



# LowCode con Delphi & iORM2

less is more



SPEAKER: MAURIZIO DEL MAGNO







## MAURIZIO DEL MAGNO DEVELOPER



**Lev@nte software**

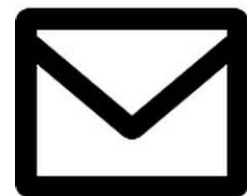


**i-ORM**

[github.com/mauriziodm/iORM](https://github.com/mauriziodm/iORM)

**DJSON**

[github.com/mauriziodm/DJSON](https://github.com/mauriziodm/DJSON)



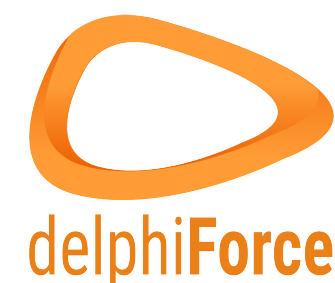
[mauriziodm@levantesw.it](mailto:mauriziodm@levantesw.it)

[mauriziodelmagno@gmail.com](mailto:mauriziodelmagno@gmail.com)



[facebook.com/maurizio.delmagno](https://facebook.com/maurizio.delmagno)

iORM + DJSON (group)



Membro fondatore

**eInvoice4D**

<https://github.com/delphiforce/eInvoice4D>



# LowCode con Delphi & iORM2

**less is more**



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# O.O.P.

Paradigma Object Oriented



# O.O.P.

Paradigma Object Oriented

- ✓ • E' il paradigma più consolidato e usato.
- ✓ • Insieme di oggetti legati da associazioni.
- ✓ • Incapsulamento, Ereditarietà, Polimorfismo.
- ✗ • Gli oggetti non sopravvivono alla chiusura dell'applicazione.
  - Ci serve un modo per persisterli



# R.D.B.M.S

Paradigma Relazionale



# R.D.B.M.S

Paradigma Relazionale

- Insieme ~~di~~ oggetti ~~relati~~ da associazioni.
- Incapsulamento, ~~Ente~~ varietà, ~~Polimorfismo~~.
- Tabelle, campi, relazioni.



# R.D.B.M.S

Paradigma Relazionale





# R.D.B.M.S

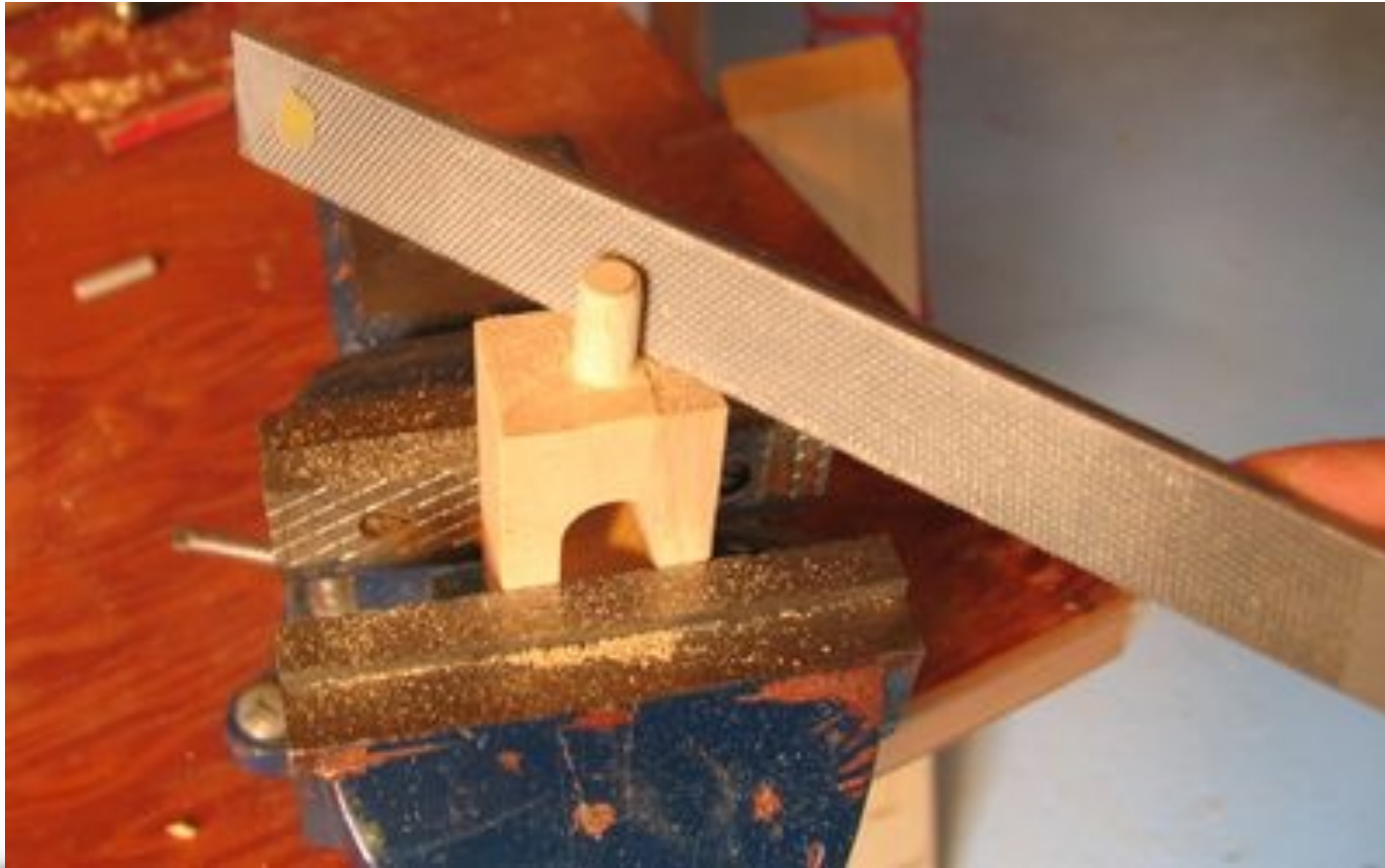
Paradigma Relazionale





# R.D.B.M.S

Paradigma Relazionale





# R.D.B.M.S

Paradigma Relazionale





# O.R.M.

Object **R**elational **M**apper



# O.R.M.

Object **R**elational **M**apper

- Automatizza la persistenza
- Libera dalla scrittura di codice SQL
- Favorisce l'integrazione tra due mondi apparentemente inconciliabili, superamento della incompatibilità
- Maschera dietro semplici comandi le ripetitive attività C.R.U.D.



# i.O.R.M.



# i.O.R.M.

- Open Source
- Nessun file di configurazione o per la mappatura delle classi
- Nessun oggetto “sessione” da creare e mantenere
- Convention over Configuration (CoC) + custom attributes
- Domain classes come se l’ORM non ci fosse (writing & life cycle)



# i.O.R.M.

- “Delphi-Like” components (also)
- Interfaced objects compatibility
- Dependency Injection Container
- MVVM framework
- AutoMapping
- Automatic Relation Detection (indexes and foreign keys also)
- LazyLoad



# i.O.R.M.

- Extended LiveBindings & DataSets
- AutoLoad & AutoPersist
- Paging
- Selectors
- Smart Where Builders
- Standard Actions
- Action aggregation



# Demo**time**





# Let'sCode





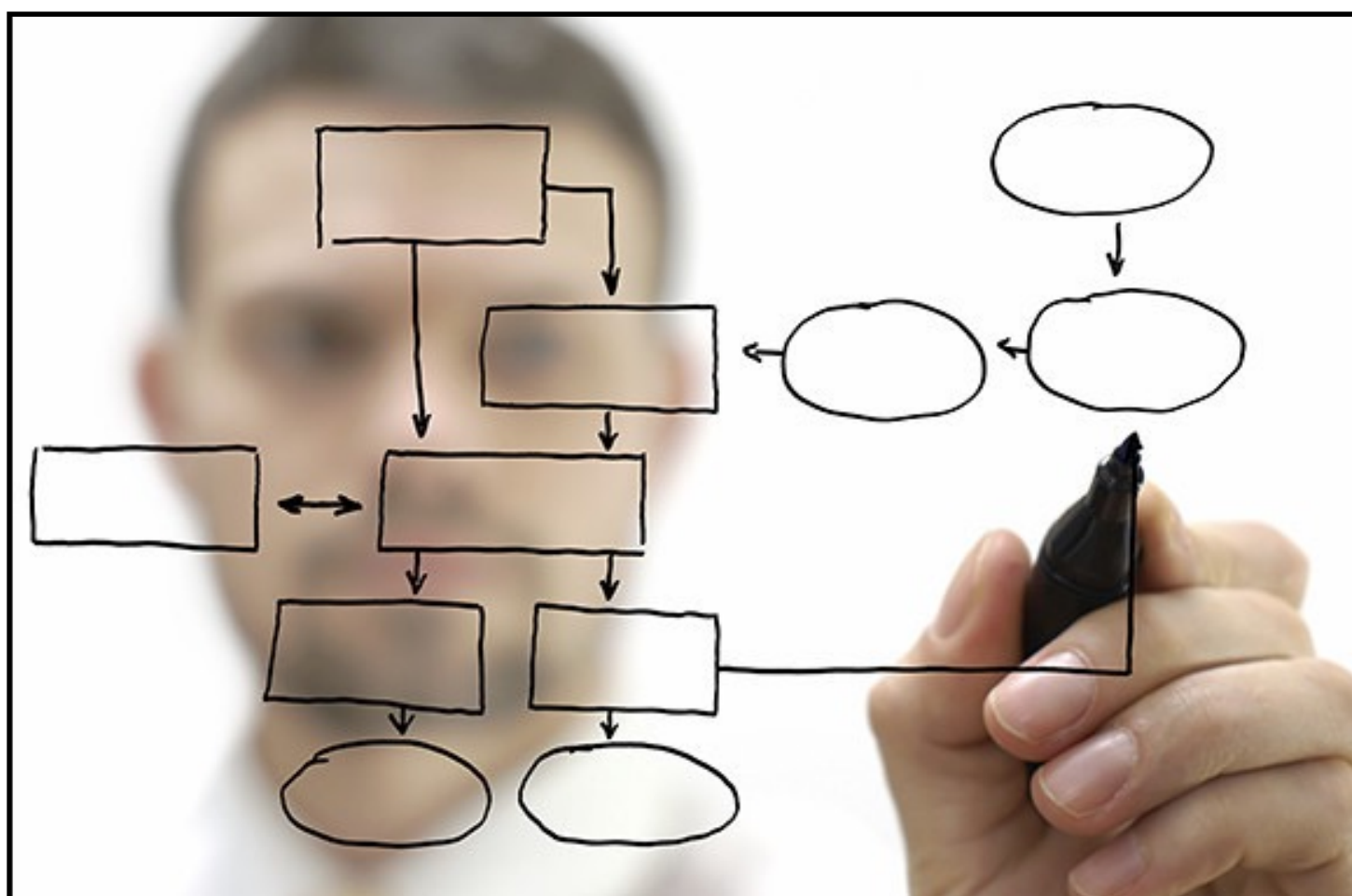
# ProgrammaApplicativo

insieme organizzato di 3 strati funzionali



# ProgrammaApplicativo

insieme organizzato di 3 strati funzionali



## Domain logic

- Sottosistema di logica applicativa
- Definisce, in forma di classi (entità), le informazioni e gli algoritmi di manipolazione e validazione che caratterizzano l'applicazione
- Es: TCliente, TOrdine, TRigaOrdine, TArticolo ...



## Data access layer

- Sottosistema di gestione della persistenza delle entità
- Si occupa dell'organizzazione dei dati, della loro memorizzazione e del loro reperimento
- iORM



## Presentation layer

- Interazione con l'utente
- Riceve i dati che l'utente fornisce come input
- Rappresenta in output i risultato dell'esecuzione del programma
- Cattura le intenzioni dell'utente e le esaudisce eseguendo uno o più comandi
- Decide la sequenza di viste da mostrare



# ProgrammaApplicativo

insieme organizzato di 3 strati funzionali

Main menù



Pizza list



Pizza



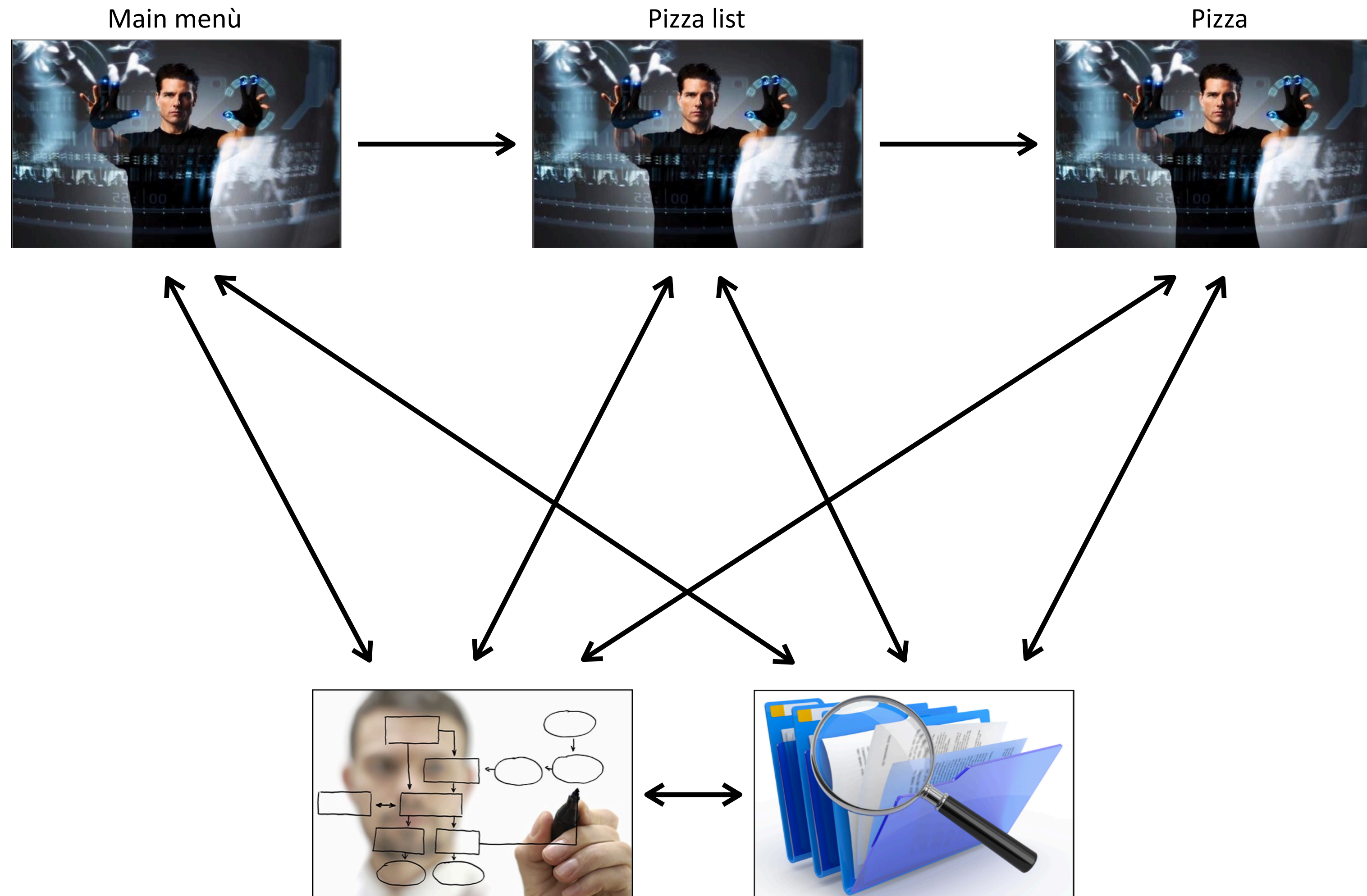
`TPizzaListForm.Create(...);`

`TPizzaForm.Create(...);`



# ProgrammaApplicativo

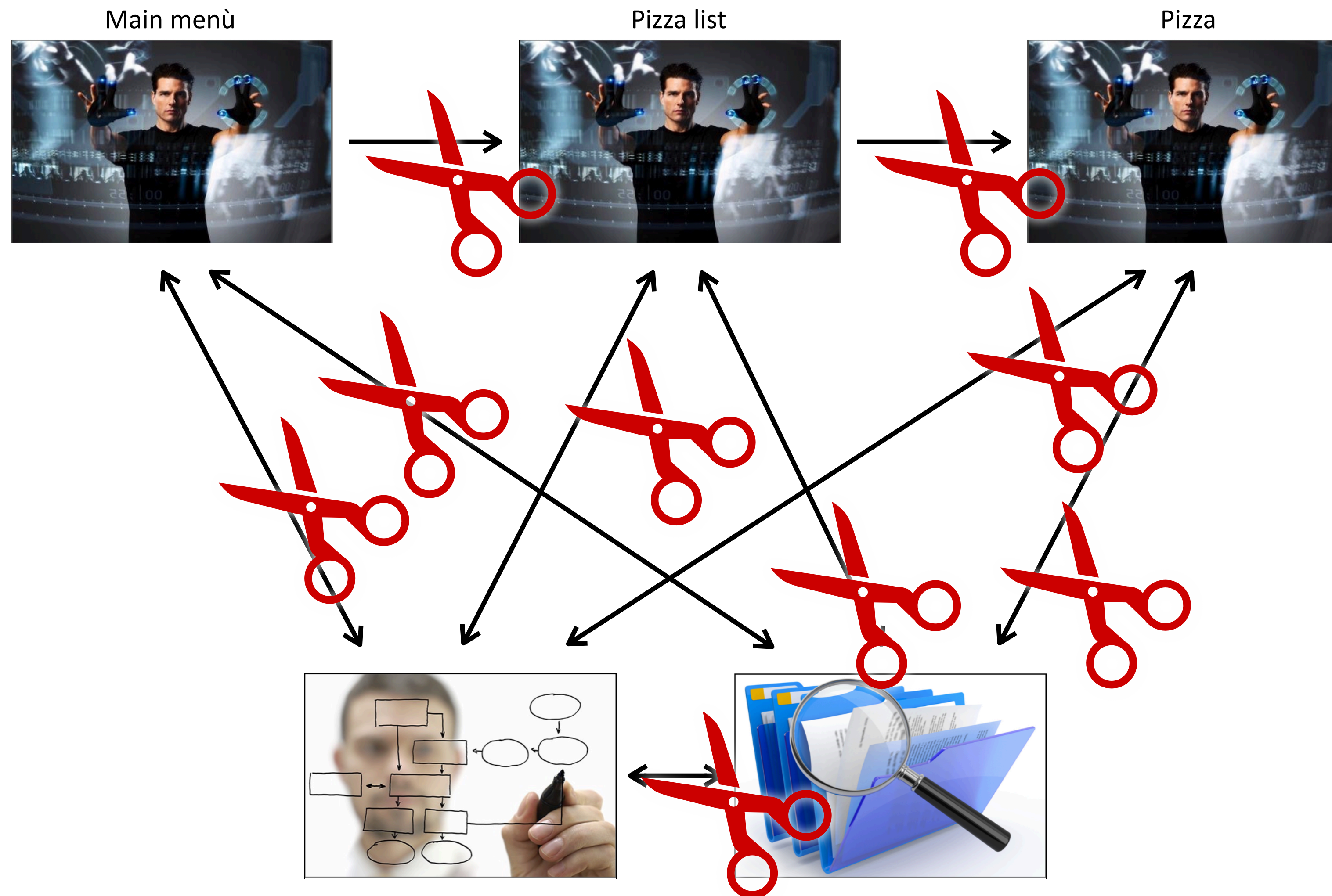
insieme organizzato di 3 strati funzionali





# ProgrammaApplicativo

insieme organizzato di 3 strati funzionali





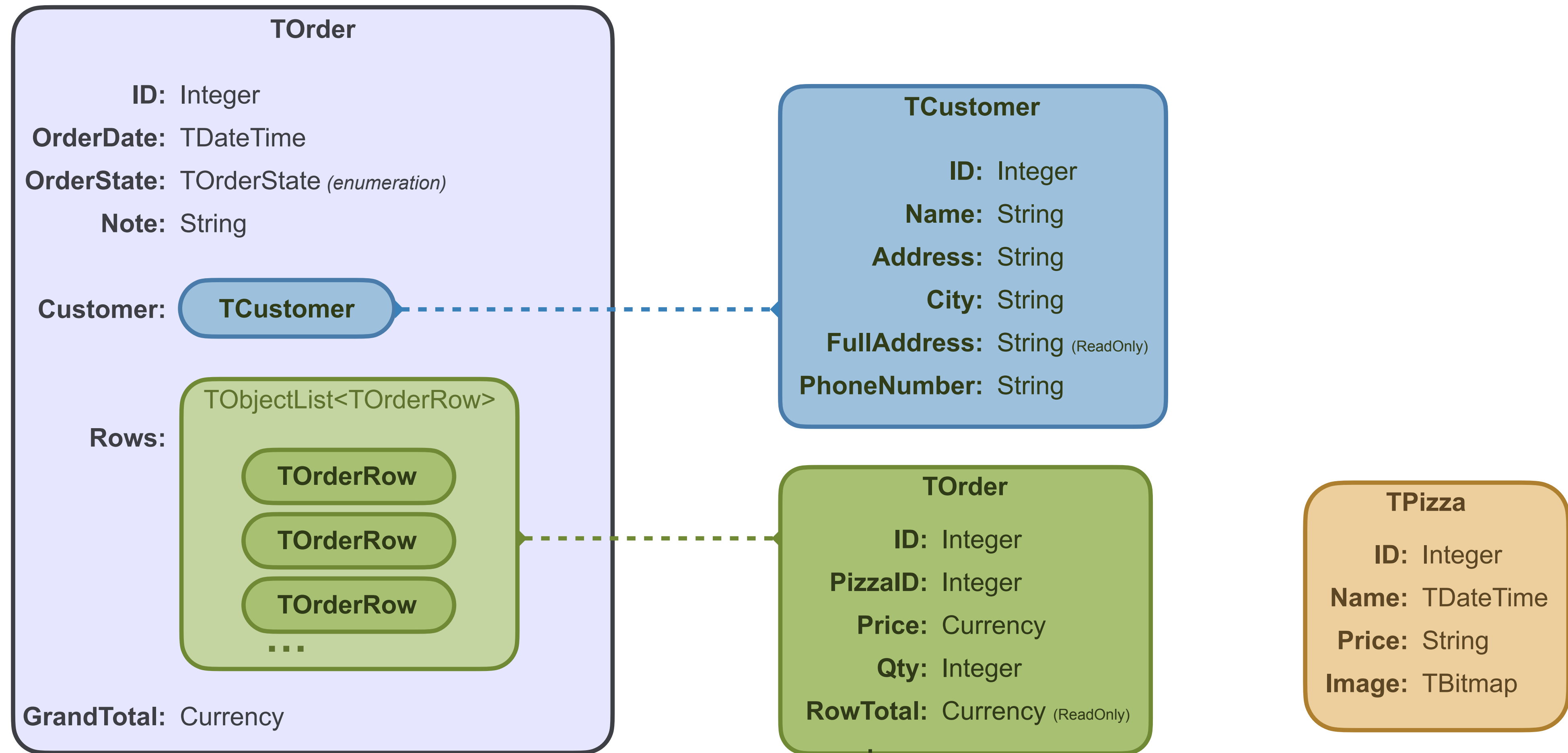
# Model

Esempi 25



# Model

Esempi 25





# Let'sCode





# SimpleView



## Presentation layer

- Interazione con l'utente
- Riceve i dati che l'utente fornisce come input
- Rappresenta in output i risultati dell'esecuzione del programma
- Cattura le intenzioni dell'utente e le esaudisce eseguendo uno o più comandi
- Decide la sequenza di viste da mostrare



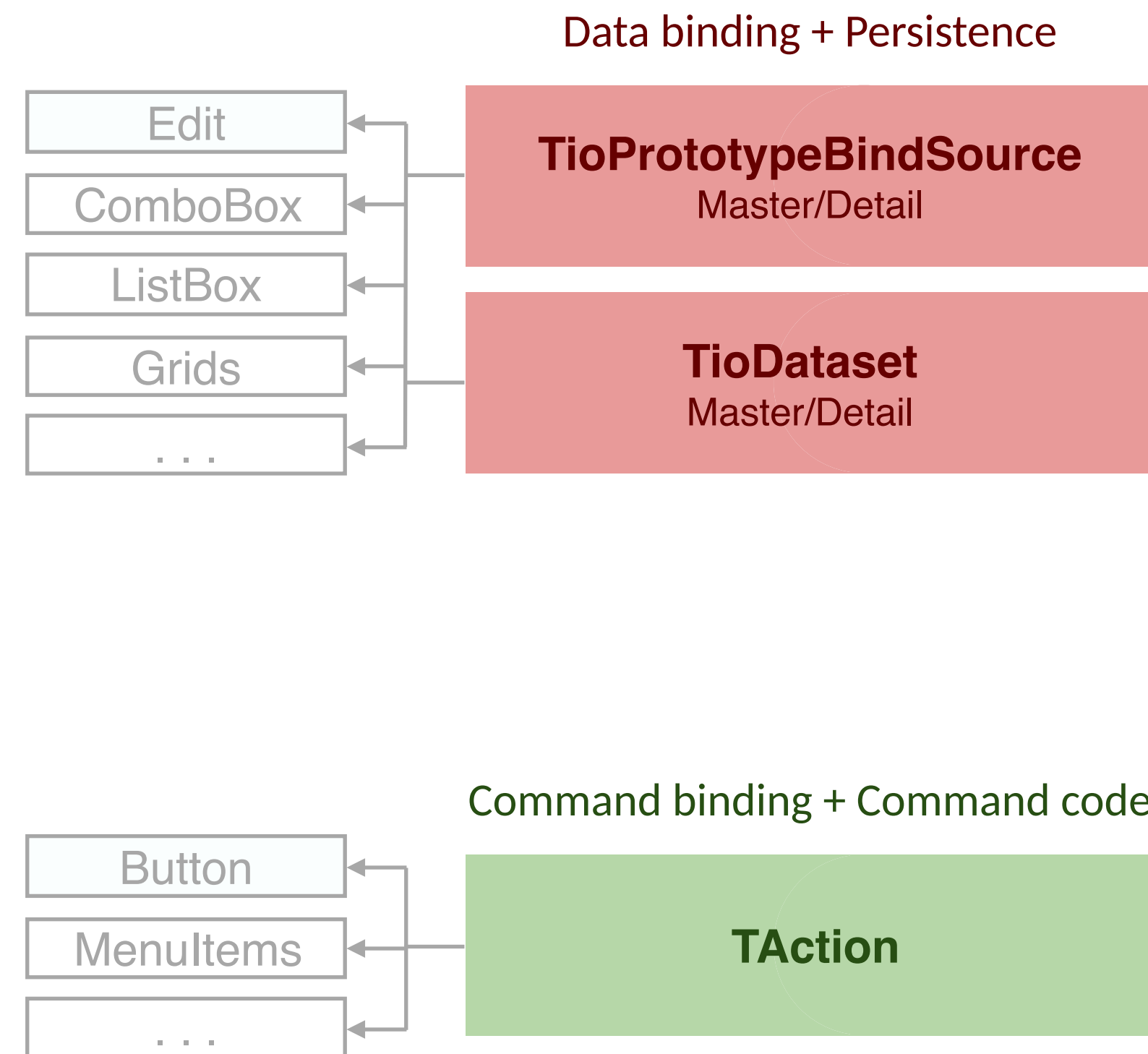
# SimpleView



## Presentation layer

- Interazione con l'utente
- Riceve i dati che l'utente fornisce come input
- Rappresenta in output i risultato dell'esecuzione del programma
- Cattura le intenzioni dell'utente e le esaudisce eseguendo uno o più comandi
- Decide la sequenza di viste da mostrare

## SimpleView





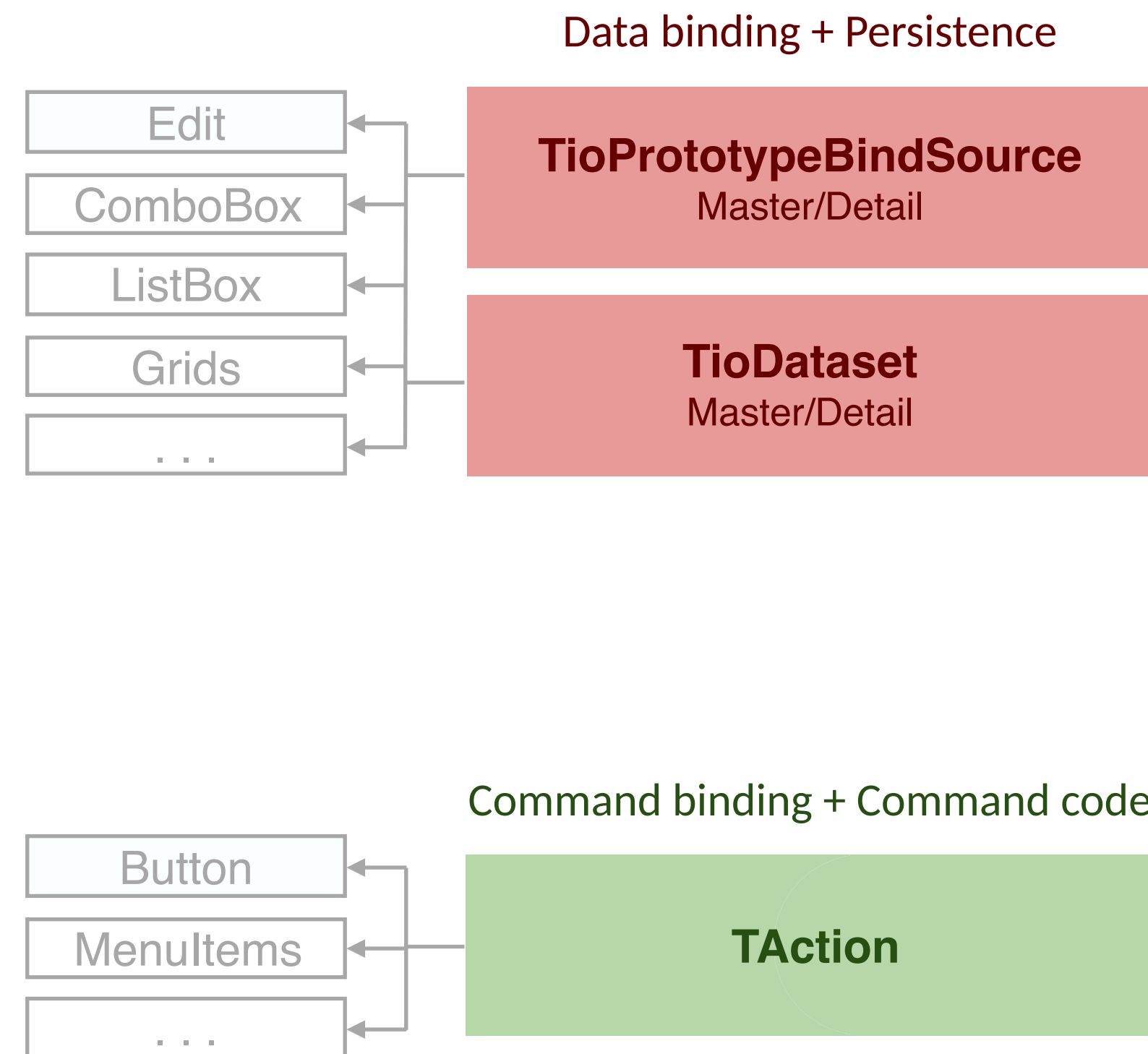
# SimpleView



## Presentation layer

- Interazione con l'utente
- Riceve i dati che l'utente fornisce come input
- Rappresenta in output i risultato dell'esecuzione del programma
- Cattura le intenzioni dell'utente e le esaudisce eseguendo uno o più comandi
- Decide la sequenza di viste da mostrare

## SimpleView





# DependencyInjection





# DependencyInjection





# DependencyInjection



## Register

```
[diSimpleViewFor(TPizza)]  
TPizzaForm = class(TForm);
```

*SimpleView for  
TPizza*

The screenshot shows a Delphi application window titled "Pizz'Amore". Inside the window is a form titled "Pizza". The form has a "Back" button in the top left corner. Below the title bar, there are four input fields: "ID", "Name", "Price", and "Image". The "Image" field is a large rectangle with a small green button containing three dots to its right. A red rectangular box with the text "BSPizza Master" is overlaid on the left side of the form. Below the form, there is a green rectangular box with the text "Actions". At the bottom of the window, there are two buttons: "Revert" on the left and "Persist" on the right.

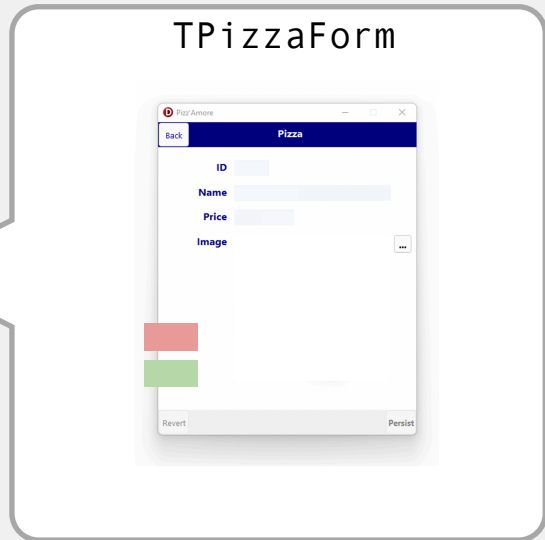


Register

# DependencyInjection



*SimpleView for  
TPizza*

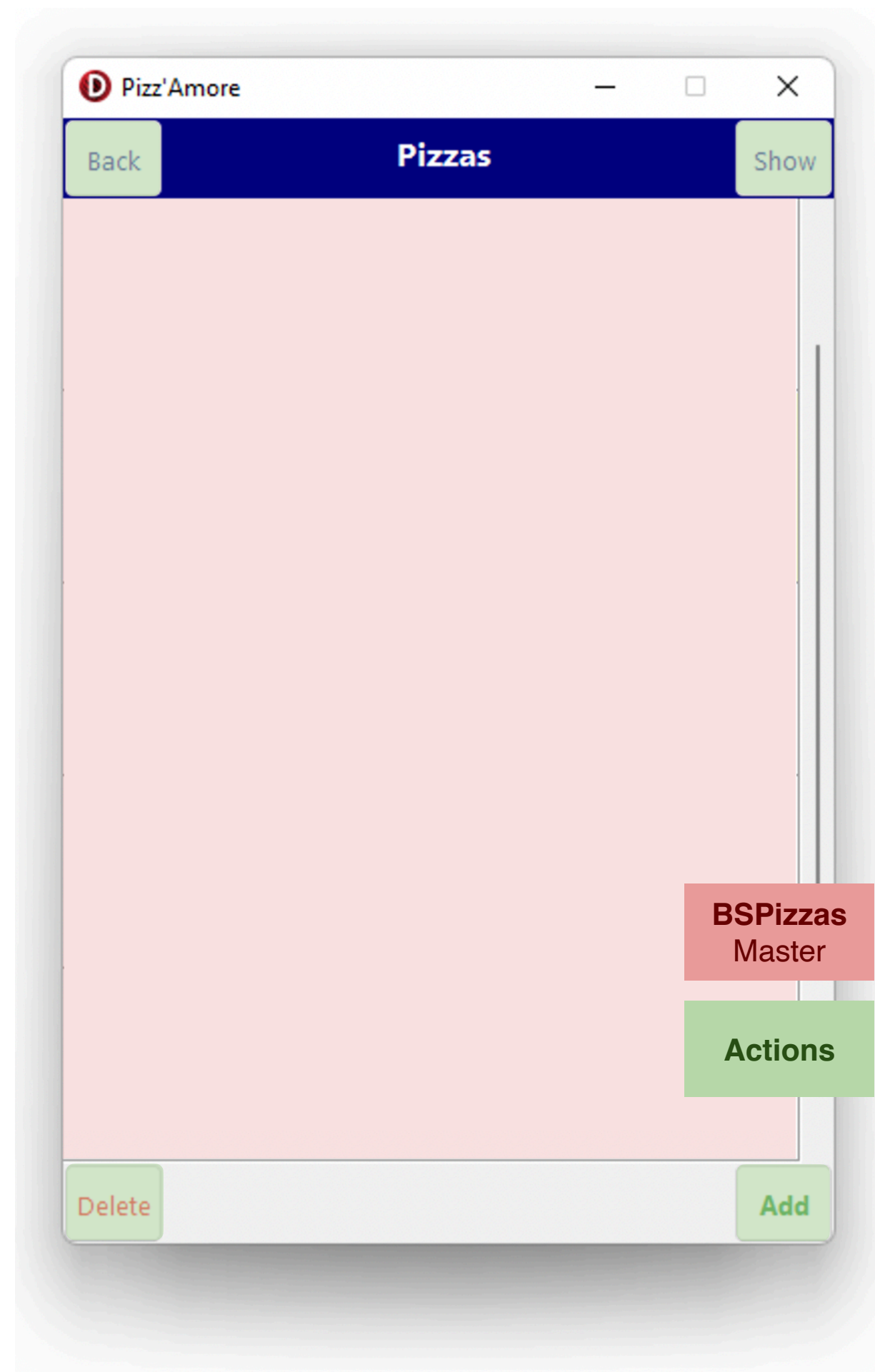




# DependencyInjection

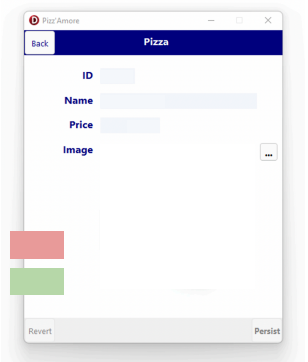
## Register

```
[diSimpleViewFor(TPizza, 'LIST')]  
TPizzaListForm = class(TForm);
```



*SimpleView for  
TPizza*

TPizzaForm



*SimpleView for  
TPizza  
alias LIST*



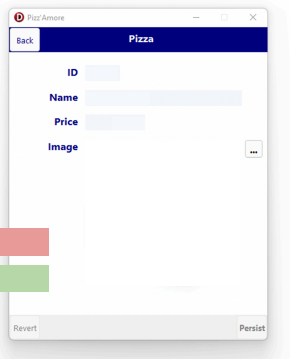
Register

# DependencyInjection



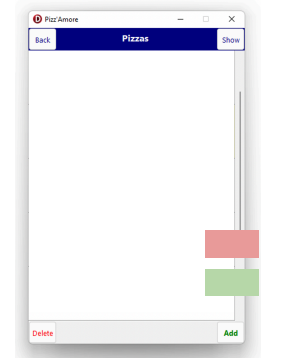
*SimpleView for  
TPizza*

TPizzaForm



*SimpleView for  
TPizza  
alias LIST*

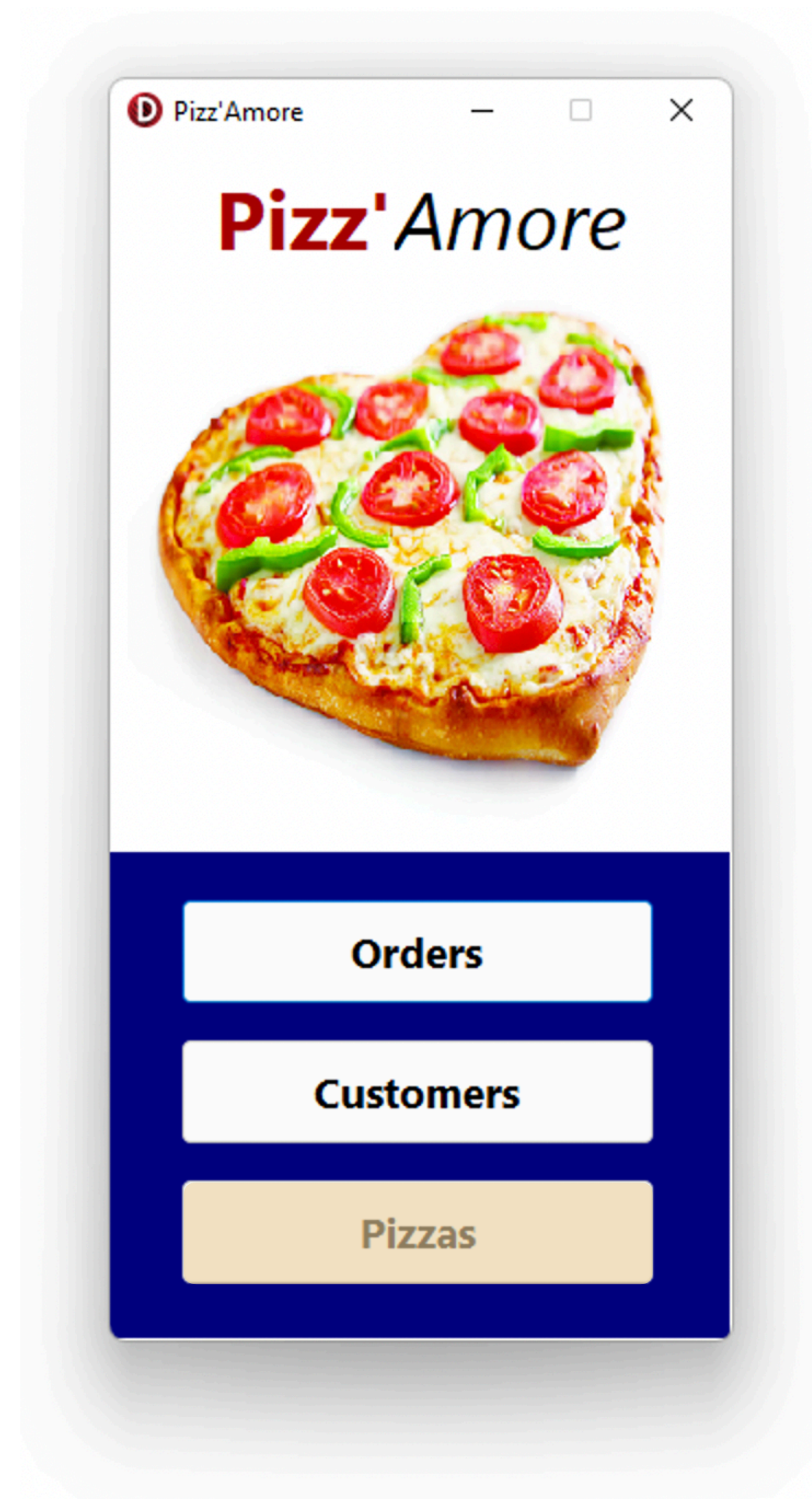
TPizzaListForm





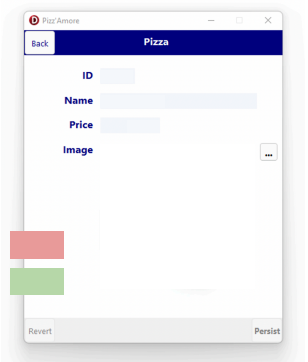
Injection

# DependencyInjection



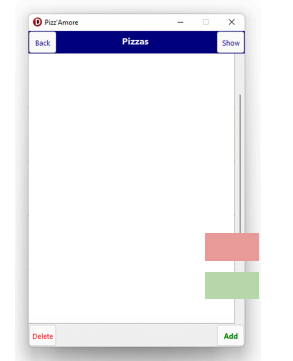
*SimpleView for  
TPizza*

TPizzaForm



*SimpleView for  
TPizza  
alias LIST*

TPizzaListForm

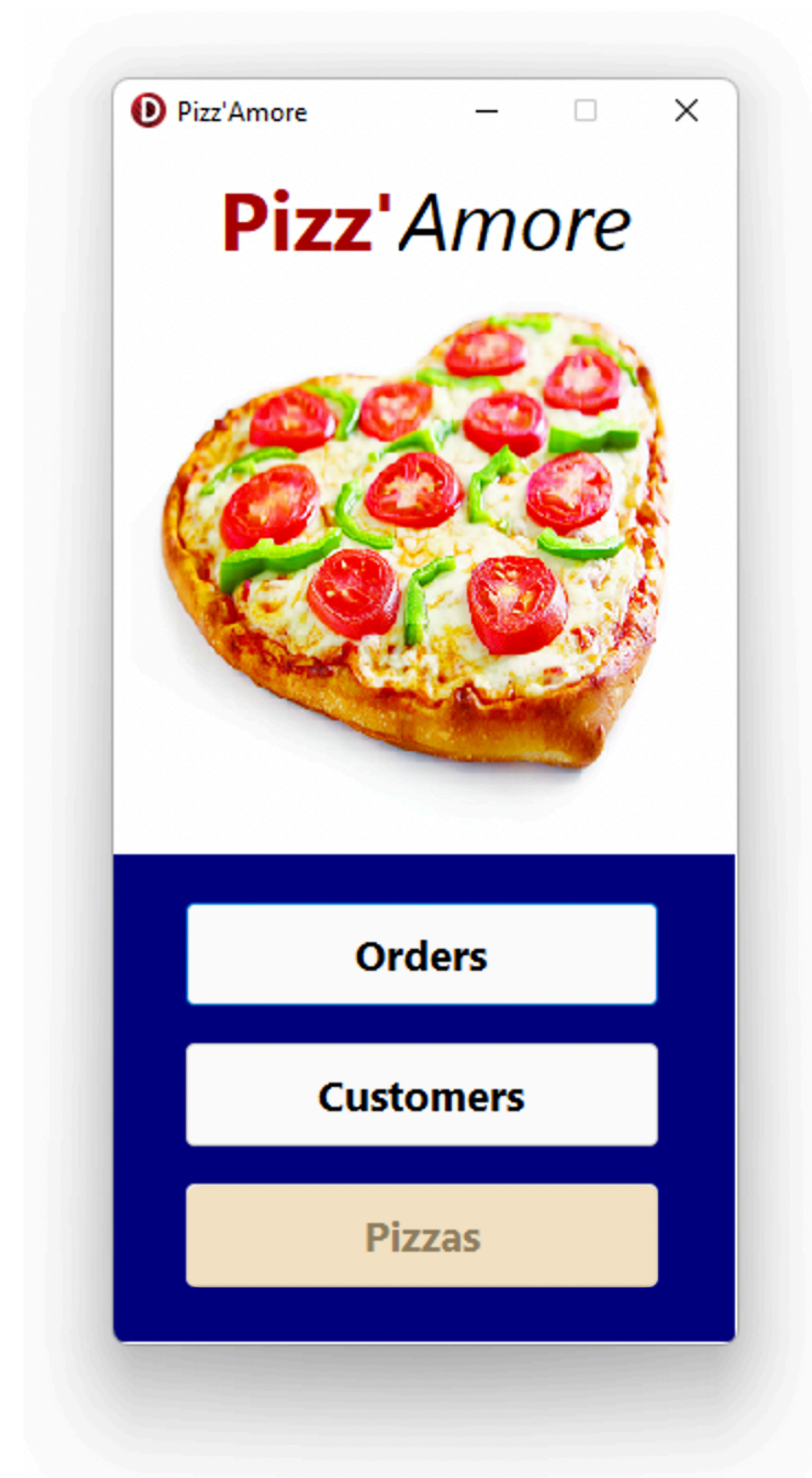




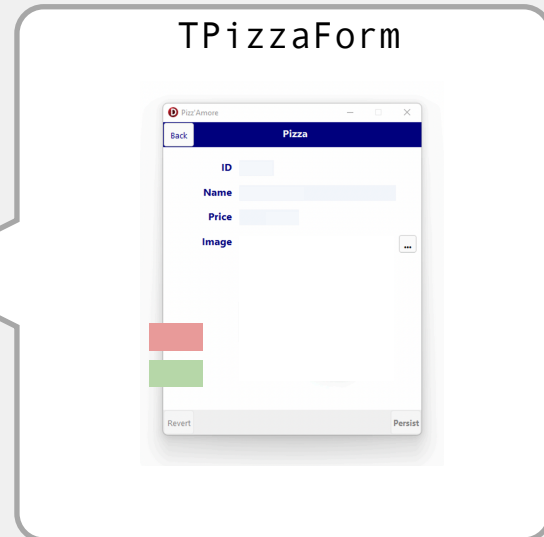
# DependencyInjection



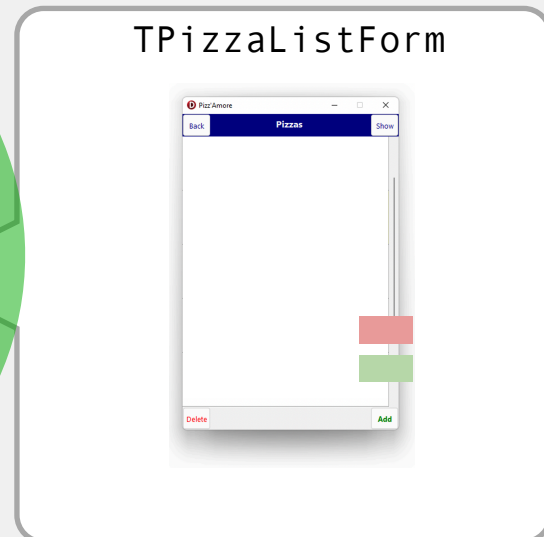
## Injection



*SimpleView for  
TPizza*



*SimpleView for  
TPizza  
alias LIST*



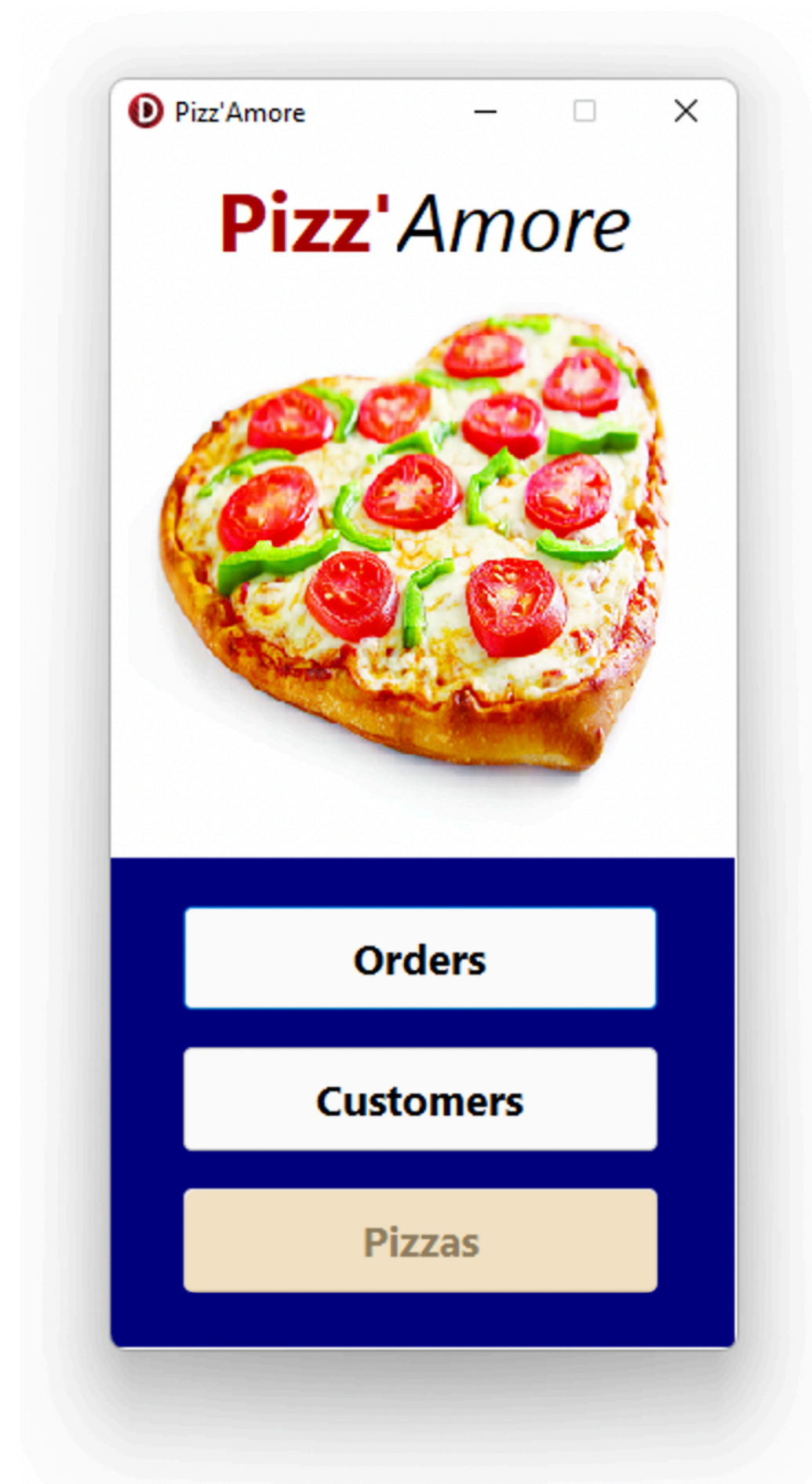
```
io.Show(TPizza, 'LIST');
```



# DependencyInjection

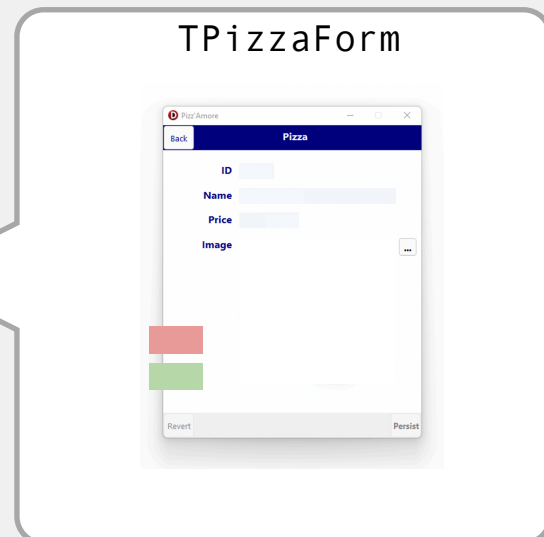


## Injection

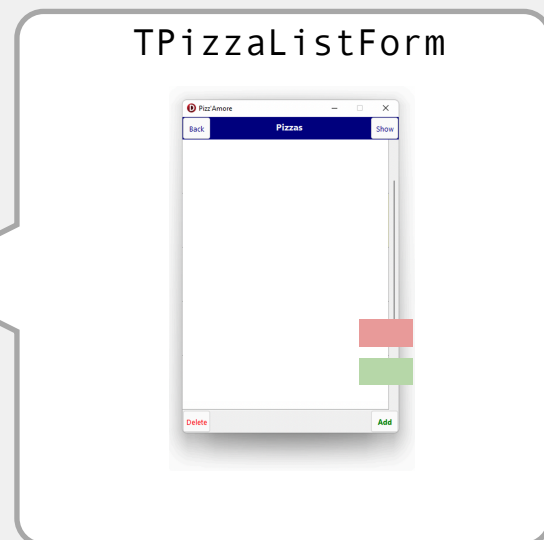


```
io.Show(TPizza, 'LIST');
```

*SimpleView for  
TPizza*



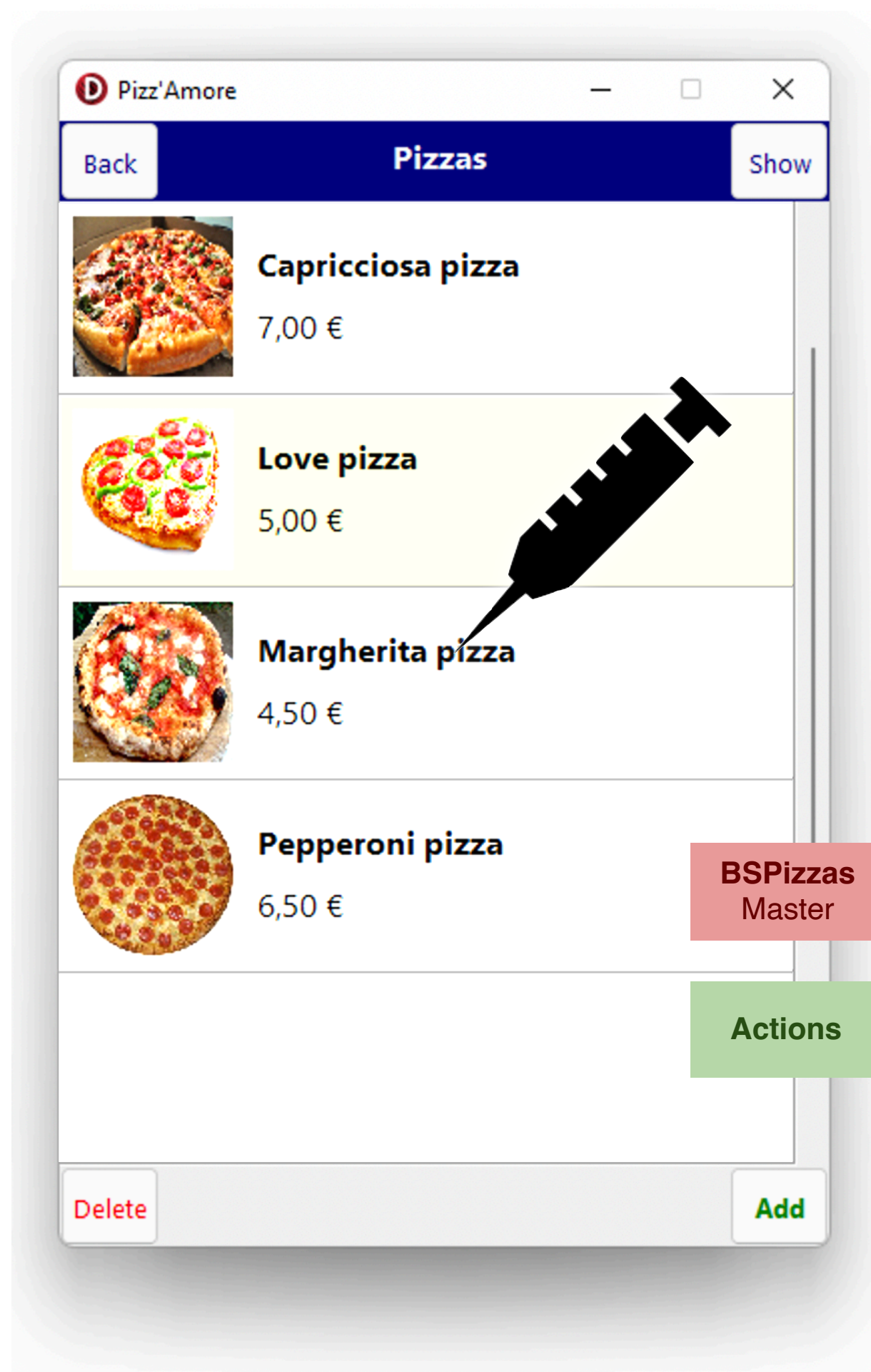
*SimpleView for  
TPizza  
alias LIST*





# DependencyInjection

## Injection



*property* TypeName := TPizza  
*property* LoadType := ItAuto

ORM



*oppure*

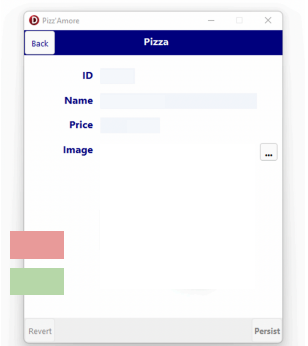
*property* TypeName := TPizza  
*property* LoadType := ItManual

BSPizzas.SetDataObject( Obj );  
Obj := BSPizzas.DataObject;

???

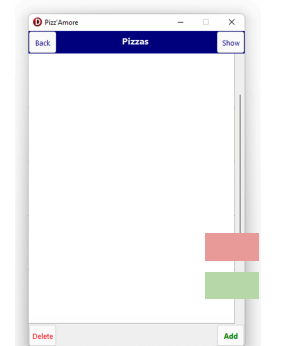
*SimpleView for*  
TPizza

TPizzaForm



*SimpleView for*  
TPizza  
*alias* LIST

TPizzaListForm

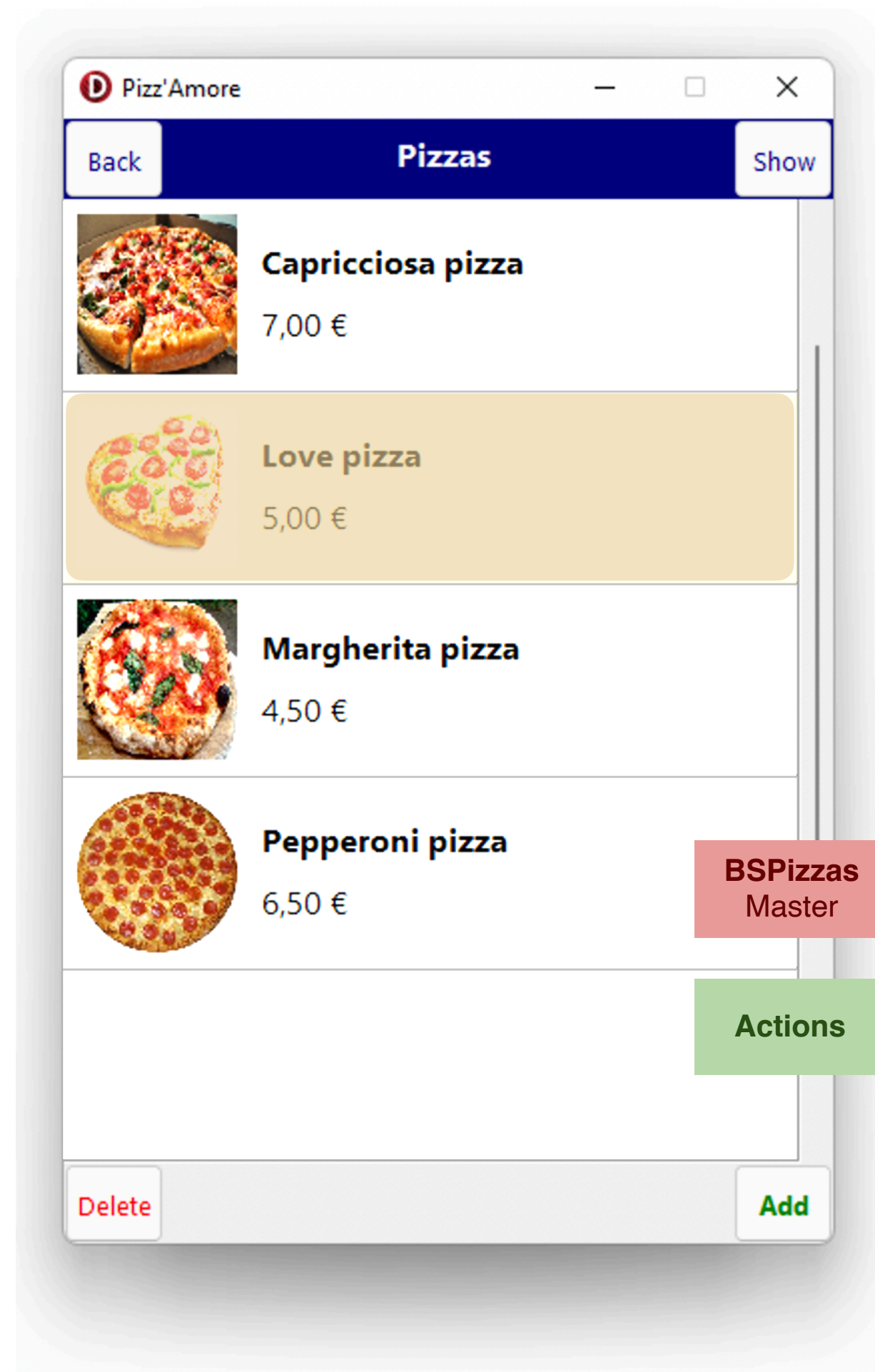




# DependencyInjection

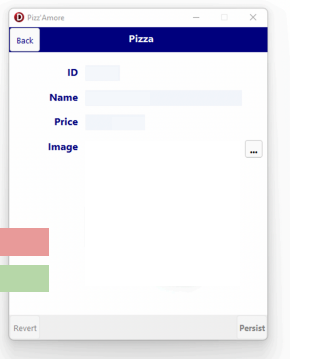


## Injection



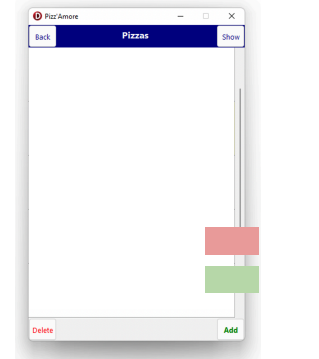
*SimpleView for  
TPizza*

TPizzaForm



*SimpleView for  
TPizza  
alias LIST*

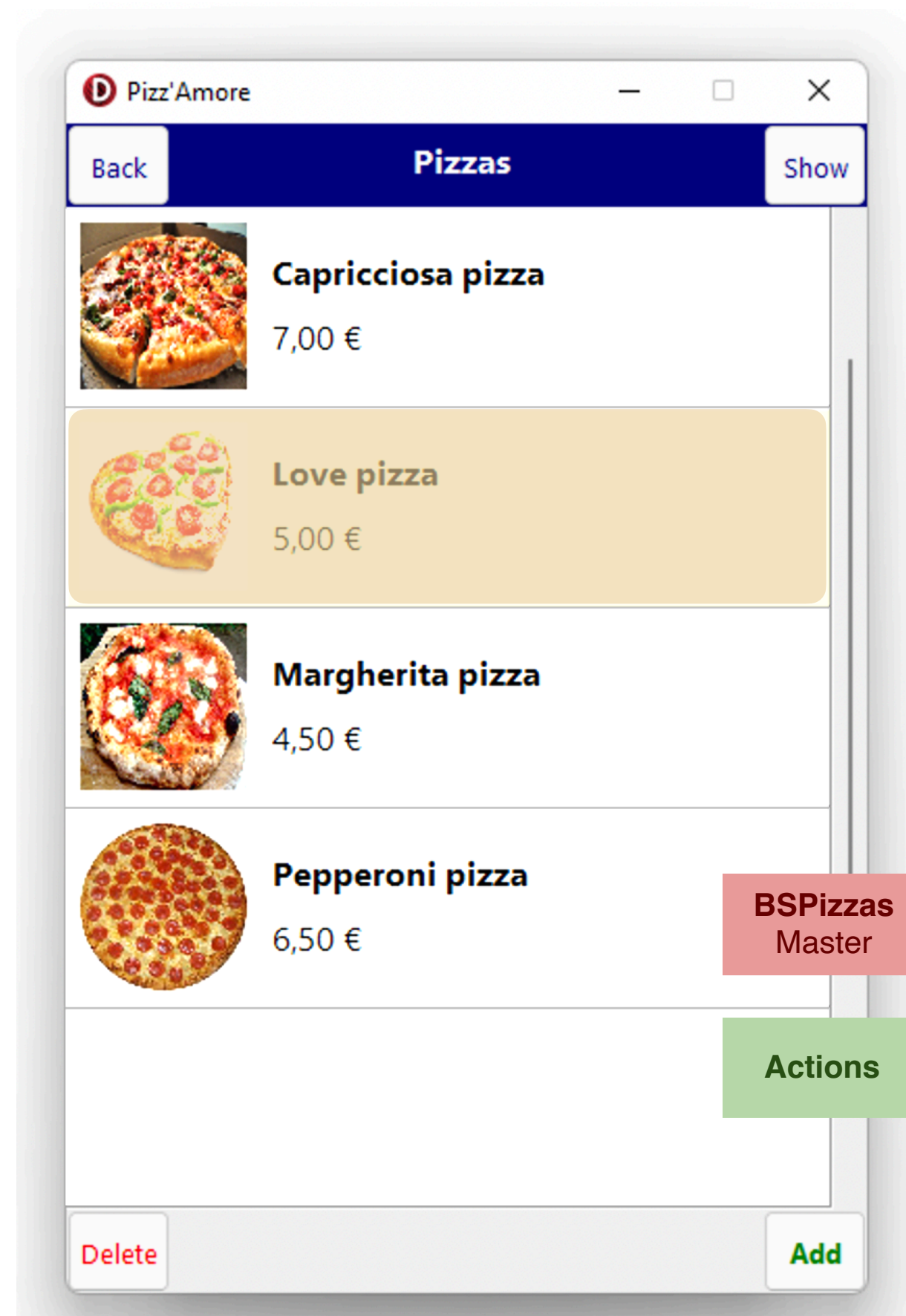
TPizzaListForm





# Dependency Injection

## Injection

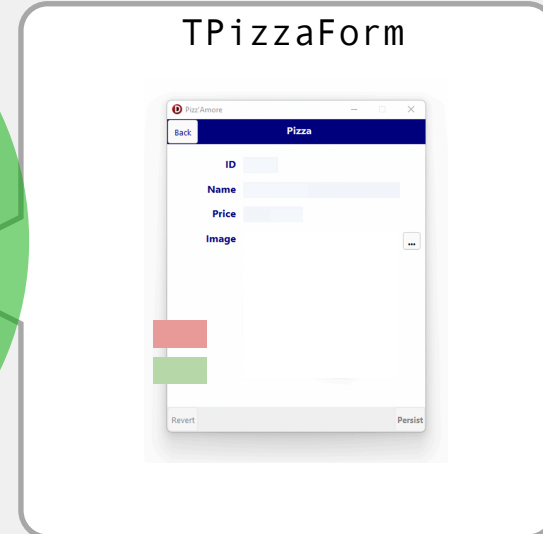


BSPizzas.ShowCurrent;

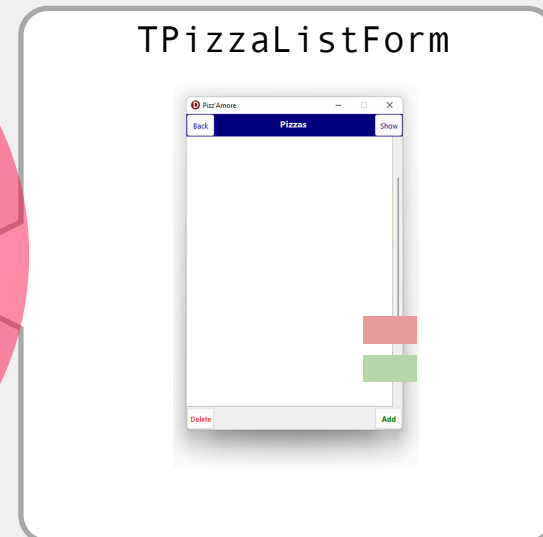
NB: *BSPizzas.Current = TPizza*

NB: Nessun *alias* specificato

SimpleView for  
TPizza



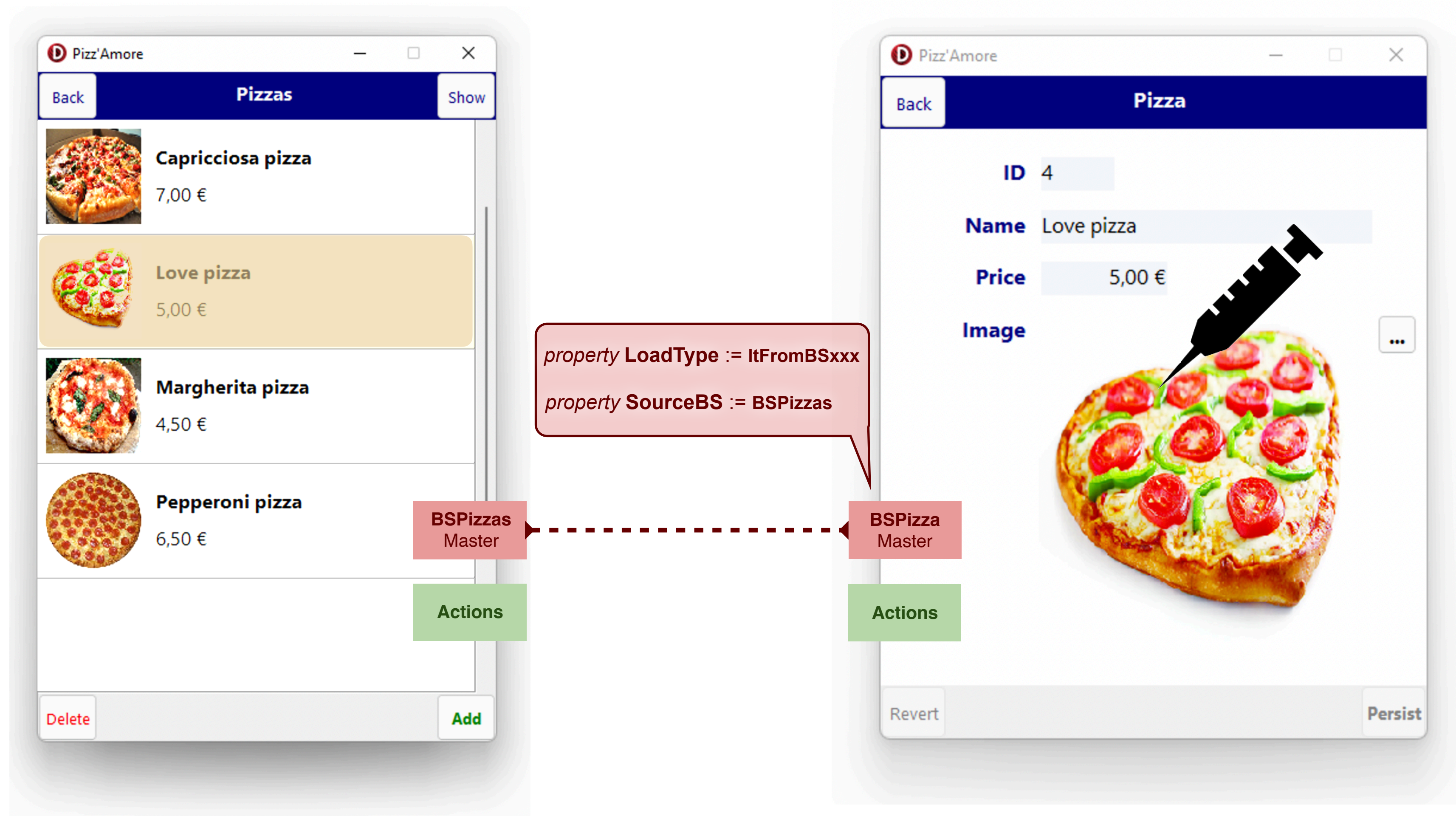
SimpleView for  
TPizza  
alias LIST





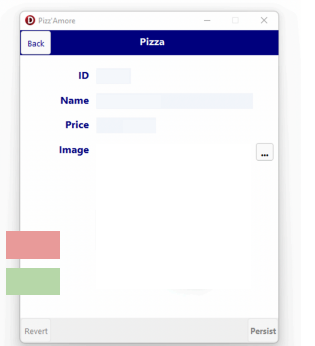
# DependencyInjection

## Injection



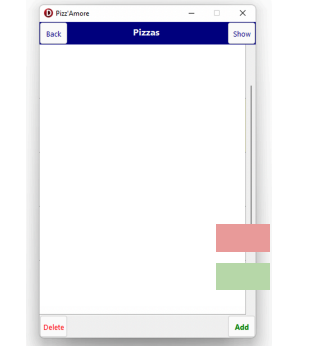
SimpleView for  
TPizza

TPizzaForm



SimpleView for  
TPizza  
alias LIST

TPizzaListForm



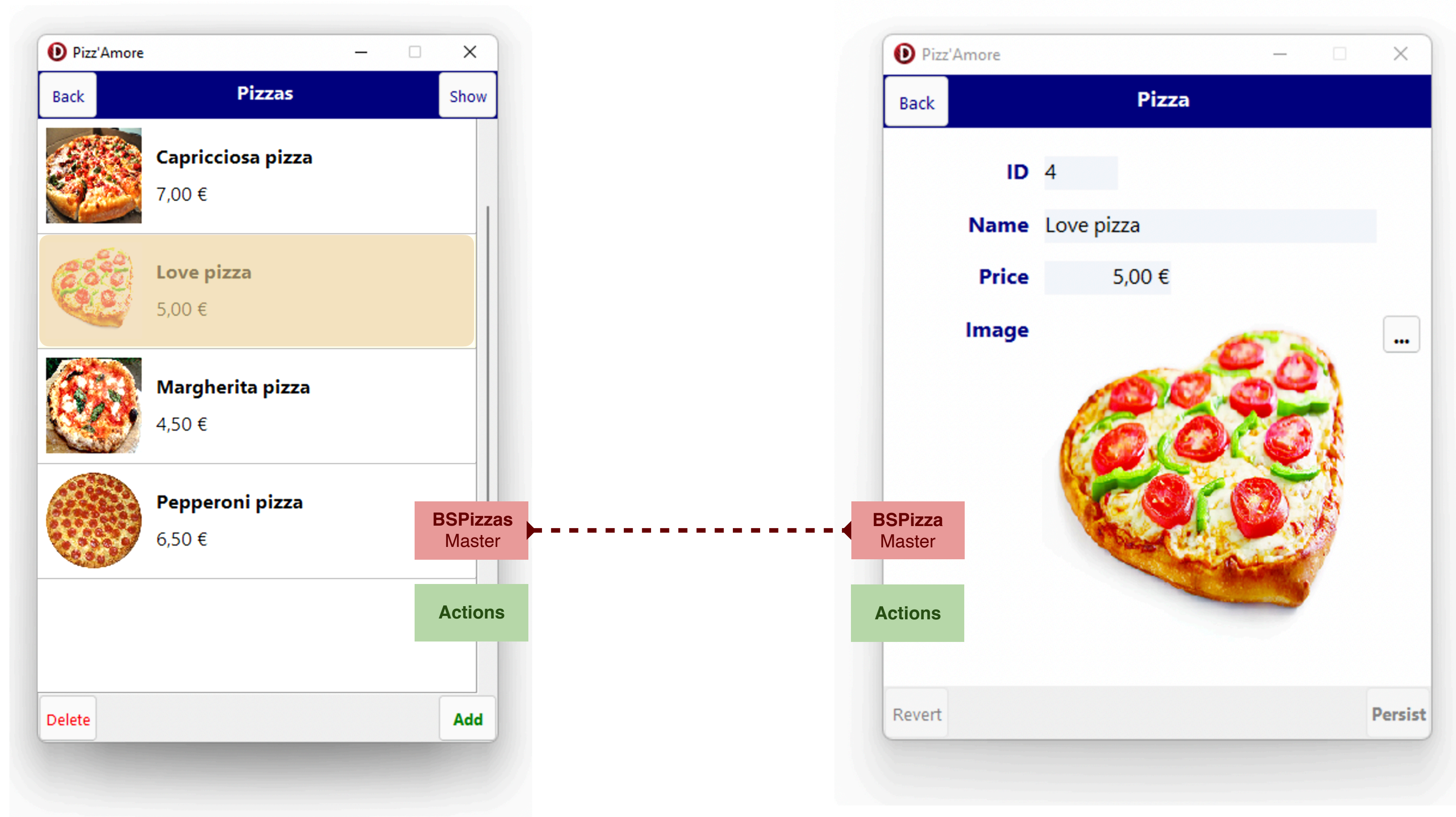
\* TioLoadType = (ltManual, ltCreate, ltFromBSAsIs, ltFromBSReload, ltFromBSReloadNewInstance, ltAuto);



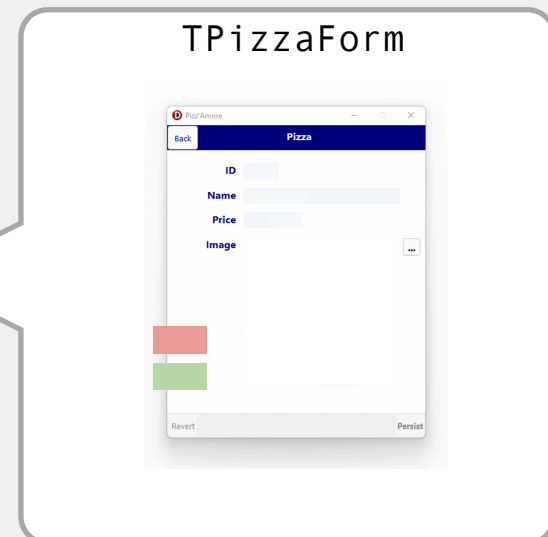
# DependencyInjection



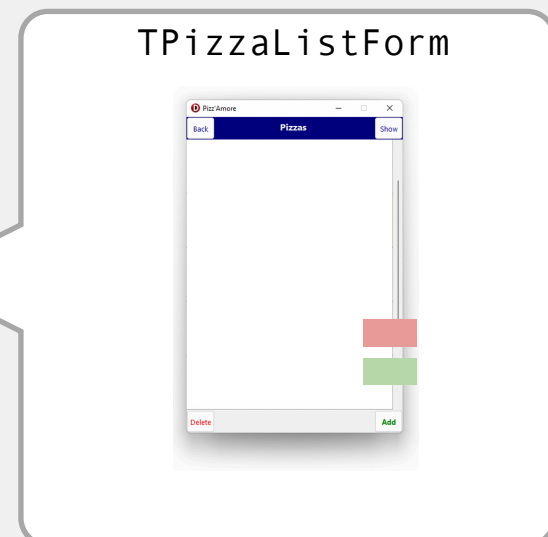
## Injection



*SimpleView for  
TPizza*



*SimpleView for  
TPizza  
alias LIST*



\* TioLoadType = (ltManual, ltCreate, ltFromBSAsIs, ltFromBSReload, ltFromBSReloadNewInstance, ltAuto);



# BindSources

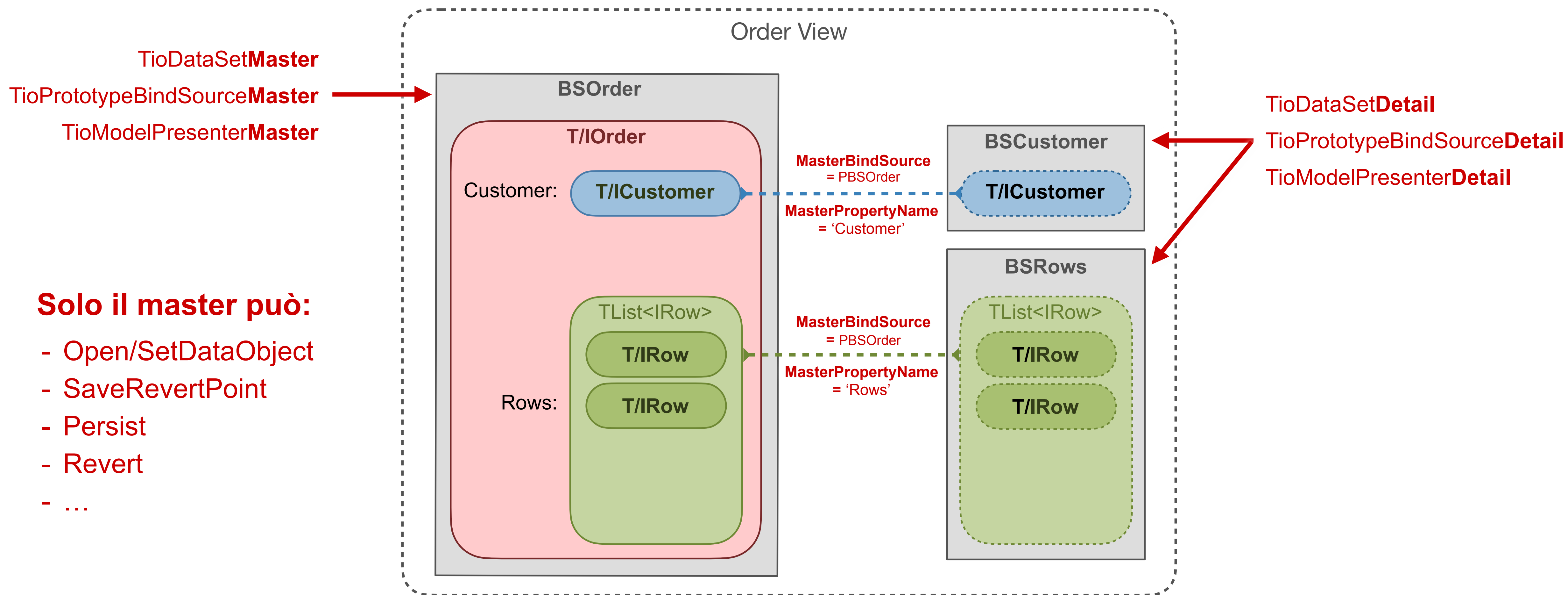
DataSet, PrototypeBindSource, ModelPresenter (Master-Detail)



# BindSources

## Master - Detail

DataSet, PrototypeBindSource, ModelPresenter (Master-Detail)

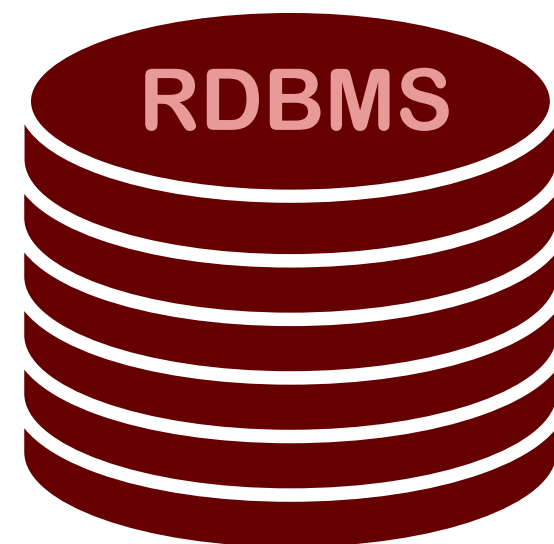


### Solo il master può:

- Open/SetDataObject
- SaveRevertPoint
- Persist
- Revert
- ...

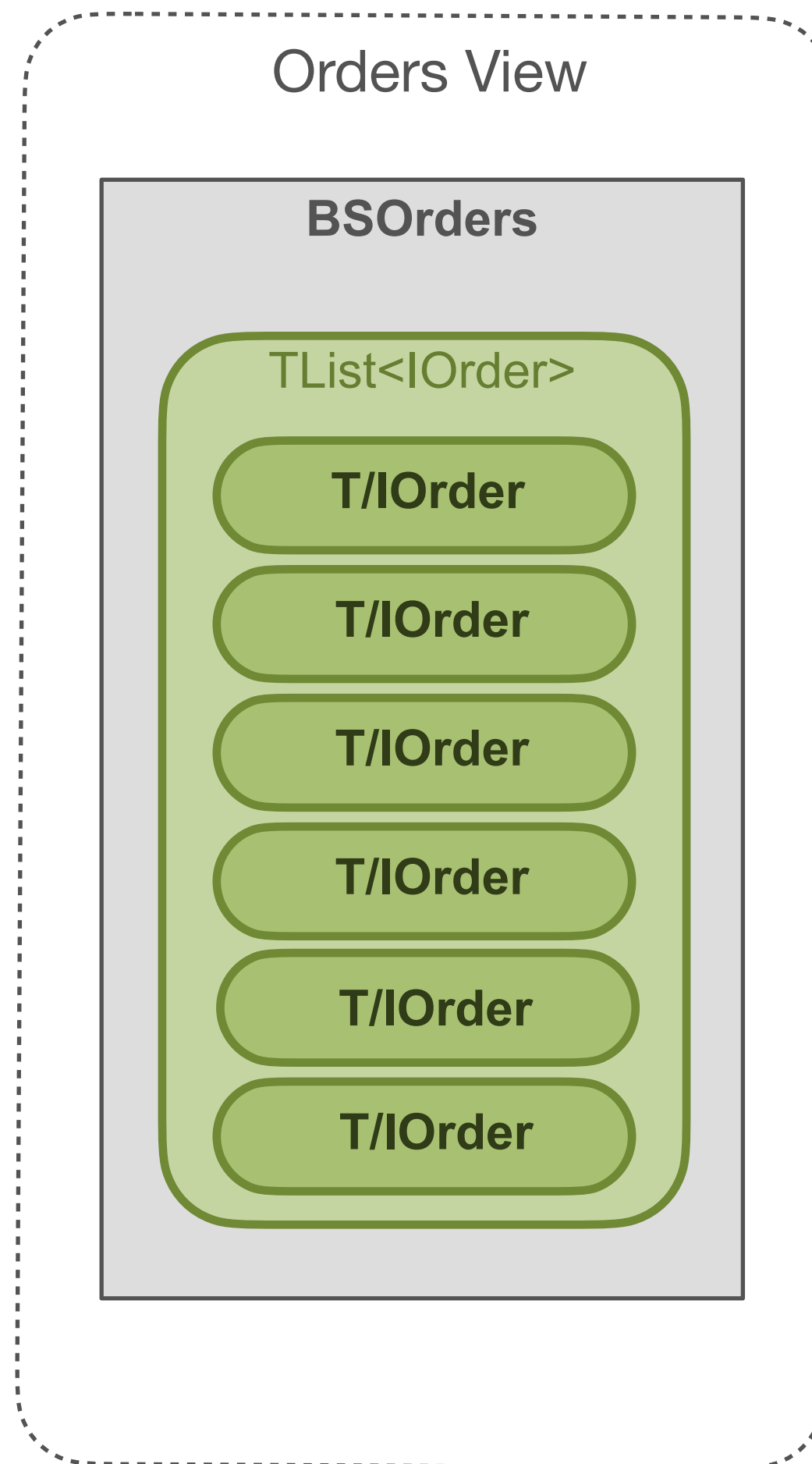


- TypeName := TOrder
- TypeOfCollection := tcList
- LoadType := ItAuto
- Open



# BindSources

DataSet, PrototypeBindSource, ModelPresenter (Master-Detail)

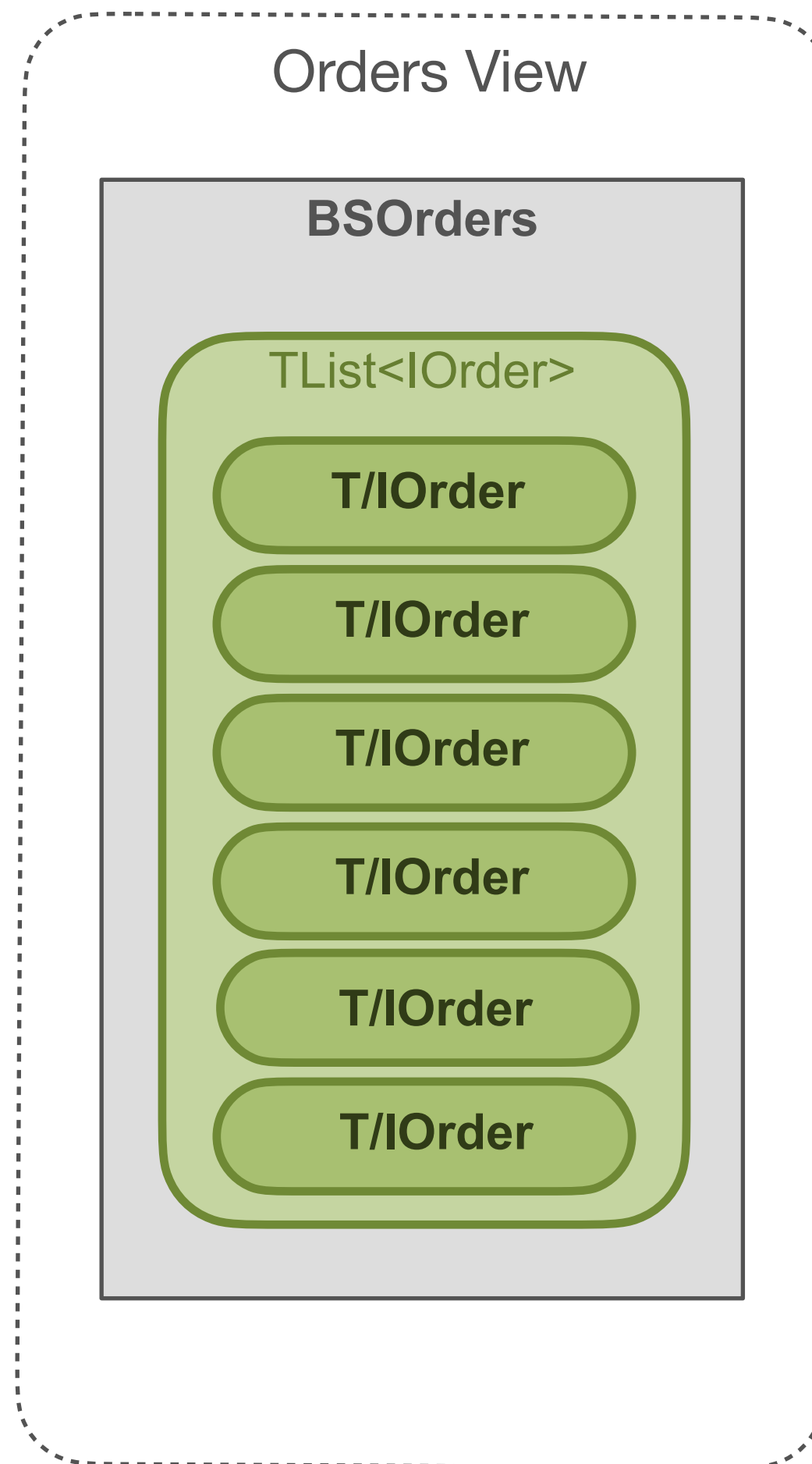




- TypeName := TOrder
- TypeOfCollection := tcList
- LoadType := ItManual
- SetDataObject(...)

# BindSources

DataSet, PrototypeBindSource, ModelPresenter (Master-Detail)

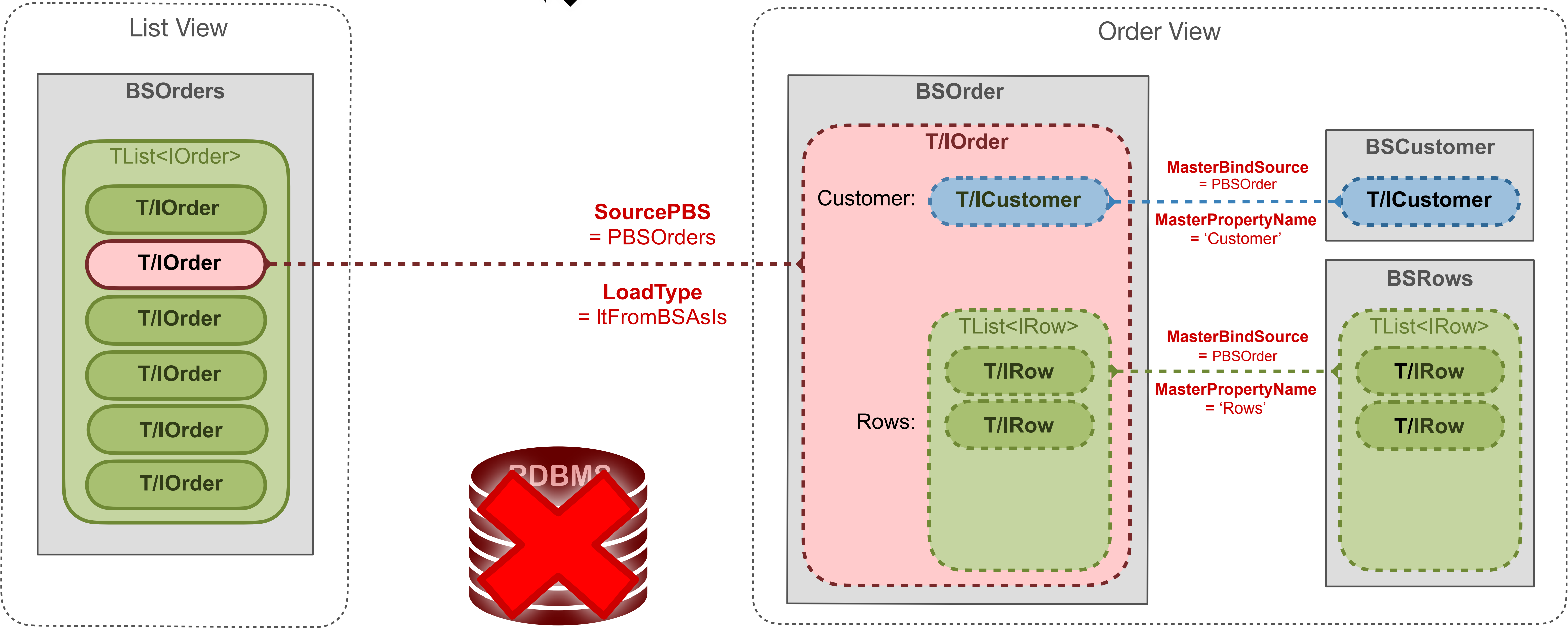




LoadType := ItFromBSAsIs

# BindSources

DataSet, PrototypeBindSource, ModelPresenter (Master-Detail)

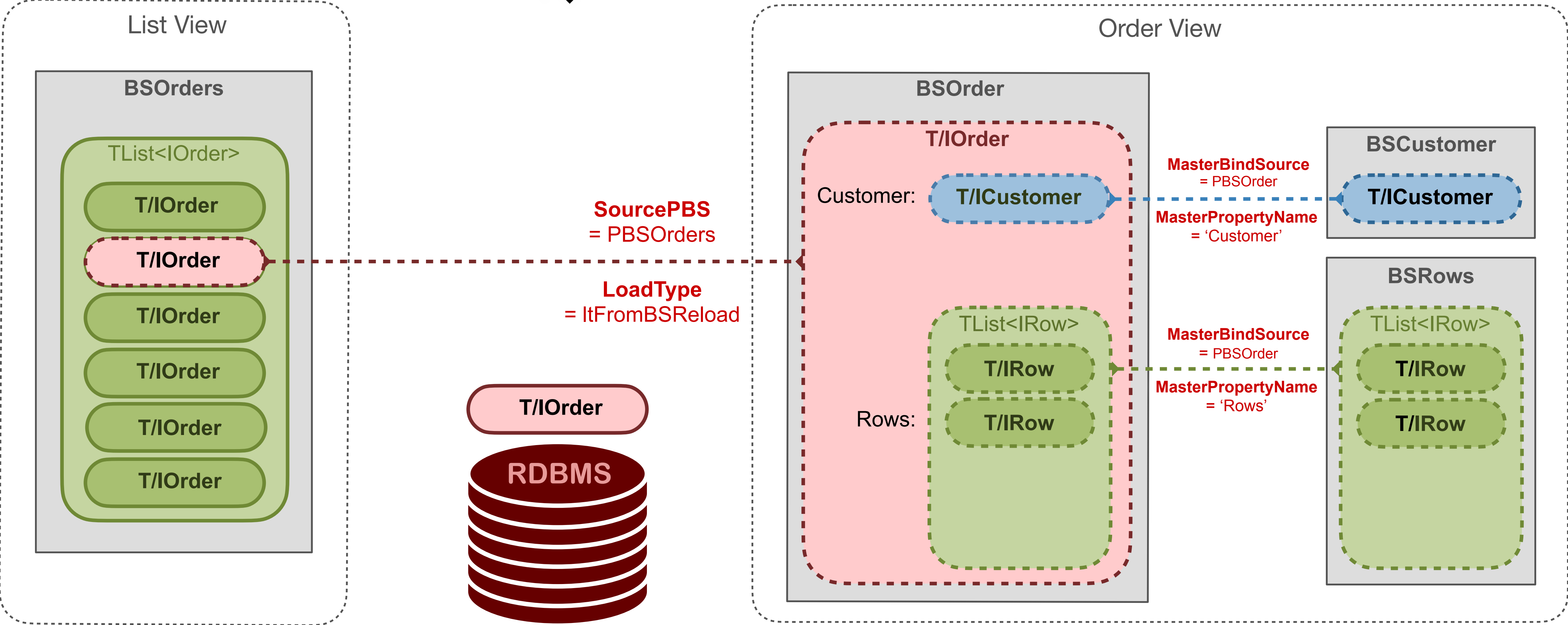




LoadType := ItFromBSReload

# BindSources

DataSet, PrototypeBindSource, ModelPresenter (Master-Detail)

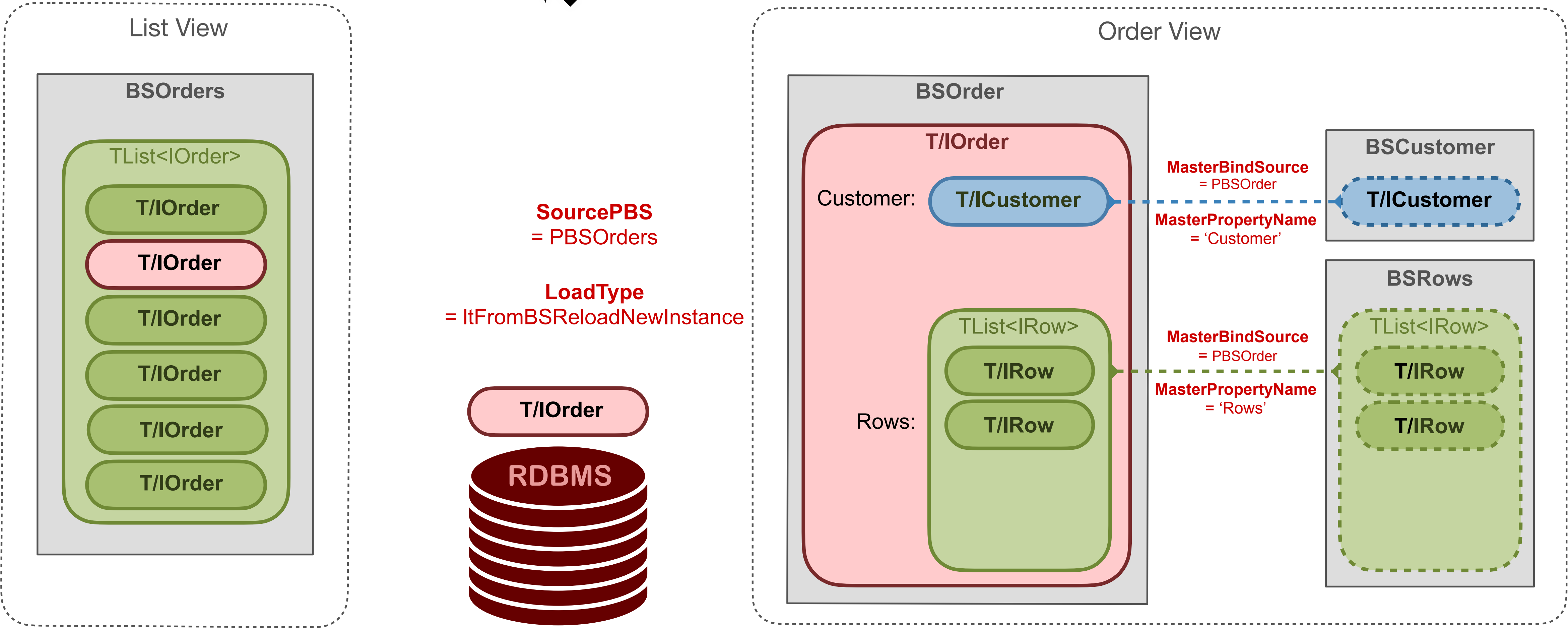




LoadType := ItFromBSReloadNewInstance

# BindSources

DataSet, PrototypeBindSource, ModelPresenter (Master-Detail)





# Let'sCode





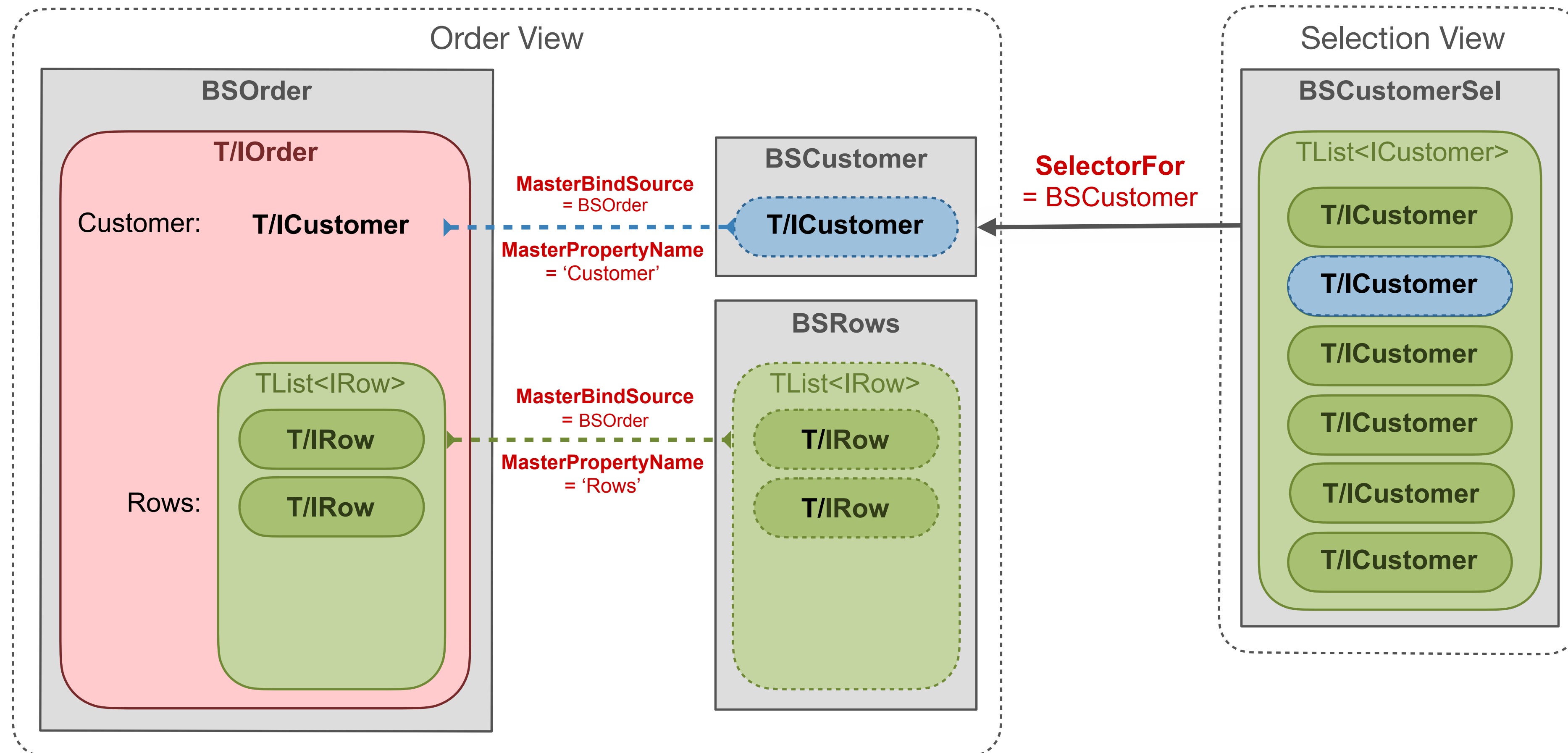
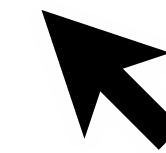
# Selectors

DataSet, PrototypeBindSource, ModelPresenter



# Selectors

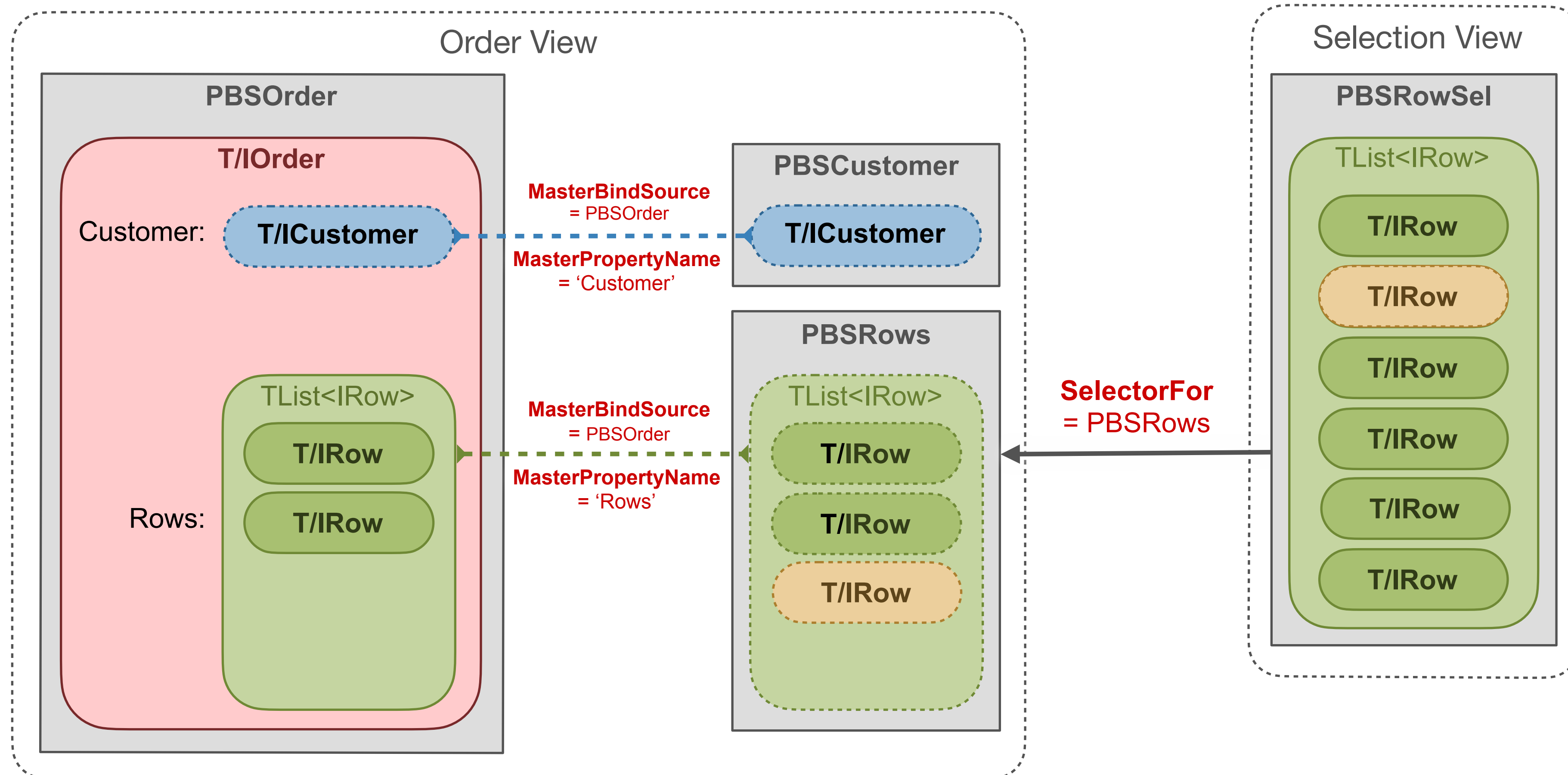
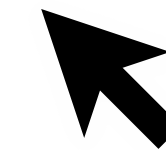
DataSet, PrototypeBindSource, ModelPresenter





# Selectors

DataSet, PrototypeBindSource, ModelPresenter





# Let'sCode





# EmbeddedMicroViews

DesignTime (static)



# EmbeddedMicroViews

DesignTime (static)

**Pizz'Amore**

Back Order Add

**Order** 1 16/10/2022

**Note** Well done

**Customer** 1 Maurizio Del Magno

**Address** New York, 301 Park Ave

**Phone** (555) 555-1234

Description	UnitPrice	Qty	Total
► Margherita pizza		3	13,50 €
Capricciosa pizza		2	14,00 €
Love pizza		1	5,00 €

**Actions**

Revert Delete row **Grand total** 32,50 € Persist

**Annotations:**

- BSCustomer Detail**: MasterBindSource = BSOrder, MasterPropertyName = 'Customer'
- BSRows Detail**: MasterBindSource = BSOrder, MasterPropertyName = 'Rows'



# EmbeddedMicroViews

DesignTime (static)

The screenshot shows a Delphi application window titled "Pizz'Amore" with a menu bar containing "Back", "Order", and "Add". The main content area is divided into two sections. The left section contains order details: "Order 1" with date "16/10/2022", a "Note" field with "Well done", and customer information: "Customer 1" with name "Maurizio Del Magno", "Address" "New York, 301 Park Ave", and "Phone" "(555) 555-1234". A red circle highlights the customer information fields. Below this is a table with columns "Description", "UnitPrice", "Qty", and "Total". The table contains three rows: "Margherita pizza" (3 units, 13,50 €), "Capricciosa pizza" (2 units, 14,00 €), and "Love pizza" (1 unit, 5,00 €). The right section displays a list of pizzas with images and prices: "Margherita pizza" (4,50 €), "Capricciosa pizza" (7,00 €), "Pepperoni pizza" (6,50 €), and "Love pizza" (5,00 €). At the bottom, there are buttons "Revert", "Delete row", "Grand total 32,50 €", and "Persist".

Below the screenshot, a diagram illustrates the data flow between components:

- BSOrder Master** (red box) is connected to **BSCustomer Detail** (red box) and **BSRows Detail** (red box) via arrows.
- Actions** (green box) is connected to **BSOrder Master** via an arrow.



# EmbeddedMicroViews

DesignTime (static)

The screenshot shows a web application window titled "Pizz'Amore" with a navigation bar containing "Back", "Order", and "Add" buttons. The main content area is divided into two sections. The left section contains form fields for "Order" (1, 16/10/2022), "Note" (Well done), "Customer" (1, Maurizio Del Magno), "Address" (New York, 301 Park Ave), and "Phone" ((555) 555-1234). A red circle highlights the "Customer" field. Below these fields is a table with columns "Description", "UnitPrice", "Qty", and "Total". The table contains three rows: "Margherita pizza" (3, 13,50 €), "Capricciosa pizza" (2, 14,00 €), and "Love pizza" (1, 5,00 €). The right section displays a list of pizzas with images and prices: "Margherita pizza" (4,50 €), "Capricciosa pizza" (7,00 €), "Pepperoni pizza" (6,50 €), and "Love pizza" (5,00 €). At the bottom of the window, there are buttons for "Revert", "Delete row", "Grand total" (32,50 €), and "Persist".

Below the screenshot, a diagram illustrates the data flow between components:

- BSOrder Master** (red box) is connected to **BSCustomer Detail** (red box) and **BSRows Detail** (red box) by arrows pointing from the detail boxes to the master box.
- Actions** (green box) is connected to **BSOrder Master** by an arrow pointing from the master box to the actions box.



# EmbeddedMicroViews

DesignTime (static)

Customer  Show ...

Detail Address

Actions Phone

TCustomerMicroView = class(TFrame);

Pizz'Amore

Back Order Add

Order 1 16/10/2022

Note Well done

Customer 1 Maurizio Del Magno ...

Address New York, 301 Park Ave

Phone (555) 555-1234

Description	UnitPrice	Qty	Total
► Margherita pizza		3	13,50 €
Capricciosa pizza		2	14,00 €
Love pizza		1	5,00 €

BSOrder Master ← BSCustomer Detail

BSOrder Master ← BSRows Detail

Actions

Margherita pizza 4,50 €

Capricciosa pizza 7,00 €

Pepperoni pizza 6,50 €

Love pizza 5,00 €

Revert Delete row Grand total 32,50 € Persist



# EmbeddedMicroViews

DesignTime (static)

Customer  Show ...

Detail Address

Actions Phone

TCustomerMicroView = class(TFrame);

Pizz'Amore

Back Order Add

Order 1 16/10/2022

Note Well done

Customer 1 Maurizio Del Magno ...

Address New York, 301 Park Ave

Phone (555) 555-1234

Description	UnitPrice	Qty	Total
► Margherita pizza		3	13,50 €
Capricciosa pizza		2	14,00 €
Love pizza		1	5,00 €

BSOrder Master

BSCustomer Detail

BSRows Detail

Actions

Margherita pizza 4,50 €

Capricciosa pizza 7,00 €

Pepperoni pizza 6,50 €

Love pizza 5,00 €

Revert Delete row Grand total 32,50 € Persist



# EmbeddedMicroViews

DesignTime (static)



The screenshot shows the Pizz'Amore application interface. At the top, there's a blue header bar with "Back", "Order", and "Add" buttons. Below the header, there's a section for "Order 1" dated "16/10/2022" with a "Note" field containing "Well done". To the right of this section is a list of pizzas: "Margherita pizza" (4,50 €), "Capricciosa pizza" (7,00 €), "Pepperoni pizza" (6,50 €), and "Love pizza" (5,00 €). Each pizza item has a small image and a yellow highlight. Below the pizzas is a table with columns "Description", "UnitPrice", "Qty", and "Total". The table contains three rows: "Margherita pizza" (3 units, 13,50 €), "Capricciosa pizza" (2 units, 14,00 €), and "Love pizza" (1 unit, 5,00 €). At the bottom, there's a footer bar with "Revert", "Delete row", "Grand total 32,50 €", and "Persist" buttons. A yellow sticky note is attached to the left side of the table. A diagram of a microview component is shown above the table, with arrows pointing to the "BSOrder Master" and "BSRows Detail" components. A green box labeled "Actions" is also shown.

Description	UnitPrice	Qty	Total
Margherita pizza		3	13,50 €
Capricciosa pizza		2	14,00 €
Love pizza		1	5,00 €



# EmbeddedMicroViews

## DesignTime (static)

	Customer	Show	...
Detail	Address		
Actions	Phone		

Pizz'Amore

BackOrderAdd

**Order** 1 16/10/2022  
**Note** Well done

Description	UnitPrice	Qty	Total
Margherita pizza		3	13,50 €
Capricciosa pizza		2	14,00 €
Love pizza		1	5,00 €

BSOrder Master

BSCustomer Detail

BSRows Detail

Actions

Margherita pizza  
4,50 €  
  
 Capricciosa pizza  
7,00 €  
  
 Pepperoni pizza  
6,50 €  
  
 Love pizza  
5,00 €

RevertDelete rowGrand total32,50 €Persist



# EmbeddedMicroViews

DesignTime (static)

**Customer** Show ...

Detail **Address**

Actions **Phone**

*property MasterBindSource := BSOOrder*  
*property MasterPropertyName := Customer*

Pizz'Amore

Back Order Add

Order 1 16/10/2022

Note Well done

**Customer** Show ...

Detail **Address**

Actions **Phone**

Description	UnitPrice	Qty	Total
► Margherita pizza		3	13,50 €
Capricciosa pizza		2	14,00 €
Love pizza		1	5,00 €


**BSOrder Master**

~~**BSCustomer Detail**~~


**BSRows Detail**

Actions


Revert Delete row Grand total 32,50 € Persist




**Margherita pizza**  
4,50 €



**Capricciosa pizza**  
7,00 €



**Pepperoni pizza**  
6,50 €



**Love pizza**  
5,00 €



# EmbeddedMicroViews

DesignTime (static)



The screenshot shows a web application titled "Pizz'Amore". It features a top navigation bar with "Back", "Order", and "Add" buttons. The main content area is divided into two columns. The left column contains a form for order details: "Order 1" with date "16/10/2022", a "Note" field with "Well done", and a "Customer" section. The "Customer" section includes a "Show" button and a three-dot menu, and is linked to a "Customer" microview. Below this is a table with columns "Description", "UnitPrice", "Qty", and "Total", containing rows for "Margherita pizza", "Capricciosa pizza", and "Love pizza". The right column displays a list of pizzas: "Margherita pizza" (4,50 €), "Capricciosa pizza" (7,00 €), "Pepperoni pizza" (6,50 €), and "Love pizza" (5,00 €). At the bottom, there are buttons for "Revert", "Delete row", "Grand total" (32,50 €), and "Persist".

Diagrammatic annotations on the left side of the screenshot:

- A pink box labeled "BSOrder Master" is connected by a dashed red arrow to the "Customer" microview.
- A pink box labeled "BSRows Detail" is connected by a solid red arrow to the "BSOrder Master" box.
- A green box labeled "Actions" is connected by a solid red arrow to the "BSOrder Master" box.



# EmbeddedMicroViews

DesignTime (static)

Customer

Show ...

Detail

Address

Actions

Phone

Pizz'Amore

Back

Order

Add

Order 1 16/10/2022

Note Well done

Customer 1 Maurizio Del Magno (1)

Show ...

Detail Address 301 Park Ave - New York

Actions Phone +1 (555) 555-1234

Description	UnitPrice	Qty	Total
► Margherita pizza		3	13,50 €
Capricciosa pizza		2	14,00 €
Love pizza		1	5,00 €

BSOrder Master

BSRows Detail

Actions

Margherita pizza 4,50 €

Capricciosa pizza 7,00 €

Pepperoni pizza 6,50 €

Love pizza 5,00 €

Revert

Delete row

Grand total 32,50 €

Persist



# EmbeddedMicroViews

DesignTime (static)

Customer

Show ...

Detail

Address

Actions

Phone

Pizz'Amore

Back

Order

Add

Order

1

16/10/2022

Note

Well done

Customer

1

Maurizio Del Magno (1)

Show ...

Detail

Address

301 Park Ave - New York

Actions

Phone

+1 (555) 555-1234

Description	UnitPrice	Qty	Total
▶ Margherita pizza		3	13,50 €
Capricciosa pizza		2	14,00 €
Love pizza		1	5,00 €

BSOrder Master

BSRows Detail

Actions

Revert

Delete row

Grand total

32,50 €

Persist

Pizz'Amore

Back

Invoice

Order

1

16/10/2022

Note

Well done

Customer

1

Maurizio Del Magno

...

Address

New York, 301 Park Ave

Phone

(555) 555-1234

Description	UnitPrice	Qty	Total
▶ Margherita pizza		3	13,50 €
Capricciosa pizza		2	14,00 €
Love pizza		1	5,00 €

BSInvoice Master

BSRows Detail

Actions

Revert

Delete row

Grand total

32,50 €



# EmbeddedMicroViews

DesignTime (static)

Customer Show ...

Detail Address

Actions Phone

Pizz'Amore

Back Order Add

Order 1 16/10/2022

Note Well done

Customer 1 Maurizio Del Magno (1) Show ...

Detail Address 301 Park Ave - New York

Actions Phone +1 (555) 555-1234

Description	UnitPrice	Qty	Total
► Margherita pizza		3	13,50 €
Capricciosa pizza		2	14,00 €
Love pizza		1	5,00 €

BSOrder Master ← BSRows Detail

Actions

Revert Delete row Grand total 32,50 € Persist

Pizz'Amore

Back Invoice

Order 1 16/10/2022

Note Well done

Description	UnitPrice	Qty	Total
► Margherita pizza		3	13,50 €
Capricciosa pizza		2	14,00 €
Love pizza		1	5,00 €

BSInvoice Master ← BSRows Detail

Actions

Revert Delete row Grand total 32,50 €



# EmbeddedMicroViews

DesignTime (static)

**Customer** Show ...

Detail **Address**

Actions **Phone**

**Pizz'Amore**

Back **Order** Add

**Order** 1 16/10/2022

**Note** Well done

**Customer** 1 Maurizio Del Magno (1) Show ...

Detail **Address** 301 Park Ave - New York

Actions **Phone** +1 (555) 555-1234

Description	UnitPrice	Qty	Total
▶ Margherita pizza		3	13,50 €
Capricciosa pizza		2	14,00 €
Love pizza		1	5,00 €

**BSOrder Master** ← **BSRows Detail**

Actions

Revert Delete row **Grand total** 32,50 € Persist

**Pizz'Amore**

Back **Invoice**

**Order** 1 16/10/2022

**Note** Well done

Description	UnitPrice	Qty	Total
▶ Margherita pizza		3	13,50 €
Capricciosa pizza		2	14,00 €
Love pizza		1	5,00 €

**BSInvoice Master** ← **BSRows Detail**

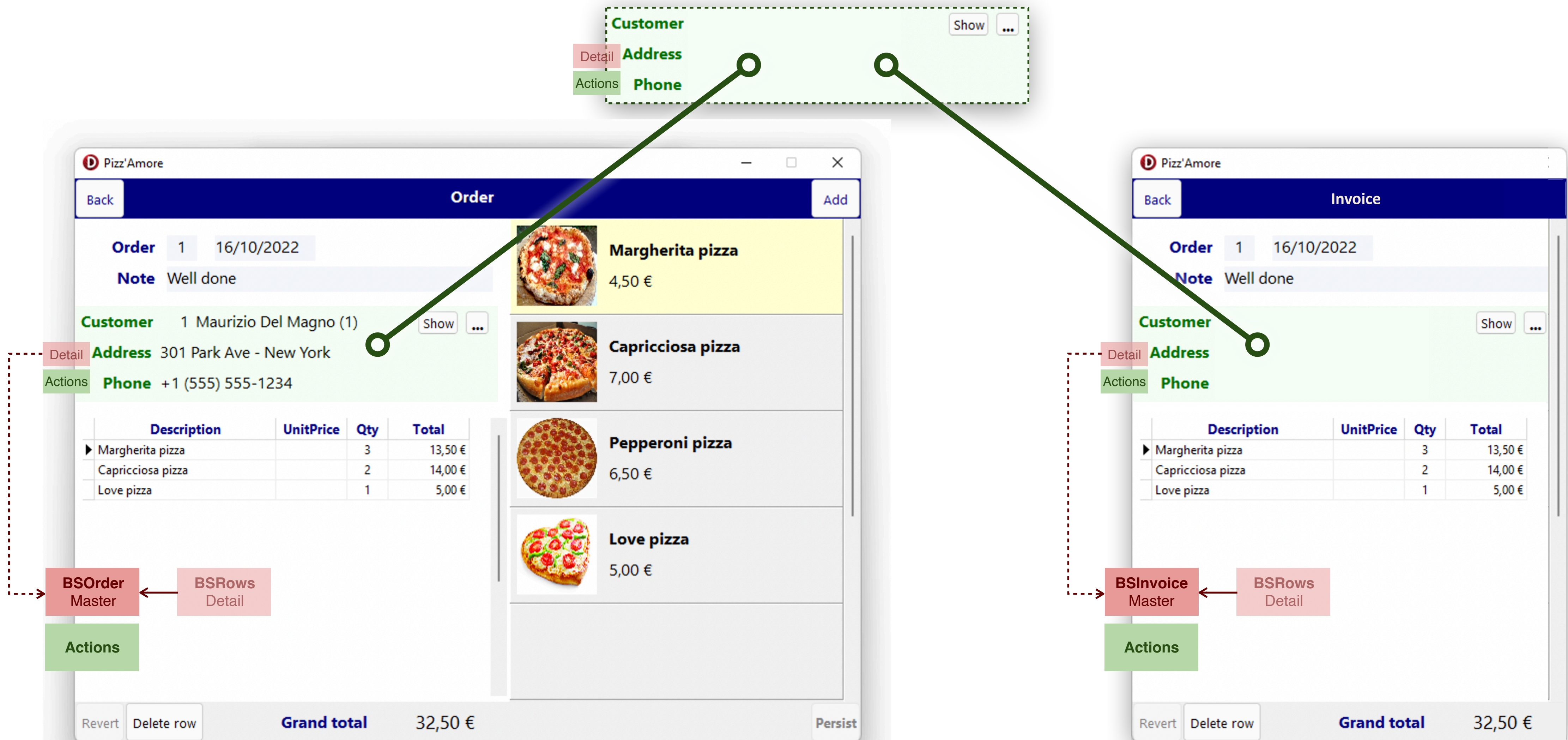
Actions

Revert Delete row **Grand total** 32,50 €



# EmbeddedMicroViews

DesignTime (static)





# ViewContextProvider

RunTime (dynamic embedded micro view)





# ViewContextProvider

RunTime (dynamic embedded micro view)

Detail

Actions

BSOrder Master

BSRows Detail

Actions

Pizz'Amore

BackOrderAdd

Order 116/10/2022

NoteWell done

Customer1Maurizio Del Magno (1)Show...

Address301 Park Ave - New York

Phone+1 (555) 555-1234

Description	UnitPrice	Qty	Total
Margherita pizza		3	13,50 €
Capricciosa pizza		2	14,00 €
Love pizza		1	5,00 €

Grand total32,50 €

RevertDelete rowPersist

Margherita pizza4,50 €

Capricciosa pizza7,00 €

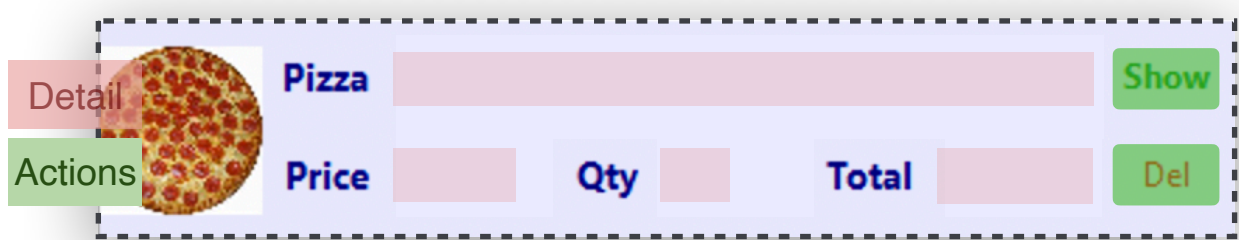
Pepperoni pizza6,50 €

Love pizza5,00 €



# ViewContextProvider

RunTime (dynamic embedded micro view)



TOrderRowMicroView = class(TFrame);

Detail

Actions

Order 1 16/10/2022

Note Well done

Customer 1 Maurizio Del Magno (1) Show ...

Address 301 Park Ave - New York

Phone +1 (555) 555-1234

Description	UnitPrice	Qty	Total
► Margherita pizza		3	13,50 €
Capricciosa pizza		2	14,00 €
Love pizza		1	5,00 €

BSOrder Master

BSRows Detail

Actions

Revert Delete row

Grand total

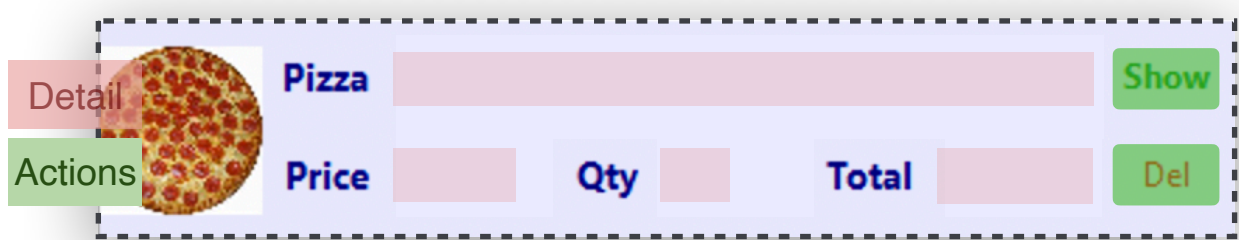
32,50 €

Persist



# ViewContextProvider

RunTime (dynamic embedded micro view)



TOrderRowMicroView = class(TFrame);

Detail

Actions

Order 1 16/10/2022

Note Well done

Customer 1 Maurizio Del Magno (1) Show ...

Address 301 Park Ave - New York

Phone +1 (555) 555-1234

Description	UnitPrice	Qty	Total
▶ Margherita pizza		3	13,50 €
Capricciosa pizza		2	14,00 €
Love pizza		1	5,00 €

BSOrder Master

BSRows Detail

Actions

Revert Delete row

Grand total 32,50 €

Persist



# ViewContextProvider

RunTime (dynamic embedded micro view)



```
[diSimpleViewFor(TOrderRow)]
TOrderRowMicroView = class(TFrame)
```

SimpleView for  
TOrderRow

Detail

Actions

Order 1 16/10/2022

Note Well done

Customer 1 Maurizio Del Magno (1) Show ...

Address 301 Park Ave - New York

Phone +1 (555) 555-1234

Description	UnitPrice	Qty	Total
▶ Margherita pizza		3	13,50 €
Capricciosa pizza		2	14,00 €
Love pizza		1	5,00 €

BSOrder Master

BSRows Detail

Actions

Revert Delete row

Grand total 32,50 €

Persist



# ViewContextProvider

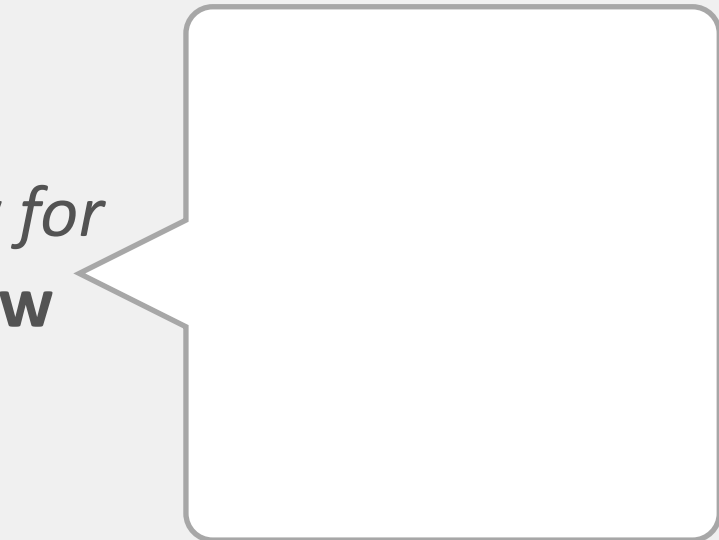
RunTime (dynamic embedded micro view)



```
[diSimpleViewFor(TOrderRow)]  
TOrderRowMicroView = class(TFrame)
```

SimpleView for  
TOrderRow

The screenshot shows the Pizz'Amore application interface. At the top, there's a 'Back' button and an 'Add' button. Below them, the 'Order' section displays 'Order 1' dated '16/10/2022' with a 'Note' 'Well done'. The 'Customer' section shows '1 Maurizio Del Magno (1)' with a 'Show' button and 'Address 301 Park Ave - New York' and 'Phone +1 (555) 555-1234'. A table lists the order items: Margherita pizza (3 units, 13,50 €), Capricciosa pizza (2 units, 14,00 €), and Love pizza (1 unit, 5,00 €). The table is circled in red. To the right of the table, there's a list of pizzas with their prices: Margherita pizza (4,50 €), Capricciosa pizza (7,00 €), Pepperoni pizza (6,50 €), and Love pizza (5,00 €). At the bottom, there's a 'Grand total' of 32,50 € and a 'Persist' button. Annotations include a red dashed line from the 'Detail' label to the 'BSOrder Master' component and a red arrow from the 'BSRows Detail' component to the 'BSOrder Master' component.



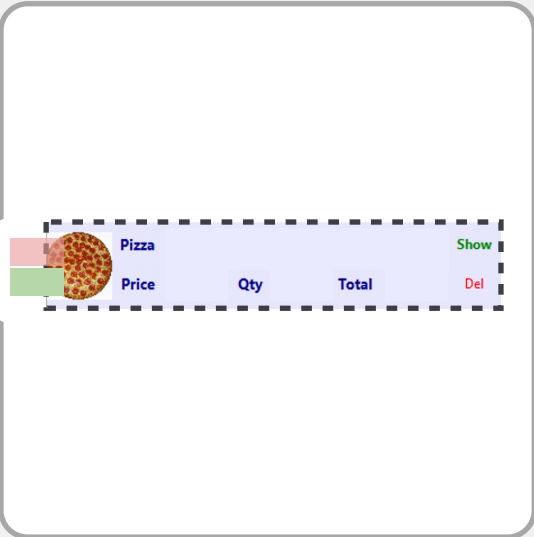


# ViewContextProvider

RunTime (dynamic embedded micro view)



SimpleView for  
TOrderRow



Detail

Address

Phone

16/10/2022

Well done

1 Maurizio Del Magno (1)

301 Park Ave - New York

+1 (555) 555-1234

BSOrder Master

BSRows Detail

Revert

Delete row

Grand total

32,50 €

Persist

Order

Margherita pizza

4,50 €

Capricciosa pizza

7,00 €

Pepperoni pizza

6,50 €

Love pizza

5,00 €



# ViewContextProvider


RunTime (dynamic embedded micro view)

BSRows.ShowEach;      Quando ???



SimpleView for  
TOrderRow

TOrderRowMicroView

Pizza	Price	Qty	Total	Del
				

Detail

Address

Phone

301 Park Ave - New York

+1 (555) 555-1234

BSOrder Master

BSRows Detail

Actions

Revert Delete row


Pizz'Amore


Back Order Add


Order 1 16/10/2022


Note Well done

Customer 1 Maurizio Del Magno (1) Show ...

 Margherita pizza 4,50 €

 Capricciosa pizza 7,00 €

 Pepperoni pizza 6,50 €

 Love pizza 5,00 €

Grand total 32,50 €

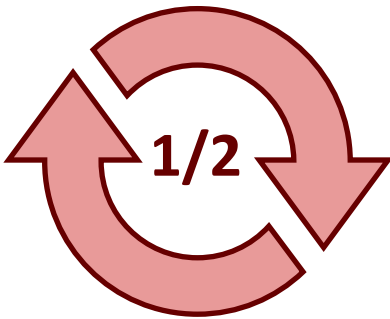
Persist



# ViewContextProvider

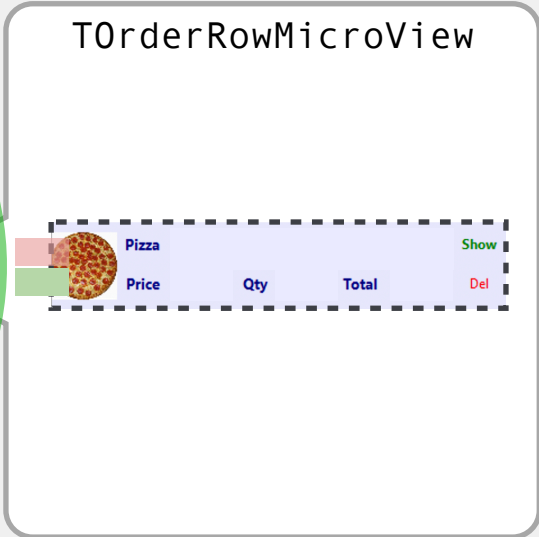
RunTime (dynamic embedded micro view)

BSRows.ShowEach;



Current = TOrderRow  
Nessun alias specificato

SimpleView for  
TOrderRow



Detail

Actions

Order 1 16/10/2022

Note Well done

Customer 1 Maurizio Del Magno (

Address 301 Park Ave - New York

Phone +1 (555) 555-1234

BSOrder Master

BSRows Detail

Actions

Revert Delete row

Grand total 32,50 €

Persist

Back

Add

Margherita pizza 10 €

Deliziosa pizza 7,00 €

Pepperoni pizza

Love pizza 5,00 €





# ViewContextProvider

RunTime (dynamic embedded micro view)

BSRows.ShowEach; 

???



SimpleView for TOrderRow

TOrderRowMicroView

	Pizza				Show
	Price	Qty	Total		Del

Pizz'Amore

BackOrderAdd

Order116/10/2022

NoteWell done

Customer1Maurizio Del Magno (1)Show...

Address301 Park Ave - New York

Phone+1 (555) 555-1234

Margherita pizza

4,50 €

Capricciosa pizza

7,00 €

Pepperoni pizza

6,50 €

Love pizza

5,00 €

BSOrder MasterBSRows Detail

Actions

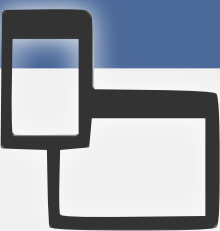
RevertDelete rowGrand total32,50 €Persist



# ViewContextProvider

RunTime (dynamic embedded micro view)

BSRows . ShowEach; 



ViewContextProvider

OnRequest


ResultViewContext := ScrollBoxRows;

OnAfterRequest

TControl(AView).Align := alTop;

OnRelease

(AiewContext.Free;)





SimpleView for  
TOrderRow

TOrderRowMicroView

Pizza

Price

Qty

Total

Del

Pizz'Amore

Back

Order

Add

Order 1 16/10/2022

Note Well done

Customer 1 Maurizio Del Magno (1) Show ...

Address 301 Park Ave - New York

Phone +1 (555) 555-1234

Margherita pizza

4,50 €

Capricciosa pizza

7,00 €

Pepperoni pizza

6,50 €

Love pizza

5,00 €

BSOrder Master

BSRows Detail

ViewContextProvider

Revert

Delete row

Grand total 32,50 €

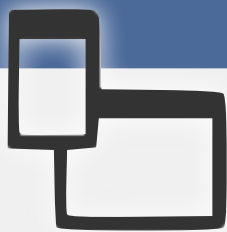
Persist



# ViewContextProvider

RunTime (dynamic embedded micro view)

BSRows . ShowEach; 



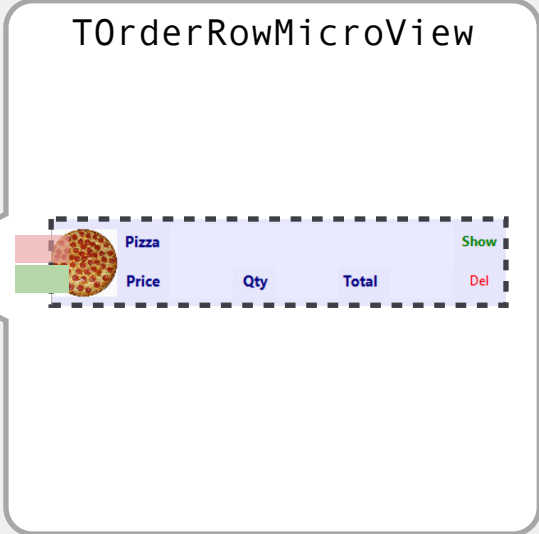
ViewContextProvider

```
OnRequest
ResultViewContext := ScrollBoxRows;

OnAfterRequest
TControl(AView).Align := alTop;

OnRelease
(AiewContext.Free;)
```

SimpleView for  
TOrderRow



Detail

Actions

Detail

Actions

BSOrder Master

BSRows Detail

ViewContextProvider

Revert

Delete row

Grand total

32,50 €

Persist

Pizz'Amore

Back

Order

Add

Order 1 16/10/2022

Note Well done

Customer 1 Maurizio Del Magno (1) Show ...

Address 301 Park Ave - New York

Phone +1 (555) 555-1234

Pizza

Price

Qty

Total

Del

1

2

3

4

5

Margherita pizza

4,50 €

Capricciosa pizza

7,00 €

Pepperoni pizza

6,50 €

Love pizza

5,00 €

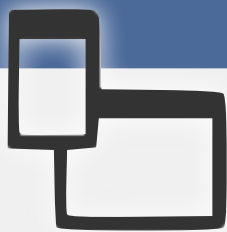
delphiForce MAURIZIO DEL MAGNO



# ViewContextProvider

RunTime (dynamic embedded micro view)

BSRows . ShowEach; 



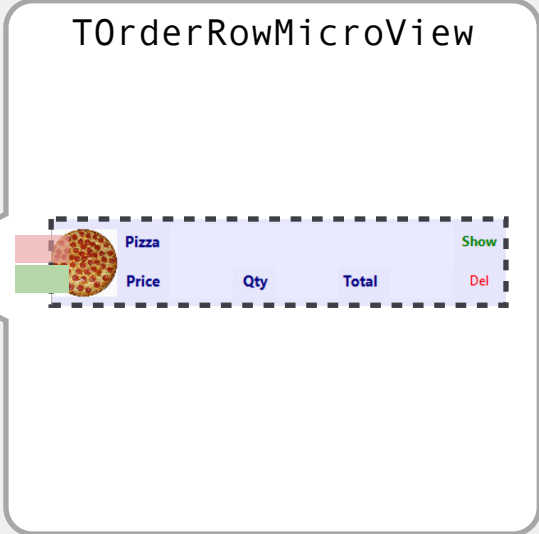
ViewContextProvider

```
OnRequest
ResultViewContext := ScrollBoxRows;

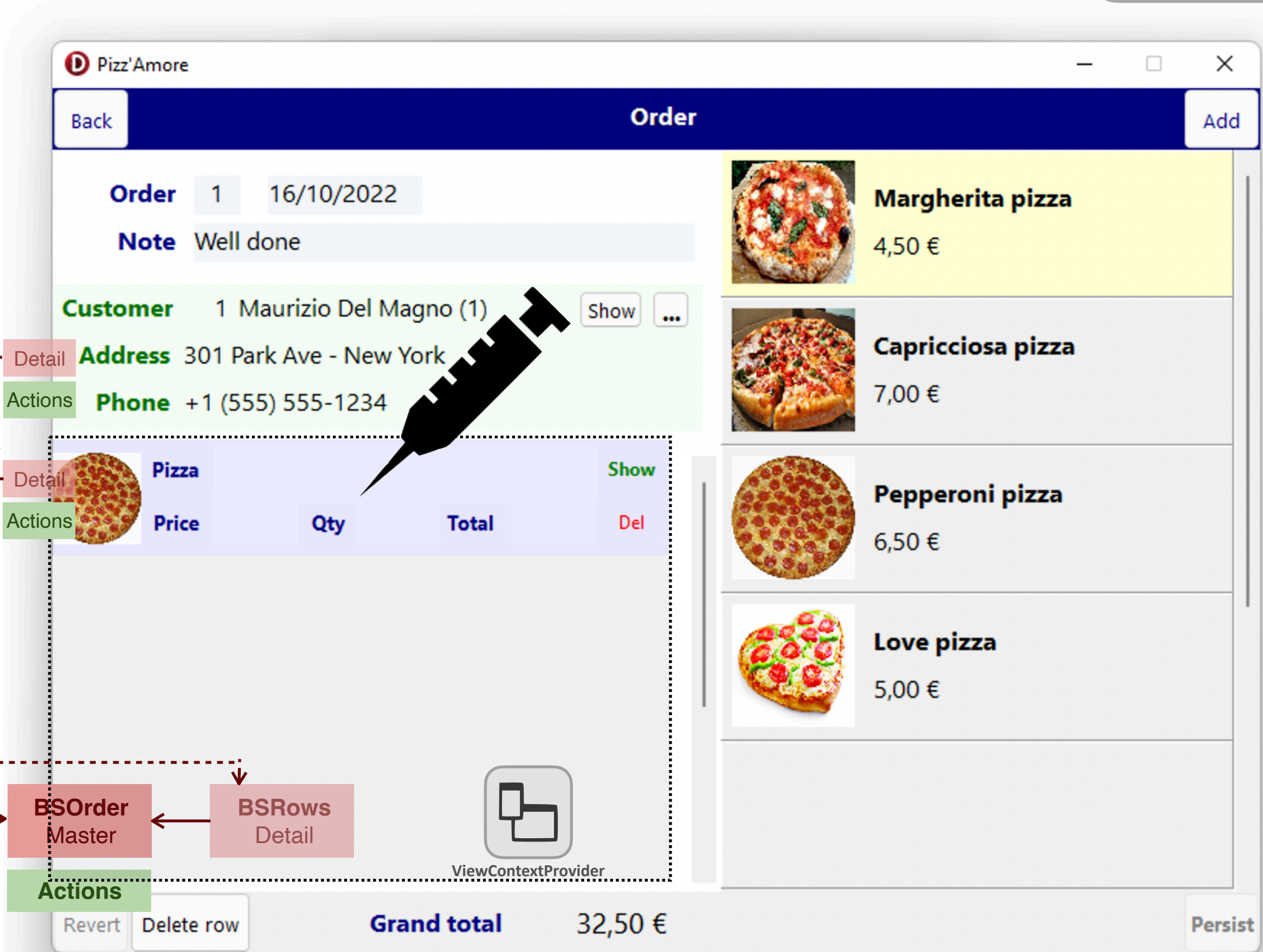
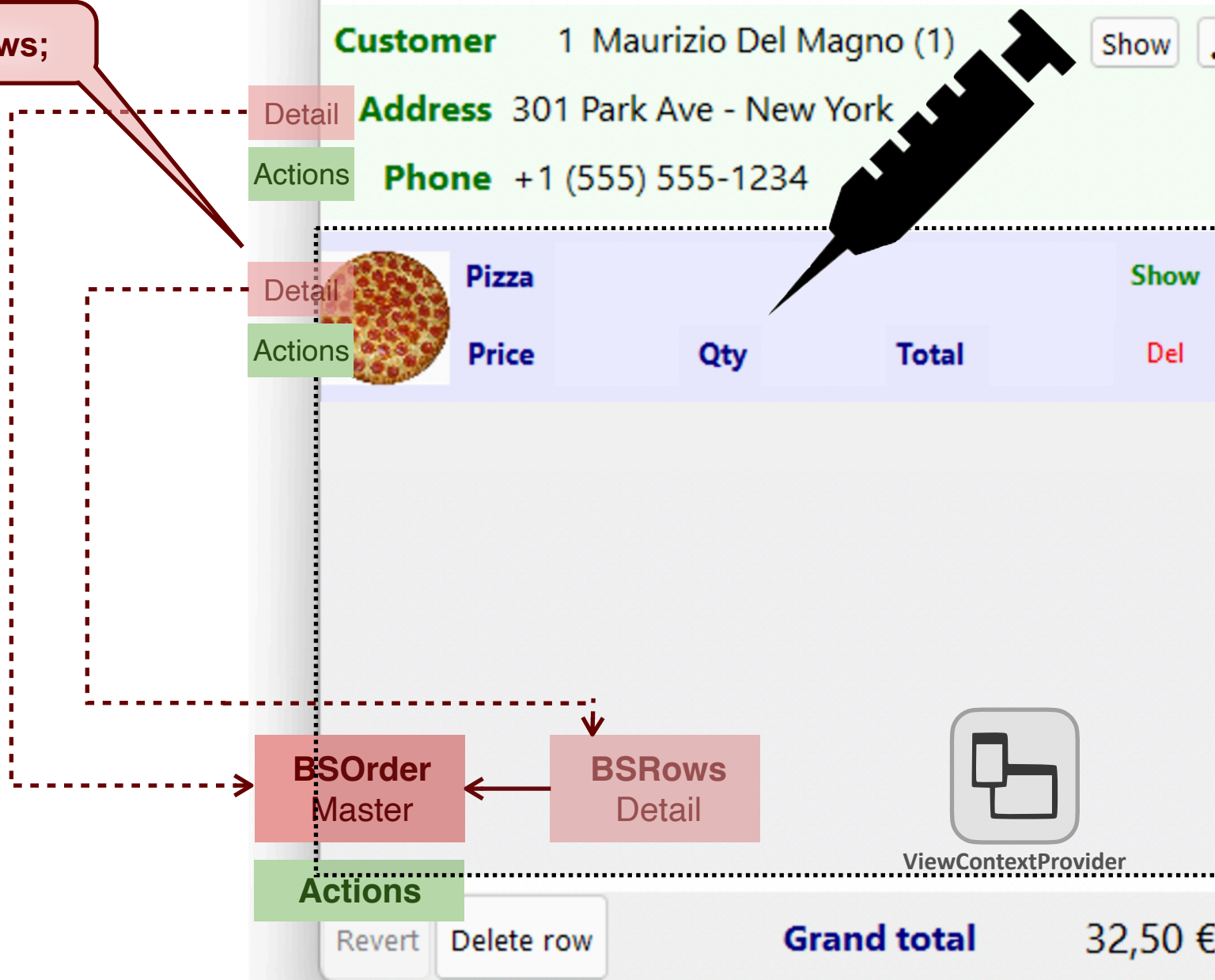
OnAfterRequest
TControl(AView).Align := alTop;

OnRelease
(AiewContext.Free;)
```

SimpleView for  
TOrderRow



SourceBS := BSRows;

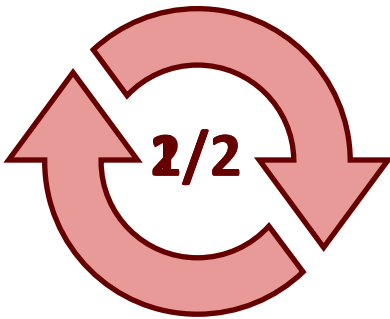




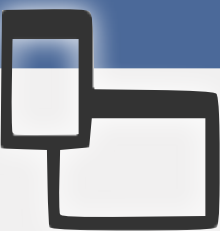
# ViewContextProvider

RunTime (dynamic embedded micro view)

BSRows.ShowEach;



Current = TOrderRow  
Nessun alias specificato




ViewContextProvider

**OnRequest**  
ResultViewContext := ScrollBoxRows;


**OnAfterRequest**  
TControl(AView).Align := alTop;

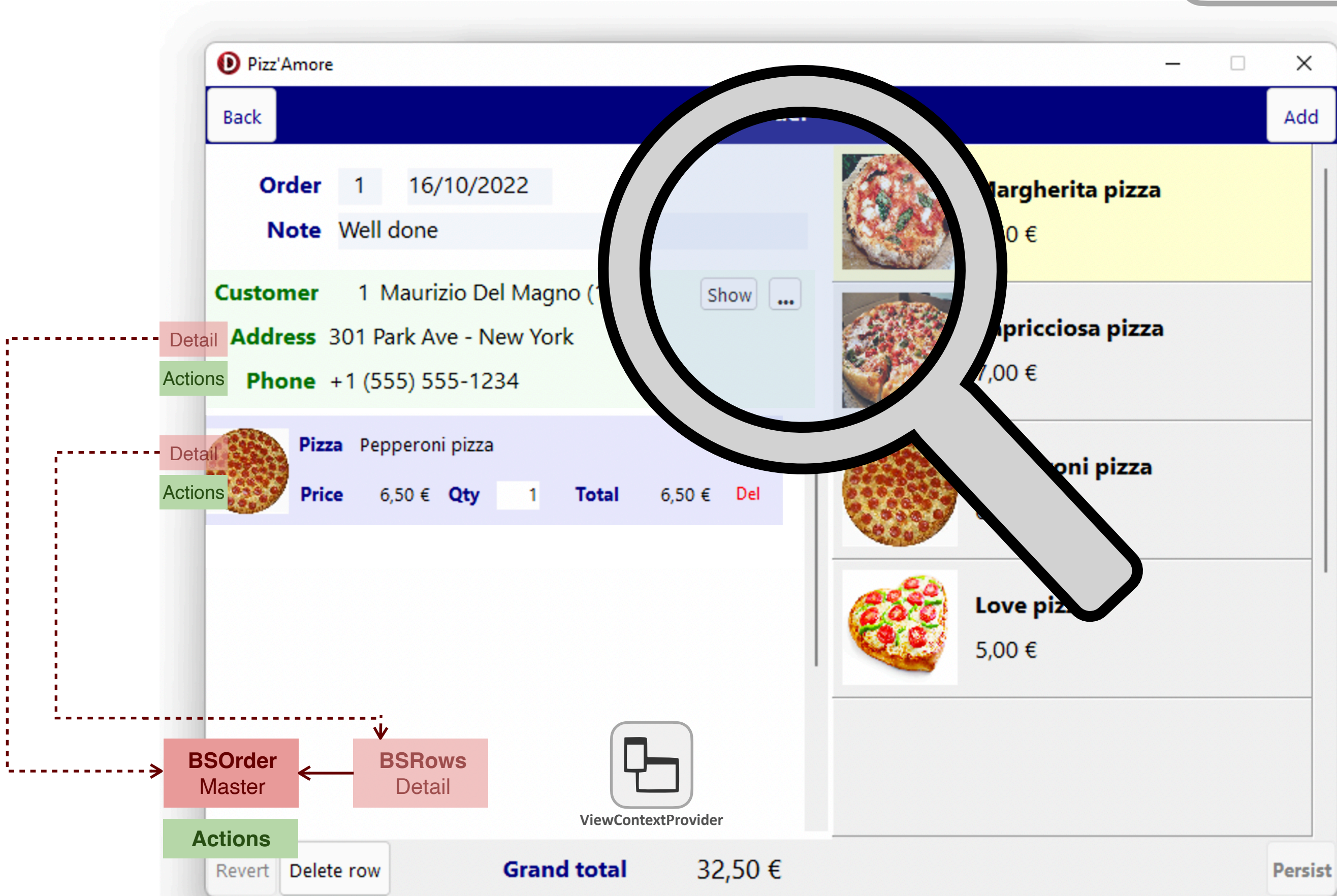
**OnRelease**  
(AiewContext.Free;)



SimpleView for TOrderRow

TOrderRowMicroView



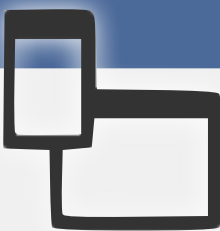




# ViewContextProvider

RunTime (dynamic embedded micro view)

BSRows.ShowEach; 



ViewContextProvider

OnRequest

ResultViewContext := ScrollBoxRows;

OnAfterRequest

TControl(AView).Align := alTop;


OnRelease

(AiewContext.Free;)



SimpleView for  
TOrderRow

TOrderRowMicroView

 Pizza

Price

Qty

Total

Del

Show

Pizz'Amore

Back

Order

Add

Order 1 16/10/2022


Note Well done

Customer 1 Maurizio Del Magno (1) Show ...

Address 301 Park Ave - New York

Phone +1 (555) 555-1234

Detail

 Pizza

Pepperoni pizza

Show

Actions

Price 6,50 € Qty 1 Total 6,50 € Del

BSOrder Master

BSRows Detail

ViewContextProvider

Revert

Delete row

Grand total 32,50 €

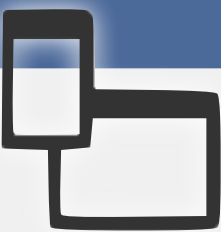
Persist



# ViewContextProvider

RunTime (dynamic embedded micro view)

BSRows.ShowEach; 



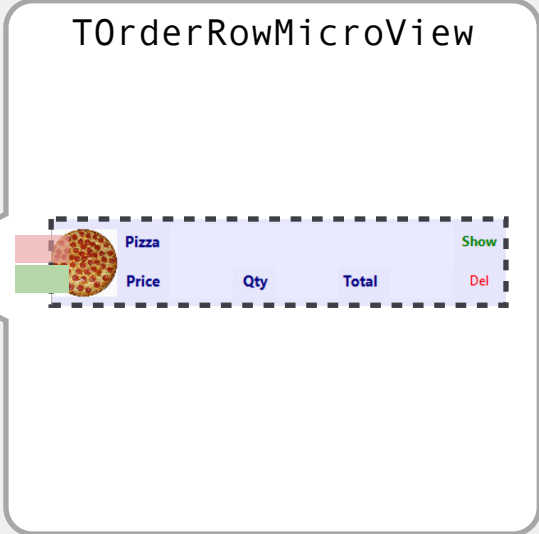
ViewContextProvider

```
OnRequest
ResultViewContext := ScrollBoxRows;

OnAfterRequest
TControl(AView).Align := alTop;

OnRelease
(AiewContext.Free;)
```

SimpleView for  
TOrderRow



Pizz'Amore

Back Order Add

Order 1 16/10/2022

Note Well done

Customer 1 Maurizio Del Magno (1) Show ...

Address 301 Park Ave - New York

Phone +1 (555) 555-1234

Pizza	Price	Qty	Total	Del	Show
Pepperoni pizza	6,50 €	1	6,50 €	Del	Show

BSOrder Master ← BSRows Detail

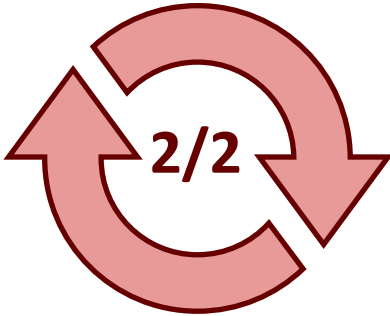
ViewContextProvider

Revert Delete row Grand total 32,50 € Persist



# ViewContextProvider

RunTime (dynamic embedded micro view)

BSRows . ShowEach; 

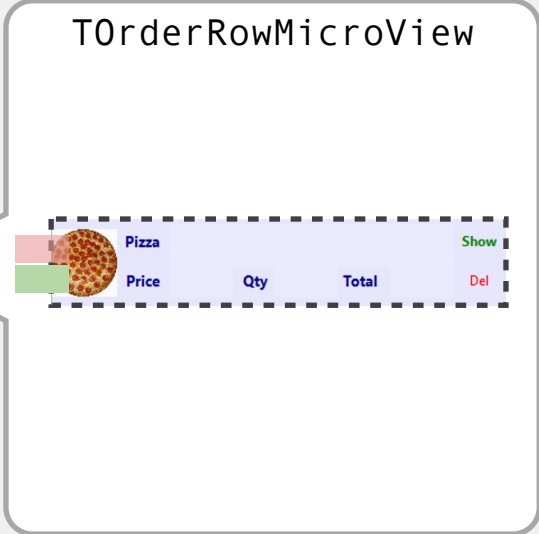
 ViewContextProvider

```
OnRequest
ResultViewContext := ScrollBoxRows;

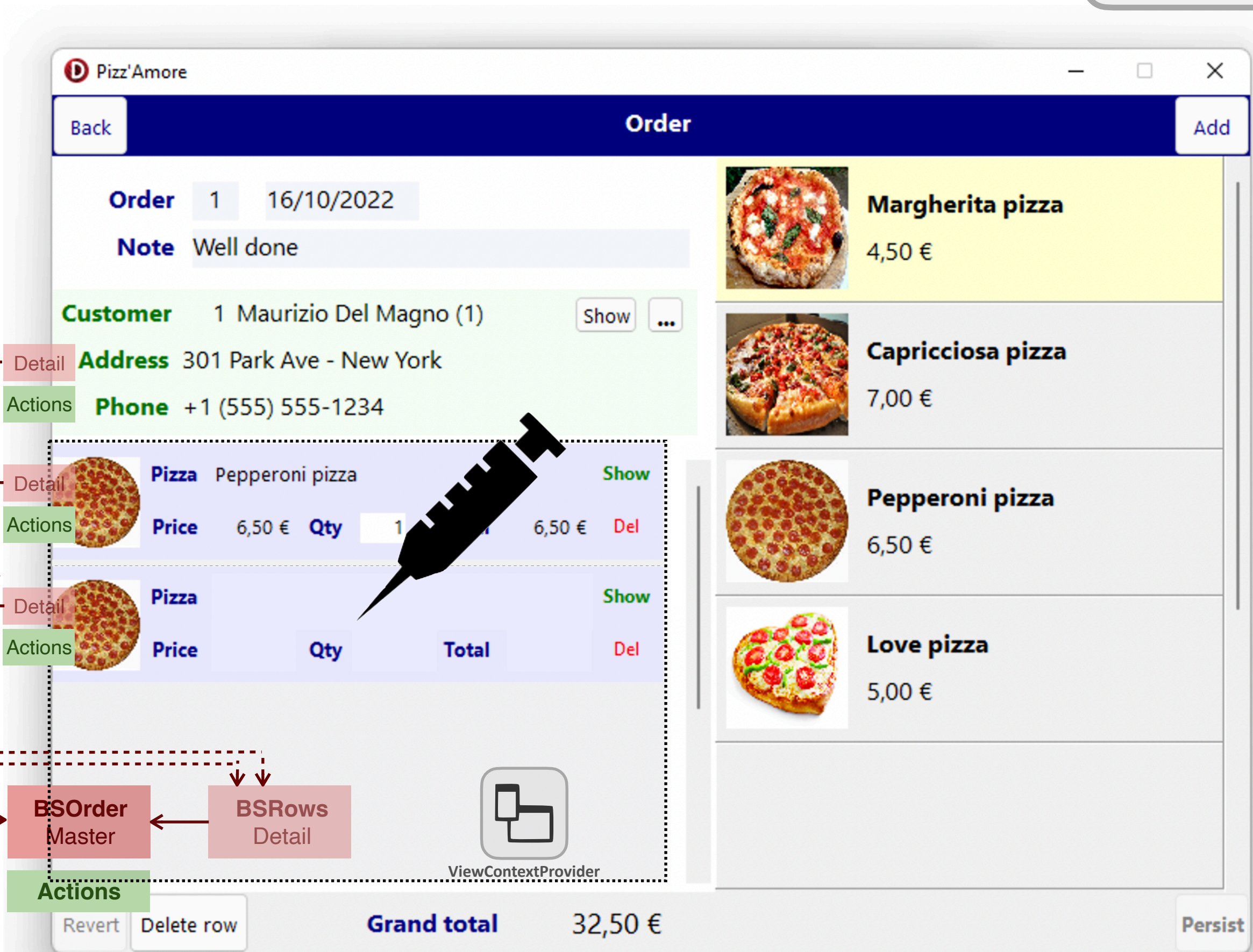
OnAfterRequest
TControl(AView).Align := alTop;

OnRelease
(AiewContext.Free;)
```

SimpleView for  
TOrderRow



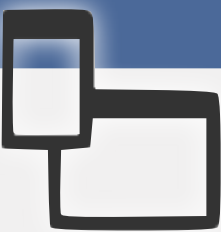
SourceBS := BSRows;





# ViewContextProvider

RunTime (dynamic embedded micro view)



ViewContextProvider

```
OnRequest
ResultViewContext := ScrollBoxRows;

OnAfterRequest
TControl(AView).Align := alTop;

OnRelease
(AiewContext.Free;)
```



SimpleView for  
TOrderRow

TOrderRowMicroView

Pizza	Price	Qty	Total	Del

Detail

Actions

Address

Phone

16/10/2022

Well done

1

Maurizio Del Magno (1)

Show

...

301 Park Ave - New York

+1 (555) 555-1234

Detail

Actions

Pizza

Price

Qty

Total

Del

Pepperoni pizza

6,50 €

1

6,50 €

Detail

Actions

Pizza

Price

Qty

Total

Del

Pepperoni pizza

6,50 €

1

6,50 €

BSOrder Master

BSRows Detail

Revert

Delete row

Grand total

32,50 €

Persist

Order

Back

Add

Margherita pizza

4,50 €

Capricciosa pizza

7,00 €

Pepperoni pizza

6,50 €

Love pizza

5,00 €

ViewContextProvider

delphiForce MAURIZIO DEL MAGNO

DelphiDay italian conference



**SPECIAL  
EDITION**

# ViewContextProvider

RunTime (dynamic embedded micro view)

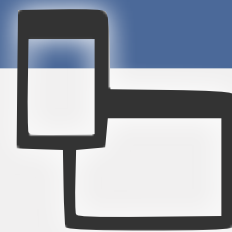


# ViewContextProvider

RunTime (dynamic embedded micro view)

SPECIAL EDITION

BSRows . ShowEach;



ViewContextProvider

OnRequest  
ResultViewContext := ScrollBoxRows;

OnAfterRequest  
TControl(AView).Align := alTop;

OnRelease  
(AiewContext.Free;)



SimpleView for TOrderRow

TOrderRowMicroView

	Pizza				Show
	Price	Qty	Total	Del	



Detail Actions

Detail Actions

Detail Actions

BSOrder Master

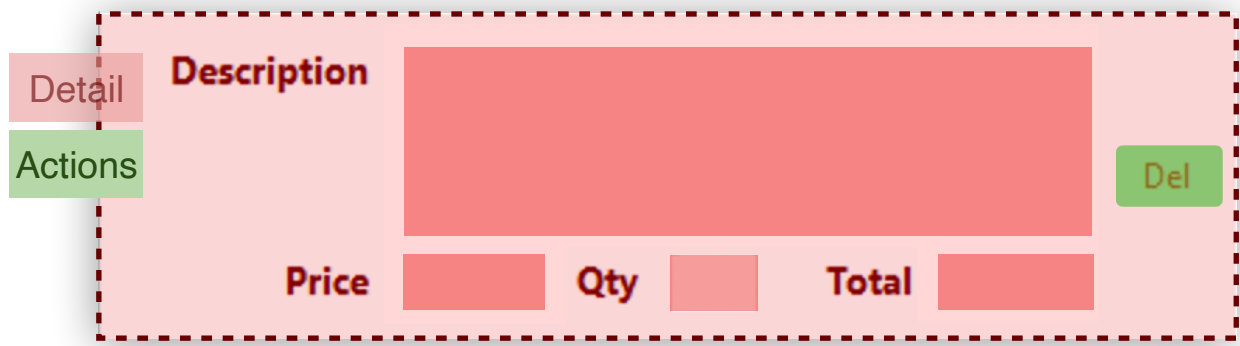
BSRows Detail




# ViewContextProvider

SPECIAL EDITION

RunTime (dynamic embedded micro view)





ViewContextProvider

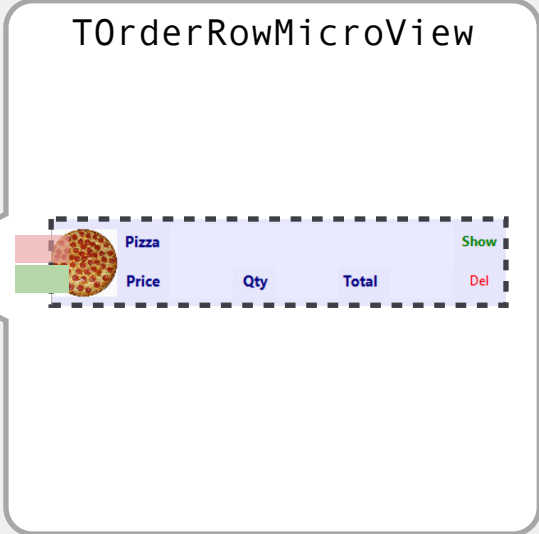
**OnRequest**  
ResultViewContext := ScrollBoxRows;

**OnAfterRequest**  
TControl(AView).Align := alTop;

**OnRelease**  
(AiewContext.Free;)



SimpleView for TOrderRow



BSRows ShowEach

BSOrder Master

BSRows Detail

ViewContextProvider

Revert

Delete row

Grand total

32,50 €

Persist

Order

1

16/10/2022

Note

Well done

Customer

1 Maurizio Del Magno (1)

Show

...

Address

301 Park Ave - New York

Phone

+1 (555) 555-1234

Pizza

Pepperoni pizza

Show

Price

6,50 €

Qty

1

Total

6,50 €

Del

Margherita pizza

4,50 €

Capricciosa pizza

7,00 €

Pepperoni pizza

6,50 €

Love pizza

5,00 €



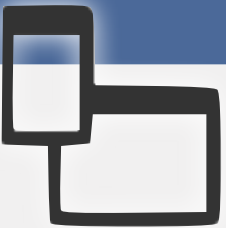
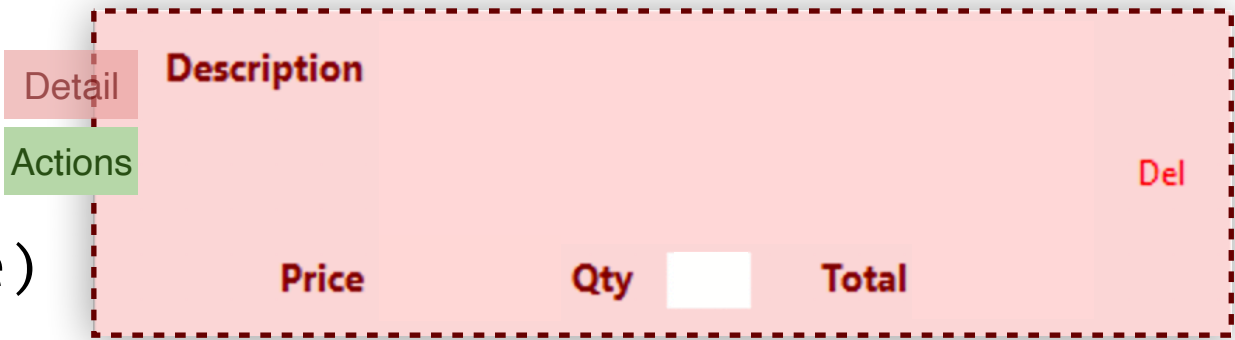
# ViewContextProvider

SPECIAL EDITION

RunTime (dynamic embedded micro view)

[diSimpleViewFor(TOrderRowCustom)]

TOrderRowCustomMicroV = class(TFrame)



ViewContextProvider

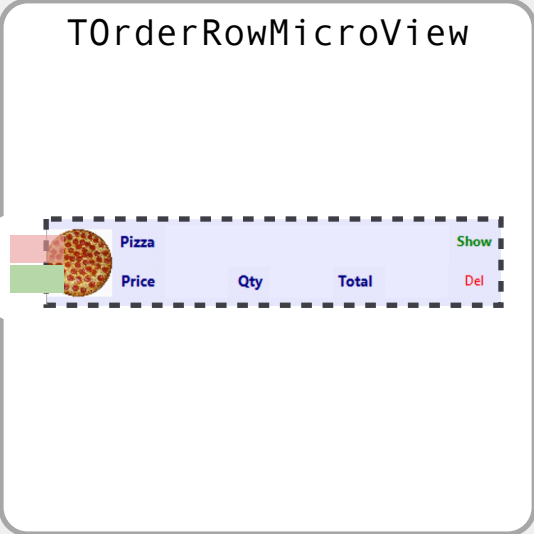
```
OnRequest
ResultViewContext := ScrollBoxRows;

OnAfterRequest
TControl(AView).Align := alTop;

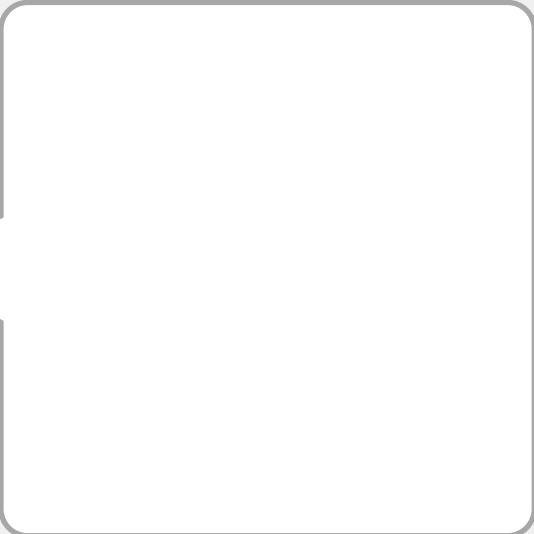
OnRelease
(AiewContext.Free;)
```



SimpleView for TOrderRow



SimpleView for TOrderRow Custom



BSRows ShowEach

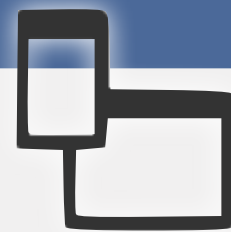
A screenshot of the Pizz'Amore application interface. The window title is 'Pizz'Amore'. The interface is divided into several sections. At the top, there is a 'Back' button and an 'Add' button. Below this, there is a section for 'Order' with fields for 'Order' (1), 'Date' (16/10/2022), and 'Note' (Well done). Below this, there is a section for 'Customer' with fields for 'Customer' (1 Maurizio Del Magno (1)), 'Address' (301 Park Ave - New York), and 'Phone' (+1 (555) 555-1234). Below this, there is a section for 'Pizza' with a 'Show' button. The 'Pizza' section contains a table with columns for 'Price', 'Qty', and 'Total'. The table has one row with 'Pepperoni pizza', '6,50 €', '1', and '6,50 €'. Below the table, there is a 'Del' button. At the bottom of the window, there is a 'Grand total' section showing '32,50 €'. There are also buttons for 'Revert', 'Delete row', and 'Persist'. A 'ViewContextProvider' icon is located at the bottom center.



# ViewContextProvider

RunTime (dynamic embedded micro view)

SPECIAL EDITION



ViewContextProvider

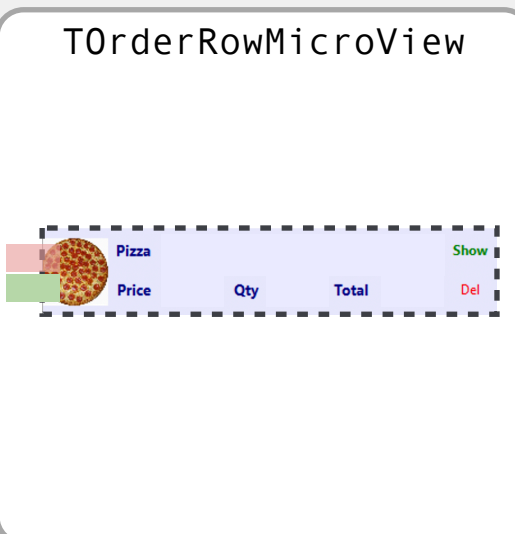
```
OnRequest
ResultViewContext := ScrollBoxRows;

OnAfterRequest
TControl(AView).Align := alTop;

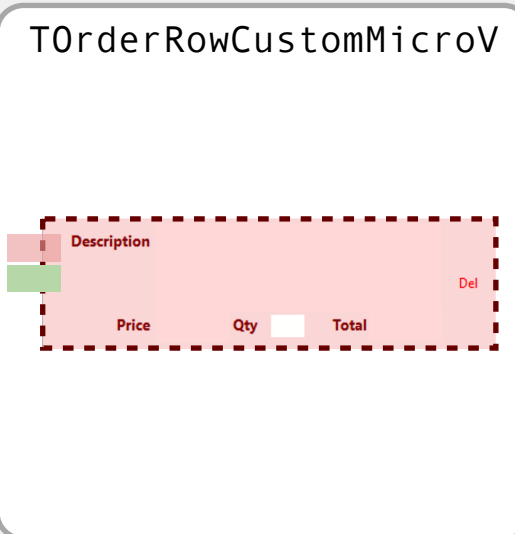
OnRelease
(AiewContext.Free;)
```



SimpleView for TOrderRow



SimpleView for TOrderRow Custom



BSRows ShowEach

BSOrder Master

BSRows Detail

ViewContextProvider

Order 1 16/10/2022

Note Well done

Customer 1 Maurizio Del Magno (1) Show ...

Address 301 Park Ave - New York

Phone +1 (555) 555-1234

Pizza

Pepperoni pizza

Show

Price 6,50 €

Qty 1

Total 6,50 €

Del

Revert

Delete row

Grand total 32,50 €

Persist

Margherita pizza 4,50 €

Capricciosa pizza 7,00 €

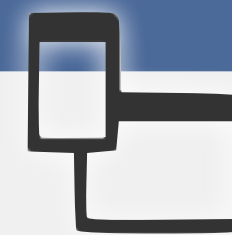
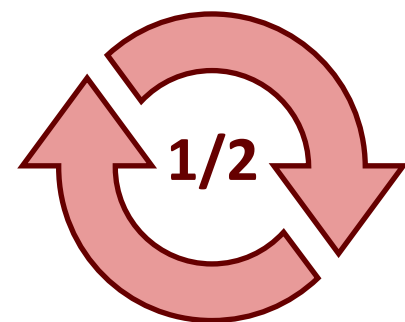
Pepperoni pizza 6,50 €

Love pizza 5,00 €



**SPECIAL EDITION**

```
BSRows.ShowEach;
```



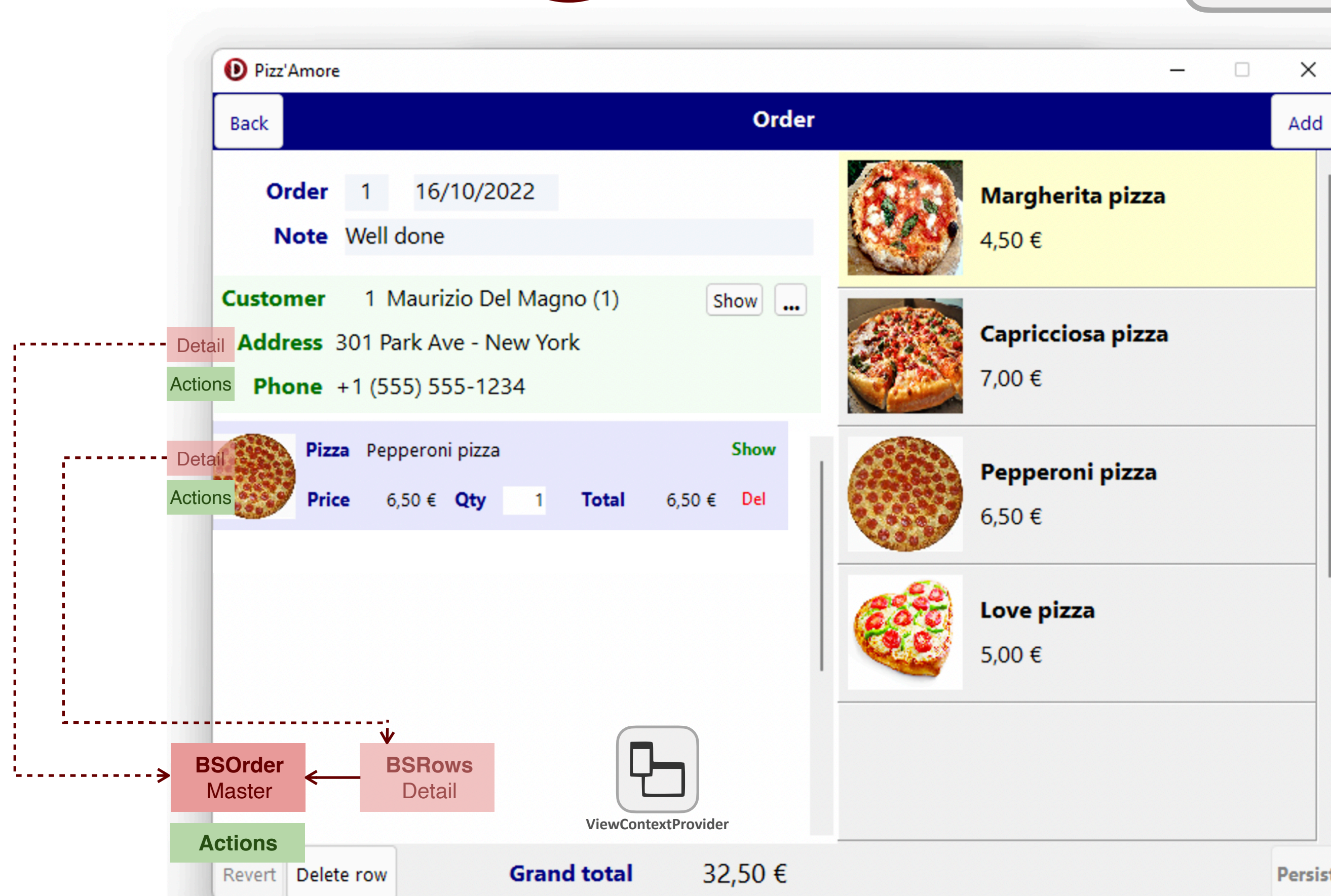
```
(AiewContext.Free;)
```



TOrderRowMicroView



TOrderRowCustomMicroV





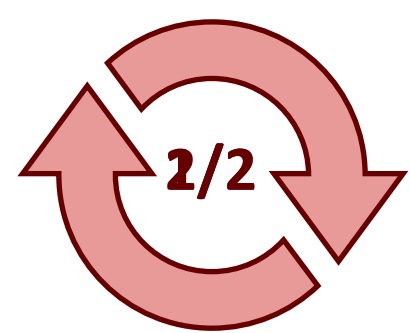
# ViewContextProvider

RunTime (dynamic embedded micro view)

SPECIAL EDITION

Current = TOrderRowCustom  
Nessun alias specificato

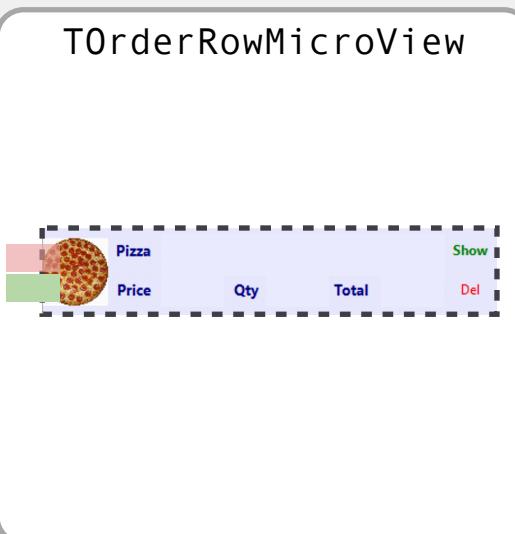
BSRows.ShowEach;



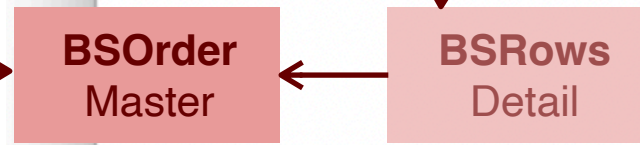
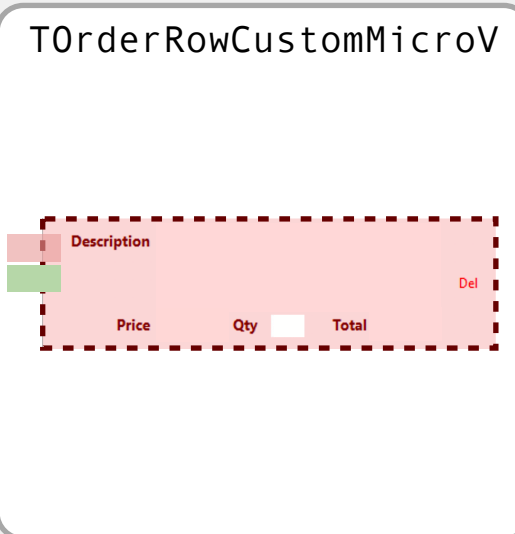
ViewContextProvider

```
OnRequest  
ResultViewContext := ScrollBoxRows;  
  
OnAfterRequest  
TControl(AView).Align := alTop;  
  
OnRelease  
(AiewContext.Free;)
```

SimpleView for TOrderRow



SimpleView for TOrderRow Custom



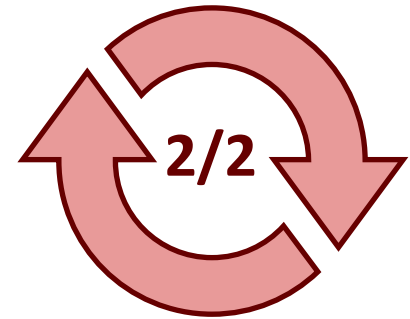


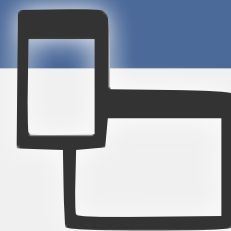
# ViewContextProvider

RunTime (dynamic embedded micro view)

SPECIAL EDITION

BSRows.ShowEach;





ViewContextProvider

OnRequest  
ResultViewContext := ScrollBoxRows;

OnAfterRequest  
TControl(AView).Align := alTop;

OnRelease  
(AiewContext.Free;)



SimpleView for TOrderRow

TOrderRowMicroView

SimpleView for TOrderRow Custom

TOrderRowCustomMicroV

Pizz'Amore

BackOrderAdd

Order 116/10/2022

NoteWell done

Customer 1Maurizio Del Magno (1)Show...

Address301 Park Ave - New York

Phone+1 (555) 555-1234

PizzaPepperoni pizzaShow

Price6,50 €Qty1Total6,50 €Del

BSOrder MasterBSRows DetailViewContextProvider

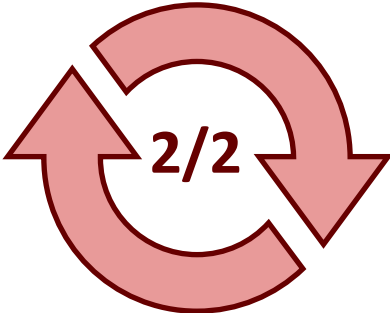
RevertDelete rowGrand total32,50 €Persist

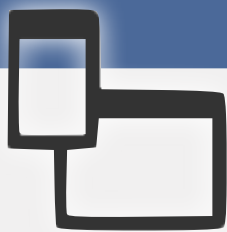


SPECIAL EDITION

# ViewContextProvider

RunTime (dynamic embedded micro view)

BSRows.ShowEach; 



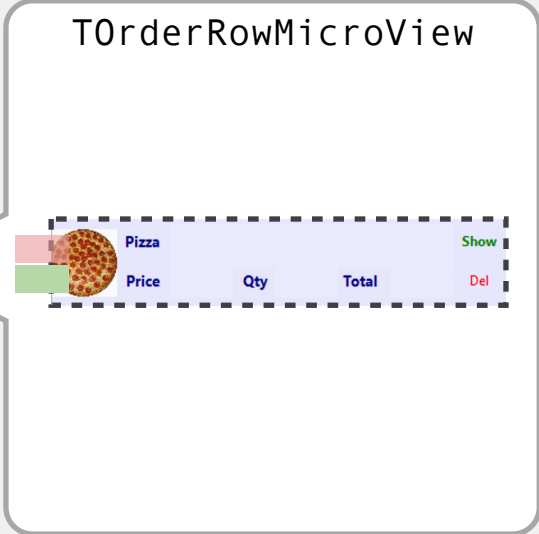
ViewContextProvider

```
OnRequest
ResultViewContext := ScrollBoxRows;

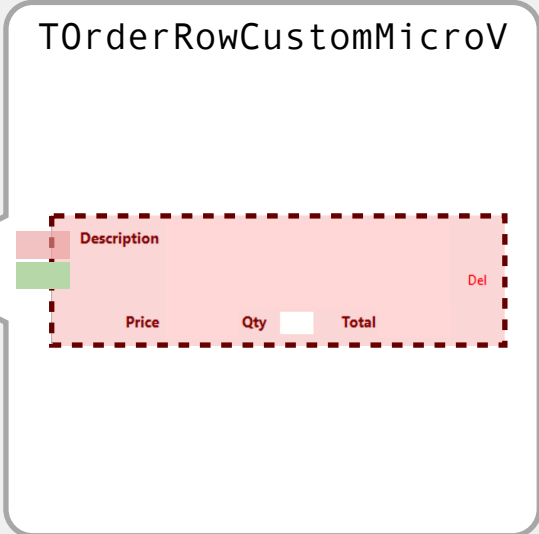
OnAfterRequest
TControl(AView).Align := alTop;

OnRelease
(AiewContext.Free;)
```

SimpleView for TOrderRow



SimpleView for TOrderRow Custom



Detail

Address

301 Park Ave - New York

Show

...

Actions

Phone

+1 (555) 555-1234

Detail

Pizza

Pepperoni pizza

Show

Actions

Price

6,50 €

Qty

1

6,50 €

Del

Detail

Description

Del

Actions

Price

Qty

Total

BSOrder Master

BSRows Detail

ViewContextProvider

Revert

Delete row

Grand total

32,50 €

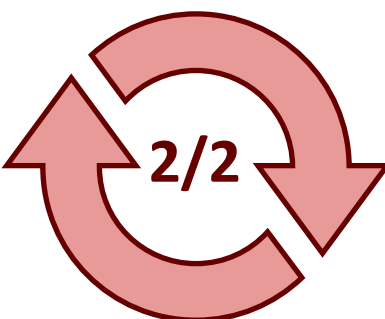
Persist

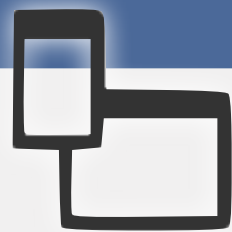


SPECIAL EDITION

# ViewContextProvider

RunTime (dynamic embedded micro view)

BSRows.ShowEach; 



ViewContextProvider

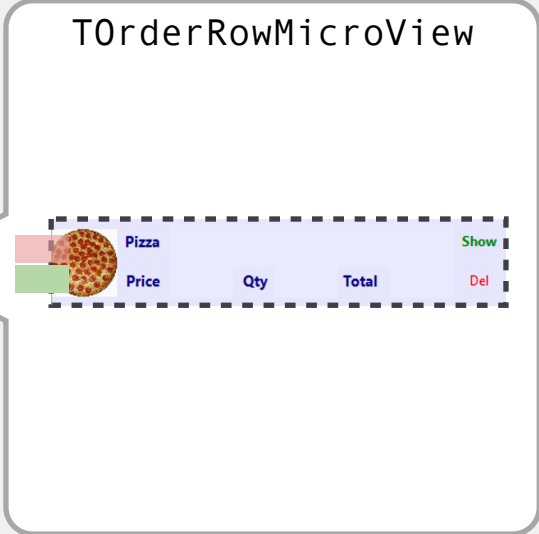
```
OnRequest
ResultViewContext := ScrollBoxRows;

OnAfterRequest
TControl(AView).Align := alTop;

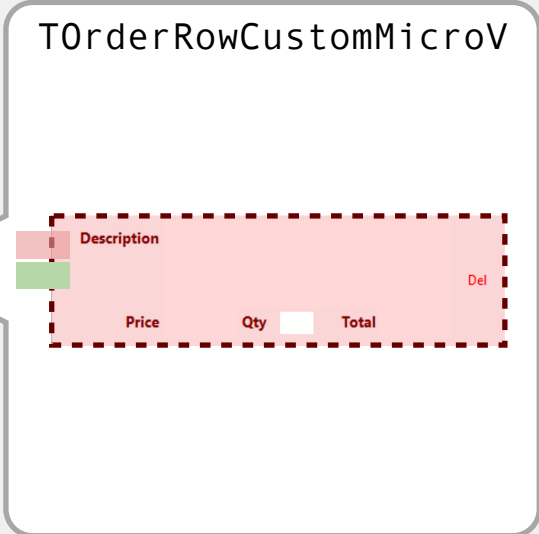
OnRelease
(AiewContext.Free;)
```



SimpleView for TOrderRow



SimpleView for TOrderRow Custom



Order 1 16/10/2022

Note Well done

Customer 1 Maurizio Del Magno (1) Show ...

Address 301 Park Ave - New York

Phone +1 (555) 555-1234

Pizza

Pepperoni pizza

Show

Price

6,50 €

Qty

1

6,50 €

Del

Description

Price

Qty

Total

Del

BSOrder Master

BSRows Detail

ViewContextProvider

Revert

Delete row

Grand total 32,50 €

Persist

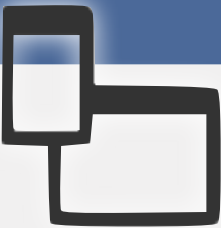
SourceBS := BSRows;



# ViewContextProvider

RunTime (dynamic embedded micro view)

SPECIAL EDITION



ViewContextProvider

```
OnRequest
ResultViewContext := ScrollBoxRows;

OnAfterRequest
TControl(AView).Align := alTop;

OnRelease
(AiewContext.Free;)
```



SimpleView for TOrderRow

TOrderRowMicroView

SimpleView for TOrderRow Custom

TOrderRowCustomMicroV

**Pizz'Amore**

Back Order Add

Order 1 16/10/2022

Note Well done

Customer 1 Maurizio Del Magno (1) Show ...

Address 301 Park Ave - New York

Phone +1 (555) 555-1234

Pizza Pepperoni pizza Show

Price 6,50 € Qty 1 Total 6,50 € Del

Description Pizza with artichokes and blue cheese without mozzarella Del

Price 9,00 € Qty 1 Total 9,00 €

BSOrder Master BSRRows Detail ViewContextProvider

Revert Delete row Grand total 32,50 € Persist



# View + ViewModel



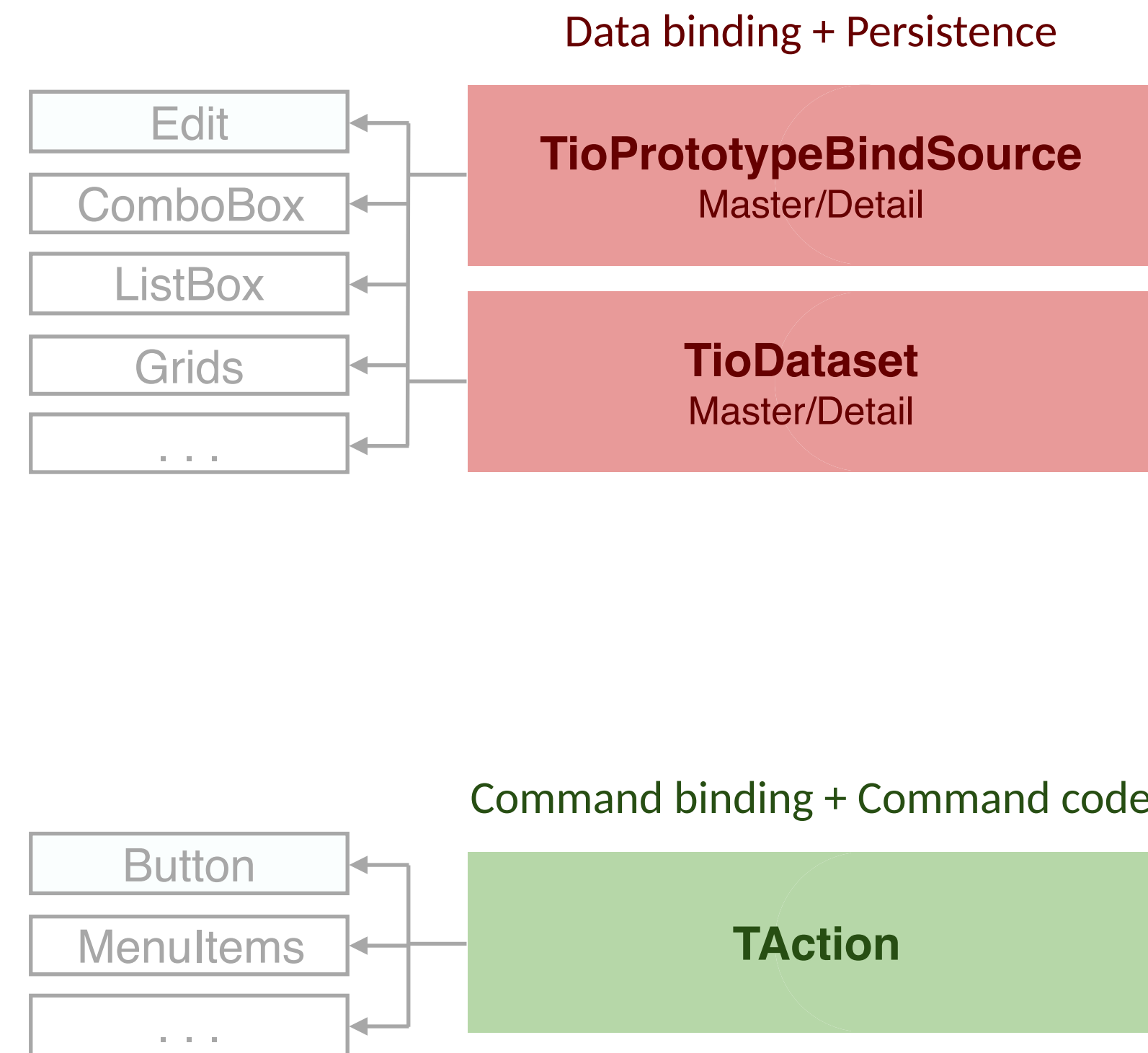
# View + ViewModel



## Presentation layer

- Interazione con l'utente
- Riceve i dati che l'utente fornisce come input
- Rappresenta in output i risultato dell'esecuzione del programma
- Cattura le intenzioni dell'utente e le esaudisce eseguendo uno o più comandi
- Decide la sequenza di viste da mostrare

## SimpleView





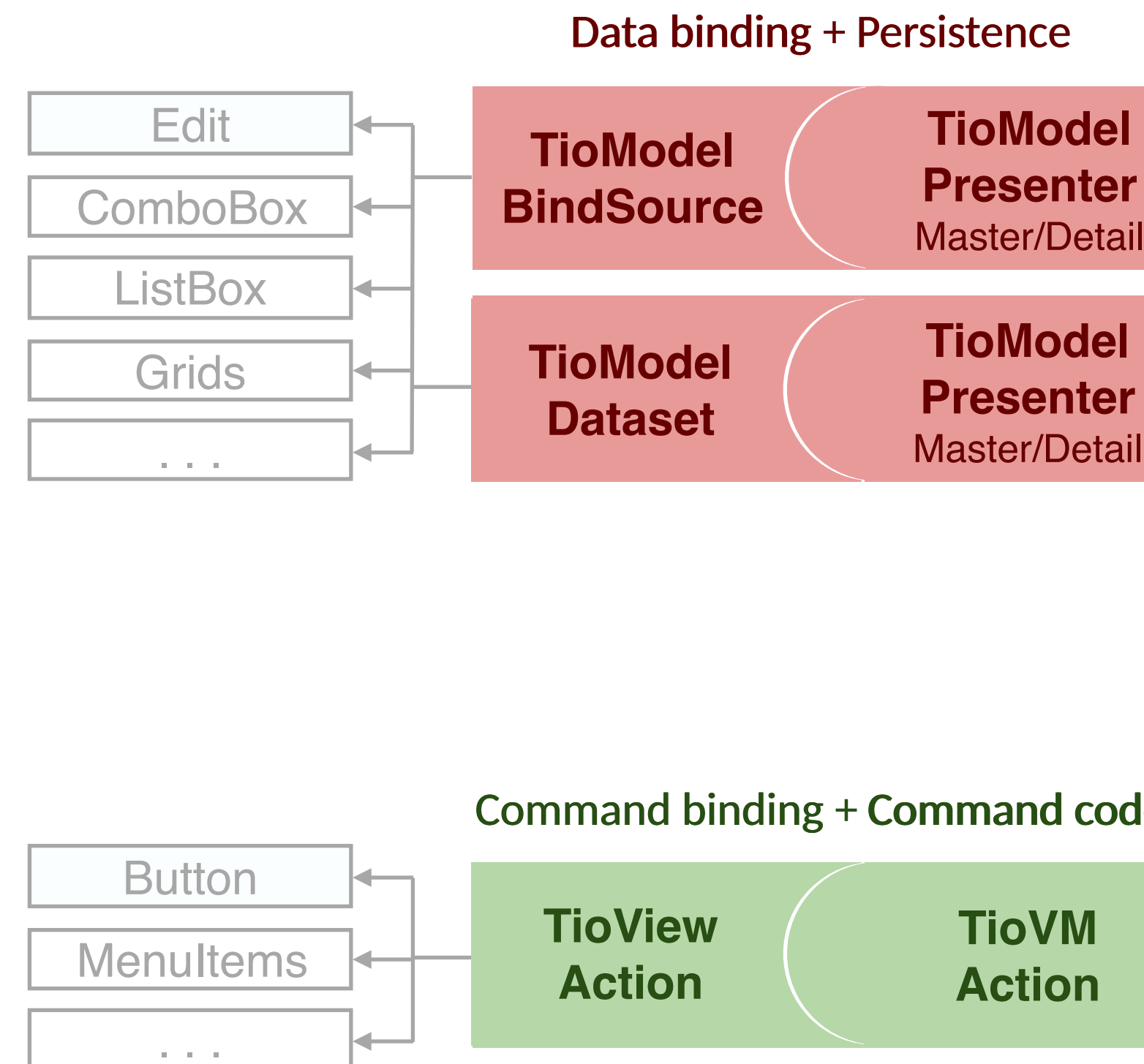
# View + ViewModel



## Presentation layer

- Interazione con l'utente
- Riceve i dati che l'utente fornisce come input
- Rappresenta in output i risultato dell'esecuzione del programma
- Cattura le intenzioni dell'utente e le esaudisce eseguendo uno o più comandi
- Decide la sequenza di viste da mostrare

~~SimpleView~~ → View



ViewModel



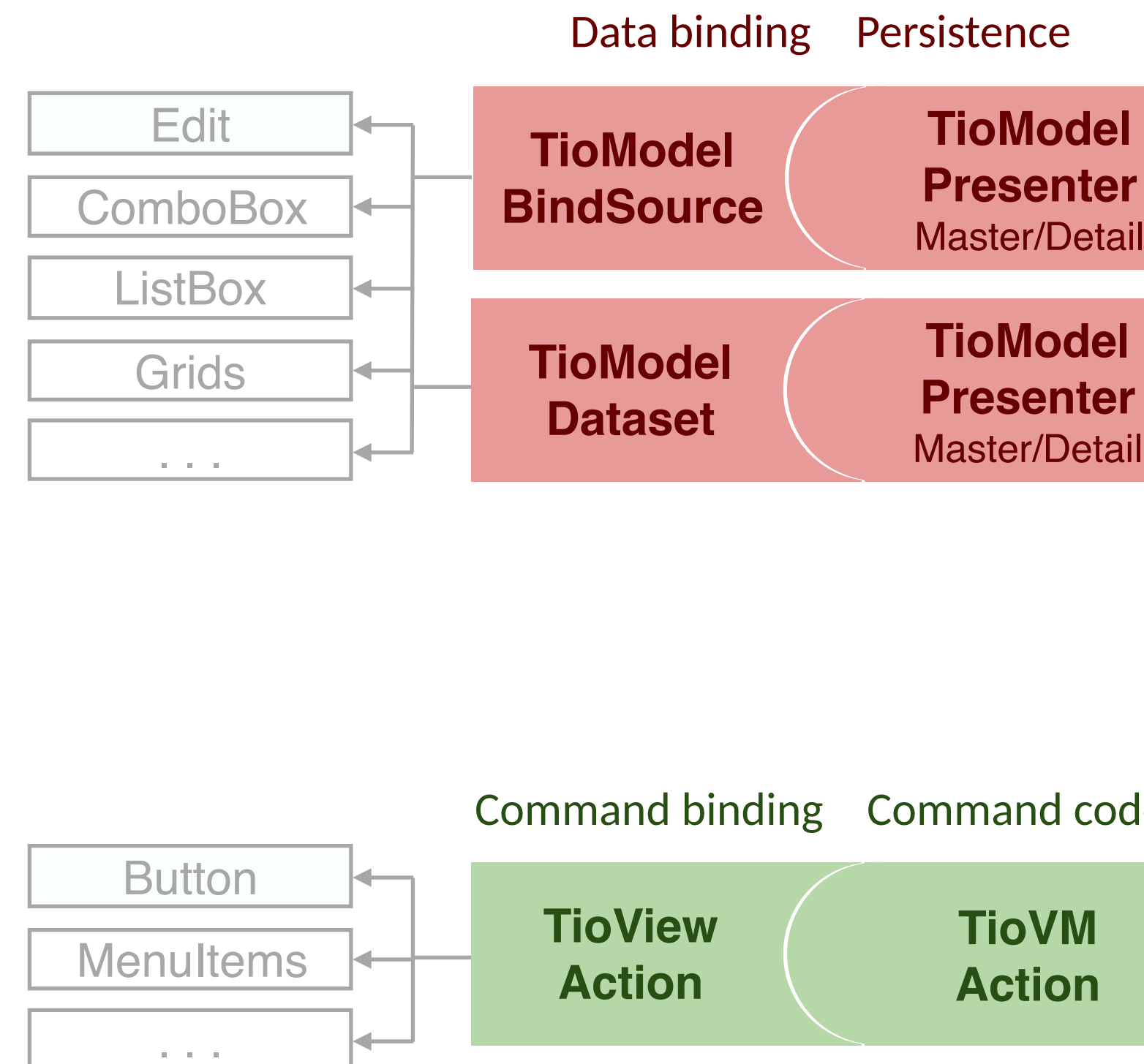
# View + ViewModel



## Presentation layer

- Interazione con l'utente
- Riceve i dati che l'utente fornisce come input
- Rappresenta in output i risultato dell'esecuzione del programma
- Cattura le intenzioni dell'utente e le esaudisce eseguendo uno o più comandi
- Decide la sequenza di viste da mostrare

## View



## ViewModel



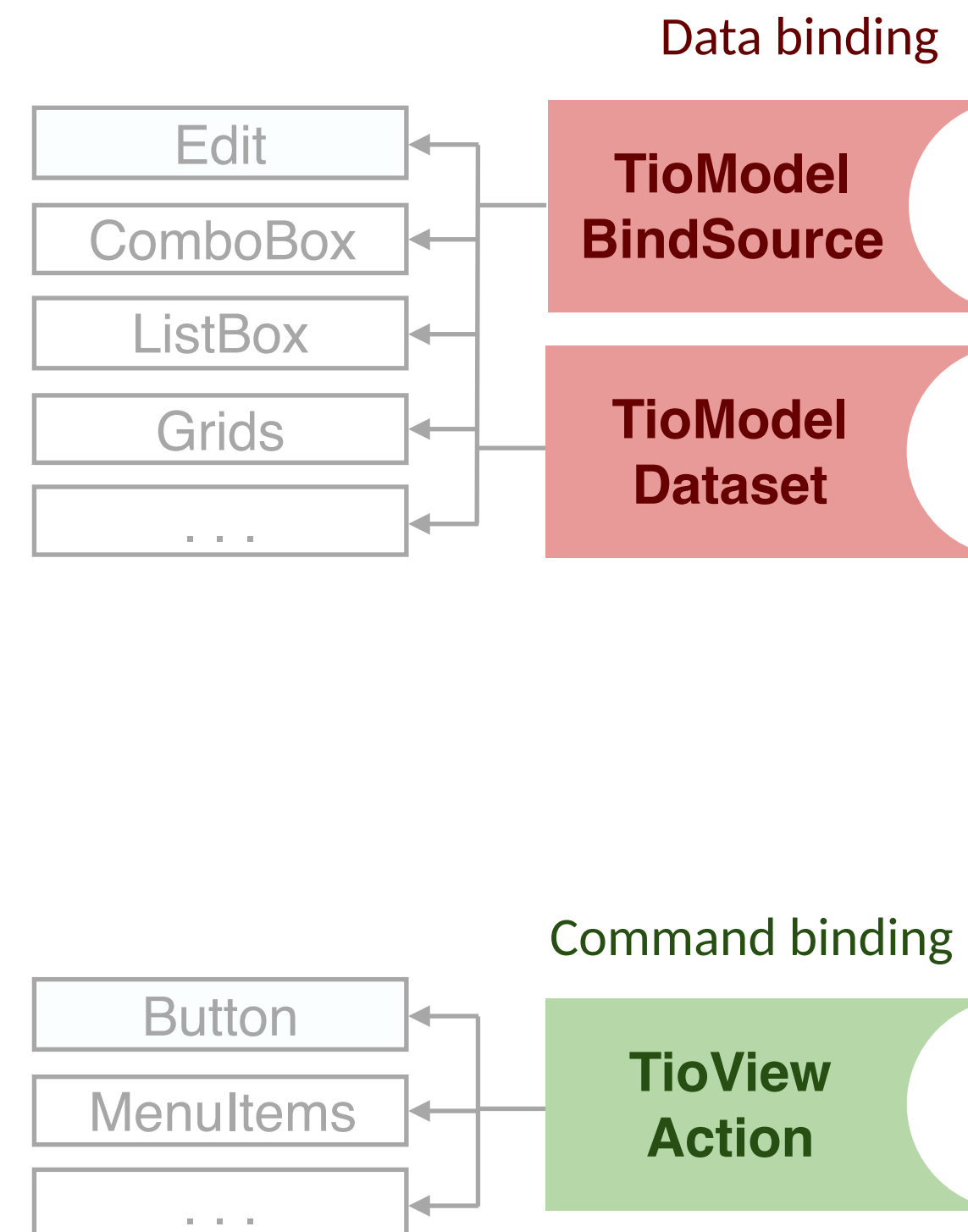
# View + ViewModel



## Presentation layer

- Interazione con l'utente
- Riceve i dati che l'utente fornisce come input
- Rappresenta in output i risultato dell'esecuzione del programma
- Cattura le intenzioni dell'utente e le esaudisce eseguendo uno o più comandi
- Decide la sequenza di viste da mostrare

## View



## ViewModel

### Persistence

**TioModel  
Presenter**  
Master/Detail

**TioModel  
Presenter**  
Master/Detail

### Command code

**TioVM  
Action**



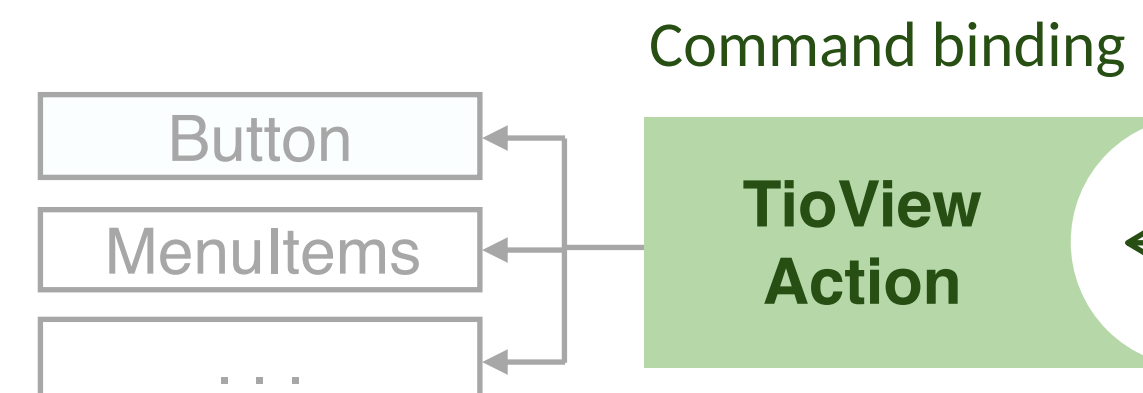
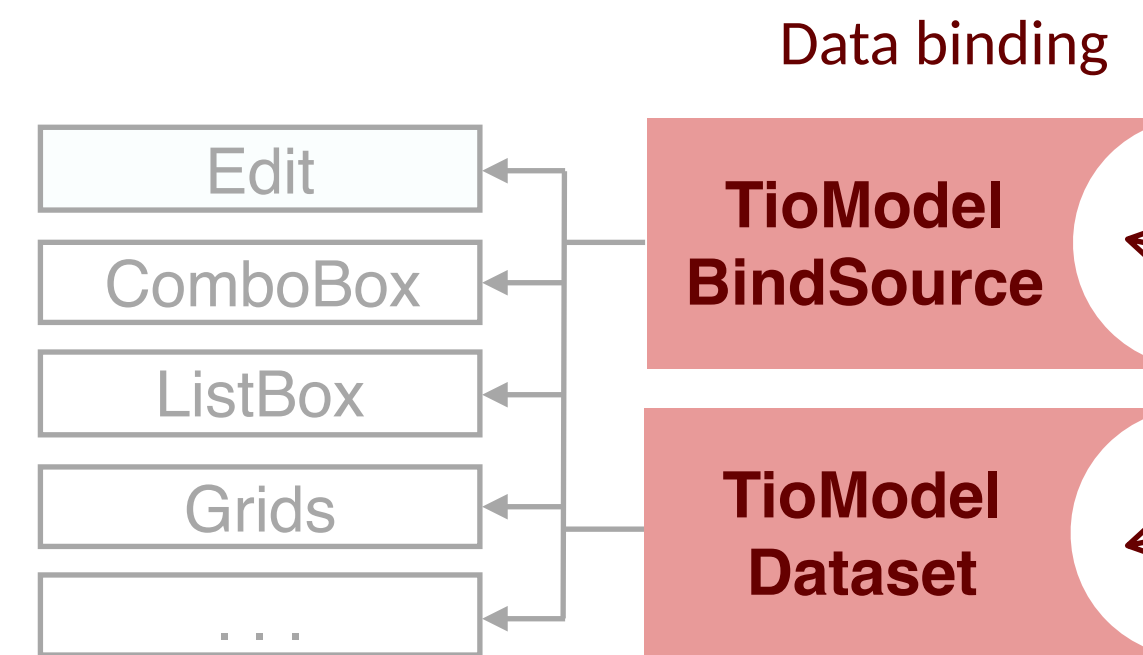
# View + ViewModel



## Presentation layer

- Interazione con l'utente
- Riceve i dati che l'utente fornisce come input
- Rappresenta in output i risultato dell'esecuzione del programma
- Cattura le intenzioni dell'utente e le esaudisce eseguendo uno o più comandi
- Decide la sequenza di viste da mostrare

## View



## ViewModel

Persistence

**TioModel  
Presenter**  
Master/Detail

Command code

**TioVM  
Action**



**M**odel + **V**iew + **V**iew**M**odel



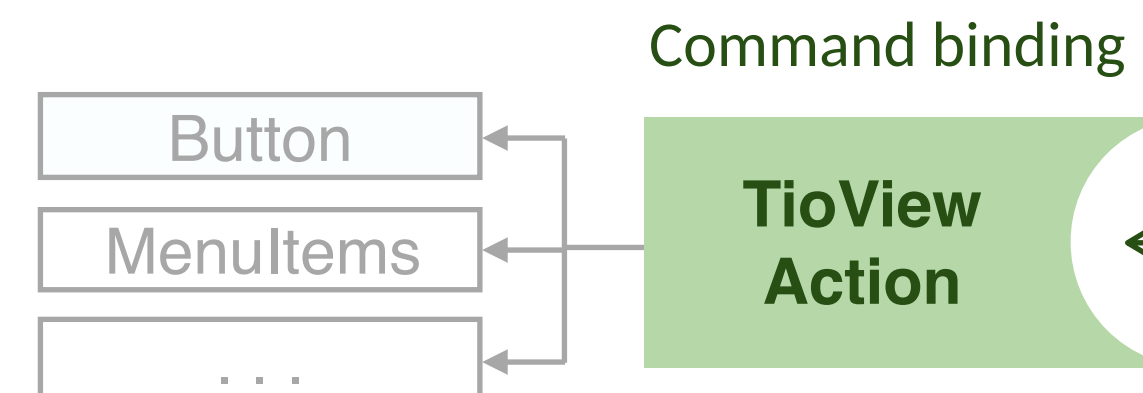
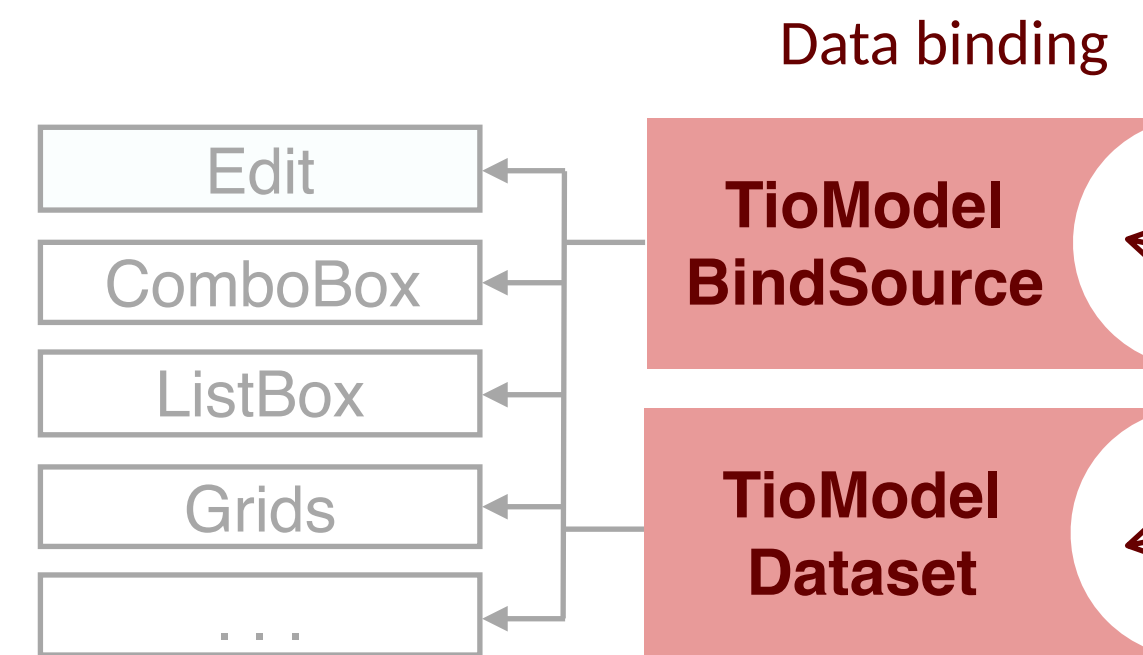
# Model + View + ViewModel



## Presentation layer

- Interazione con l'utente
- Riceve i dati che l'utente fornisce come input
- Rappresenta in output i risultato dell'esecuzione del programma
- Cattura le intenzioni dell'utente e le esaudisce eseguendo uno o più comandi
- Decide la sequenza di viste da mostrare

## View



## ViewModel

Persistence

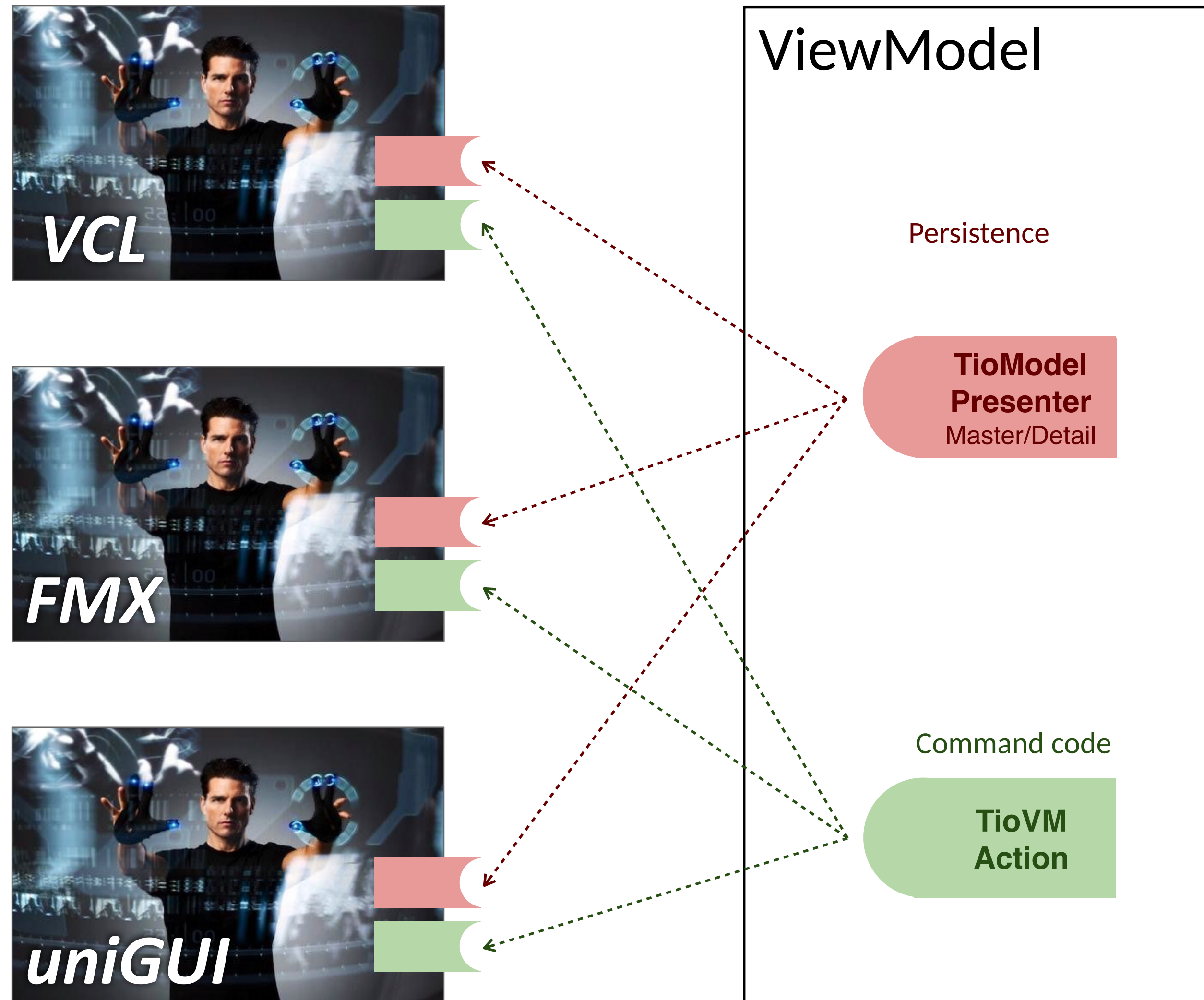
**TioModel  
Presenter**  
Master/Detail

Command code

**TioVM  
Action**

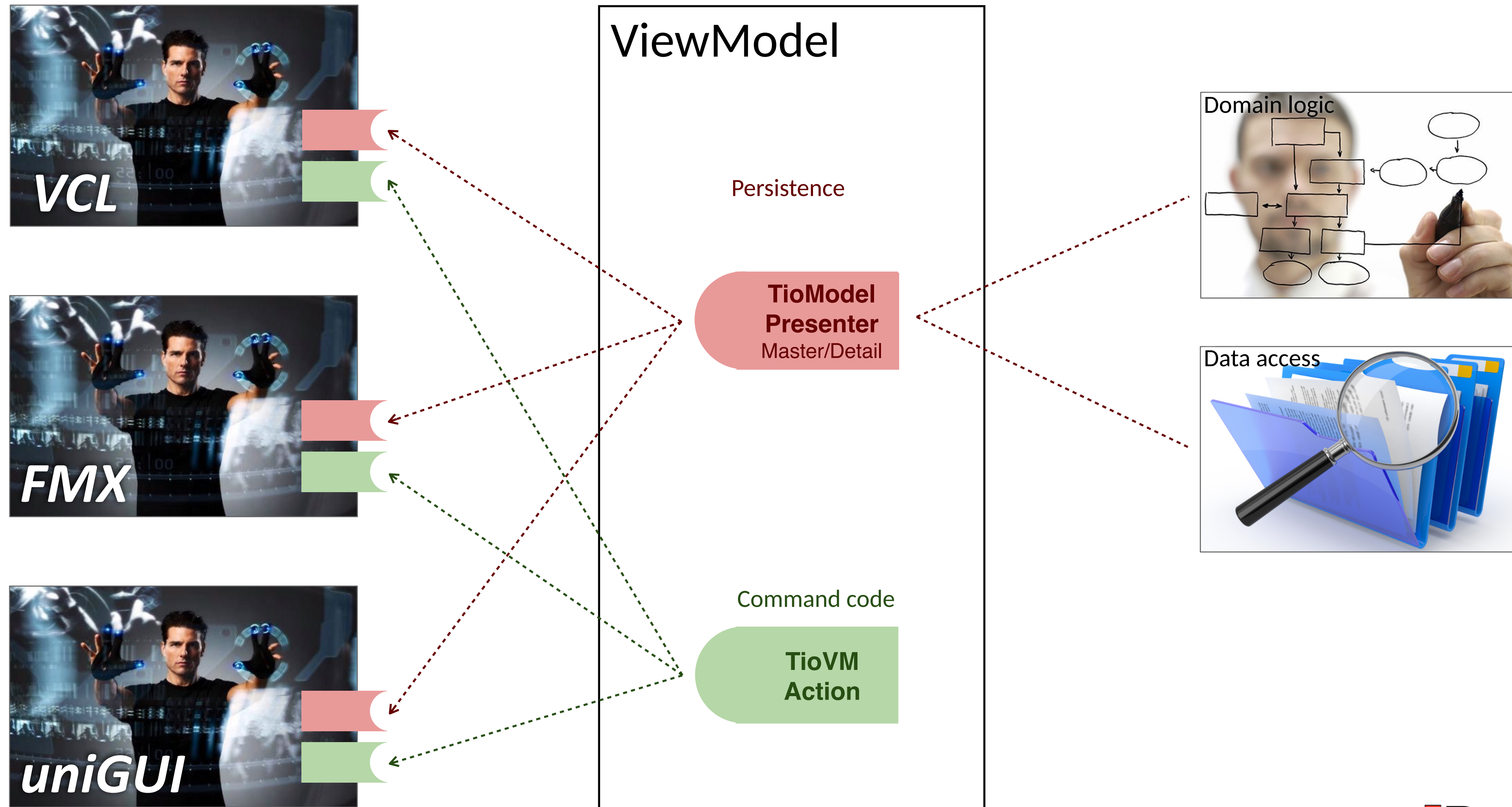


# Model + View + ViewModel



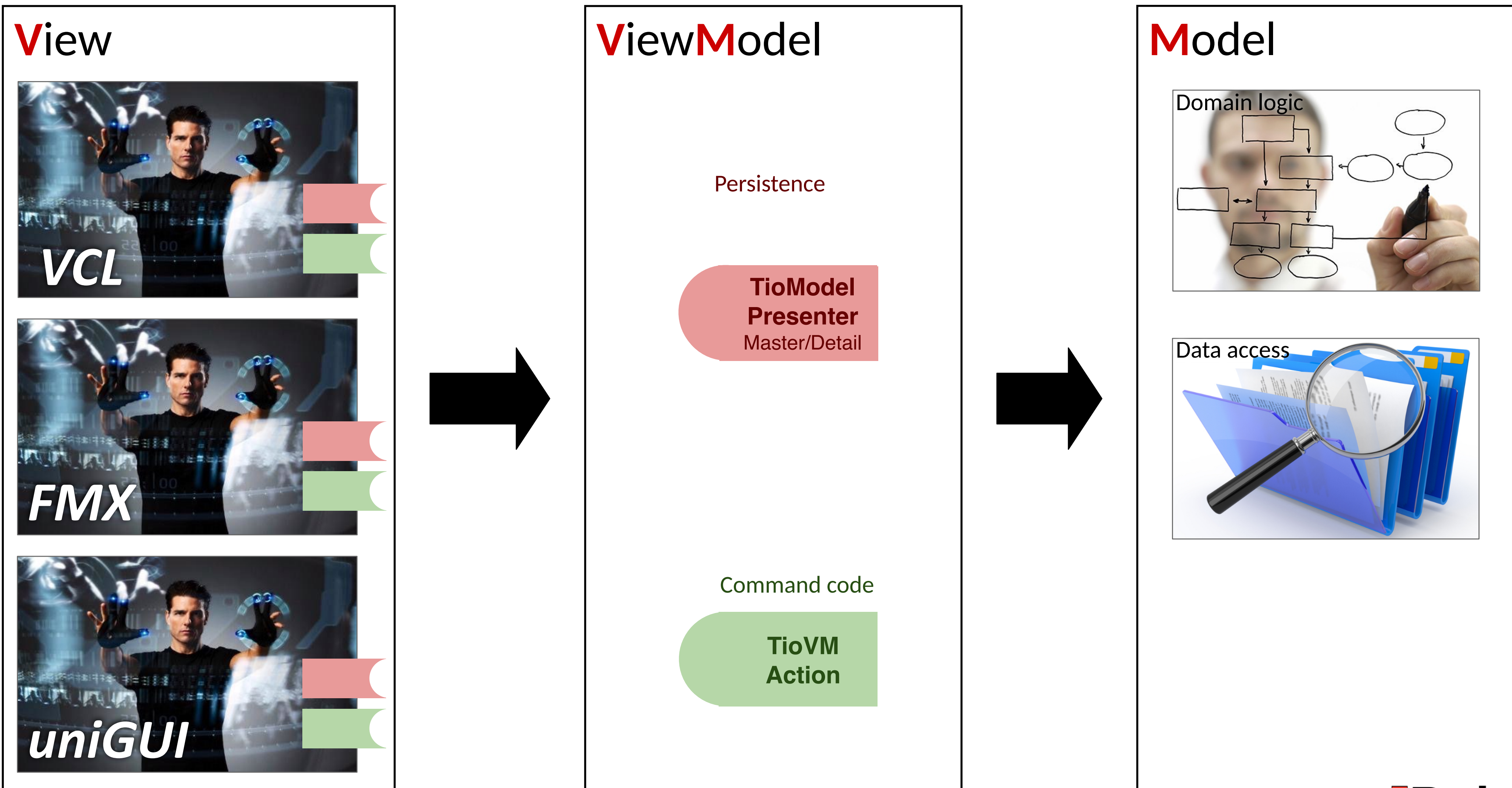


# Model + View + ViewModel





# Model + View + ViewModel





# Let'sCode





# Domande?







## MAURIZIO DEL MAGNO DEVELOPER



**Lev@nte software**

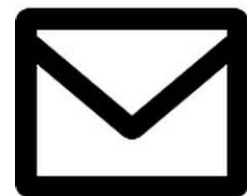


**I-ORM**

[github.com/mauriziodm/iORM](https://github.com/mauriziodm/iORM)

**DJSON**

[github.com/mauriziodm/DJSON](https://github.com/mauriziodm/DJSON)



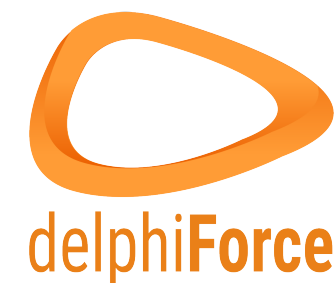
[mauriziodm@levantesw.it](mailto:mauriziodm@levantesw.it)

[mauriziodelmagno@gmail.com](mailto:mauriziodelmagno@gmail.com)



[facebook.com/maurizio.delmagno](https://facebook.com/maurizio.delmagno)

IORM + DJSON (GROUP)



Membro fondatore

**eInvoice4D**

<https://github.com/delphiforce/eInvoice4D>



# Grazie



SPEAKER: MAURIZIO DEL MAGNO