GEMINI SOLUTIONS

MVVM

Android architecture insight

Mecea Mihai
Gemini Solutions

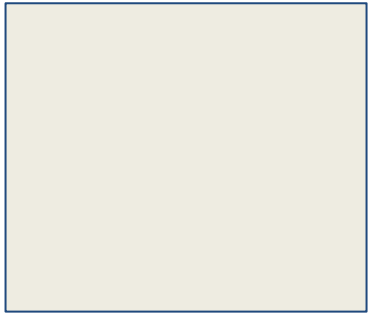
Activity

Everything goes in-here

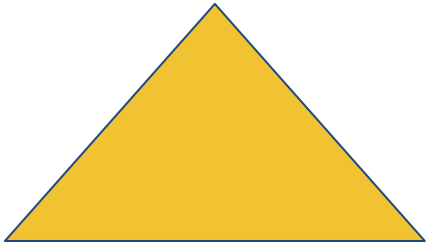
```
4829                    not
4830            }
4831        }
4832
4833    }
4834
```

Duplicates

AnActivity

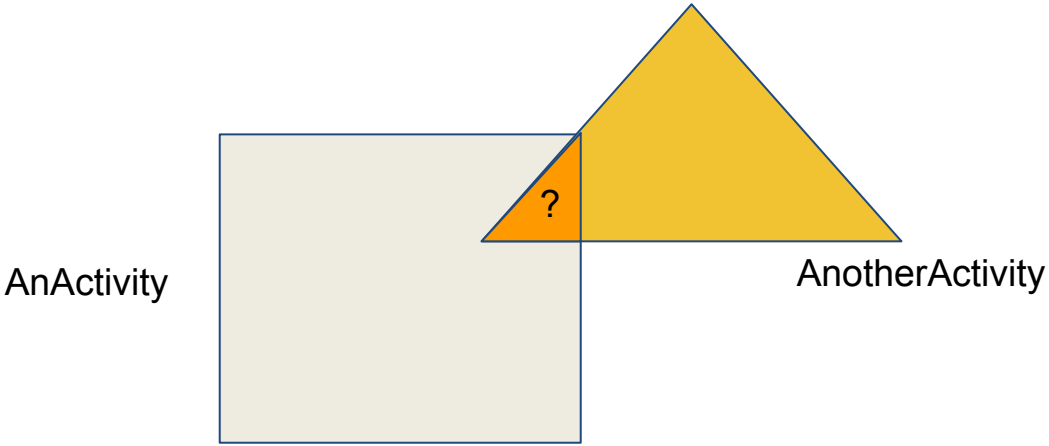


AnotherActivity



Duplicates

What's a code duplicate?



“Code duplicates are like, the worst!”

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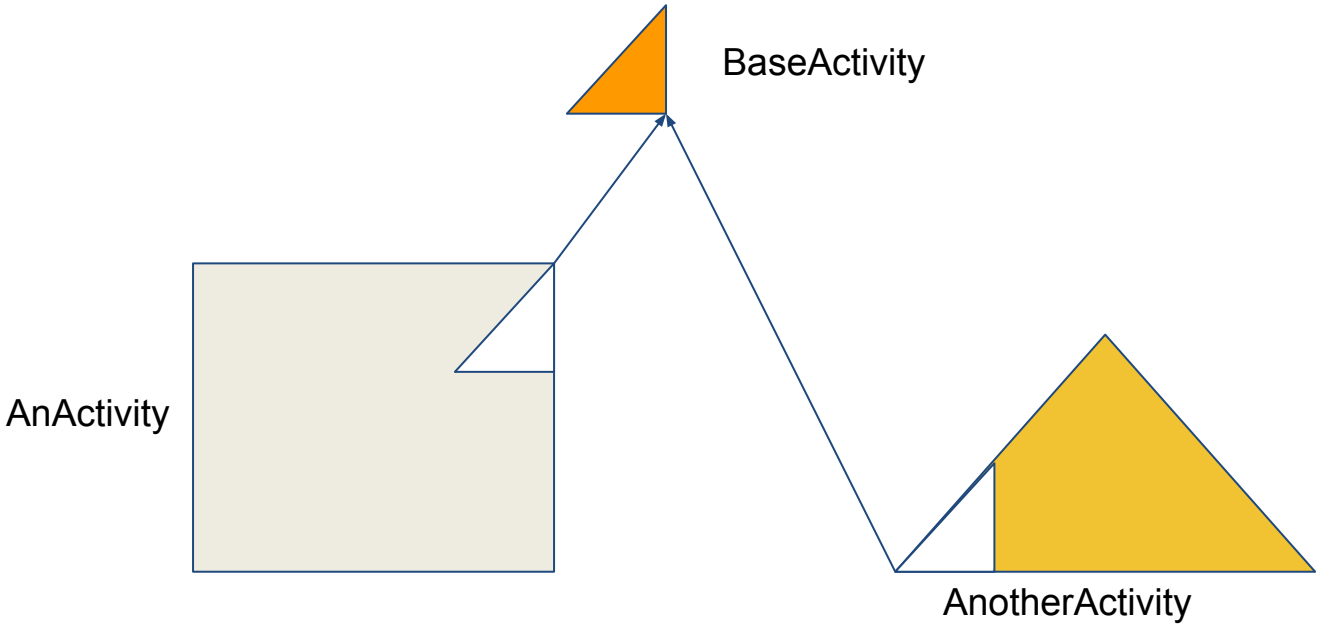
Inheritance FTW

Duplicates



Duplicates

BaseActivity

But what’s actually in it?

Duplicates

BaseActivity

- Is this code boilerplate?
- Is it a feature?
- Is it the actual feature or it just looks the same?

The two look-alike adapters case study

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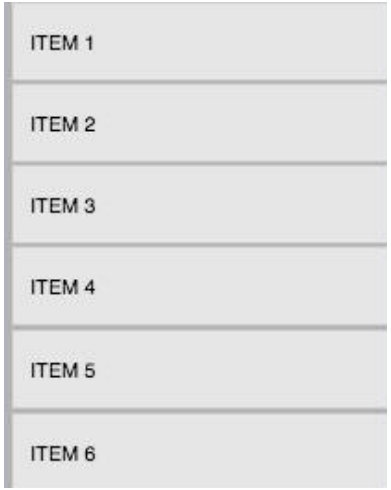
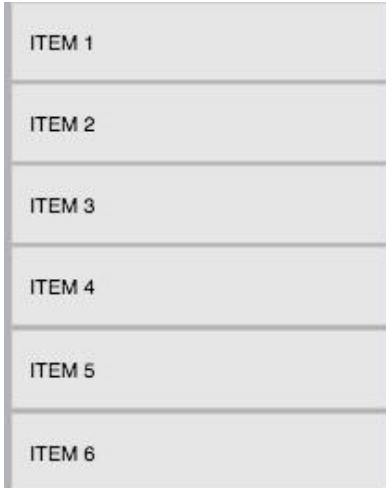
Feature A



Feature B




```
FeatureAdapter {
        + text
}
```

The two look-alike adapters case study

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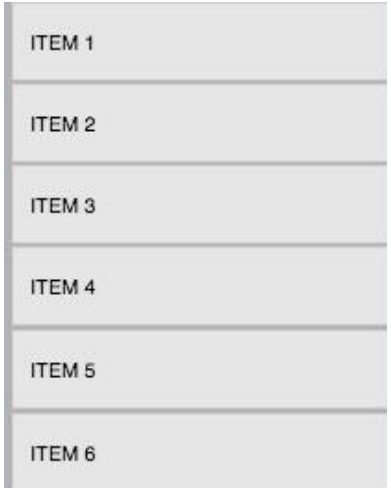
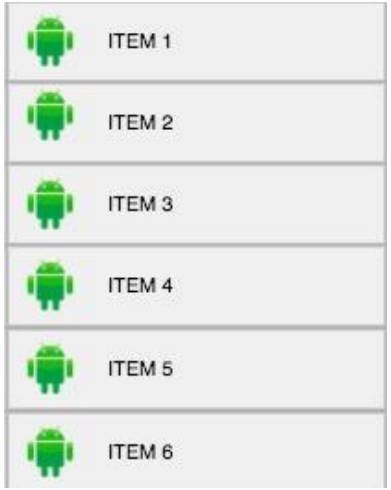
Feature A



Feature B



The two look-alike adapters

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The power of "copy/paste"

```
AFeatureAdapter {
        + text
}


BFeatureAdapter {
        + text
        + image
}
```

The power of "if"

```
THEAdapter {
        + text
        if (this is the one with a picture) {
                + image
        }
}
```

The two look-alike adapters

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The power of "copy/paste"

```
AFeatureAdapter {
        + text
}

BFeatureAdapter {
        + text
        + image
}
```

The power of "if"

```
THEAdapter {
        + text
        if (this is the one with a picture) {
                + image
        }
}
```

5 years later?

“Prefer composition over inheritance”

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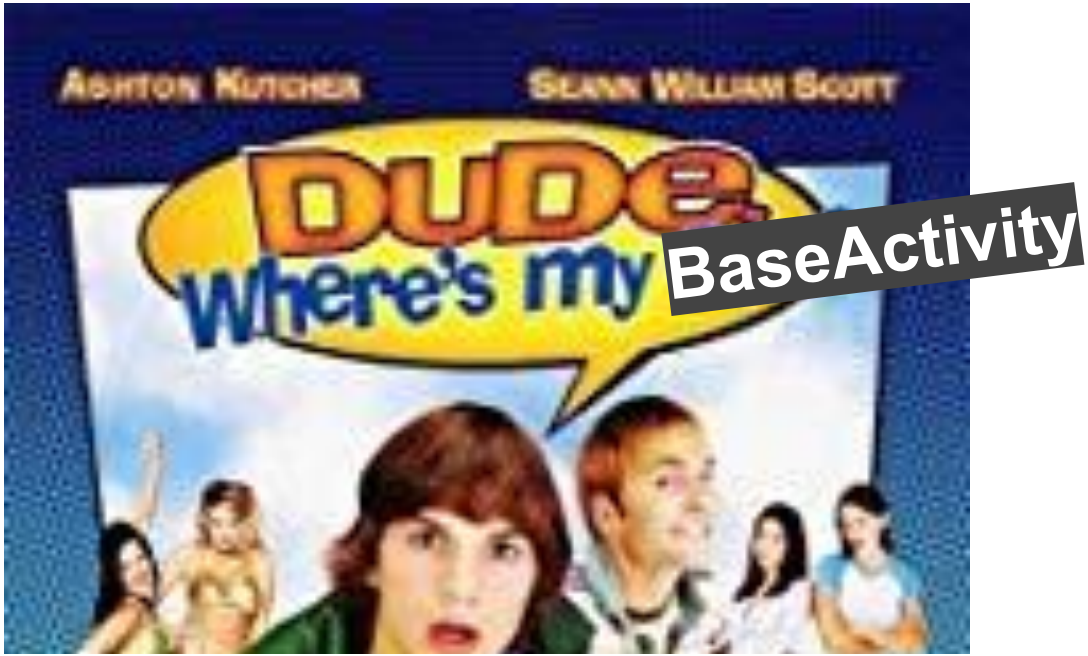
...


Ashton Kutcher
Seann William Scott
Dude,
Where's my
BaseActivity

MVP

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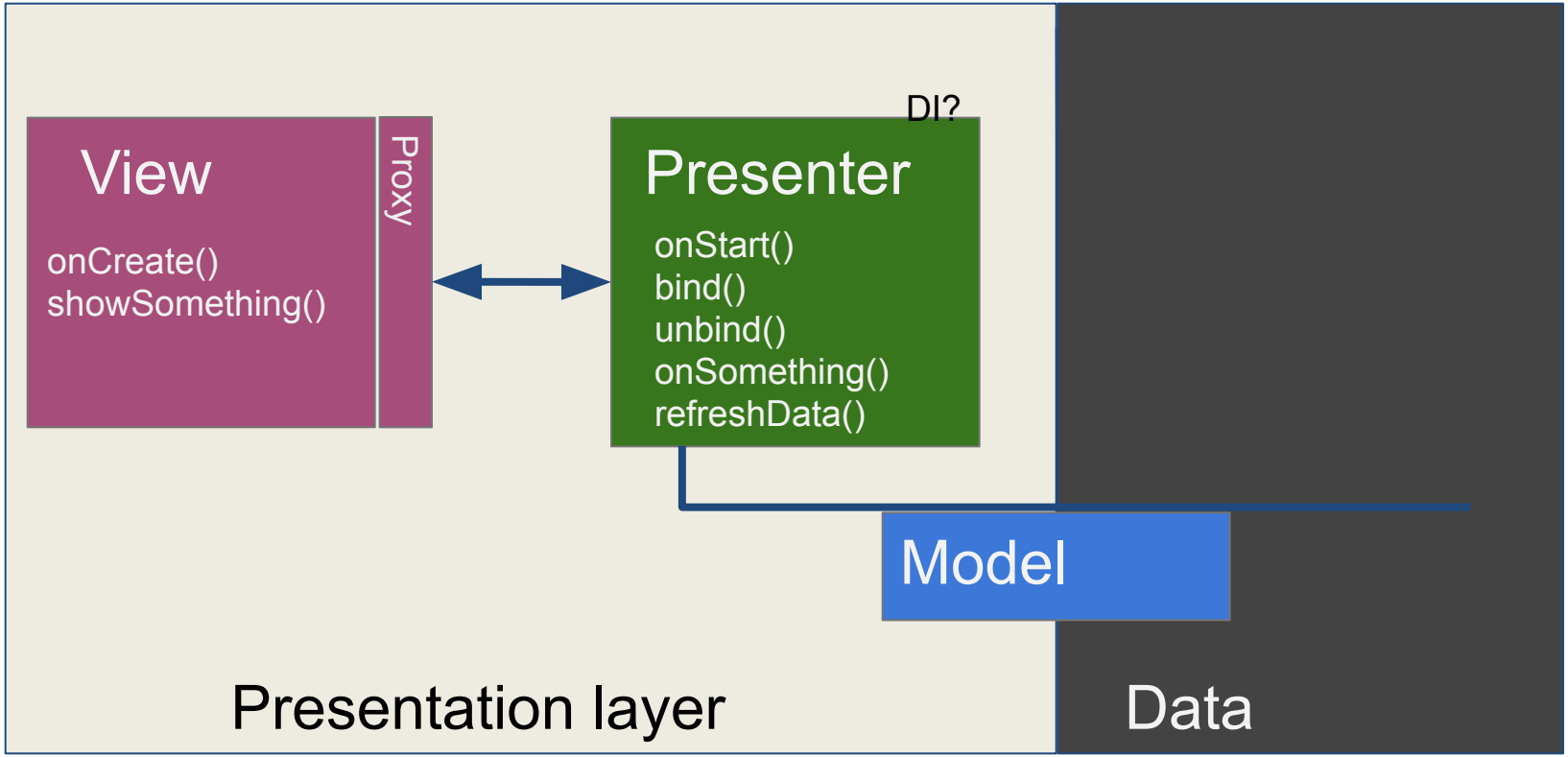
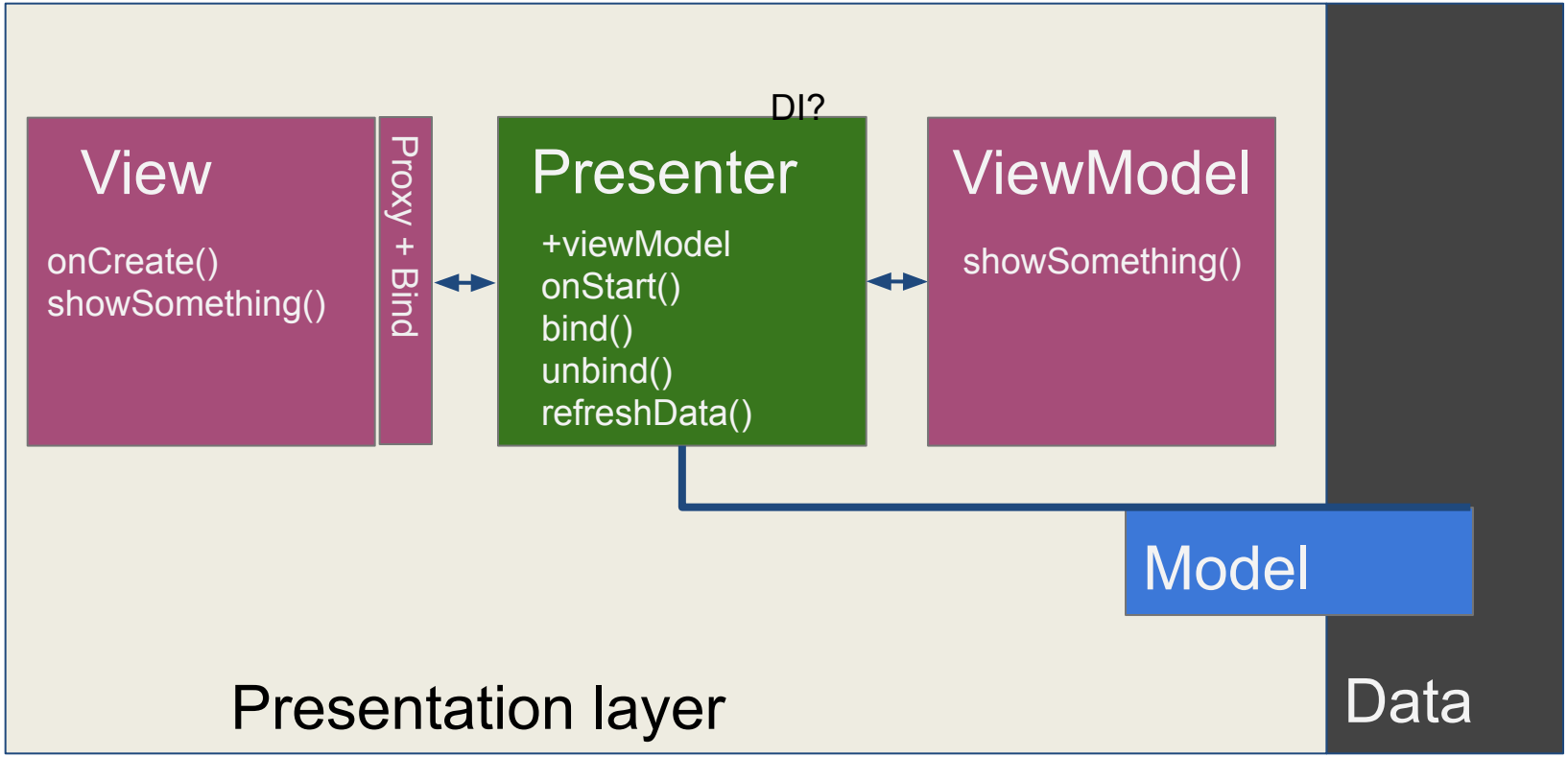
Taking a hammer to that “Activity”

MVP


View
onCreate()
showSomething()
Proxy
DI?
Presenter
onStart()
bind()
unbind()
onSomething()
refreshData()
Model
Presentation layer
Data

MVVMP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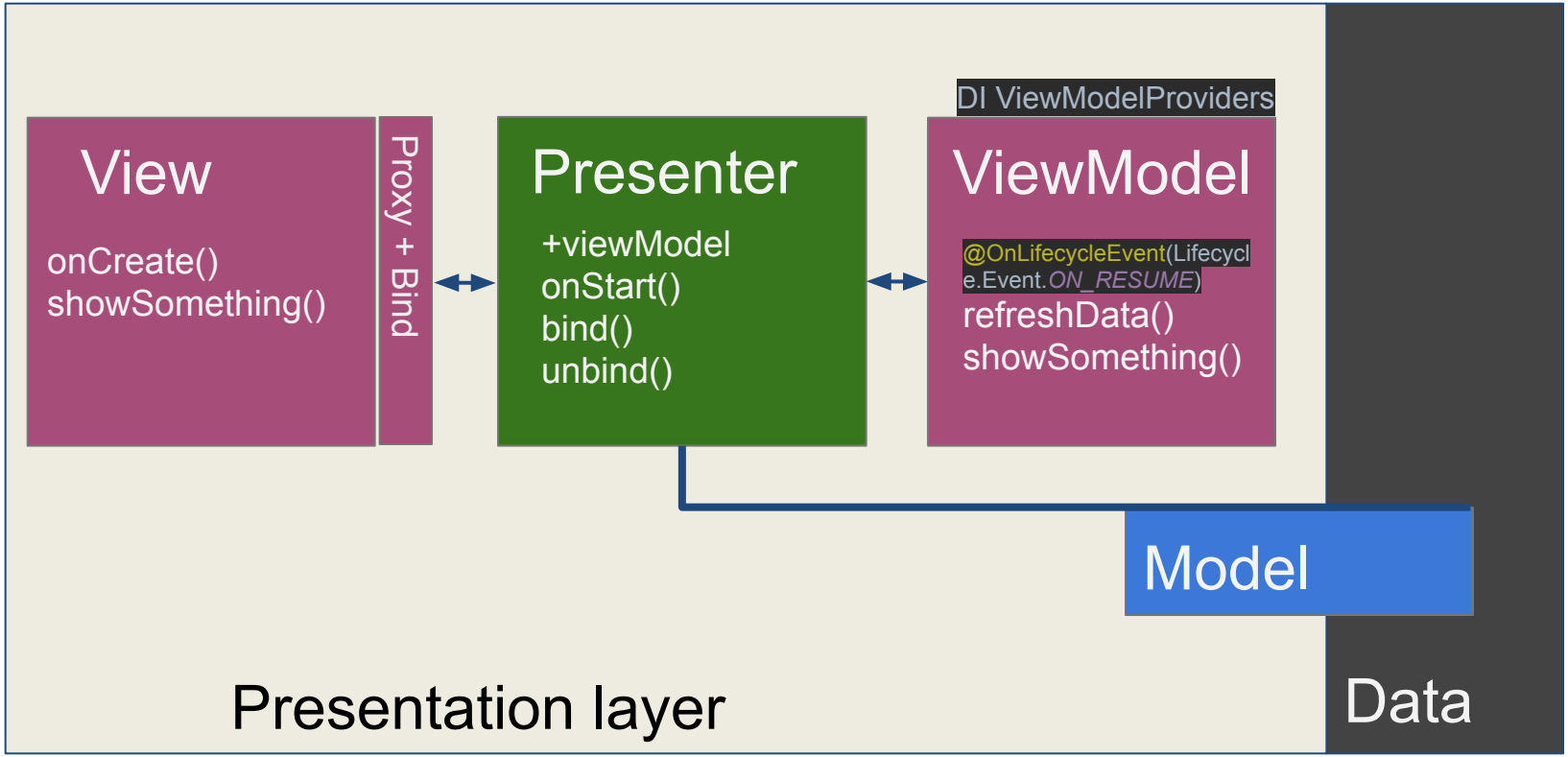
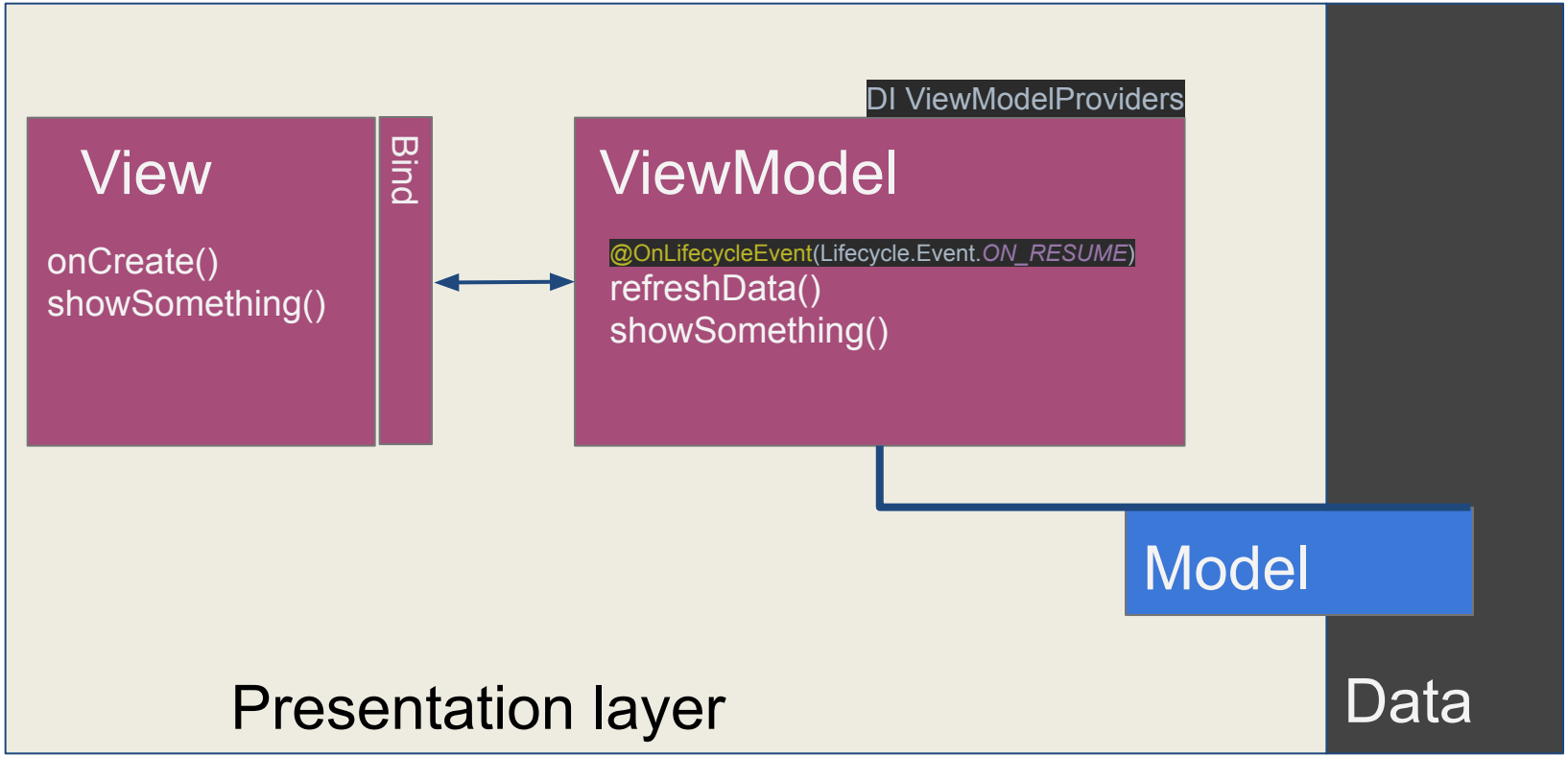
MVVMP


View
onCreate()
showSomething()
Proxy + Bind
Presenter
+viewModel
onStart()
bind()
unbind()
DI ViewModelProviders
ViewModel
@OnLifecycleEvent(Lifecycle.Event.ON_RESUME)
refreshData()
showSomething()
Model
Data
Presentation layer

MVVM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onCreate()
showSomething()
Bind
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ViewModel
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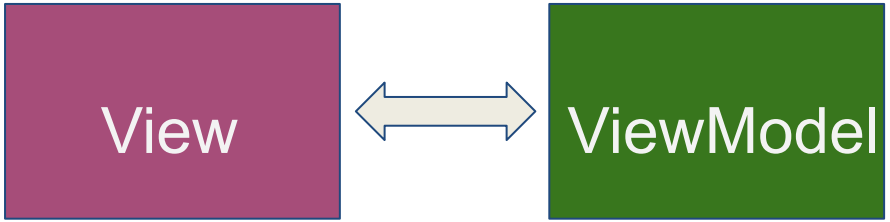
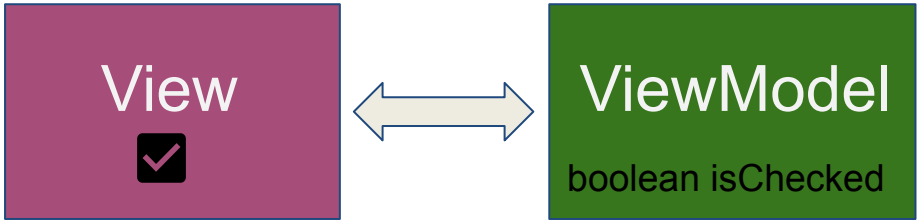
Presentation layer
Data

What is MVVM?

Allows you to **bind UI components** in your layout to **data**.



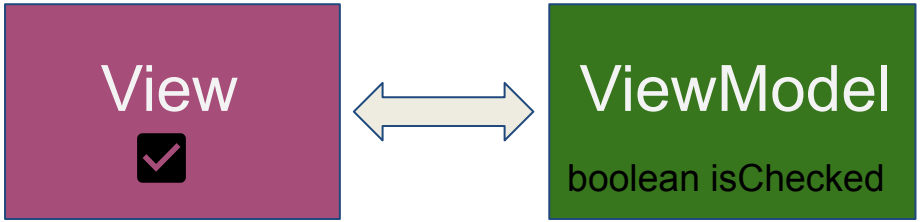
V <-> VM



View and ViewModel mirror each other:

- If a Checkbox view is checked by the user
  - then the ViewModel will have boolean isChecked == true
- If in coding we set the isChecked = true
  - Then the Checkbox view is shown checked

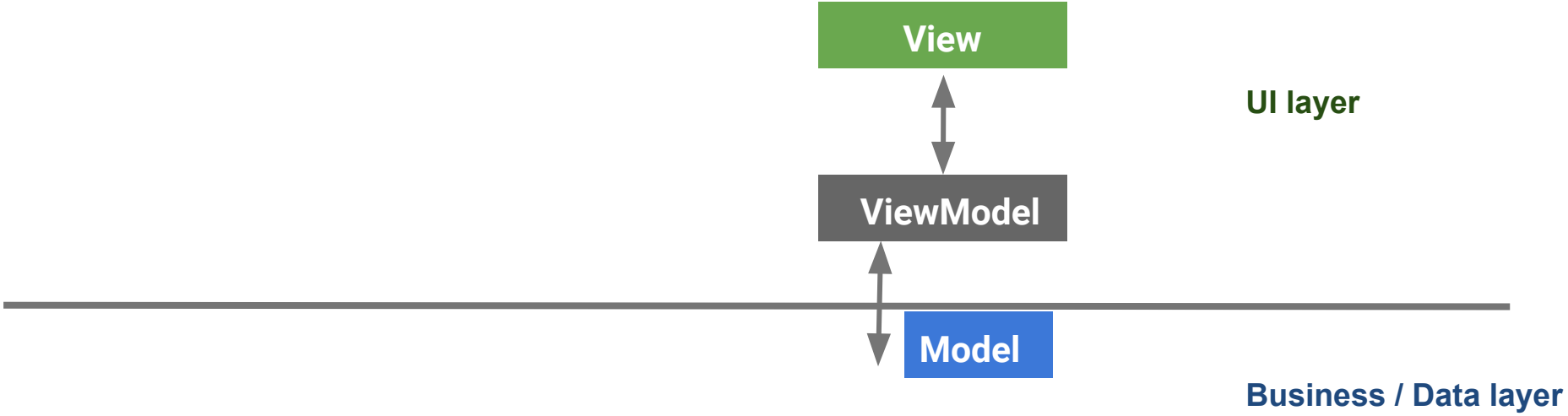
V <-> VM



V <-> VM two way binding

V -> VM one way binding
V <- VM one way binding

MVVM - overview



MVVM

How bad could it go?

MVVM

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```
public class SomeViewModel extends ViewModel {
...
    void onButtonPressed(int resourceButtonPressed) {
        User user = User.getCurrentUser();
        String token = Preferences.getInstance(getContext()).getString(Preferences.USER_TOKEN, "");
        RetrofitApiService.doRestCallForUser(getContext(), token, new Callback<Map<String,Object>>() {
            @Override
            public void onResponse(Call<Map<String, Object>> call, Response<Map<String, Object>> response) {
                if (response.code() == 200) {
                    Util.logDebugMessage(RetrofitApiService.class.getSimpleName(), response.body().toString());
                } else {
                    prefs.writeSomething...
            }
    }
...
}
```

MVVM

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Spaghetti integration

What’s wrong with spaghetti?

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Documentability

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How you gonna document that?

- and then wrote a callback for request
- and then i saw it had a method called onResponse
- and then i checked for 200
- and then…

If it’s not documentable, it’s probably not the best design

Testability

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- Don’t have to actually test it
- Mocking comes natural when units are small and well thought

if it’s not testable, it’s probably not the best design

Complexity

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if it’s not stupid simple, it’s probably not the best design

MVVM

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```
public class SomeViewModel extends ViewModel {
...
    void onButtonPressed(int resourceButtonPressed) {
        User user = User.getCurrentUser();
        String token = Preferences.getInstance(getContext()).getString(Preferences.USER_TOKEN, "");
        RetrofitApiService.doRestCallForUser(getContext(), token, new Callback<Map<String,Object>>() {
            @Override
            public void onResponse(Call<Map<String, Object>> call, Response<Map<String, Object>> response) {
                if (response.code() == 200) {
                    Util.logDebugMessage(RetrofitApiService.class.getSimpleName(), response.body().toString());
                } else {
                    prefs.writeSomething...
            }
    }
...
}
```

Complexity

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Richard Branson

@richardbranson

Follow

Complexity is your enemy. Any fool can make something complicated. It is hard to make something simple virg.in/cye

What’s the right architecture?

Mobile wise or even Android wise

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What’s the minimal architecture?

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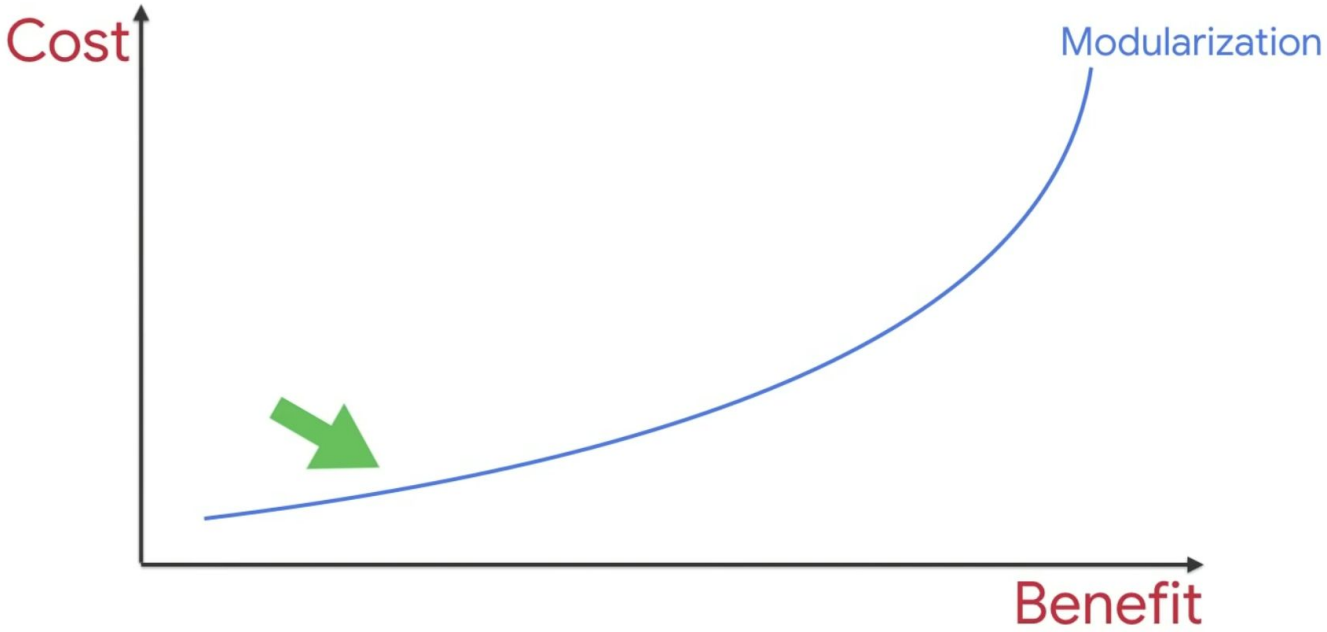
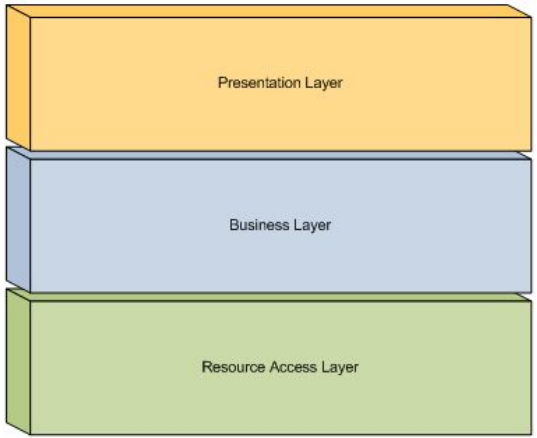
Modularization



Google I/O ‘19: Modular Android App


Presentation Layer
Business Layer
Resource Access Layer

Minimal architecture

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Android Application Module

Dependency

Android Library Module

Minimal architecture

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Android Application Module

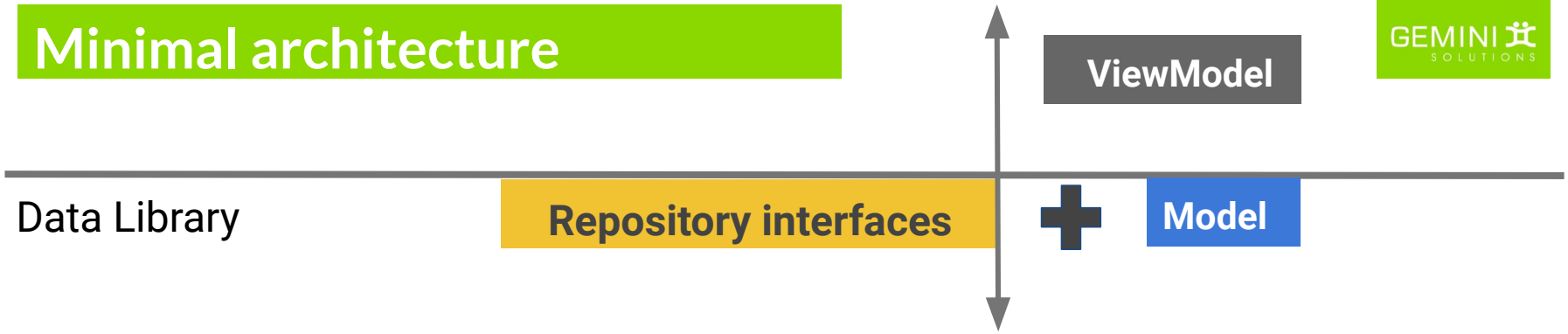
MVVM pattern
Presentation layer

Dependency

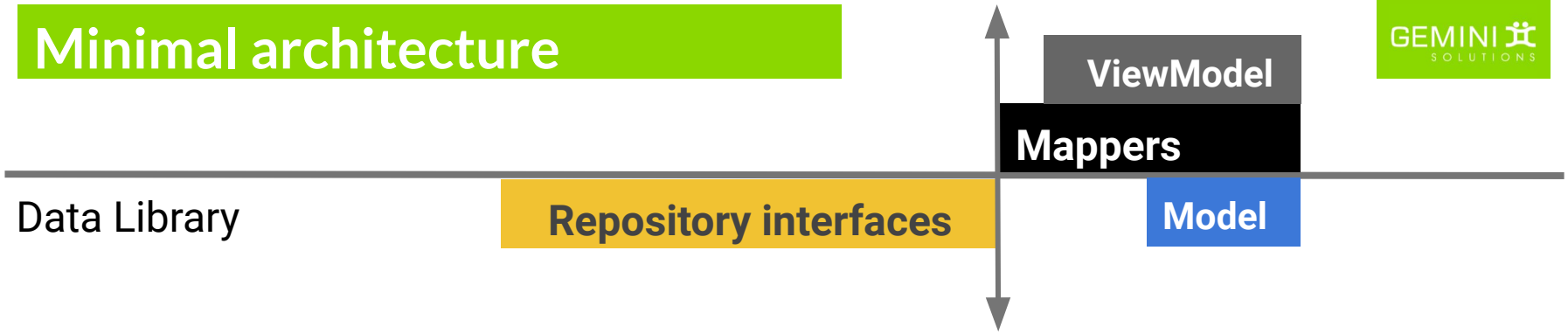
Android Library Module

Repository pattern
Data layer

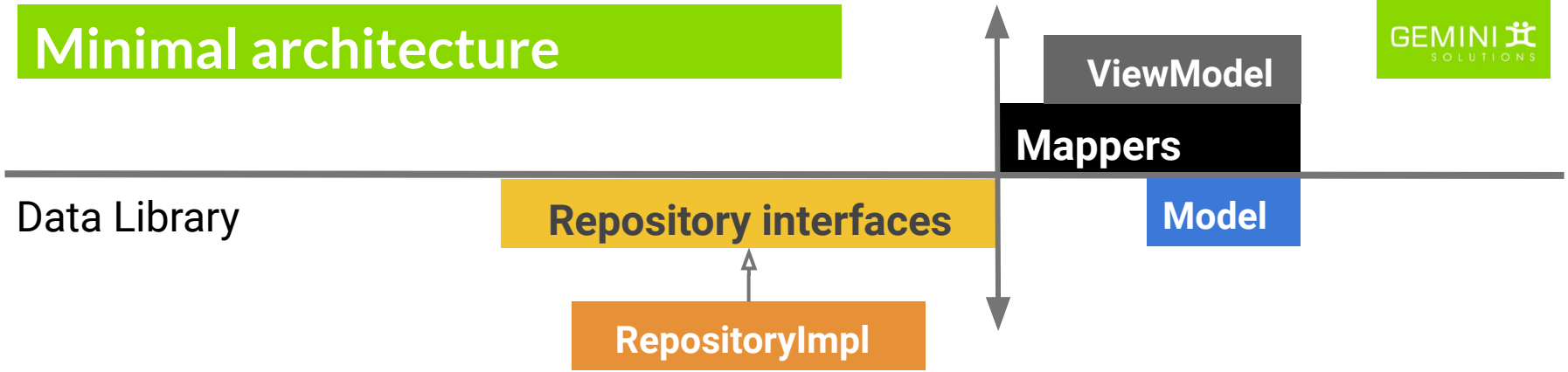
Minimal architecture



Minimal architecture



Minimal architecture



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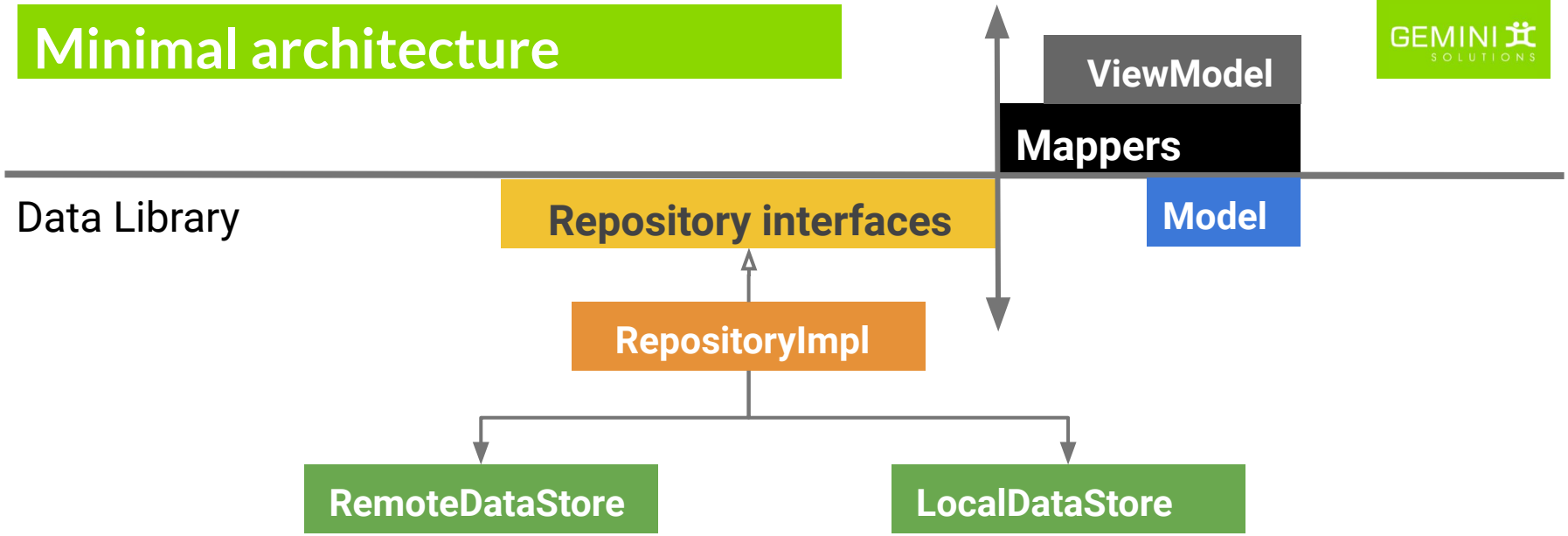
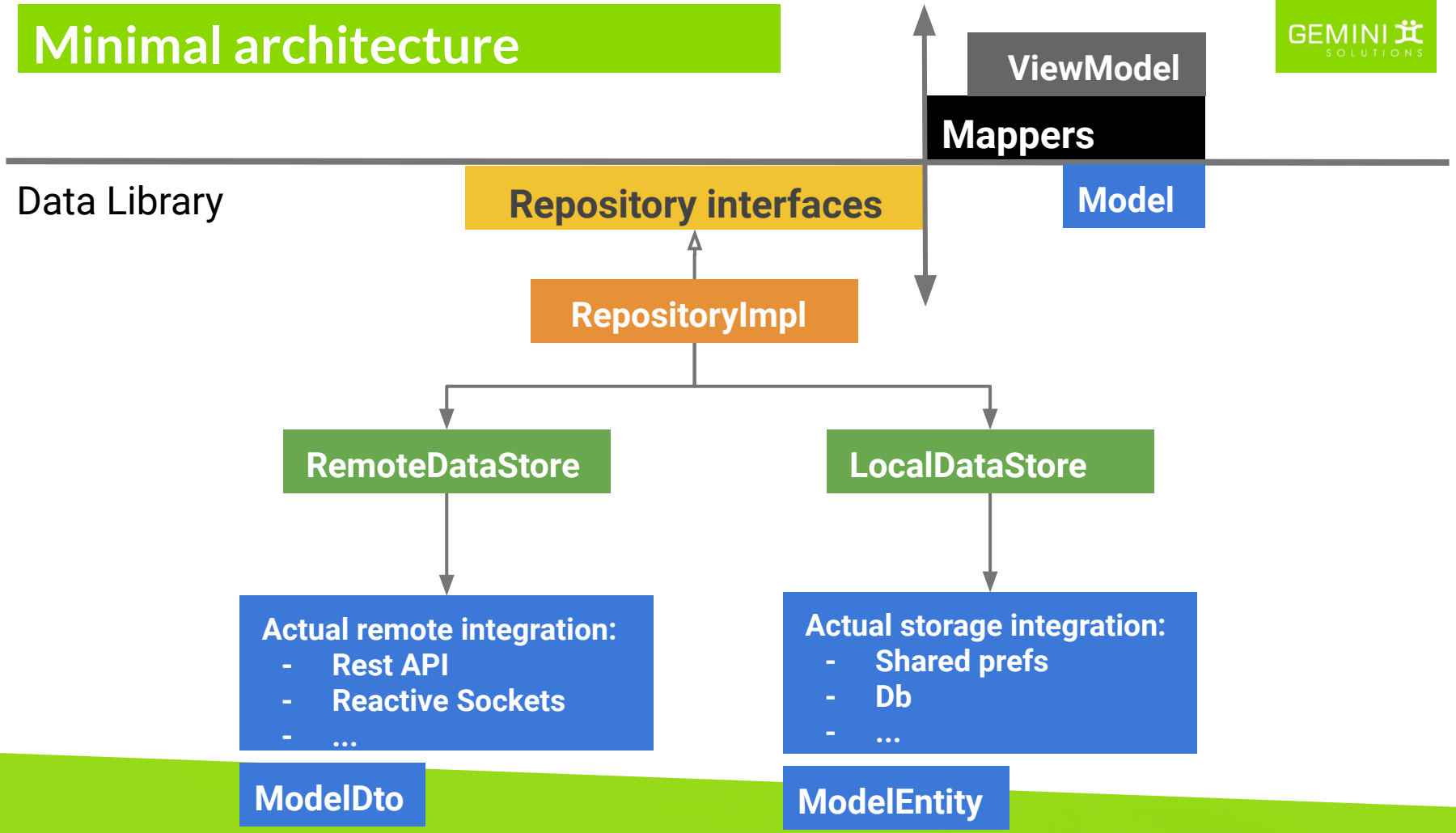


Minimal architecture



Thanks

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