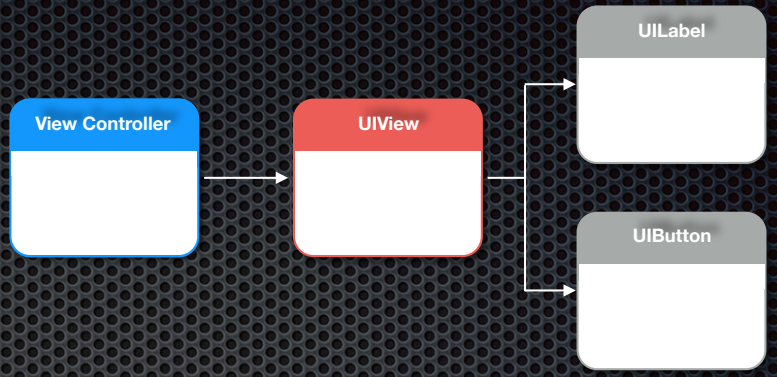
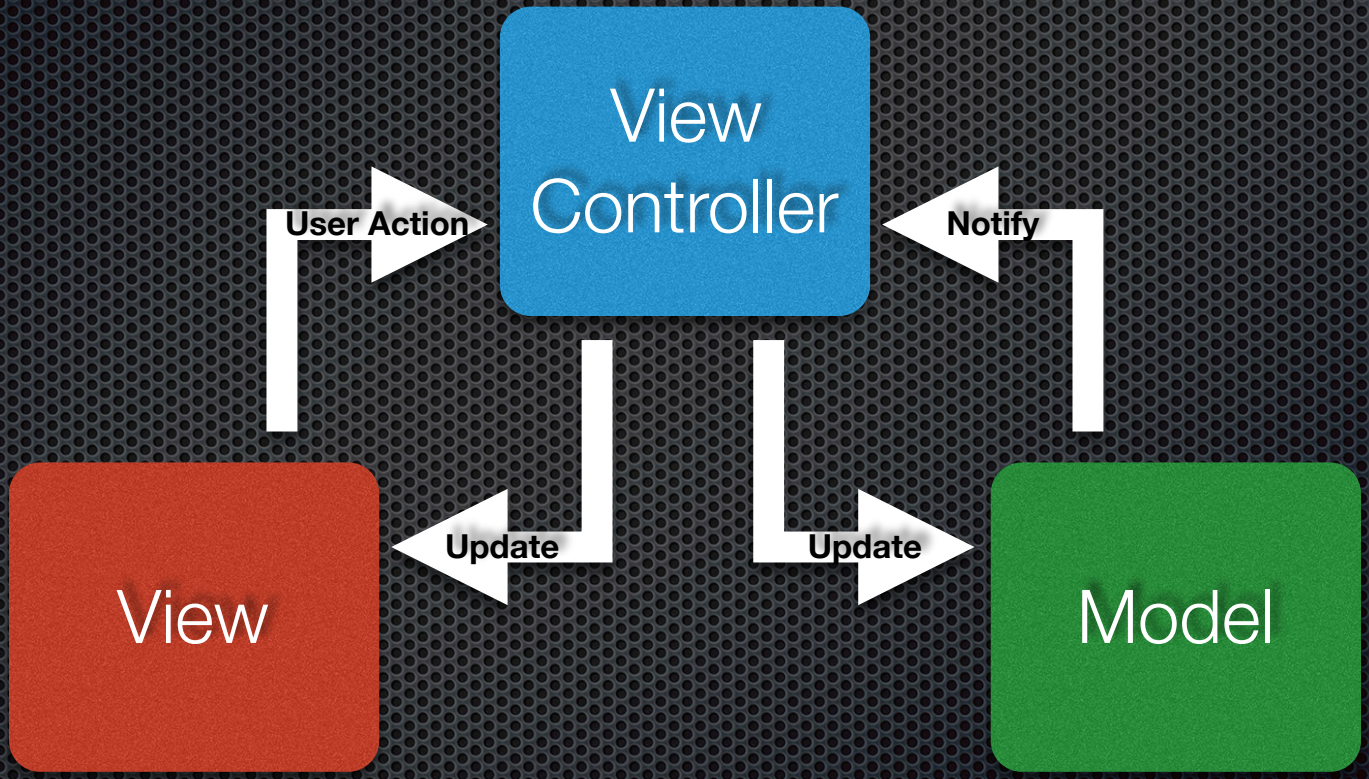
Mobile Application Programming

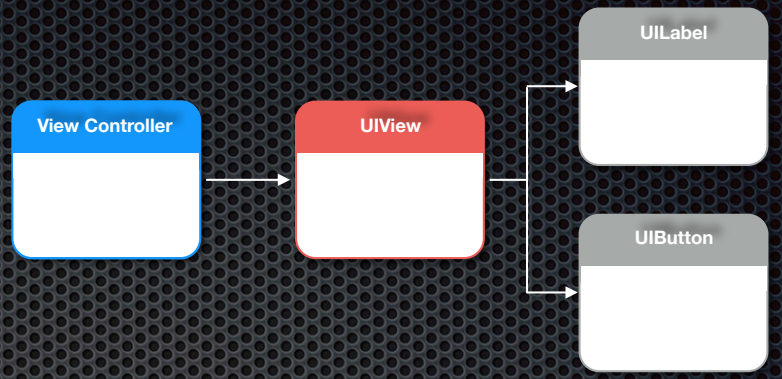
Memory

View Controllers



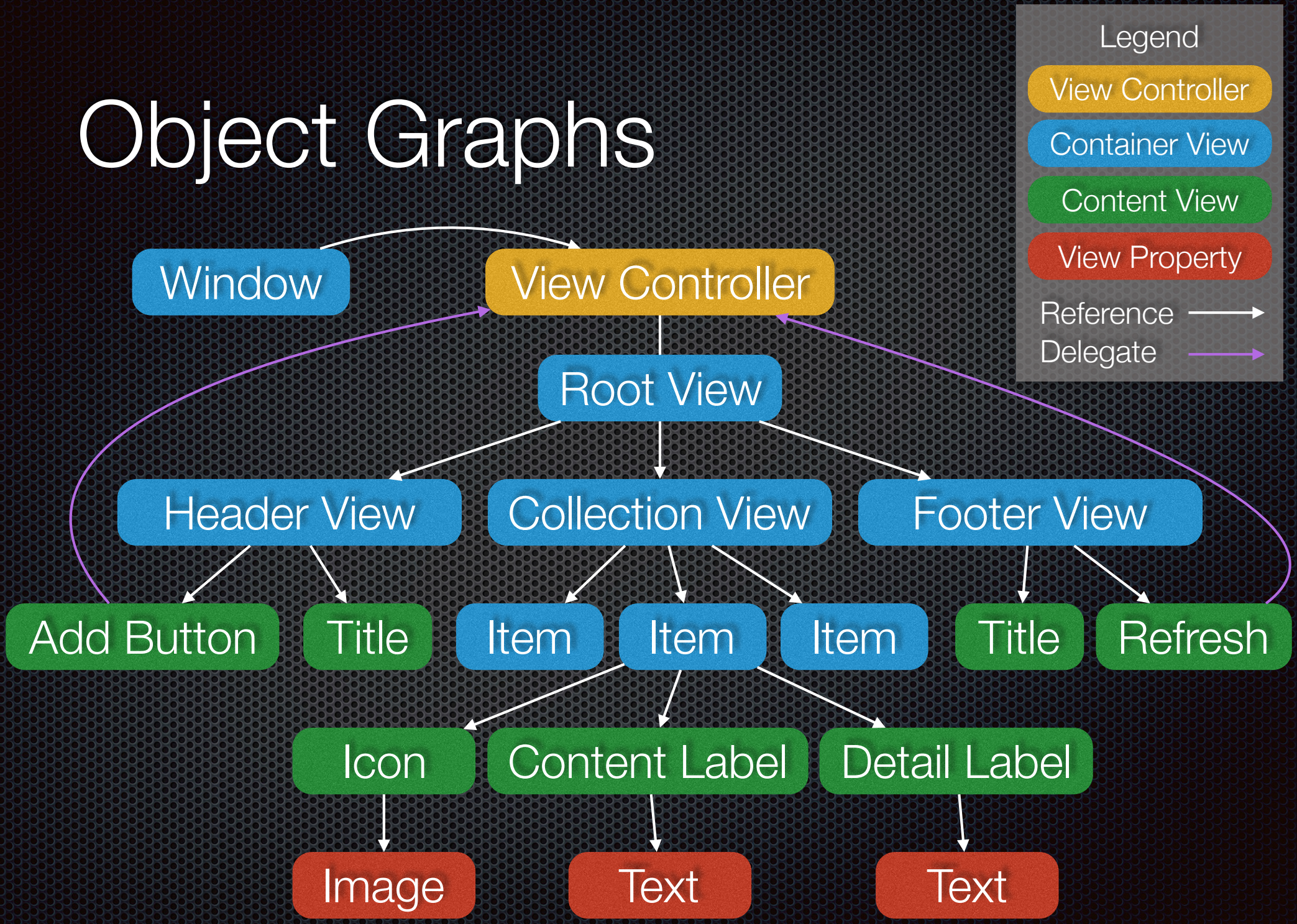


View Controllers

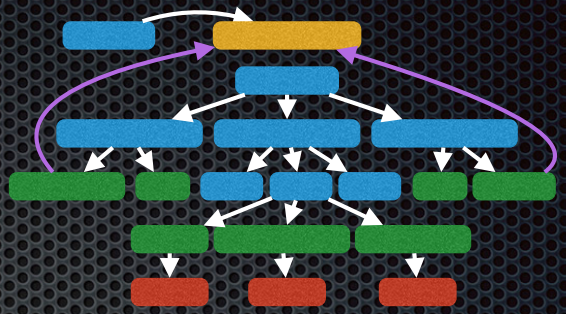


- Act as controllers in the MVC object relationship
  - They are not the only kind of controllers in an app
  - Typically occupy the location just above views in an application's object hierarchy
- Manage a view hierarchy by way of a single view
- Responds to view events using the target-action mechanism and delegate relationships
- Effect changes in model objects either directly or by communicating with other controller objects

Object Graphs

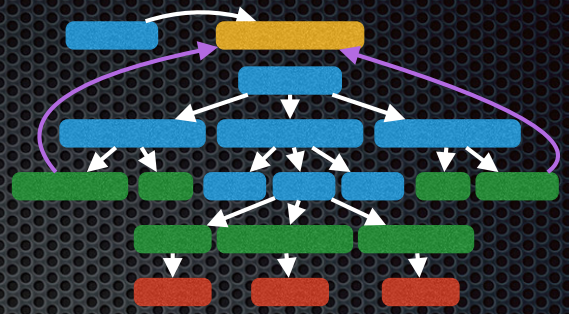


Automatic Reference Counting (ARC)



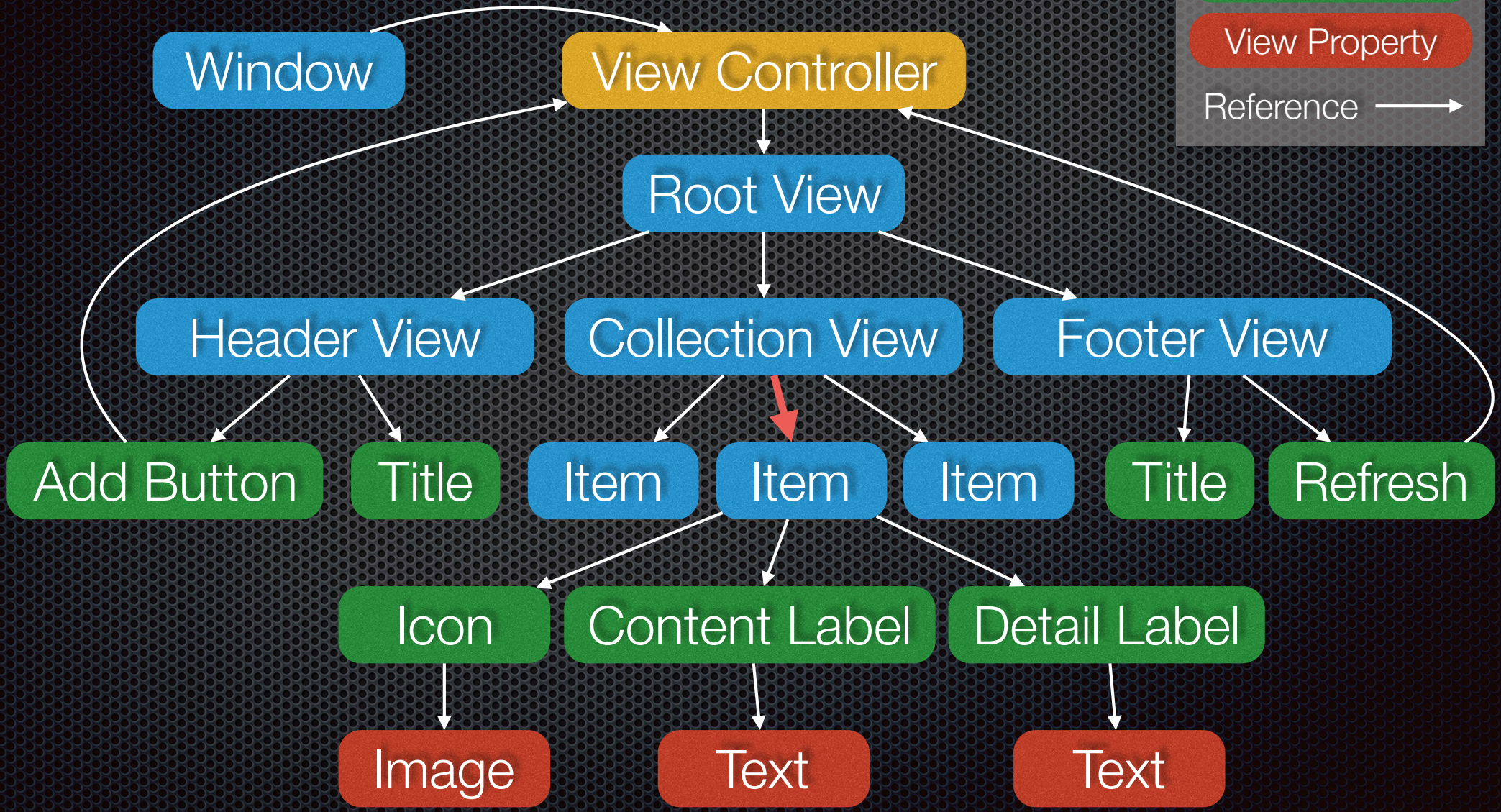
- Swift uses ARC to determine object liveness
- The number of other objects that have obtained a reference to an object is called its reference count
- When an object is created it is referenced by the local variable it is assigned to (or property if that is the case)
- As other objects obtain references the count increases
- Objects can remove references as well, reducing the count
  - Setting a property to nil or another object
  - A local variable going out of scope
- When an object has no more references, it is deleted

Strong and Weak

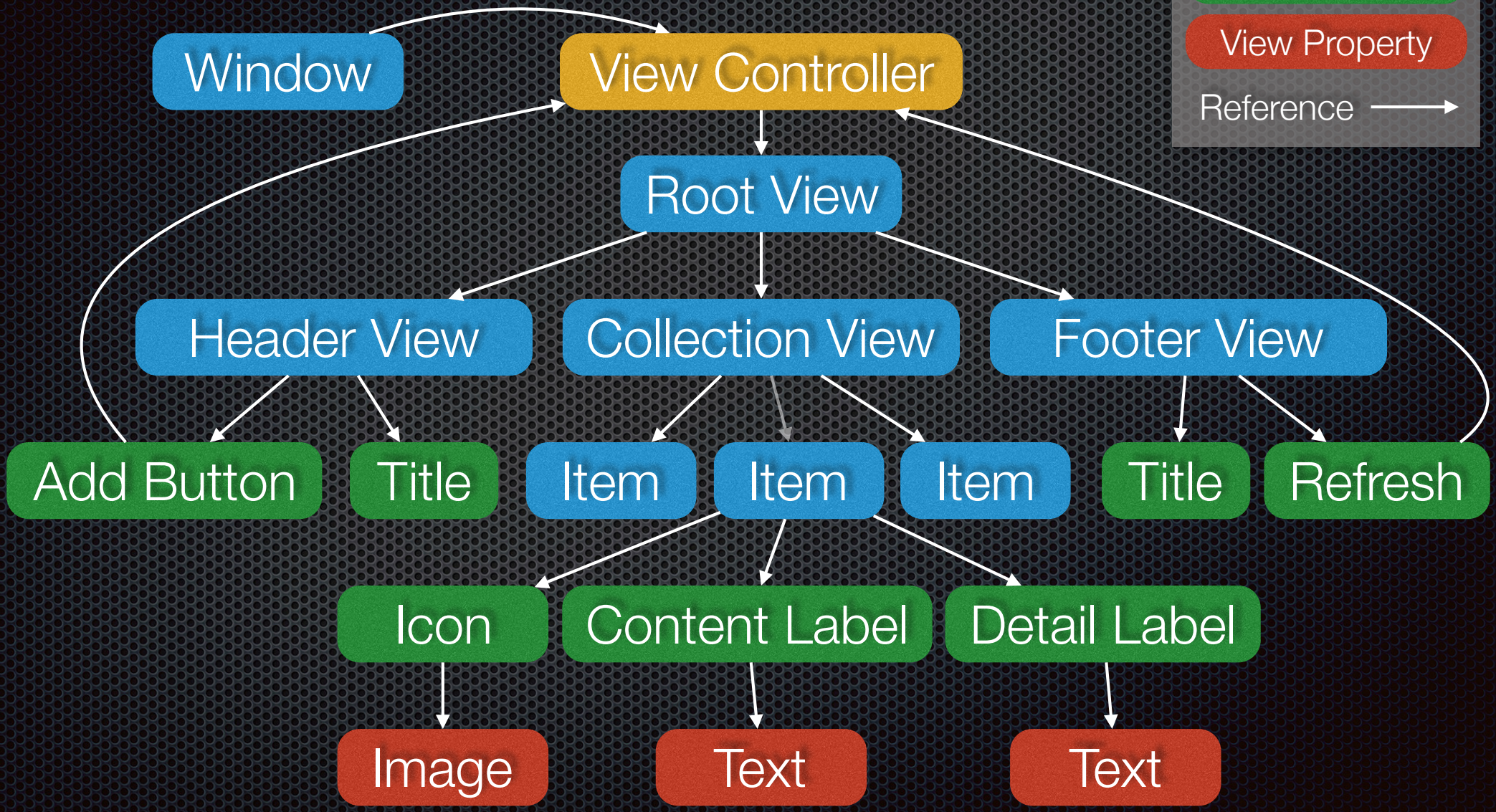


- Reference relationships can have the modifiers strong and weak
  - strong and weak properties (weak var someProperty: Double?)
  - strong and week local variables (weak var localVar: Double?)
- Strong references (default) increase an object's reference count
- Weak references do not increase an object's reference count
- When the last strong reference to an object is removed, the object is immediately deleted, deinit called, and the memory is reclaimed
- Any weak references to the object that remain are set to nil
  - Because of this, weak properties and variables must be optional

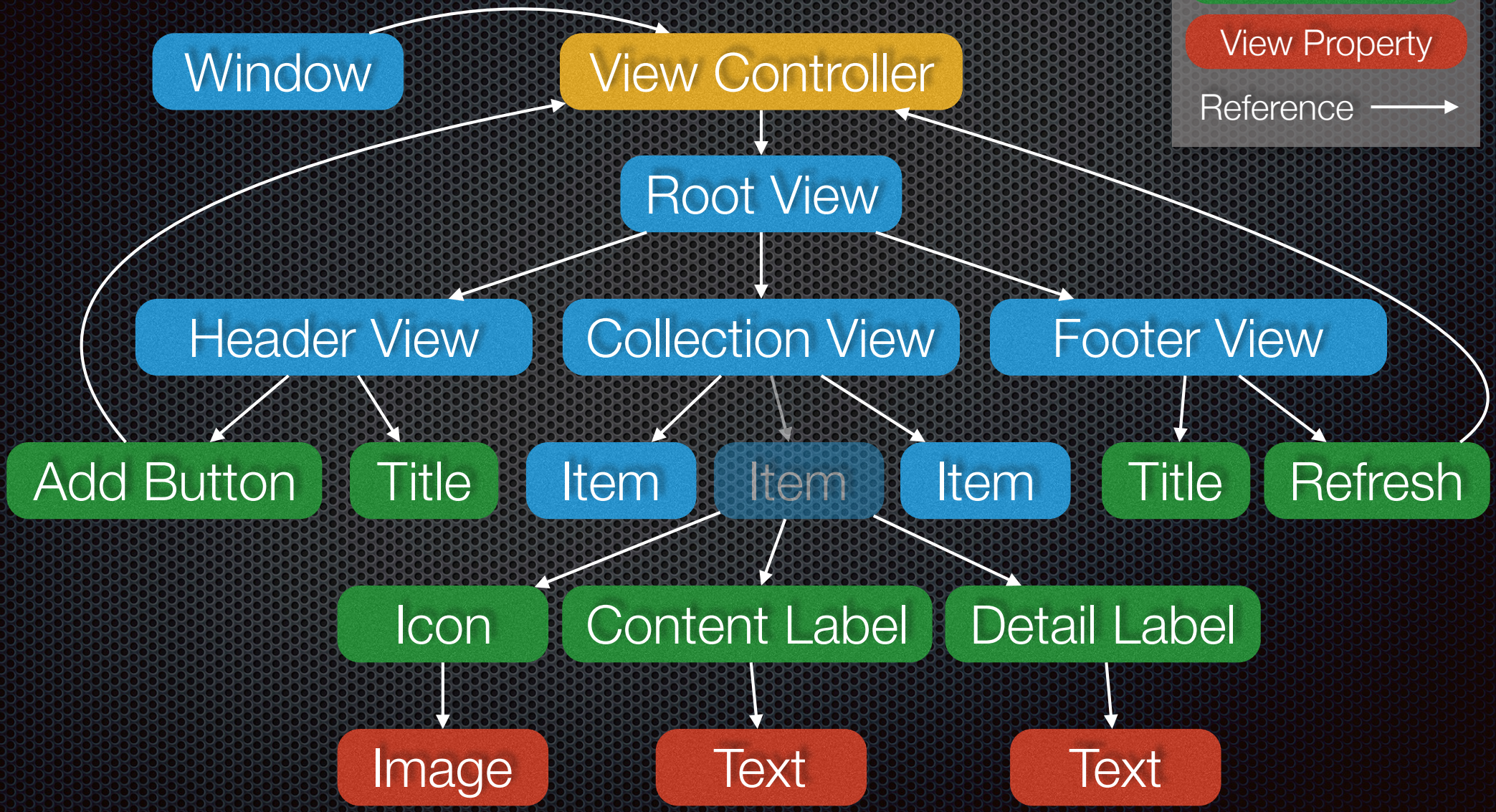
Item Removed



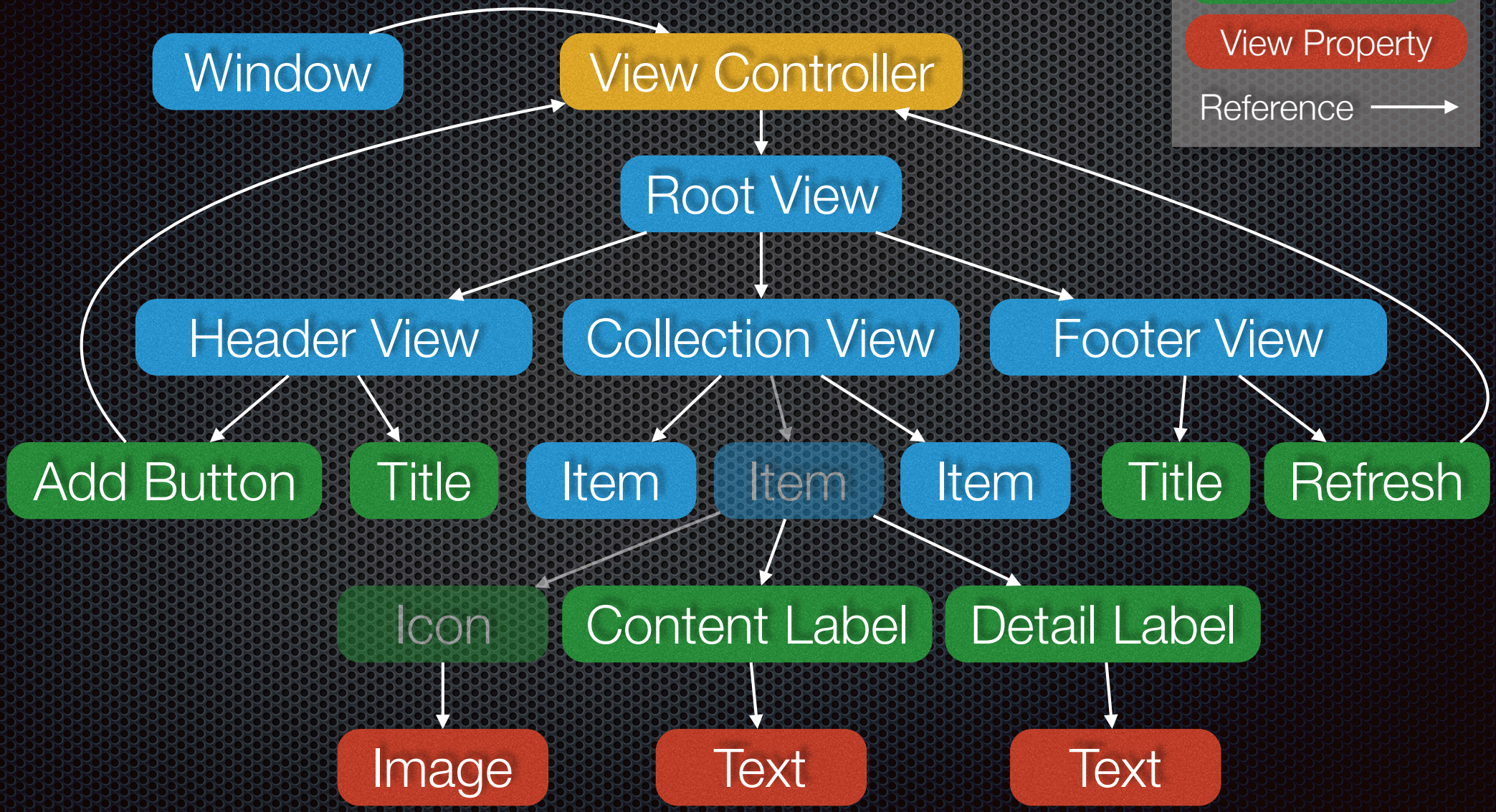
Item Removed



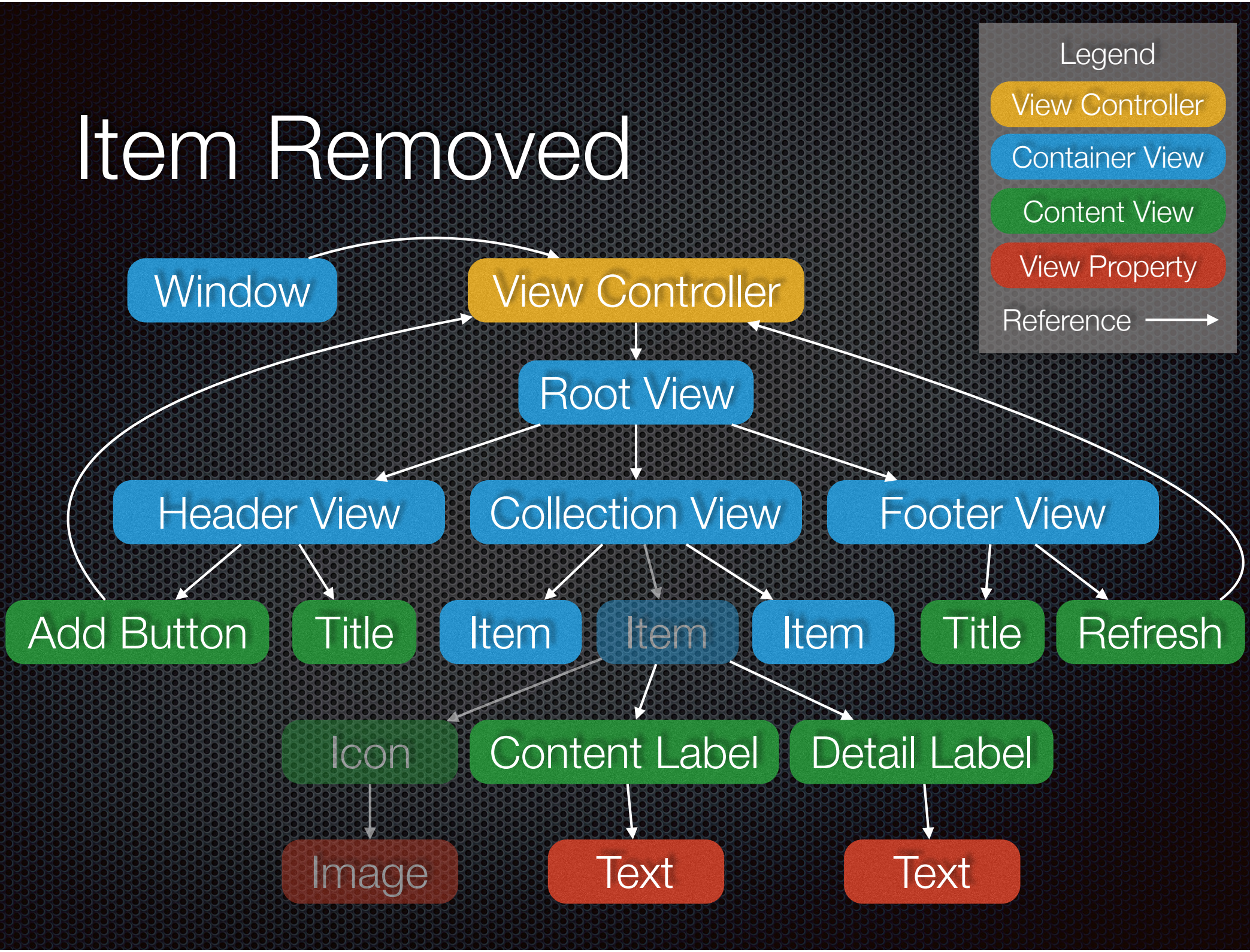
Item Removed



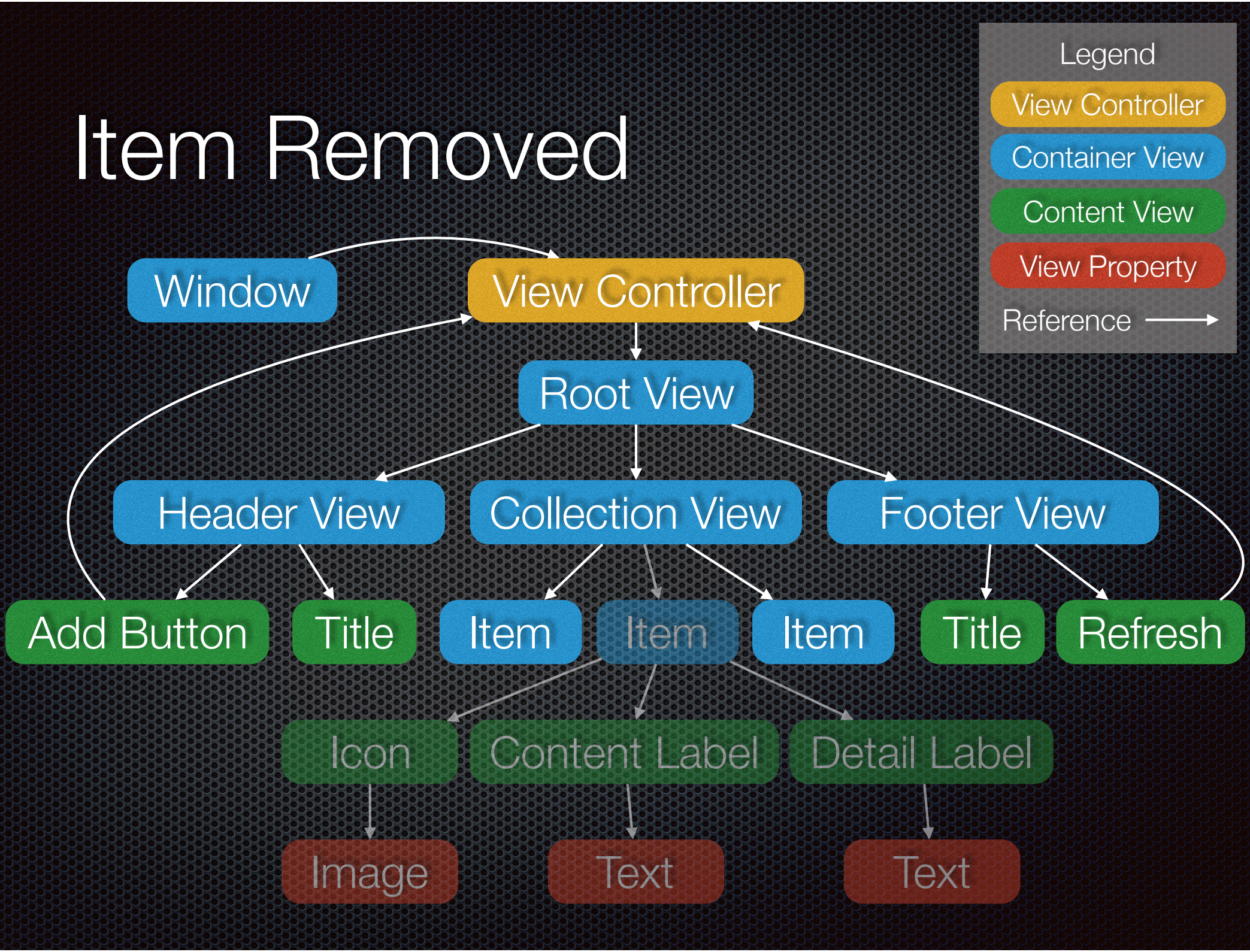
Item Removed

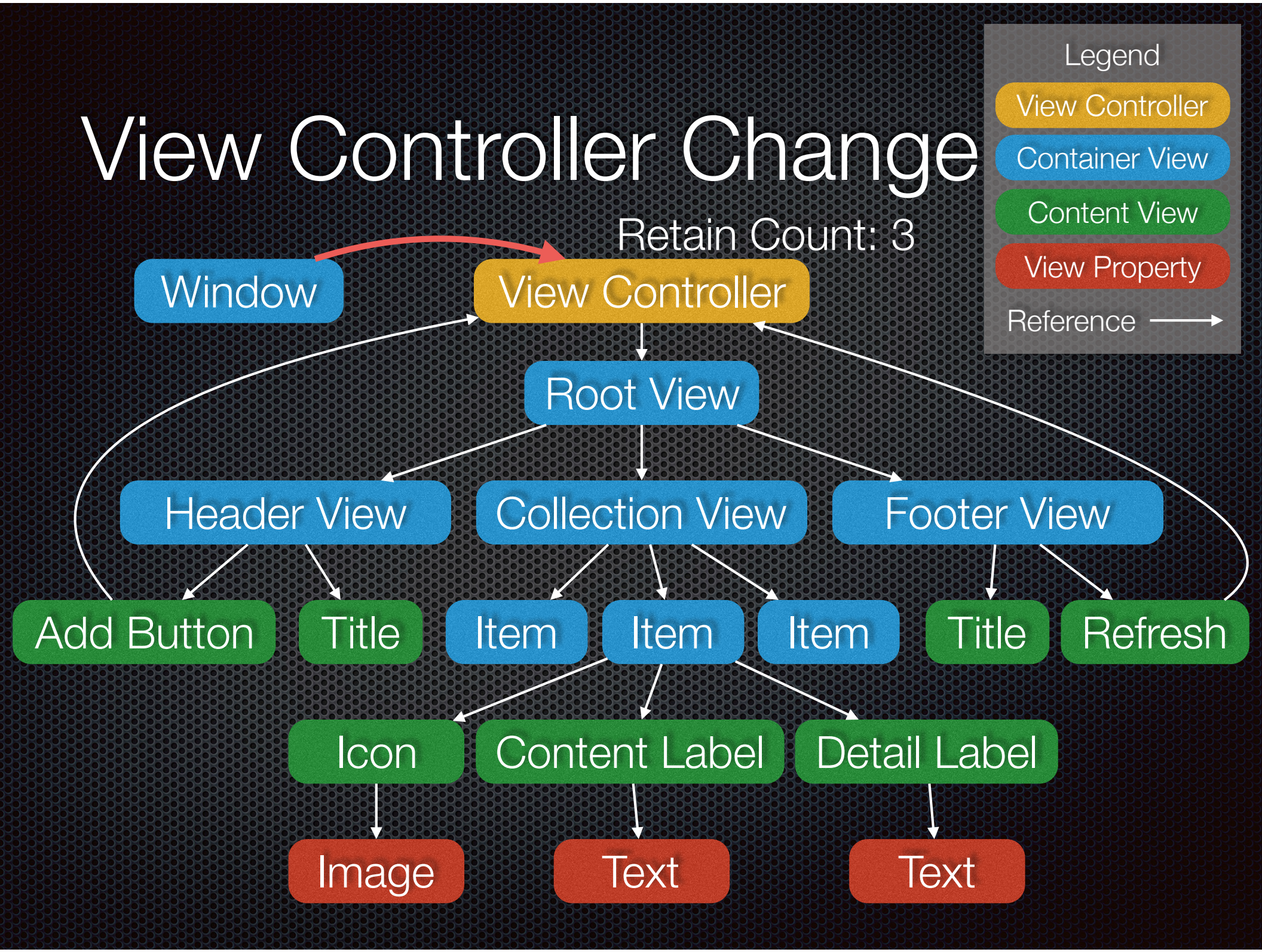


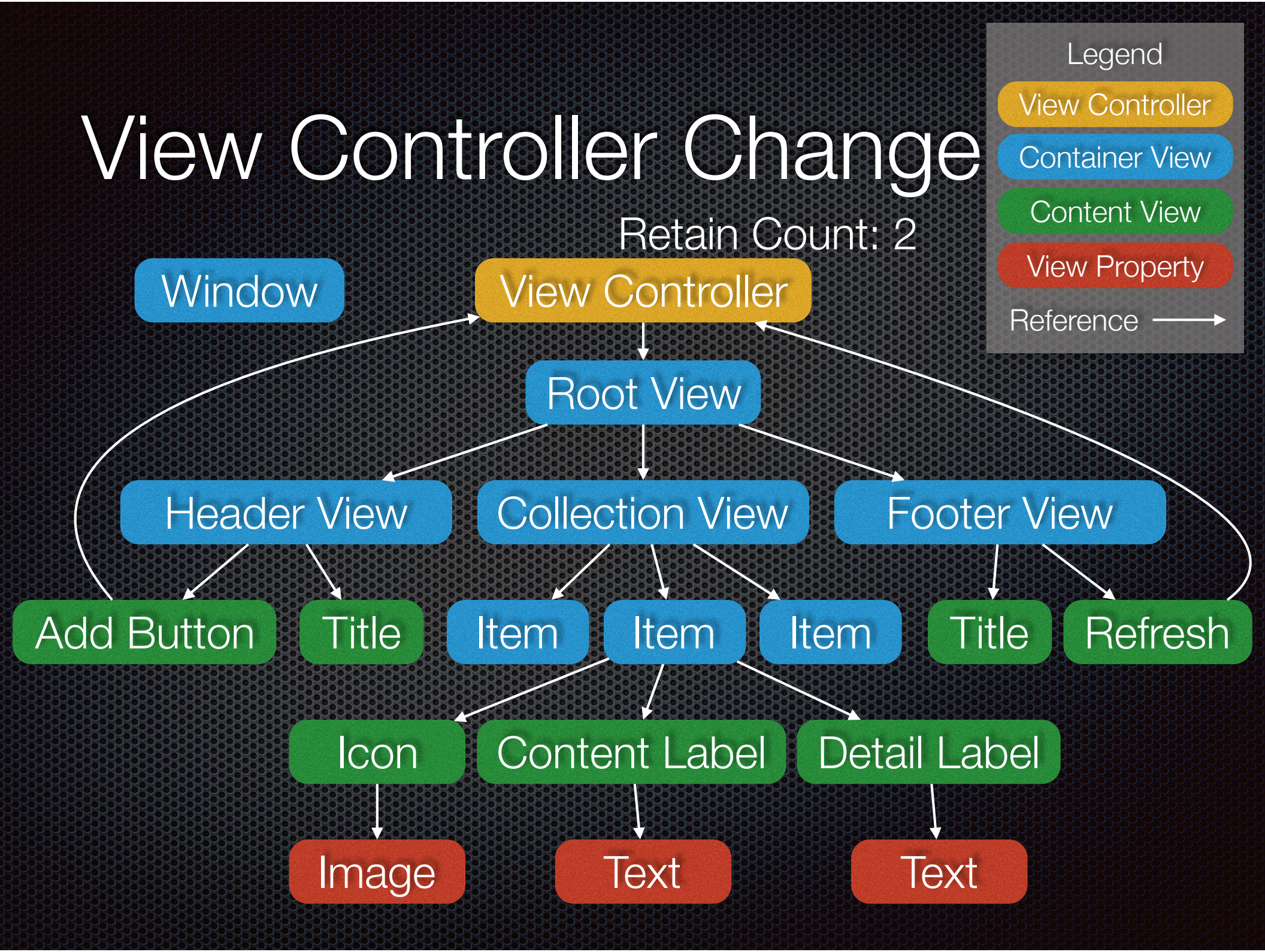
Item Removed

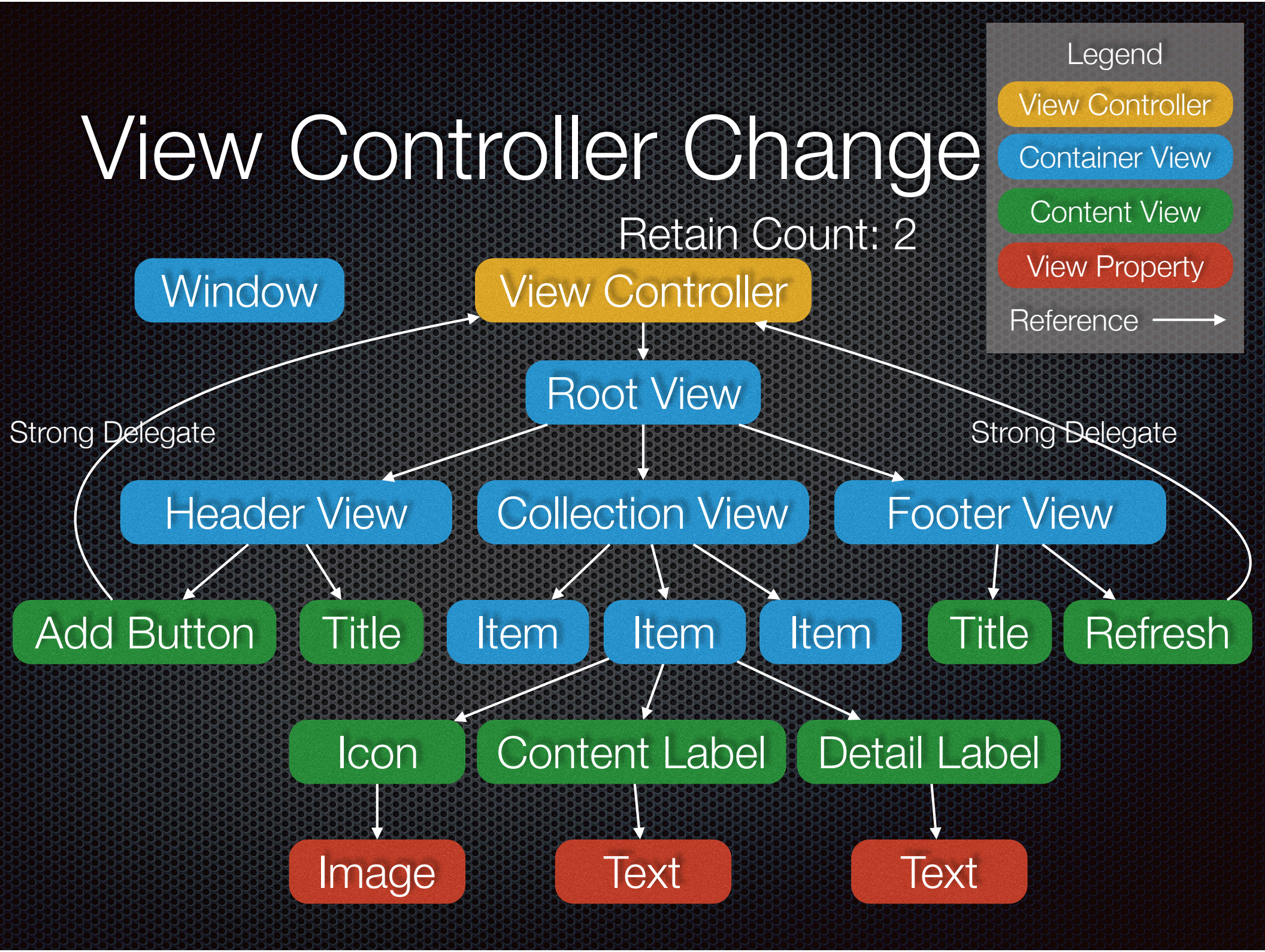


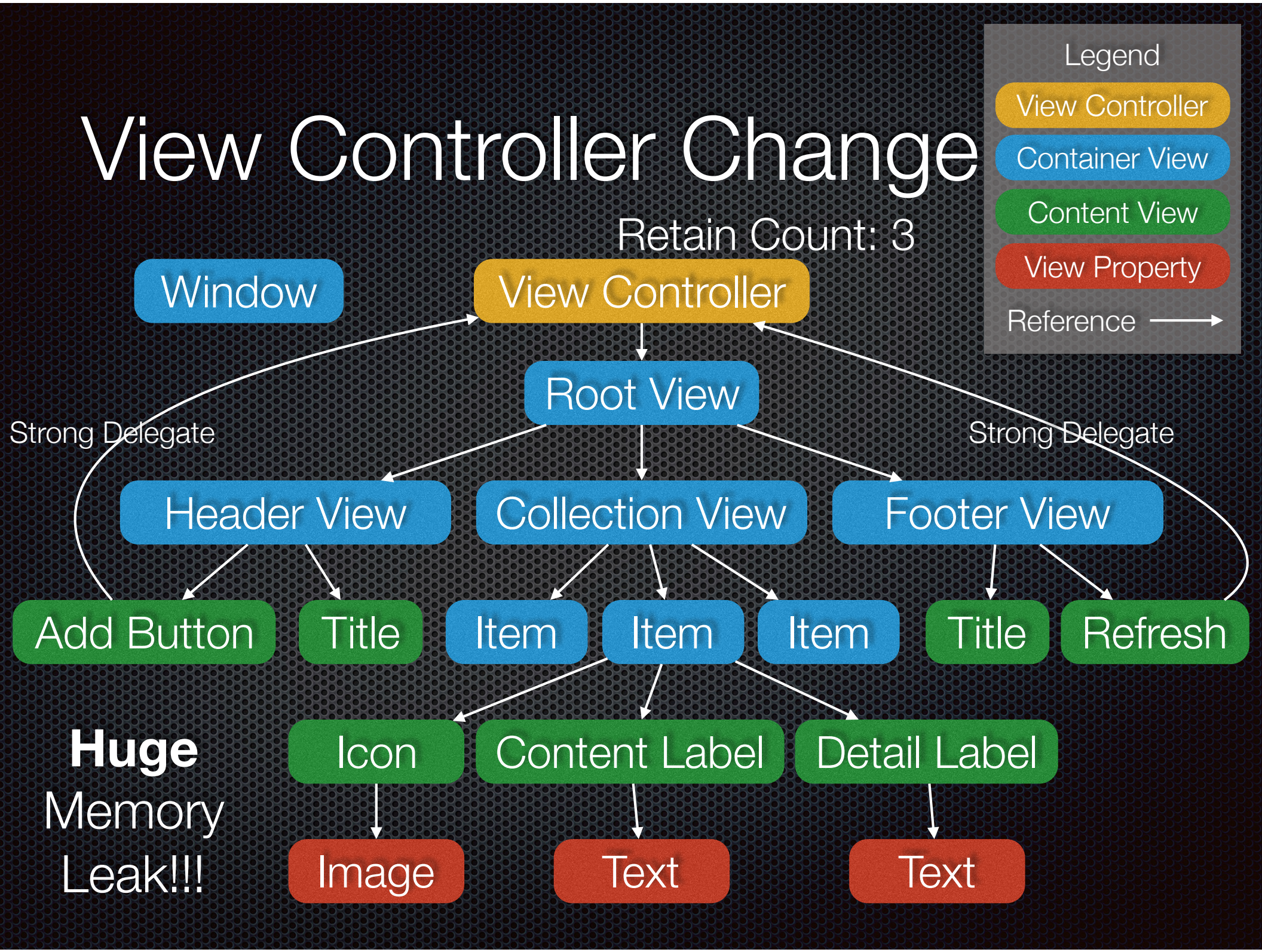
Item Removed

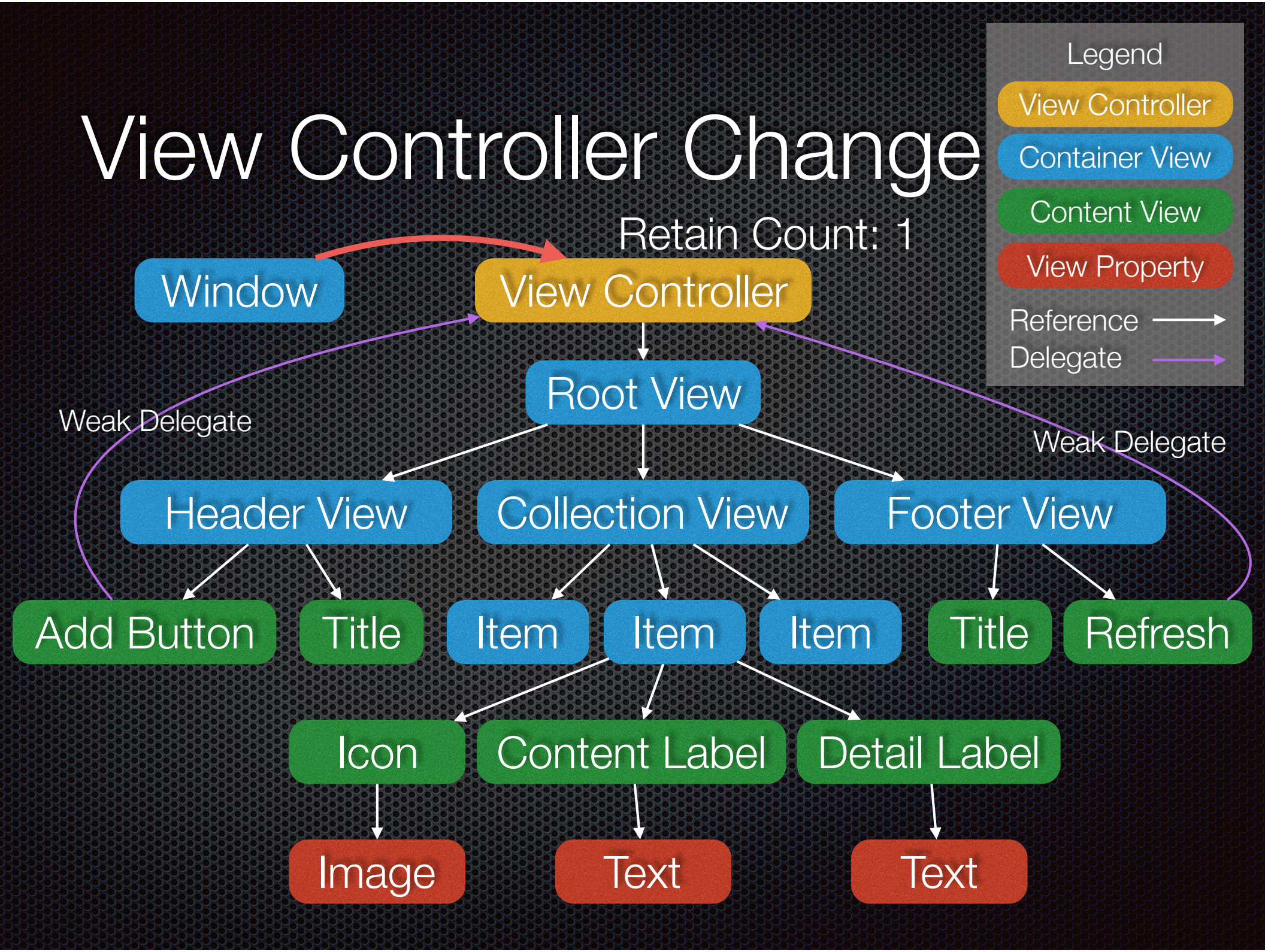


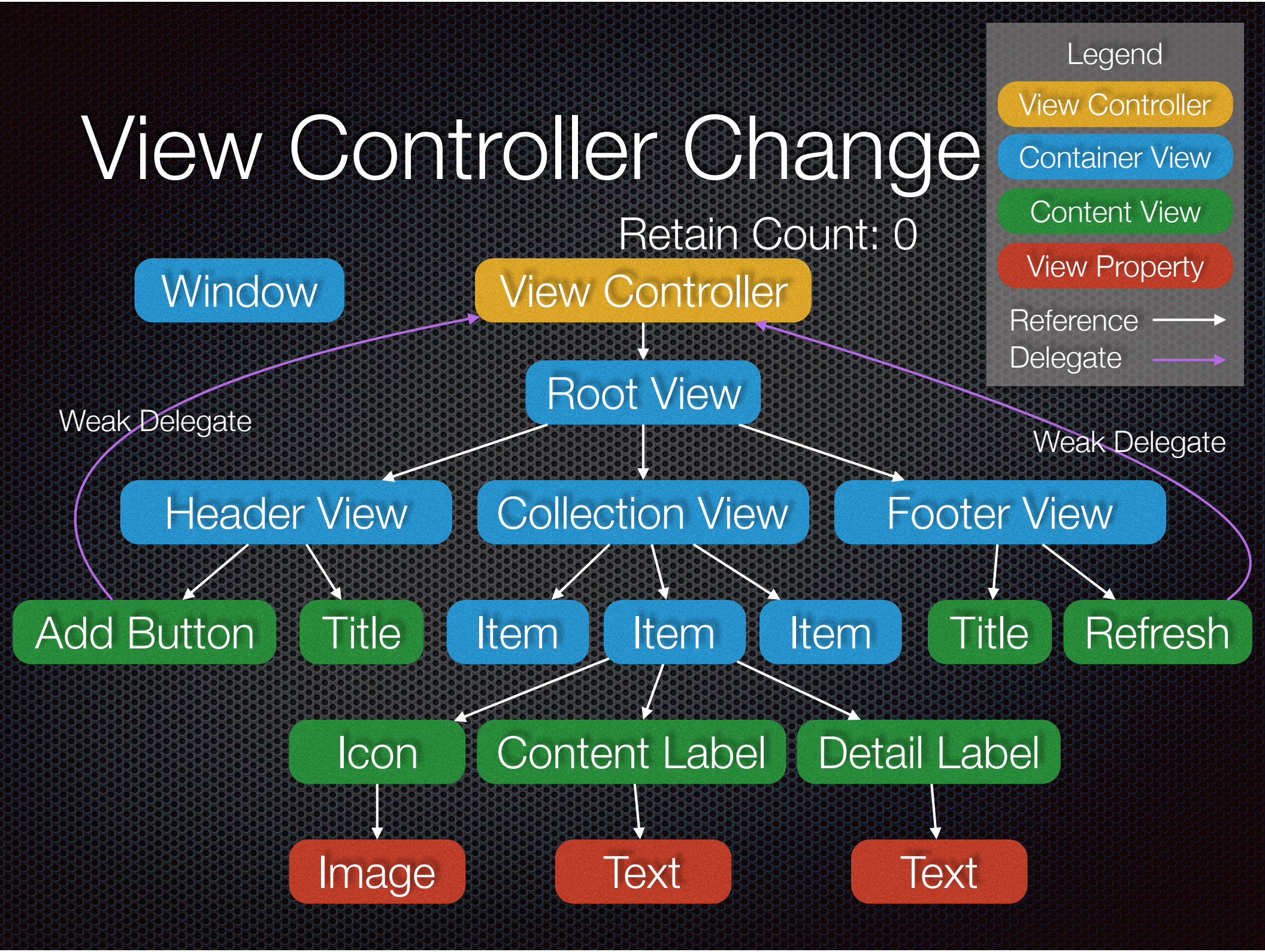

View Controller Change
Retain Count: 3
Legend
View Controller
Container View
Content View
View Property
Reference
Window
View Controller
Root View
Header View
Collection View
Footer View
Add Button
Title
Item
Item
Item
Title
Refresh
Icon
Content Label
Detail Label
Image
Text
Text


View Controller Change
Retain Count: 2
Legend
View Controller
Container View
Content View
View Property
Reference
Window
View Controller
Root View
Header View
Collection View
Footer View
Add Button
Title
Item
Item
Item
Title
Refresh
Icon
Content Label
Detail Label
Image
Text
Text

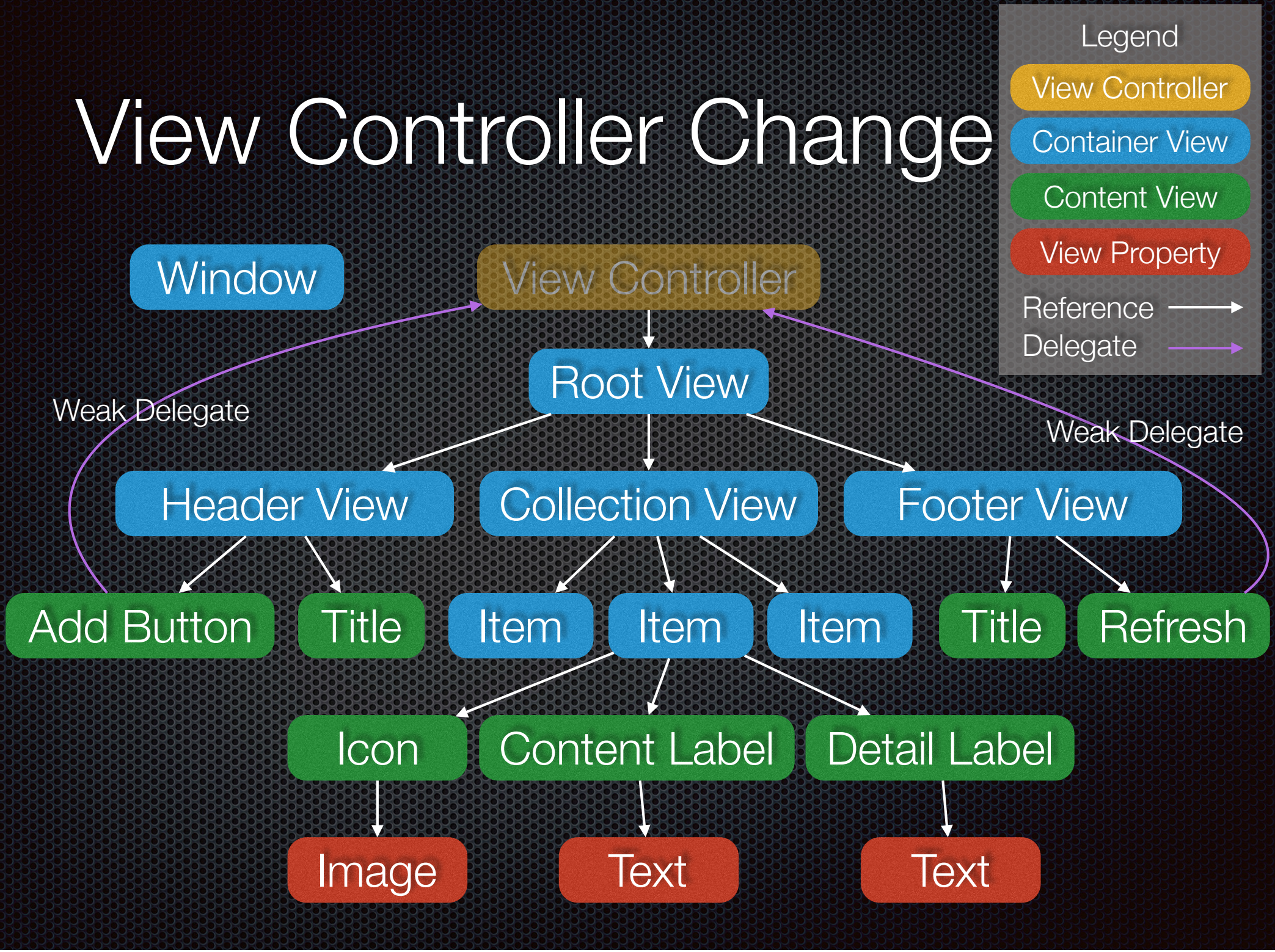

View Controller Change
Retain Count: 2
Legend
View Controller
Container View
Content View
View Property
Reference
Window
View Controller
Root View
Strong Delegate
Strong Delegate
Header View
Collection View
Footer View
Add Button
Title
Item
Item
Item
Title
Refresh
Icon
Content Label
Detail Label
Image
Text
Text


View Controller Change
Retain Count: 3
Legend
View Controller
Container View
Content View
View Property
Reference
Window
View Controller
Root View
Strong Delegate
Strong Delegate
Header View
Collection View
Footer View
Add Button
Title
Item
Item
Item
Title
Refresh
Huge
Memory
Leak!!!
Icon
Content Label
Detail Label
Image
Text
Text

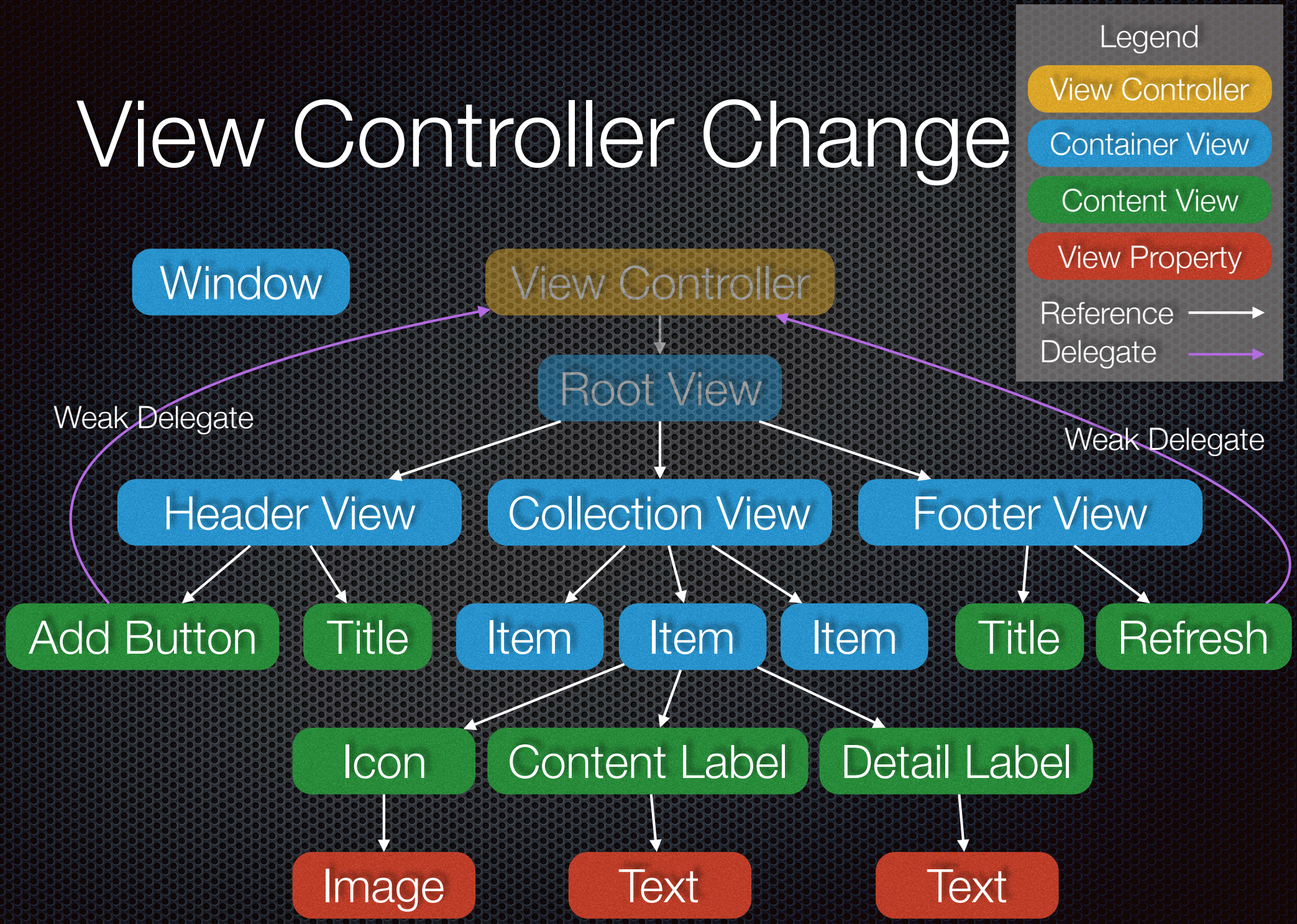

View Controller Change
Retain Count: 1
Legend
View Controller
Container View
Content View
View Property
Reference
Delegate
Window
View Controller
Root View
Weak Delegate
Weak Delegate
Header View
Collection View
Footer View
Add Button
Title
Item
Item
Item
Title
Refresh
Icon
Content Label
Detail Label
Image
Text
Text


View Controller Change
Retain Count: 0
Legend
View Controller
Container View
Content View
View Property
Reference
Delegate
Window
View Controller
Root View
Weak Delegate
Weak Delegate
Header View
Collection View
Footer View
Add Button
Title
Item
Item
Item
Title
Refresh
Icon
Content Label
Detail Label
Image
Text
Text

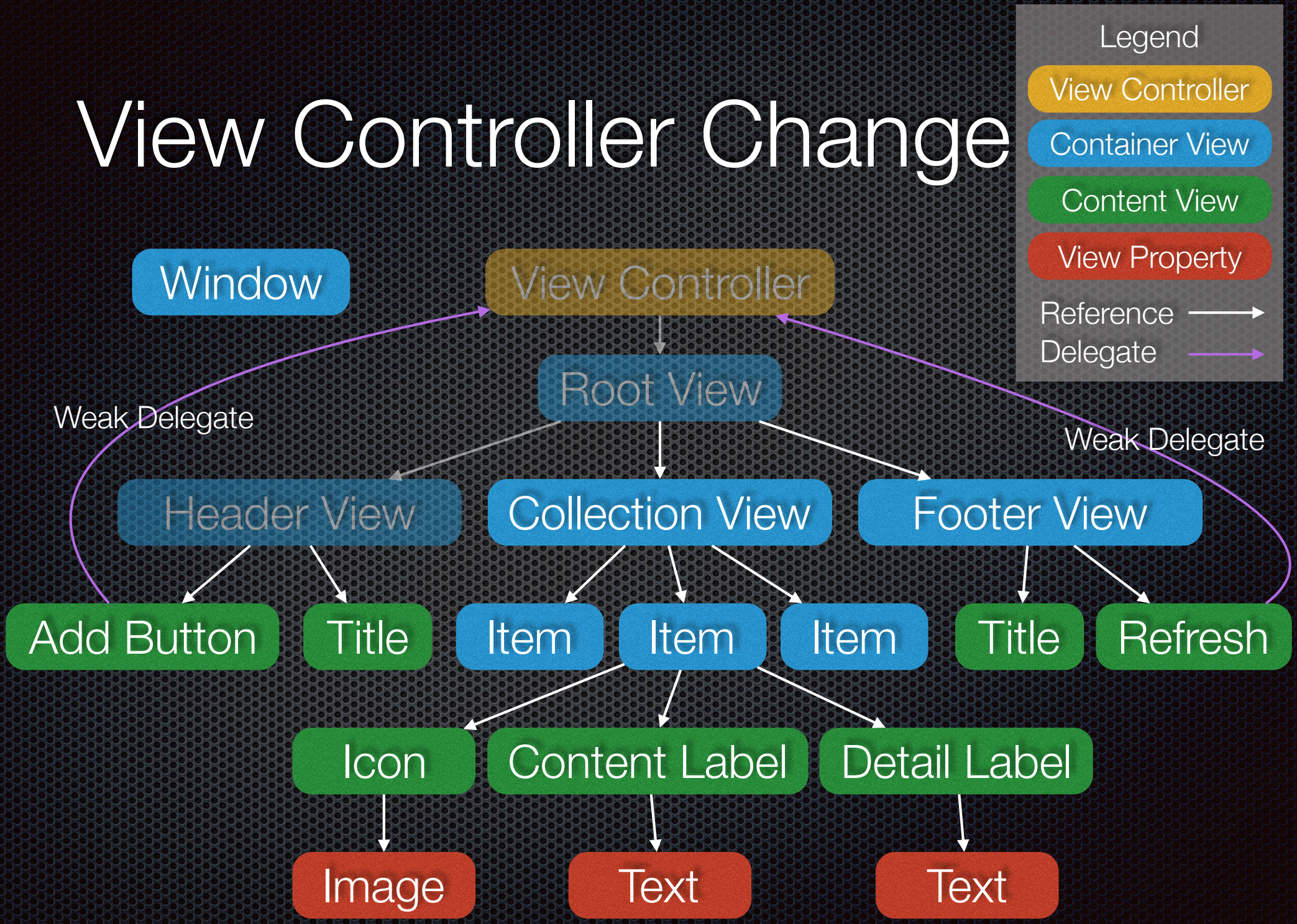
View Controller Change



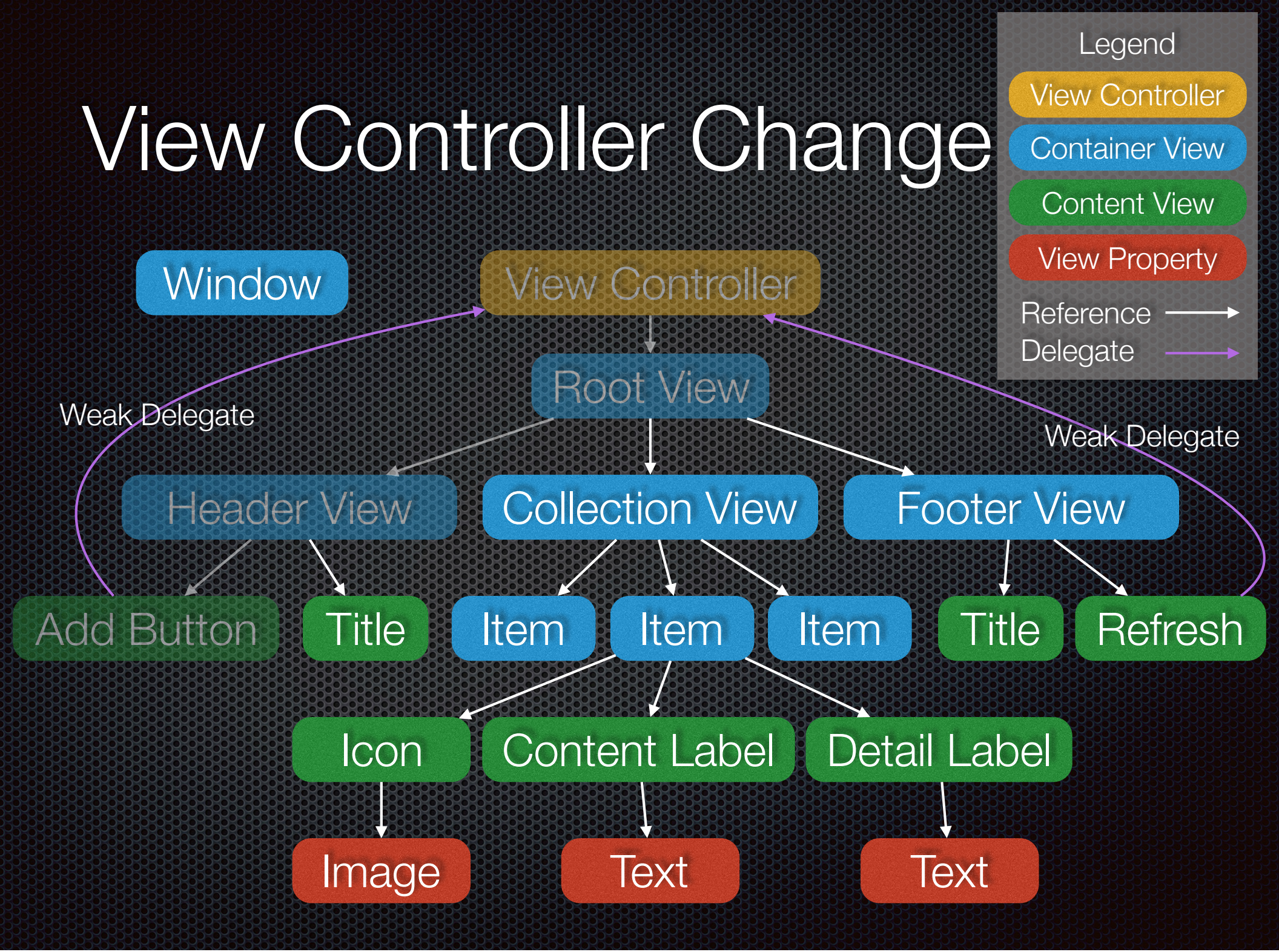
View Controller Change



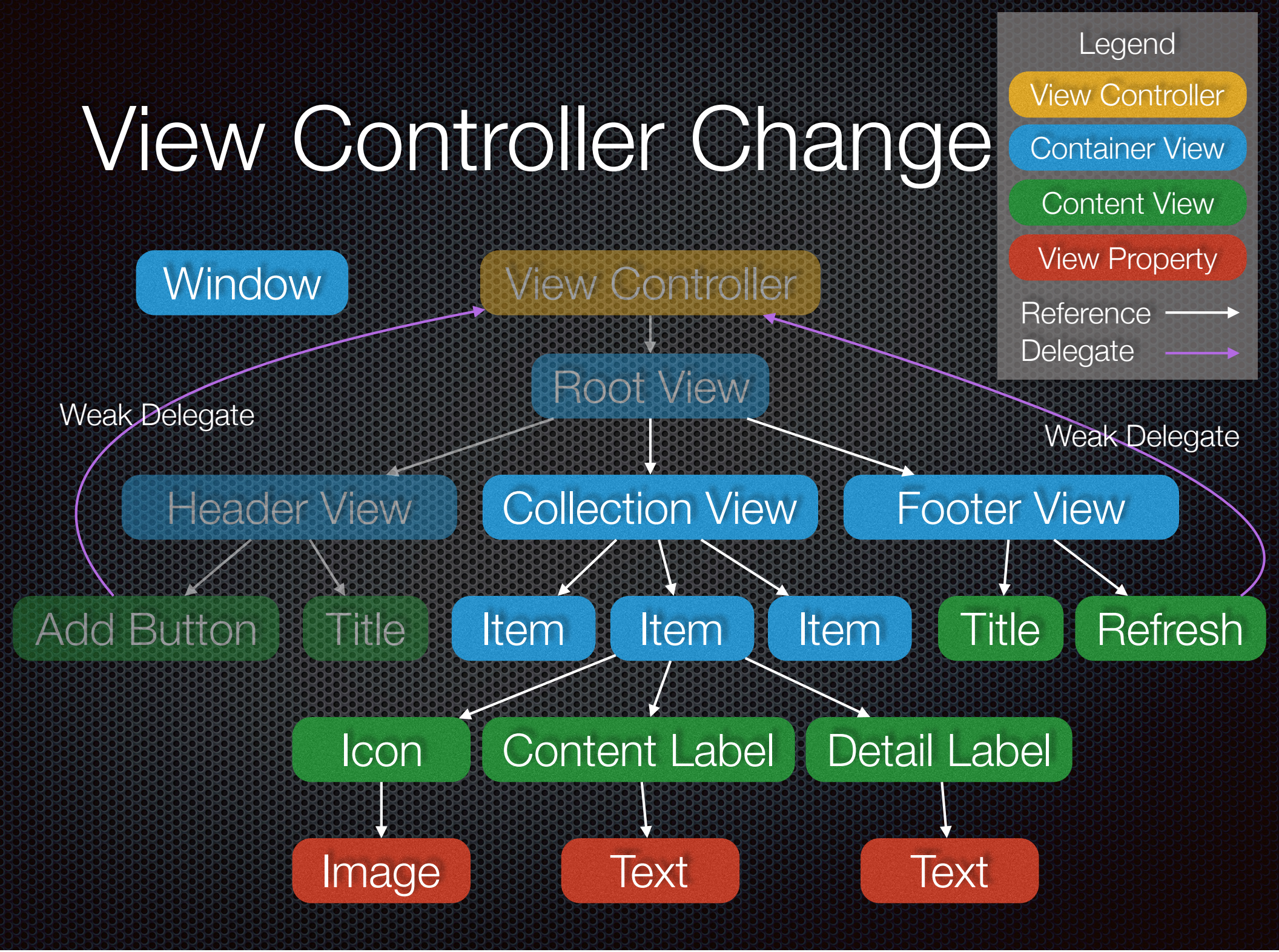
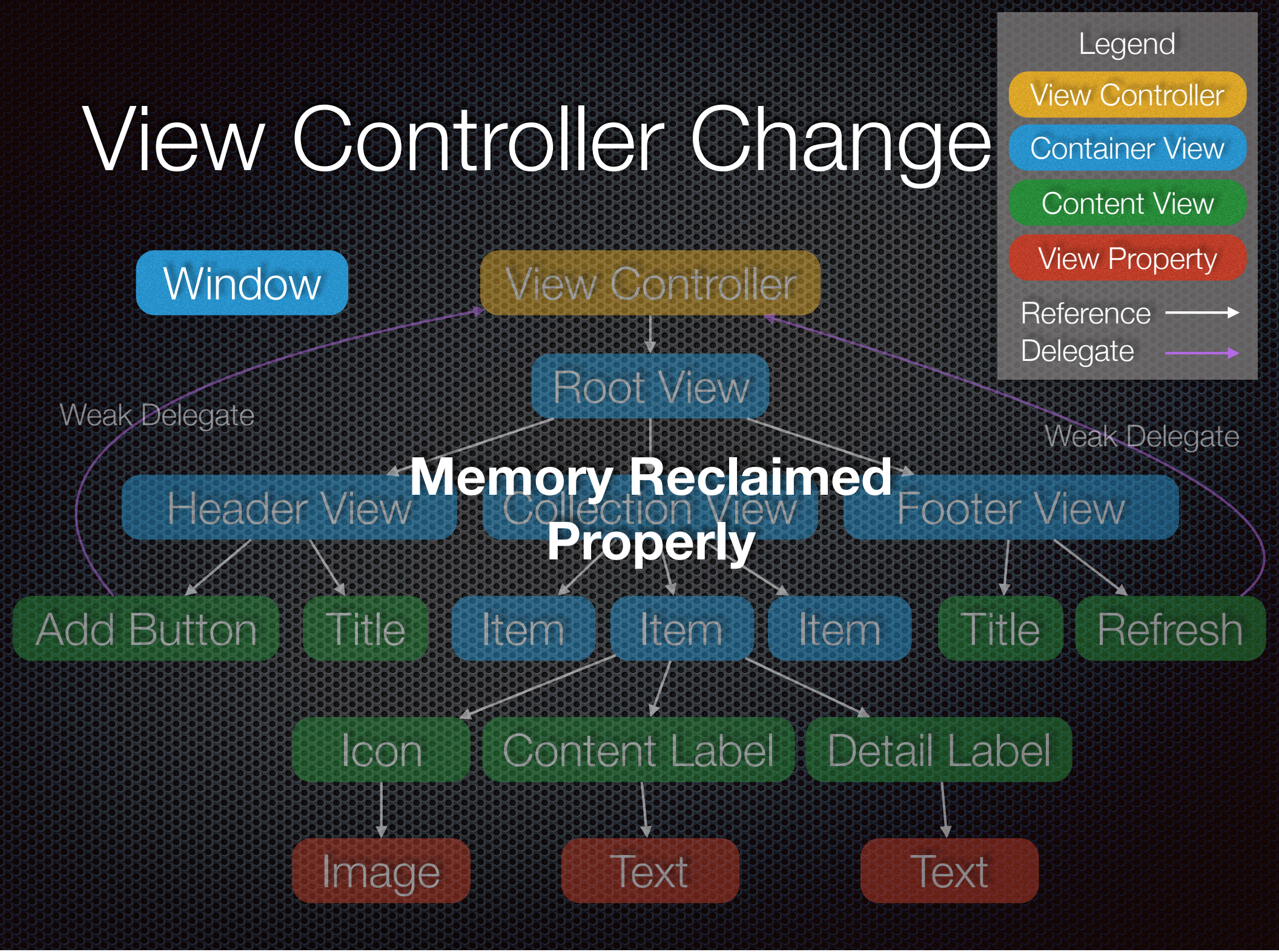
View Controller Change



View Controller Change



View Controller Change



View Controller Change