Creating Great Localized Experiences with Xcode 11

Kulpreet Chilana, Software Engineer
Vivian Robison, Software Engineer
Arthur Rayer, Software Engineer
Agenda

New localization features
Localization workflow improvements
Localizing images
Localized screenshots with XCTest
70% Apple users outside the US
Localized Relationships in Contacts

Language Setting per App

Bilingual Keyboard for Hindi-English

New Keyboards for 38 Languages

Bilingual Dictionaries for Thai and Vietnamese

Language Detection for Dictation

Auto-Spacing for Chinese

Localized Relationships in Contacts

Siri Voices for Indian English

Enhanced Language Setup for Multilingual Users

New Fonts for Indian Languages

Redesigned Handwriting for Chinese

Easier Switching between Keyboards

Predictive Input for Arabic, Cantonese, Dutch, Hindi, Swedish, and Vietnamese

Language Detection for Dictation

Easier Switching between Keyboards
WWDC開始嘅。興奮得嘅！
佢哋做點咩呢？

梅台上講緊國際化嘅！

大家遲啲想唔想一齊食嘅呢？

印度

印 度
WWDC開始嘍啦！興奮得沸！你哋做緊咩呢？

大家遲啲想唔想一齊食晏呀？
Written and Spoken Languages

The following languages are commonly used in your region. You can set up your iPhone to use these settings or customise them individually.

- **Preferred language**
  - English
  - Kannada

- **Keyboards**
  - English (India)
  - 🇮🇳
  - 🇺🇸
  - 🇫🇷
  - 🇫🇷
  - 🇶🇦
  - 🇧🇷
  - 🇳🇴
  - 🇰🇷
  - 🇻🇪
  - 🇸🇪
  - 🇦🇺
  - 🇦🇷
  - 🇮🇹
  - 🇺🇦
  - 🇨🇳

Continue

Customise Settings
Shazam will use the first language that it supports from Language & Region settings. You can select a different language for Shazam to use if you prefer.
Shazam will use the first language that it supports from Language & Region settings. You can select a different language for Shazam to use if you prefer.

OTHER LANGUAGES

简体中文
Chinese, Simplified

繁體中文
Chinese, Traditional

Čeština
Czech

Nederlands
Dutch
Look Left

Look Right
PREFERRED LANGUAGE

Language  English
Launch to Settings

Changing language in code is not supported

Launch to Settings if you need to add a language option within your app:

```swift
UIApplication.shared.open(URL(string: UIApplication.openSettingsURLString)!)"`
ViewController State Restoration

Changing languages via Settings will relaunch your application

Enable state restoration in your AppDelegate with:

```swift
application(_:shouldSaveApplicationState:)
application(_:shouldRestoreApplicationState:)
```

Set `restorationIdentifier` on controllers to make language switching seamless
Enable state restoration in your `SceneDelegate` with:

```
stateRestorationActivity(for scene:)
```

Return an `NSUserActivity` object that encodes your scene state.
Bundle and Locale APIs

Content should be consistent in one language throughout your application.

Use Locale or Bundle APIs for custom or server-side resource loading:

- `Locale.preferredLanguages`
- `Bundle.main.preferredLocalizations`
- `Bundle.preferredLocalizations(from: availableLanguages)`
Locale APIs for Language Preference

Get a list of languages in order of user preference:

```javascript
// Example: ['pa-IN', 'en-IN', 'hi-IN', ... ]
Locale.preferredLanguages
```
Bundle APIs for Language Matching

Get the current running application language:

`Bundle.main.preferredLocalizations.first`
Bundle APIs for Language Matching

Get the current running application language:

```swift
Bundle.main.preferredLocalizations.first
```

Get the best language, given an external language code list:

```swift
let availableLanguages = Server.requestAvailableLanguages()
Bundle.preferredLocalizations(from: availableLanguages).first
```
Demo
App language setting
App Language Setting
App Language Setting

Launch to Settings to switch languages
App Language Setting

Launch to Settings to switch languages

Restore state when your app is relaunched
App Language Setting

Launch to Settings to switch languages

Restore state when your app is relaunched

Load custom resources with `Locale` or `Bundle` APIs
Localized Relationships in Contacts

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Predictive Input for Arabic, Cantonese, Dutch, Hindi, Swedish, and Vietnamese

New Fonts for Indian Languages
Localization Enhancements in Xcode

Vivian Robison, Software Engineer
Performance
15x

Faster export of Interface Builder files for localization
Xcode 10.3 vs. Xcode 11

Export-Import Localization Performance
Export-Import Localization Performance
Export-Import Localization Performance

The more Interface Builder files, the bigger the improvement
Export-Import Localization Performance

The more Interface Builder files, the bigger the improvement

No need to call `genstrings` or `ibtool` directly
Export-Import Localization Performance

$ xcodebuild -exportLocalizations -project <projectname> -localizationPath <dirpath>
[[-exportLanguage <targetlanguage>] ...]

$ xcodebuild -importLocalizations -project <projectname> -localizationPath <locale.xcloc>
iPad Apps for Mac
Welcome to Apple News
The best stories from the sources you love, selected just for you.

Siri suggests stories, channels, and topics based on Safari and app usage. You can change this in News Preferences.

Your location is sent to Apple to provide you with geographically relevant ads in Apple News and Stocks. You can change this in System Preferences.

About Apple News & Privacy... Continue

Siri suggests stories, channels, and topics based on Safari and app usage. You can change this in Settings.

About Apple News & Privacy... Continue
Siri suggests stories, channels, and topics based on Safari and app usage. You can change this in Settings.
Siri suggests stories, channels, and topics based on Safari and app usage. You can change this in News Preferences.
Device-Specific Strings
Device-Specific Strings

One `NSLocalizedString()` call in code
Device-Specific Strings

One `NSLocalizedString()` call in code

Device-specific strings defined in the `.stringsdict`
Device-Specific Strings

One **NSLocalizedString()** call in code

Device-specific strings defined in the **.stringsdict**

Can be combined with plural and variable width rules
Device-Specific Strings
Device-Specific Strings

NSStringDeviceSpecificRuleType
Device-Specific Strings

NSStringDeviceSpecificRuleType
appletv
Device-Specific Strings

NSStringDeviceSpecificRuleType
   appletv
   applewatch
Device-Specific Strings

NSStringDeviceSpecificRuleType
appletv
applewatch
ipad
Device-Specific Strings

NSStringDeviceSpecificRuleType
  appletv
  applewatch
  ipad
  iphone
Device-Specific Strings

NSStringDeviceSpecificRuleType
appletv
applewatch
ipad
iphone
ipod
Device-Specific Strings

NSStringDeviceSpecificRuleType
  appletv
  applewatch
  ipad
  iphone
  ipod
  mac
### Device-Specific Strings

<table>
<thead>
<tr>
<th>Key</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>▼ Strings Dictionary</td>
<td>Dictionary</td>
<td>(1 item)</td>
</tr>
<tr>
<td>▼ UserInstructions</td>
<td>Dictionary</td>
<td>(1 item)</td>
</tr>
<tr>
<td>▼ NSStringDeviceSpecificRuleType</td>
<td>Dictionary</td>
<td>(3 items)</td>
</tr>
<tr>
<td>iphone</td>
<td>String</td>
<td>Tap here</td>
</tr>
<tr>
<td>mac</td>
<td>String</td>
<td>Click here</td>
</tr>
<tr>
<td>appletv</td>
<td>String</td>
<td>Press here</td>
</tr>
</tbody>
</table>
Settings Bundle
Settings Bundle

Can export and import for localization
Assets
Assets
Assets
Assets
Assets

Image sets
Assets

Image sets

Watch complications
Assets

Image sets

Watch complications

Apple TV image stacks
Assets

- Image sets
- Watch complications
- Apple TV image stacks
- Sprite atlases
Assets

Image sets
Watch complications
Apple TV image stacks
Sprite atlases
Game Center dashboards and leaderboards
Assets

Image sets
Watch complications
Apple TV image stacks
Sprite atlases
Game Center dashboards and leaderboards
Symbol sets
Assets
Assets
Assets

NEW
Symbols
Symbols

SF system symbols are localized
Symbols

SF system symbols are localized

Custom symbols can be localized
Introducing SF Symbols
Demo
Localizing assets
Localization Enhancements in Xcode
Localization Enhancements in Xcode

Export and Import of Interface Builder files is 15x faster
Localization Enhancements in Xcode

Export and Import of Interface Builder files is 15x faster

Stringsdict for device-specific strings
Localization Enhancements in Xcode

Export and Import of Interface Builder files is 15x faster

Stringsdict for device-specific strings

Settings Bundle is easy to localize
Localization Enhancements in Xcode

Export and Import of Interface Builder files is 15x faster

Stringsdict for device-specific strings

Settings Bundle is easy to localize

Symbols and images in asset catalogs are localizable
Localized Screenshots with XCTest

Arthur Rayer, Software Engineer
Localization Testing
Localization Testing

Clipping
Localization Testing

Clipping

Truncation
Localization Testing

Clipping

Truncation

Layout overlapping
Localization Testing

Clipping

Truncation

Layout overlapping

Right-to-Left languages
Localization Testing
Localization Testing
XCTESTPLAN
Test Plans

Multiple tests

Multiple configurations
Set up tests for localization
Set up tests for localization
Generate localized screenshots
Set up tests for localization
Generate localized screenshots
Use cases
Set up Tests for Localization
Set up Tests

// Set Accessibility Identifier
myCell.accessibilityIdentifier = "myCell"

// Use Accessibility Identifier to find myCell
app.tables.cells["myCell"].tap()
Set up Tests
Set up Tests
Generate Localized Screenshots
Generate Localized Screenshots
Generate Localized Screenshots

- English (United States)
- Swedish (Sweden)
- Configuration 3
Generate Localized Screenshots
Generate Localized Screenshots

**Localization**

- **Application Language**: English
- **Application Region**: United States
## Generate Localized Screenshots

<table>
<thead>
<tr>
<th>Setting</th>
<th>Setting Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment Variables</td>
<td></td>
</tr>
<tr>
<td>Arguments Passed On Launch</td>
<td></td>
</tr>
<tr>
<td>Environment Variables</td>
<td></td>
</tr>
<tr>
<td>Application Language</td>
<td>English (United States)</td>
</tr>
<tr>
<td>Application Region</td>
<td>Swedish (Sweden)</td>
</tr>
<tr>
<td>Simulated Location</td>
<td>Configuration 3</td>
</tr>
<tr>
<td>UI Testing</td>
<td>Off</td>
</tr>
<tr>
<td>Automatic Screenshots</td>
<td>Off</td>
</tr>
<tr>
<td>Localization Screenshots</td>
<td>Off</td>
</tr>
<tr>
<td>Attachments</td>
<td>On, and keep all</td>
</tr>
<tr>
<td>Test Execution</td>
<td>Lexical</td>
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<tr>
<td>Code Coverage</td>
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</tr>
<tr>
<td>Runtime Sanitization</td>
<td></td>
</tr>
<tr>
<td>Address Sanitizer</td>
<td>Off</td>
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<tr>
<td>Thread Sanitizer</td>
<td>Off</td>
</tr>
<tr>
<td>Undefined Behavior Sanitizer</td>
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<tr>
<td>Runtime API Checking</td>
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<tr>
<td>Main Thread Checker</td>
<td>On</td>
</tr>
<tr>
<td>Memory Management</td>
<td></td>
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<tr>
<td>Malloc Sanitible</td>
<td>Off</td>
</tr>
<tr>
<td>Malloc Guard Edges</td>
<td>Off</td>
</tr>
<tr>
<td>Guard Malloc</td>
<td>Off</td>
</tr>
<tr>
<td>Zombie Objects</td>
<td>Off</td>
</tr>
<tr>
<td>Malloc Stack Logging</td>
<td>Off</td>
</tr>
</tbody>
</table>
Generate Localized Screenshots

UI Testing

Automatic Screenshots: Off
Localization Screenshots: On
Generate Localized Screenshots
Use Cases
Vacation Planet
Where are you going next?

4.6 ★★★★★
32 Ratings
12+

Discover
Kids in Space

Kids in Space
Fun for the whole family! Kids can fill out their Planet Passport as we visit each of the eight planets in the solar system. Sculpt sandcastles with real Martian sand, build a moonlander and test it, and try your hand at finding geographic features under a thick cloud in the Venus simulation table. Little ones getting squirmly? The Planetary Playground is just one floor down so you can run around the orbital racetrack or play dodgeball in the asteroid belt room. Finish your day at our Constellation Buffet, a restaurant sure to please even the pickiest of eaters.

Planète Vacances
Découvrez une autre planète ?

4,5 ★★★★★
6,4k notes
12+

Découvrir
Petit Cosmonaute

Petit Cosmonaute
Divertissement garanti pour toute la famille ! Venez compléter votre passeport planétaire en visitant chaque planète du système solaire. Faites des châteaux de sable martiens, construisez un atterrisseur lunaire ou essayez de découvrir de nouvelles caractéristiques géographiques sous les épais nuages de Vénus. Un trop plein d'énergie ? L'aire de jeux planétaire n'est qu'un étage plus bas : vous pouvez y courir sur un circuit orbital ou faire une partie de dodgeball dans notre univers d'astéroïdes. Et après l'effort, le réconfort : le restaurant Port Cloud est une attraction culinaire à ne pas manquer !
Travel Details

Start: 6/7/19
End: 6/14/19
1 traveler

Price: $76.00
<table>
<thead>
<tr>
<th>Start</th>
<th>6/7/19</th>
</tr>
</thead>
<tbody>
<tr>
<td>End</td>
<td>6/14/19</td>
</tr>
<tr>
<td>1 traveler</td>
<td></td>
</tr>
<tr>
<td>PRICE</td>
<td>$76.00</td>
</tr>
</tbody>
</table>
Xcode Localization Catalog

Localizable Files
- Localizable.strings
- Localizable.stringsdict
- Main.storyboard
- ...
- index.html
- image.png

UI Tests Attachments
- Screenshots
- Metadata

Export

fr.xcloc

contents.json

Localized Contents
- fr.xliff
- fr.lproj

Source Contents
- Base.lproj
- en.lproj

Notes
- README
- Screenshots
- Metadata
Xcode Localization Catalog

Save As: VacationPlanet

Localizations:
- English — Development Language
- French
- Swedish

Include screenshots

New Folder  Customize...  Export  Cancel
Xcode Localization Catalog

Save As: VacationPlanet

Localizations:
- English — Development Language
- French
- Swedish

Include screenshots

45 of 45 selected
$ xcodebuild -exportLocalizations -project <projectname> -localizationPath <dirpath>
[[-exportLanguage <targetlanguage>] ...] -includeScreenshots
Xcode Localization Catalog

Select screenshots to export in your Xcode Localization Catalog

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Device</th>
<th>Language</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>VacationPlanetUITests</td>
<td>iPhone 8 Plus</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>VacationPlanetMarketing</td>
<td>iPhone 8 Plus</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>VacationPlanetUITests</td>
<td>iPhone Xs</td>
<td></td>
<td>24</td>
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<tr>
<td>VacationPlanetUITests</td>
<td>iPhone Xs</td>
<td>English</td>
<td>8</td>
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<tr>
<td>VacationPlanetUITests</td>
<td>iPhone Xs</td>
<td>Swedish</td>
<td>8</td>
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<tr>
<td>VacationPlanetUITests</td>
<td>iPhone Xs</td>
<td>French</td>
<td>8</td>
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<tr>
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<td>iPhone Xs</td>
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</tr>
<tr>
<td>VacationPlanetUITests</td>
<td>iPhone Xs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Include screenshots: Yes

45 of 45 selected

Done

New Folder
Cancel
Export
Test Attachments

VacationPlanet > VacationPlanetMarketing | 1 passed (100%) in 8s

- testMarketingScreens() | 8s
- English (United States) | 8s
- Swedish (Sweden) | 8s
- French (France) | 8s
  - Start Test at 2019-06-26 23:59:12.240 (Start)
  - Set Up (0.11s)
  - Tap Button (7.08s)
    - Wait for Apple.VacationPlanet to idle (7.08s)
      - Find the Button (7.16s)
        - Check for interrupting elements affecting "Découvrir" Button (7.29s)
    - Synthesize event (7.41s)
      - Automatic Screenshot
      - Localizable Strings Info
    - Wait for Apple.VacationPlanet to idle (7.71s)
      - Find the Target Application 'Apple.VacationPlanet' (7.82s)
      - Added attachment named 'Discover' (8.05s)
    - Tear Down (8.07s)
Test Attachments

- Synthesize event (7.41s)
- Automatic Screenshot
- Localizable Strings Info

Find the Target Application 'Apple.VacationPlanet' (7.82s)
- Added attachment named 'Discover' (8.05s)

Tear Down (8.07s)
# Test Attachments

<table>
<thead>
<tr>
<th>Key</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Root</td>
<td>Array</td>
<td>(5 items)</td>
</tr>
<tr>
<td>Item 0</td>
<td>Dictionary</td>
<td>(5 items)</td>
</tr>
<tr>
<td>Item 1</td>
<td>Dictionary</td>
<td>(5 items)</td>
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<td>Item 2</td>
<td>Dictionary</td>
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<td>Apple.VacationPlanet</td>
</tr>
<tr>
<td>bundlePath</td>
<td>String</td>
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<tr>
<td>frame</td>
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<td>((2, 730), (121, 48))</td>
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<tr>
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<td>kDh-xm-93c.title</td>
</tr>
<tr>
<td>tableName</td>
<td>String</td>
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<td>Item 3</td>
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<tr>
<td>frame</td>
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<tr>
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<td>String</td>
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<tr>
<td>tableName</td>
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</tr>
<tr>
<td>Item 4</td>
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<td>(5 items)</td>
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<tr>
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<td>String</td>
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<tr>
<td>tableName</td>
<td>String</td>
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</table>
Test Attachments

**Table:**

<table>
<thead>
<tr>
<th>Key</th>
<th>Type</th>
<th>Value</th>
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</thead>
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<tr>
<td>Item 2</td>
<td>Dictionary</td>
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</table>
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Xcode Localization Catalog
Xcode Localization Catalog
Demo
Localized screenshots

Vivian Robison, Software Engineer
Summary
Summary

App language setting
Summary

App language setting

Localization workflow improvements
Summary

App language setting

Localization workflow improvements

Localizing images
Summary

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Localization workflow improvements
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Localized screenshots with XCTest