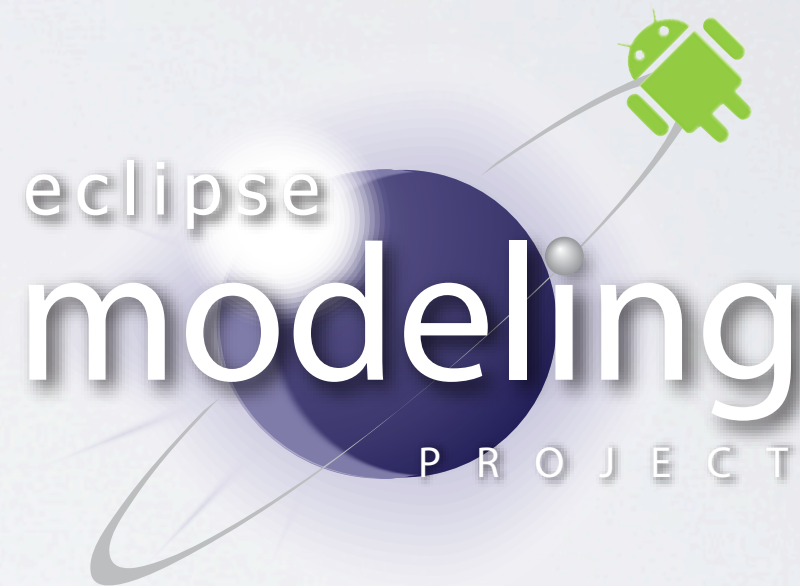


# INSTALLATION



- Get a grip on one of the USB sticks.
- Install the Eclipse SDK and the Android SDK matching your platform from the memory stick.
- Start Eclipse and set the location of the Android SDK in *Preferences > Android*
- Import the *tutorial.zip* into your workspace using *File > Import > Existing Projects into Workspace > Archive File*

# CREATING A LANGUAGE FOR ANDROID APPS WITH ECLIPSE MODELING



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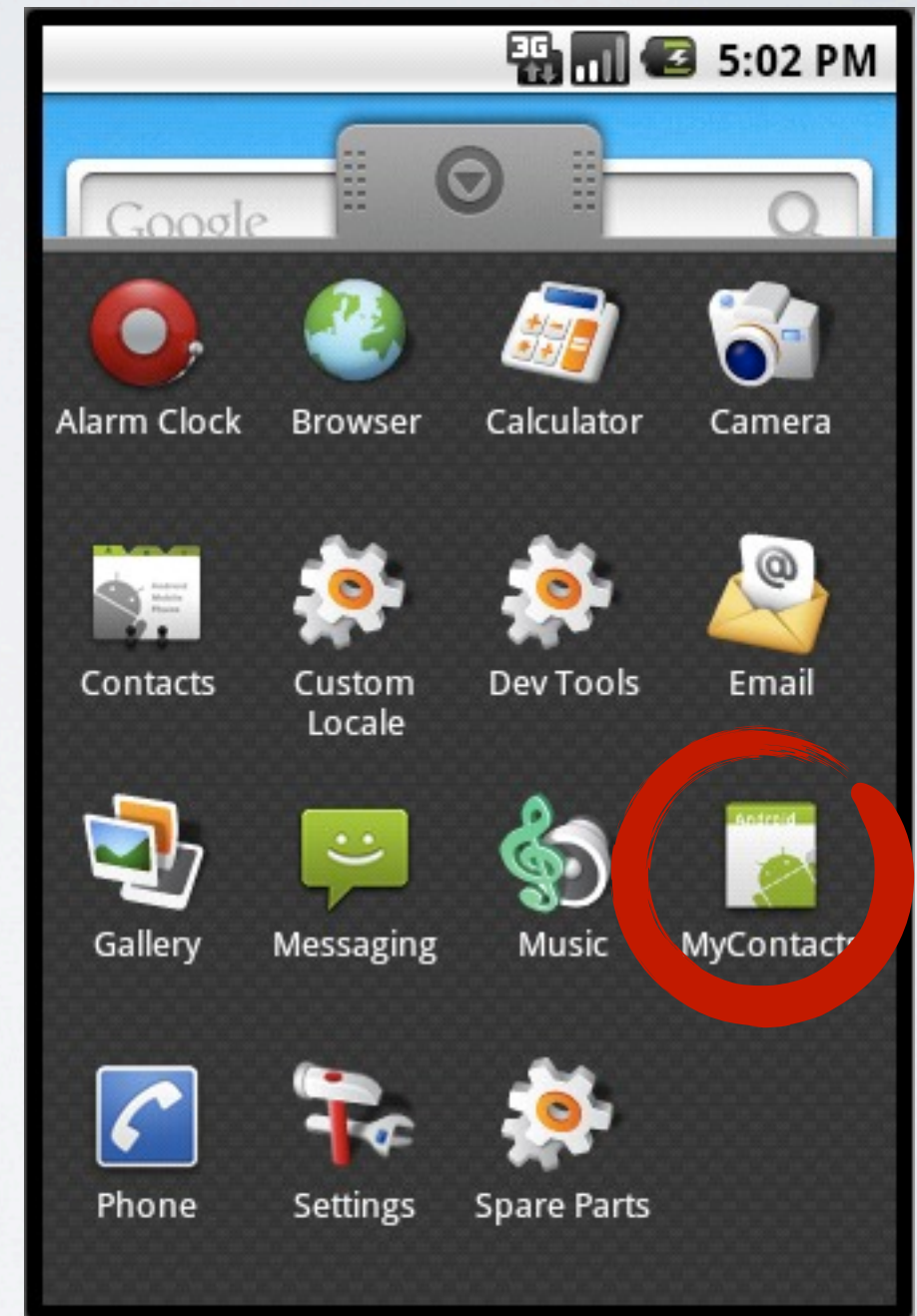


# APP CONCEPTS



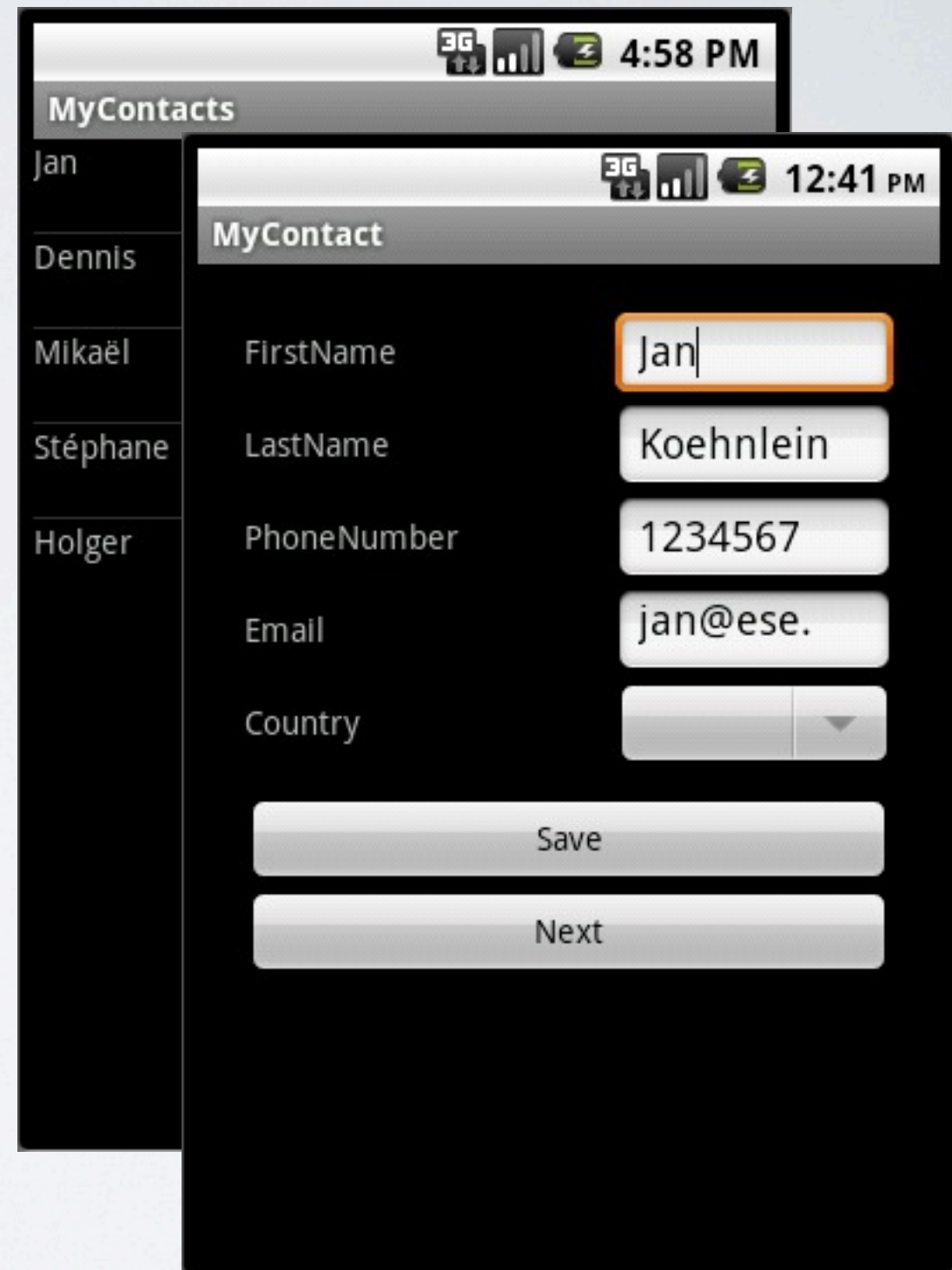
# APPLICATION

- Has a name
- Declared in AndroidManifest.xml
- Defines Activities
  - One default Activity



# ACTIVITY

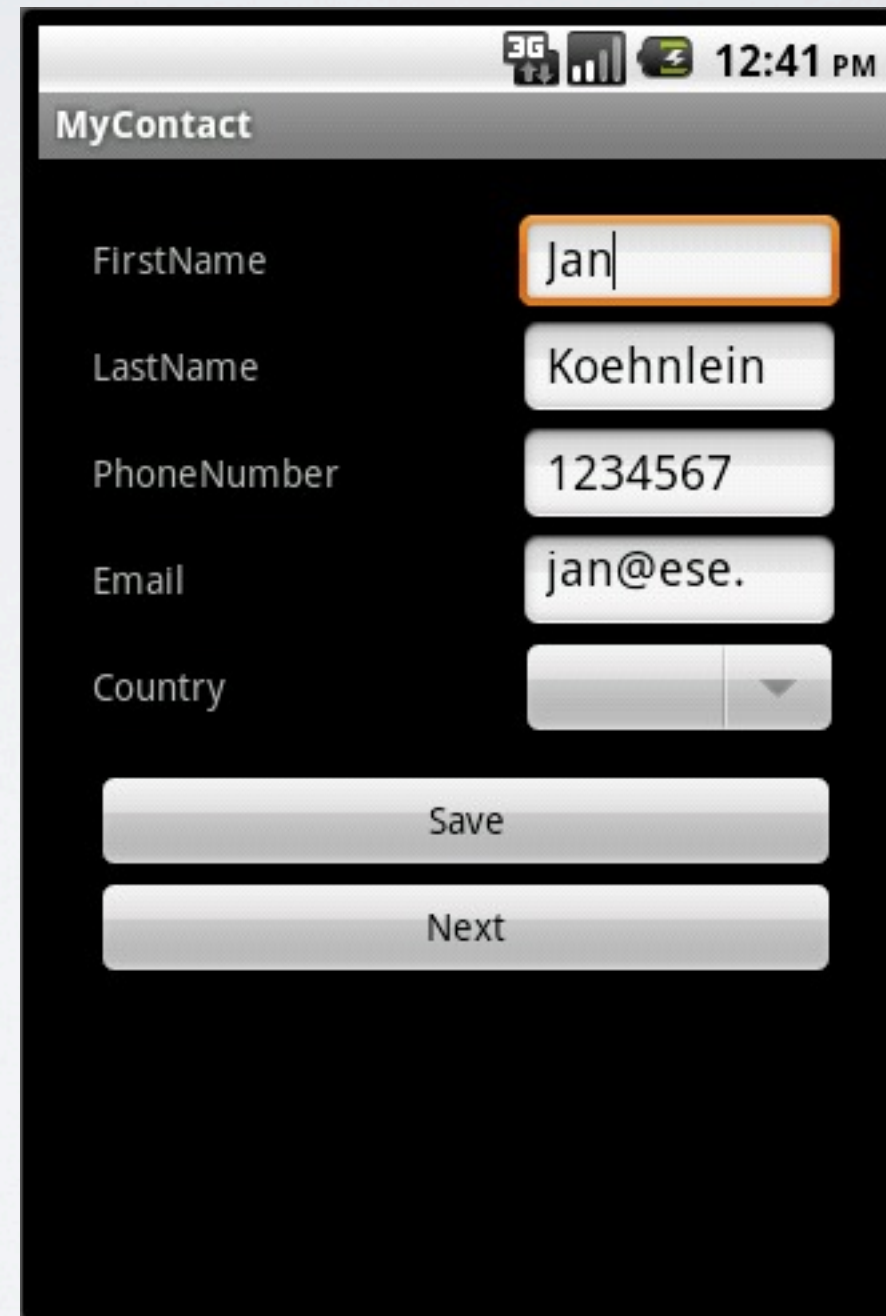
- One page of an App
- Java class extends `android.app.Activity`
- Entry in `AndroidManifest.xml`
- Layout in separate XML file





# WIDGETS

- Member in activity class
- Layout in XML
- Refer to DB entry



The screenshot shows an Android application interface titled "MyContact". At the top, there is a status bar with "3G", signal strength, battery level, and the time "12:41 PM". Below the title bar, the form contains the following fields:

Field Label	Widget Type	Value
FirstName	Text	Jan
LastName	Text	Koehnlein
PhoneNumber	Text	1234567
Email	Text	jan@ese.
Country	Spinner	[Dropdown Arrow]
Save		Button
Next		Button

Text

Spinner

Button

Link

# PROBLEM

- Concepts span across XML as well as Java code
- No common abstraction mechanism

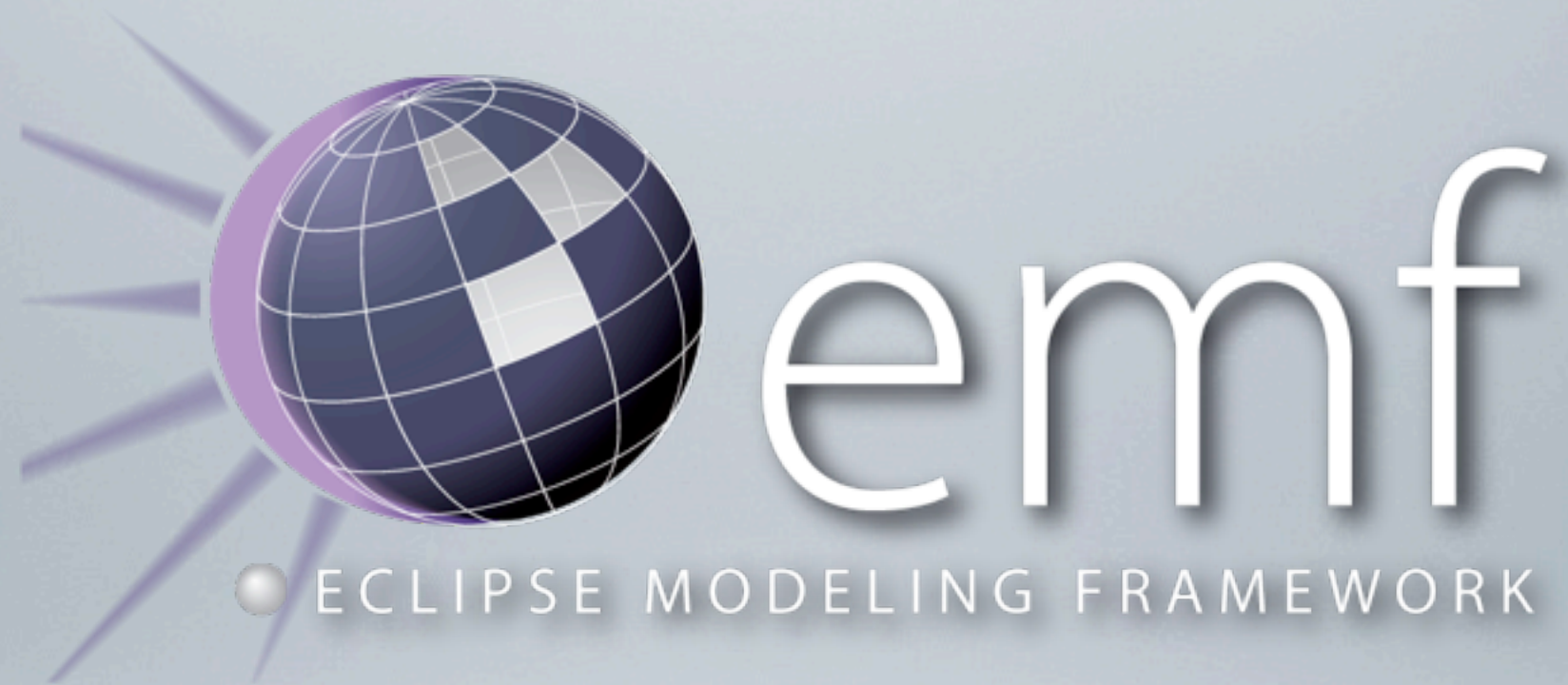




# SOLUTION

- Define concepts in an Ecore model
- Use Xtext to create an editor for model instances
- Use Acceleo to generate code from model instances

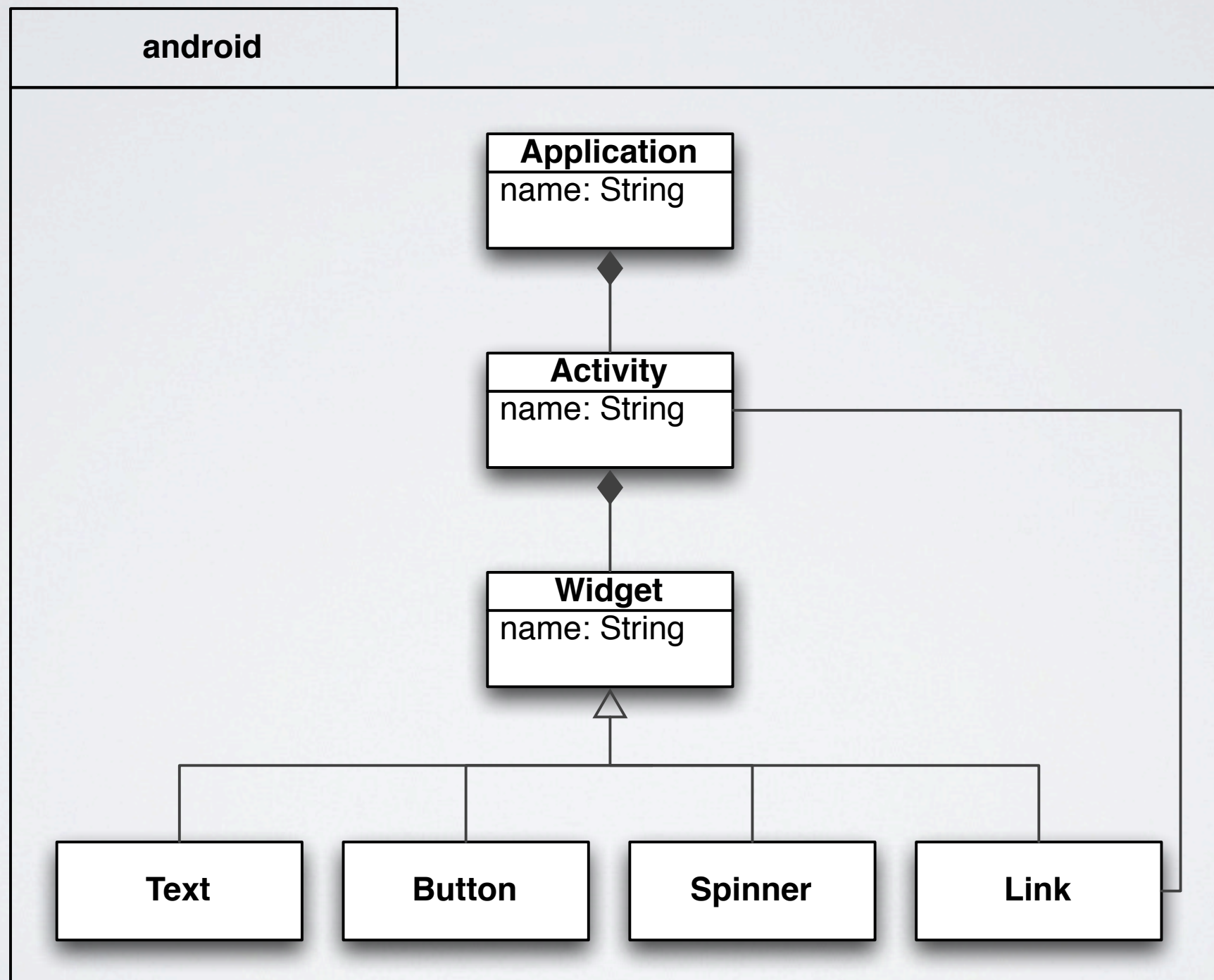




# THE MODEL

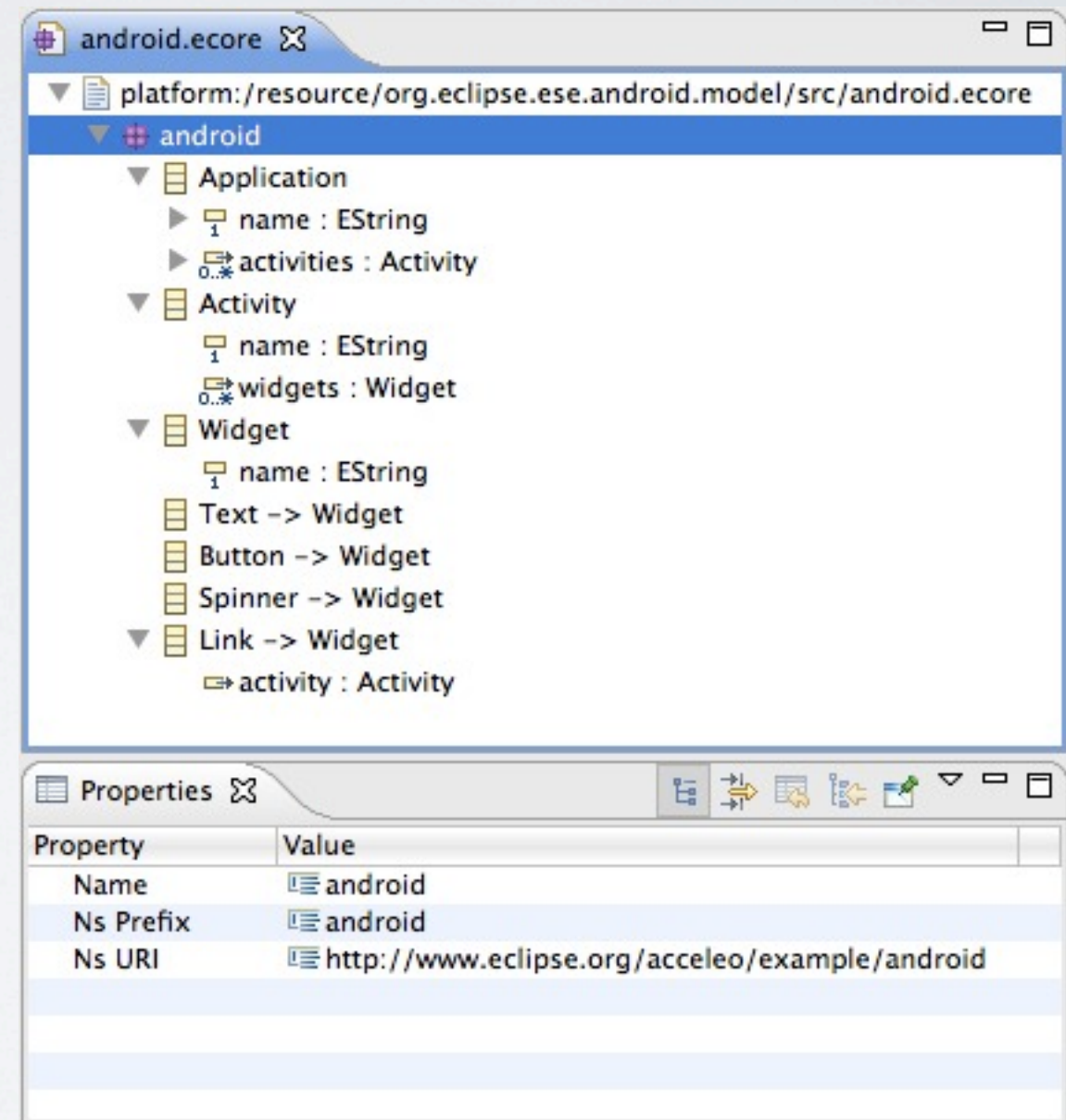


# THE MODEL



# ECORE CONCEPTS

- EPackage
- EClass
- EAttribute
- EReference
- (non-)containment
- upper bound





# Xtext

## TEXTUAL MODELING

# REFERENCE MODEL

**Application** MyContacts

```
Activity MyContact {  
    Text firstName  
    Text lastName  
    Link phoneNumbers -> PhoneNumber  
    Spinner country  
    Button save  
}
```

```
Activity PhoneNumber {  
    Text prefix  
    Text number  
    Button save  
}
```



# LABELS

```
public class AndroidLabelProvider
    extends DefaultEObjectLabelProvider {

    public Object image(Application app) {
        return "Application.gif";
    }

    public Object text(Application app) {
        return "<<" + app.getName() + ">>";
    }
}
```

# VALIDATION

```
public static final String CAPITALIZE =  
    "org.eclipse.ee.android.validation.Capitalize";  
  
@Check  
public void checkApplicationNameWithCapital(Application app) {  
    if (!Character.isUpperCase(app.getName().charAt(0))) {  
        warning("Name should start with a capital", app,  
            AndroidPackage.APPLICATION__NAME, CAPITALIZE);  
    }  
}
```



# QUICK FIX

```
@Fix(AndroidJavaValidator.CAPITALIZE)
public void capitalizeName(final Issue issue,
                           IssueResolutionAcceptor acceptor) {
    acceptor.accept(issue,
        "Capitalize name", "Capitalize the name.", "upcase.gif",
        new ISemanticModification() {
            public void apply(EObject o, IModificationContext c) {
                Application application = (Application) o;
                String name = application.getName();
                application.setName(name.substring(0,1).toUpperCase()
                    + name.substring(1));
            }
        });
}
```

# WHERE TO GO NEXT...

- Add Template Proposals
- Define Scopes
- Implement a Formatter
- Highlight Cross-References
- ...

