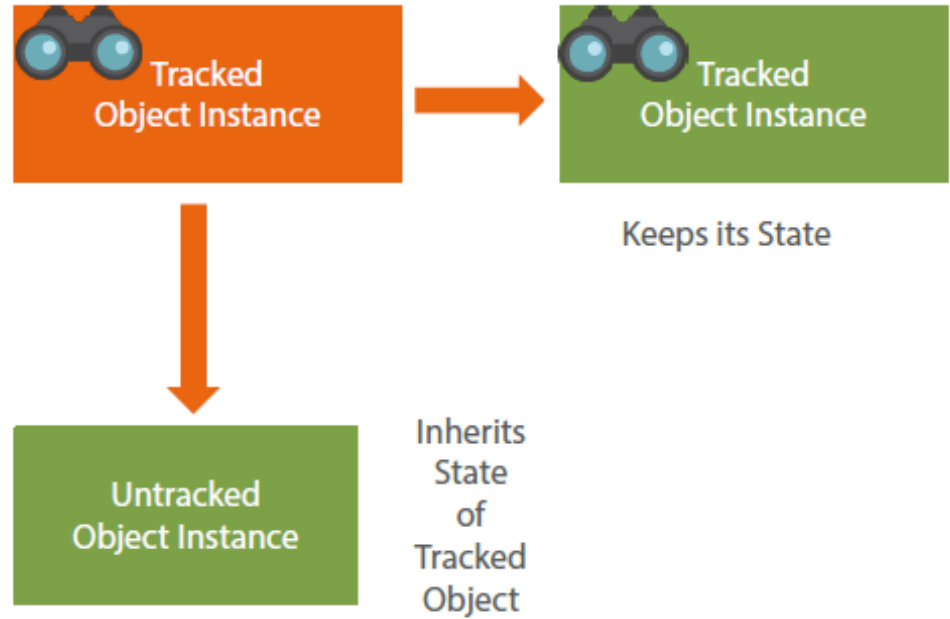
```
UPDATE people
SET Firstname='Julie'
WHERE id=3
```

EF
SaveChanges



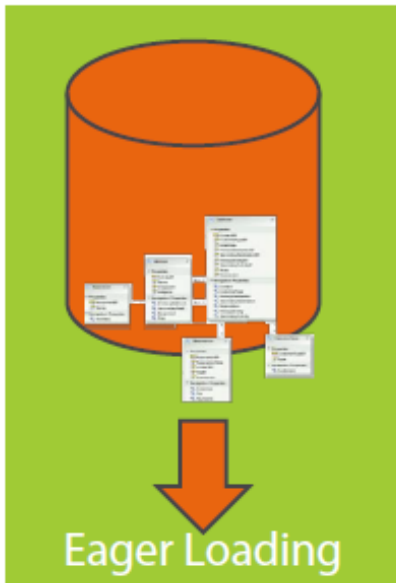
CODE FIRST DATABASE MIGRATIONS

Context



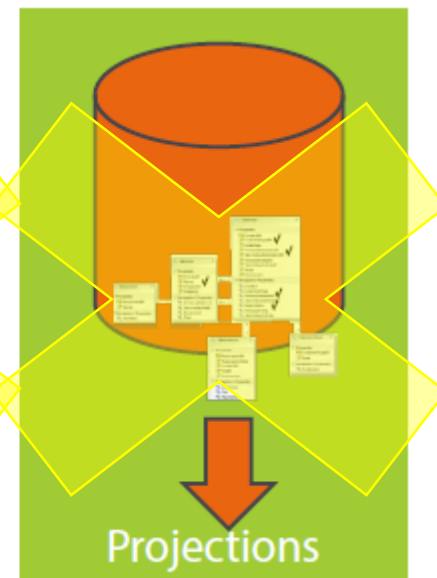
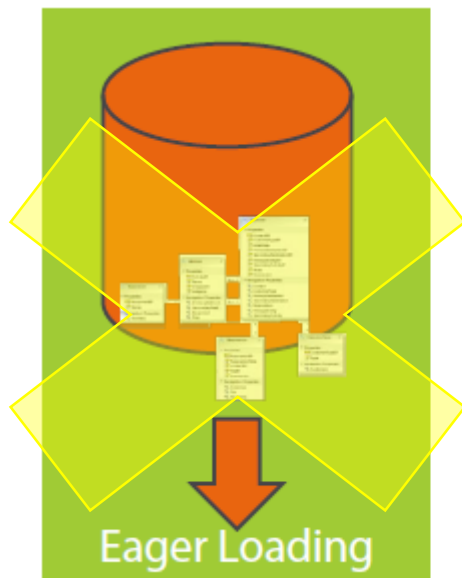
TRACKING

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LOADING RELATED DATA

(CORE < 2.1) LOADING RELATED DATA



(CORE 2.1) LOADING RELATED DATA

