Taking Control of Auto Layout in Xcode 5

Session 406

Kevin Cathey
Interface Builder Engineer

Tony Ricciardi
Interface Builder Engineer
What is Auto Layout?
Auto Layout is a Constraint-Based, Descriptive Layout System
What Is Auto Layout?
Hard-Coded Layout

- Control’s frame origin is (139, 270)
Hard-Coded Layout

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Hard-Coded Layout

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Auto Layout

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Auto Layout

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Auto Layout

- Control.centerY = Superview.centerY
- Control.right = Superview.right - <padding>
Auto Layout is a constraint-based, descriptive layout system

Describe the layout with constraints, and frames are calculated automatically.
Why Auto Layout?
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• **Relational:** Codifying the relative way we describe interfaces
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Why Auto Layout?

- **Relational:** Codifying the relative way we describe interfaces
- **Dynamism:** Improved responsiveness to changes in the application
  - **Metrics:** iOS 6 to iOS 7, screen sizes, and rotation
  - **Content:** Localization
- **Expressiveness:** Can specify powerful relationships between views
Adopting Auto Layout
Adopting Auto Layout

• Update Interface Builder documents
  ▪ Enable Auto Layout
  ▪ Add constraints
Adopting Auto Layout

• Update Interface Builder documents
  ▪ Enable Auto Layout
  ▪ Add constraints

• When adding subviews in code
  ▪ Add or update constraints instead of calling -setFrame:
  ▪ Disable translatesAutoresizingMaskIntoConstraints
# More Information on Auto Layout

Previous WWDC sessions on Auto Layout

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<td>Best Practices for Mastering Auto Layout</td>
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<td>Auto Layout by Example</td>
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Initial Layout
Initial Layout

Add Constraints
Initial Layout

Maintain

Debug & Resolve

Add Constraints
Initial Layout

Maintain

Add Constraints

Debug & Resolve
Initial Layout

• First adding views, positioning, and resizing
Initial Layout

• First adding views, positioning, and resizing
• Add constraints when you are ready
Initial Layout

• First adding views, positioning, and resizing
• Add constraints when you are ready
• Fixed position and size
Demo
Adding constraints
Initial Layout

• First adding views, positioning, and resizing
• Add constraints when you are ready
• Fixed position and size
Adding Constraints

• Direct manipulation: Control drag between views
Adding Constraints

- Direct manipulation: Control drag between views
- Auto Layout resolving menu
Adding Constraints

• Direct manipulation: Control drag between views
• Auto Layout resolving menu
• Constraint addition popovers
Add Constraints

- Initial Layout
- Debug & Resolve
- Maintain
Add Constraints

Initial Layout

Debug & Resolve

Maintain
Intermediate States
Intermediate States
Intermediate States
Intermediate States
Intermediate States

- **Ambiguous Frames**: Not enough information
Intermediate States

- **Ambiguous Frames**: Not enough information
- **Conflicting Constraints**: Too much information
Intermediate States

- **Ambiguous Frames**: Not enough information
- **Conflicting Constraints**: Too much information
- **Misplaced Views**: Mismatched position or size
Ambiguous Frames
Ambiguous Frames
Ambiguous Frames

Title

Detail
Ambiguous Frames
Conflicting Constraints
Conflicting Constraints
Conflicting Constraints
Misplaced Views
Demo

Debugging
Debugging
Debugging

- Canvas decorations
Debugging

• Canvas decorations
• Xcode Issues Navigator
Debugging

• Canvas decorations
• Xcode Issues Navigator
• Quick fixes via the canvas resolving menu
Debugging

• Canvas decorations
• Xcode Issues Navigator
• Quick fixes via the canvas resolving menu
• Detailed help using the outline view
Compatibility
Compatibility

• Deployable to previous versions of OS X and iOS
Compatibility

• Deployable to previous versions of OS X and iOS
• Features requiring Xcode 5
  ▪ iOS 7 support
  ▪ New Auto Layout workflows
  ▪ Readable and diffable XIBs
More Information

Dave DeLong
App Frameworks and Developer Tools Evangelist
delong@apple.com

Apple Developer Forums
http://devforums.apple.com
# Related Sessions

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<tr>
<td>Interface Builder Core Concepts</td>
<td>Nob Hill</td>
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### Related Labs

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Apple WWDC 2013