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MVVM

Introduction to users, internals and improvements

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What is this?

MVVM

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- Model-View-ViewModel
- Separate the UI from the business logic and the backend (data model)
- The ViewModel transform the data to mean something for the UI
- View can be a testing component

- Invented by Microsoft architects Ken Cooper and Ted Peters for simplifying event driven programming

MVVM

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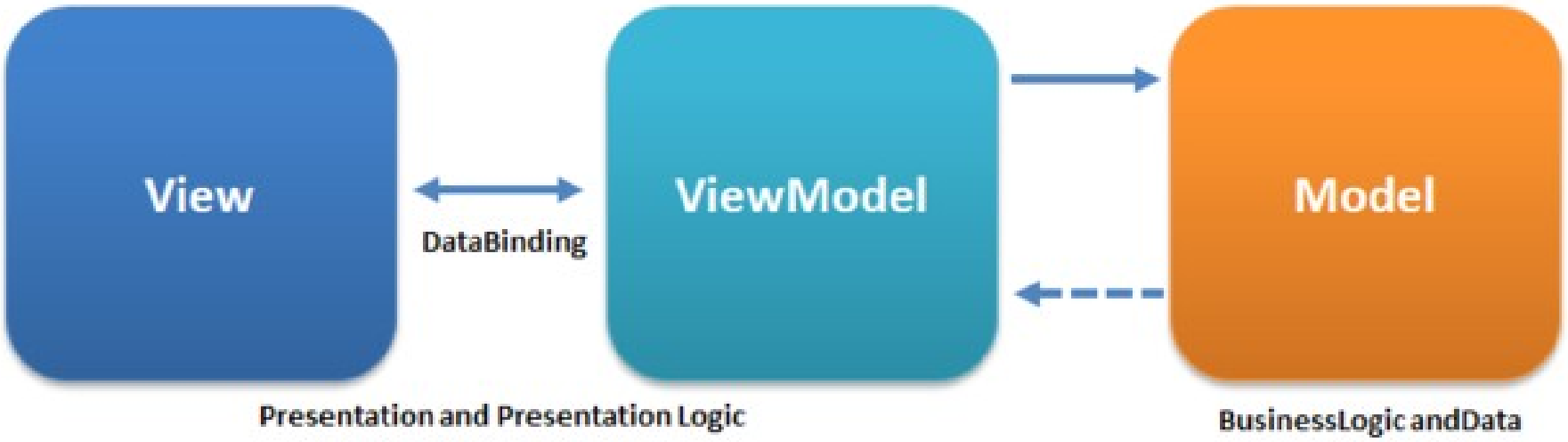

MVVM in EFL

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- Model are entity with Model children and properties. They can represent anything.
- Friendly to declarative UI
- Friendly to bindings
- Fully asynchronous, but always provide a valid state for the UI to display
- Use introspection to simplify writing ViewModel, Model or View

MVVM interfaces

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- Efl.Model
  - Efl.LoopModel
  - Efl.GenericModel
  - Efl.Io.Model
- Efl.CompositeModel
  - Efl.BooleanModel
  - Efl.FilterModel
  - Efl.Ui.ViewModel
- Specific model:
  - Efl.Ui.SelectModel
  - Efl.Ui.HomogeneousModel

MVVM interfaces

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- Efl.ModelProvider
- Efl.Ui.View
  - Efl.Ui.Widget
  - Efl.Ui.CollectionView
  - Efl.Ui.ListView
  - Efl.Ui.GridView
- Efl.Ui.PositionManager
- Efl.Ui.Factory

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How to use it?

Form

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- Define an Efl.ModelProvider for the form
- Create your widgets in a way that they can find the provider with Efl.ProviderFind that you just defined
- Call Efl.Ui.Property_Bind to link a property from the View to a ViewModel property
  - Introspection work on both side!
  - You also have access to bind property on efl_part
  - And you can also bind property to an edje/theme property.
- Set your model on the Efl.ModelProvider with Efl.Ui.View.set

Collection

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- Create the Efl.Ui.Factory you will need for your item
  - Efl.Ui.Factory can dispatch request to multiple factory
- Bind properties and factory on your Factory
- Create your Efl.Ui.PositionManager
- Create you Efl.Ui.CollectionView
- Set your model on Efl.Ui.CollectionView

Integrating the two

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- Show examples

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How does it work?

Model

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- Efl.Model.properties.get → List of properties supported by an Efl.Model
- Efl.Model.property.get → Always return an Eina_Value
- Efl.Model.property.set → Return a Future when the data has been applied on the Efl.Model
- Efl.Model.children_slice_get → Return a Future with the child Efl.Model (Never duplicate Efl.Model)
- Efl.Model.child_{add/del} → Affect Efl.Model data (efl_del/efl_unref do not)

Model helper

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- Not ready property : Eina_Error(EAGAIN)
- Efl.Model.property_ready_get
- Efl.Loop_Model
  - Efl.Loop_Model.volatile_make
- Efl.Composite_Model
  - Provide indexes
  - Base for ViewModel

ViewModel

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- property_string_{add/del}
  - Automatically link the new property to the property it uses
  - Generate a string using other properties
  - Generate a different string if any of the properties are not ready and another different one in case of errors
- property_{bind/unbind} → Automatically update Efl.Model.properties,changed event
- property_logic_{add/del}
  - Mostly useful in C when you do not want to create a new .eo file
  - Not sure if we want to keep it

Efl.Ui.Widget

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- Monitor model change and appropriately generate event when model change
- Provide reflection support for all properties that Efl.Ui.Widget and its inheriting children have
- Handle Efl_Part support too

Efl.Ui.Layout

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- Enable linking theme
  - Text property (Using Efl.Ui.Property_Bind)
  - Signals (Using Efl.Ui.Property_Bind)
  - Swallow (Using Efl.Ui.Factory_Bind)

Efl.Ui.CollectionView

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- Use Efl.Ui.PositionManager
- Provide Focus logics
- Automatically instantiate:
  - Efl.Ui.SelectModel
  - Efl.Ui.SizeModel

Efl.Ui.Item

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- Provide an ability to prevent recalculate
- Provide press/unpress event.
- Provide Efl.Ui.Selectable interface.

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Improvements?

The obvious!

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- Decide the index limit
- More tests!
  - Introduce a Efl.Ui.TestView
- Update examples to use the new infrastructure
- Get better documentation
- Write tutorials
- Improve focus
- Add more Efl.Model (DB, RPC, ...)

The needed

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- Support other policy for sizing
- Random item insertion
  - Efl.SortModel (Interfaces + Class)
- Add Group support to Efl.Ui.CollectionView
- Figure out how to provide Efl.Ui.TreeView
- Opportunistic event forwarding

The fun

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- Improve speed by being more efficient with Efl.Ui.PositionManager interaction
- Introduce automatic yield when processing batches of request to avoid flooding the main loop
- Improve Efl.Ui.PositionManager to not panic drop cache all the time
- Introduce Viewport support back in CollectionView
- Use map/proxy to improve speed of scrolling

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Any other ideas?

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Thank You!