Supporting the Enterprise with OS X Automation

Creating solutions using OS X automation technologies

Session 306

Sal Soghoian  Product Manager Automation Technologies
“The Enterprise”
“The Enterprise”
“Workflow Strategies”
“Workflow Strategies”
“Workflow Strategies”

Develop a library of tools

• Avoid “one-tool” mindset
“Workflow Strategies”

Take advantage of strengths

• Use the right tool for the job
Take advantage of strengths
• Use the right tool for the job
“Workflow Strategies”

Design workflows as connected modules

• Enable repurposing, adaptation and expansion
“Workflow Strategies”

Design workflows as connected modules

• Enable repurposing, adaptation and expansion
Optimize workflows

• Eliminate bottlenecks
• Reduce repetition
• Remove complexity/confusion
“Workflow Strategies”

Optimize workflows
• Eliminate bottlenecks
• Reduce repetition
• Remove complexity/confusion
Design workflows for the user

- **Complex** solutions are **avoided**
- **Convenient** solutions are **used**
“Workflow Strategies”

Design workflows for the user

- **Complex** solutions are avoided
- **Convenient** solutions are used
“Workflow Strategies”

- Use all available tools
- Take advantage of strengths
- Design workflows to be modular
- Eliminate bottlenecks, repetition, and complexity
- Design workflows for the user
“Workflow Strategies”

- Pursue inclusion
“Workflow Strategies”

Pursue inclusion

Success = AND not OR
Origami comes from the Japanese words ori (folding) and kami (paper).

Origami, the Japanese art of paper folding, can be traced back to the 11th century. The goal of origami is to transform a sheet of paper, usually a square, into a 3D shape or figure by folding and/or creasing it. The principles of origami are simple: Many animal shapes are easy to make, as are forklifts and paper cranes. Each step is shown below with precise instructions and diagrams.
iOS and OS X

Origami comes from the Japanese words ori (folding) and kami (paper).

Origami, the Japanese art of paper folding, can be traced back to the 17th century. The art form is known for its precision and beauty, often seen in intricate designs and symmetrical shapes. In recent years, origami has gained popularity in various fields, including mathematics, engineering, and computer science, where its principles are applied to solving complex problems.
OS X

Depth and power
OS X

Depth and power

Frameworks

- Text
- Media - Image - Video
- Animation
- Core Data

User services
- Location and Maps - Calendar

Speech
- Recognition - Dictation - Command and Control
OS X

Depth and power

Connective technologies

- WiFi - Bluetooth - Ethernet
- Bonjour
- File Sharing (AFP - SMB)
- Web Sharing
- AirDrop
OS X

Depth and power

Automation technologies

• AppleScript
OS X

Depth and power

Automation technologies
• AppleScript
• AppleScriptObjective-C
OS X
Depth and power

Automation technologies
• AppleScript
• AppleScriptObjective-C
• JavaScript for Automation (JXA)
OS X

Depth and power

Automation technologies
• AppleScript
• AppleScriptObjective-C
• JavaScript for Automation (JXA)
• Automator
OS X

Depth and power

Automation technologies
• AppleScript
• AppleScriptObjective-C
• JavaScript for Automation (JXA)
• Automator
• UNIX shells • Perl • Python • Ruby
OS X

Depth and power

Speed
Accuracy
Consistency
Convenience
Flexibility
Scalability
Enterprise Automation Scenarios
Enterprise Automation Scenarios

Workgroup image repository
Enterprise Automation Scenarios

Workgroup image repository
Automating document construction
Enterprise Automation Scenarios

Workgroup image repository
Automating document construction
Automating setup of iOS devices
Workgroup Image Repository

Off-cloud workgroup sharing
AirDrop
Automator and Folder Actions
Automator and Folder Actions
Automator and Folder Actions
Automator and Folder Actions
Automator and Folder Actions
Choose a type for your document:

- Workflow
- Application
- Service
- Print Plugin

- Folder Action
- Calendar Alarm
- Image Capture Plugin
- Dictation Command

Workflow

Workflows can be run from within Automator.

Open an Existing Document... Close Choose
Choose a type for your document:

- Workflow
- Application
- Service
- Print Plugin
- Folder Action
- Calendar Alarm
- Image Capture Plugin
- Dictation Command

Workflow

Workflows can be run from within Automator.

Open an Existing Document... Close Choose
Folder Action

Folder Actions are workflows that are attached to a folder in the Finder. Items added to the folder cause the workflow to run and are used as input to the workflow.
Activate Fonts

This action activates the fonts passed from the previous action.

Input: Font Book typeface
Result: Font Book typeface
Version: 5.0
Copyright: Copyright © 2004–2014 by Apple Inc. All rights reserved.
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Add to Album

This action will add media items, whose references are passed to this action as input, to the indicated album.

**Input:** Photos Media Item

**Options:** You can choose to add media items to either an existing top-level album, or a new top-level album.

**Result:** Photos Album

**Version:** 1

**Website:** http://www.yourwebsite.com/
Import Files into Photos

This action returns references to the media items imported into the Photos application.

**Input:** (Files/Folders) Image files

**Options:** Action options include:
1) Importing into an existing top-level album; a new album; or into the default library.
2) The option to delete the source files upon completion of import.
Import Files into Photos

This action returns references to the media items imported into the Photos application.

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Folder Action receives files and folders added to `

Drag actions or files here to build your workflow.
Import Files into Photos

This action returns references to the media items imported into the Photos application.

- **Input:** (Files/Folders) Image files
- **Options:** Action options include:
  1) Importing into an existing top-level album; a new album; or into the default library.
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Input: (Files/Folders) Image files
Options: Action options include:
1) Importing into an existing top-level album; a new album; or into the default library.
2) The option to delete the source files upon completion of import.

Save folder action as: Import from Drop Box

- Import without adding to album
- Skip checking for duplicates
- Move source files to trash after import completion

Results Options
Import Files into Photos

This action returns references to the media items imported into the Photos application.

**Input:** (Files/Folders) Image files

**Options:** Action options include:

1. Importing into an existing top-level album; a new album; or into the default library.
2. The option to delete the source files upon completion of import.

**Save folder action as:** Import from Drop Box

- [ ] Skip checking for duplicates
- [ ] Move source files to trash after import completion
Import from Drop Box

Folder Action receives files and folders added to

Import Files into Photos

- Import without adding to album
- Skip checking for duplicates
- Move source files to trash after import completion

Results Options

Import Files into Photos

This action returns references to the media items imported into the Photos application.

Input: (Files/Folders) Image files

Options: Action options include:
1) Importing into an existing top-level album; a new album; or into the default library.
2) The option to delete the source files upon completion of import.
This action returns references to the media items imported into the Photos application.

**Input:** (Files/Folders) Image files

**Options:** Action options include:
1. Importing into an existing top-level album: a new album; or into the default library.
2. The option to delete the source files.
You can put items into “Drop Box”, but you won’t be able to see them. Do you want to continue?

Other users with sufficient permissions will be able to use the items.
You can put items into “Drop Box”, but you won’t be able to see them. Do you want to continue?

Other users with sufficient permissions will be able to use the items.

Cancel  OK
Workgroup Image Repository
Off-cloud network file sharing

Takes advantage of built-in technologies
- File Sharing (SMB)
- AirDrop (Bluetooth, WiFi)
- Automator and Folder Actions

Works with wide-range of devices
- OS X computers
- iOS devices
- Windows-based computers (SMB)
Auto-accept AirDrop applet
Auto-accept AirDrop applet
Auto-accept AirDrop applet
Auto-accept AirDrop applet
Automator actions for Photos in OS X

https://photosautomation.com
Workgroup Image Repository

Off-cloud workgroup sharing
Automating Document Construction

Creative freedom
OS X Automation Technologies

Anything is possible

Automations run as the user

- Command and control applications
  - Application Object Model
  - Application interface
- Access and move data freely
- Create, duplicate, and delete documents
- Mount/unmount volumes
- Access OS and UNIX frameworks
Domestic Sales by Quarter
Domestic Sales by Quarter
Demo

Automation and document construction

Sal Soghoian
Product Manager Automation Technologies
OS X provides a complete range of automation technologies

- AppleScript (AppleScriptObjC)
- JavaScript for Automation (JXA)
- Automator
- UNIX CLI

Scriptable applications

- iWork and Photos
- Finder
- FileMaker Pro
https://iworkautomation.com

AppleScript and Automator automation for iWork
Automating Document Construction
Creative freedom
Automating the Setup of iOS Devices

Device preparation for the “Accidental Administrator”
Data deployment
Thunderstorms at SFO

Severe thunderstorms and showers at SFO, expect major delays affecting all flights
### Portfolio

**Jon Wiita**
- Client since 1995
- Moderate Risk Profile

**Value**
- $2,332,567

**Accounts**
- Investment Account: $9,456,789
- IRA Retirement: $1,456,789
- Cash Account

### Alerts & Approvals

<table>
<thead>
<tr>
<th>Client</th>
<th>Segment</th>
<th>Lead Rating</th>
<th>Opportunity Size</th>
<th>New Business</th>
<th>Advice</th>
<th>Retention</th>
<th>Delegated</th>
<th>Completed</th>
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<tbody>
<tr>
<td>Jennifer Martin</td>
<td>HNW</td>
<td>8</td>
<td>$15-20M</td>
<td>2</td>
<td>15</td>
<td>1</td>
<td>20</td>
<td>16</td>
</tr>
<tr>
<td>Kim Kligo</td>
<td></td>
<td></td>
<td>$12M</td>
<td>14</td>
<td>1</td>
<td>1</td>
<td>29</td>
<td>16</td>
</tr>
<tr>
<td>Ian Craigmire</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**New Lead**

- **Client** Jennifer Martin, EVP Strategy of ABC Enterprises, holds shares estimated to be worth $15-20M following IPO and has 6 client connections.

**Client Satisfaction Issue**


**New Account Approval**

- USLI pending approval for Account 40389-4164-242. (Branch #005, FAX 001, submitter ID P0287P).

**Recommendations**

- **Create Case Team** to prepare proposals
- Call to address client concerns
- Personal advisor contract
- Investigative issue

**Approval Details**

- Target Account Size
- Net Worth
- Age
- Investment Objective

**Status**

- Delegate
- Postpone
- Act
- Reject
- Approve

---

**New Lead**

- Client: Jennifer Martin, EVP Strategy of ABC Enterprises, holds shares estimated to be worth $15-20M following IPO and has 6 client connections.

**Recommendations**

- Create Case Team to prepare proposals
- Call to address client concerns
- Request introduction from mutual connection

**Investigative issue**

- Ask to investigate to determine other follow-up required.
Enterprise and iOS
Enterprise and iOS
Device deployment
One-to-One
One-to-One
One-to-One
One-to-One
One-to-One
One-to-One
Shared-Use
Shared-Use
Shared-Use
Shared-Use
Shared-Use
Shared-Use
Shared-Use
Shared-Use
Shared-Use
Shared-Use
Shared-Use
Shared-Use
Shared-Use
Shared-Use
Shared-Use
Device Management

One-to-One

Shared-Use
Device Management

One-to-One

Shared-Use

Device Enrollment Program
Volume Purchase Program
Device Management

One-to-One
- Device Enrollment Program
- Volume Purchase Program

Shared-Use
- Apple Configurator
Apple Configurator
Apple Configurator 2
iPad

About

- Model: iPad Air 2
- Capacity: 55.86 GB
- State: Booted
- Battery: 100%

Tech Info

- iOS Version: 8.3 (12F69)
- Serial Number: DLXNK6FUG5VW
- UDID: 7B2D0D7D8C01B4AD9...F9F457479A384B4868
- ECID: 0xB498C20090826
- Wi-Fi Address: 78:7E:61:CA:13:90
- Latest Backup: Never

- Encrypt local backup

Usage

- 55.51 GB Available
Apple Configurator can prepare your devices by supervising them, enrolling them in an MDM server, or configuring which panes will be skipped in the setup assistant before reaching the home screen.

Configuration: Manual

Encrypt local backup
Backs up account passwords.
Change Password...

Usage

55.51 GB Available
Enroll in MDM Server

An MDM server allows you to manage enrolled devices remotely over the air. If you have an MDM server, enter its enrollment URL below. Once the device has been prepared, it will be enrolled with your MDM server and further management of the device can be done using the MDM server console.

Server: Do not enroll in MDM
Supervise devices

An iOS device can be supervised, allowing for more advanced configuration for devices owned by an institution. Additional restrictions and settings are available, such as installing configuration profiles without needing to tap on the device's screen.

- [ ] Supervise devices
- [ ] Allow devices to connect to other computers

Encrypt local backup
Backs up account passwords.

Change Password...

Usage
55.51 GB Available
Assign to Organization

The name, address, and phone number you provide for an organization appears in Settings > General > About on a supervised device. This information is mandatory for supervised devices and cannot be changed once the device has been prepared.

Organization: Woodbury Middle School

Cancel  Previous  Next

Encrypt local backup

Usage

55.51 GB Available
“Accidental Administrators”
Choose a type for your document:

- Workflow
- Application
- Service
- Print Plugin
- Folder Action
- Calendar Alarm
- Image Capture Plugin
- Dictation Command

**Workflow**

Workflows can be run from within Automator.

[Open an Existing Document... Close Choose]
Choose a type for your document:

- Workflow
- Application
- Service
- Print Plugin

Folder Action
Calendar Alarm
Image Capture Plugin
Dictation Command

**Workflow**

Workflows can be run from within Automator.

Open an Existing Document... Close Choose
Choose Connected Devices

This action returns a list of ECID identifiers to connected iOS devices selected by the user, as a displayed list.

This action takes no input.

You can choose to include the device serial number in the data string displayed for each device.

Result: (Text) ECID identifiers

Version: 1.0
Choose Connected Devices

This action returns a list of ECID identifiers to connected iOS devices by the user, as a displayed list.

This action takes no input.

You can choose to include the device serial number in the data string displayed for each device.

Result: (Text) ECID Identifiers

Version: 1.0
Get Connected Devices

This action returns a list of ECID identifiers to the iOS devices connected to this computer. This action takes no input.

Result: (Text ECID)

Version: 1.0
Website: https://example.com
Get Connected Devices

Select the type(s) of devices to identify:

- iPad
- iPhone
- iPod touch
- Apple TV

Results  Options
Get Connected Devices

Select the type(s) of devices to identify:
- iPad
- iPhone
- iPod touch
- Apple TV

Results Options
Select the type(s) of devices to identify:

- iPad
- iPhone
- iPod touch
- Apple TV

Results  Options
Restore Devices

This action restores devices whose identifiers are passed as input.

Get Connected Devices

Select the type(s) of devices to identify:
- iPad
- iPhone
- iPod touch
- Apple TV

Results Options

Restore Devices

This action restores devices whose identifiers are passed as input to this action.

Results Options
Restore Devices

This action restores devices whose identifiers are passed as input to this action.
Prepare Devices

- Get Connected Devices
  - Select the type(s) of devices to identify:
    - iPad
    - iPhone
    - iPod touch
    - Apple TV
  - Results
  - Options

- Restore Devices
  - This action restores devices whose identifiers are passed as input to this action.
  - Results
  - Options
Prepare Devices
Prepare Devices
Rename Devices

This action renames devices in a numeric sequence, the devices whose identifiers are passed as input to this action.

Configure iOS setup assistant:
- Apple ID
- Location
- Display Zoom
- Siri
- Apple Pay
- Passcode
- Terms of Service

Host certificate: certificate.der (required)
- Anchor certificate: Locate certificate file... (optional)
Rename Devices

In the image, a window is open with a list of actions and a section titled "Rename Devices." The window shows options such as "Choose Connected Devices," "Copy Documents to Devices," "Erase Devices," and "Prepare Device for Devices." Below these options, there is a highlighted action "Rename Device." Additionally, there is a section for configuration details, including host certificate, organization information, and setup assistant options. The main focus is on the "Rename Device" action, which is highlighted in the list of actions.
Install Wallpaper on Devices
Install Wallpaper on Devices

This action will copy a JPEG file to the specified devices and set it to the default wallpaper using the indicated parameters.

This action works only with supervised devices and requires the use of certificate and private key files.

Actions: (Text) ECID Identifiers

Options: There is an option to indicate a short amount of text to be overlaid on the device lock screen.

Image file: Woodbury Vertical.jpg

Screen: Both

Text: [Use device name]

Certificate: certificate.der

Private Key: private-key.der

Results: [Output file path]
Install Wallpaper on Devices

This action will copy a JPEG file to the specified devices and set it to the default wallpaper using the indicated parameters.

This action works only with supervised devices and requires the use of certificate and private key files.

Options: There is an option to indicate a short amount of text to be overlaid on the device lock screen.
Install Wallpapers

Choose the style for the wallpaper and set options such as which images to use and whether to position the images automatically or manually.

Tips:
- If you want to change the image source after the wallpaper is installed, you can use Automator to automate this process.
- If you have an image that you want to use as a wallpaper, you can use Automator to automate the process of installing it.
- If you have images that you want to use as wallpapers, you can use Automator to automate the process of installing them.

Certificate: certificate.der
Private Key: private-key.der

Hide extension
New Folder
Cancel
Save
Demo
Automator actions for Configurator

Sal Soghoian
Product Manager Automation Technologies
Automating Setup of iOS Devices
Apple Configurator 2 and Automator

Create easy-to-use configuration tools

• Integrated Automator actions support modular workflow design
• Save workflows to system-wide Script Menu

Customization via an integrated Script Library

• AppleScript
• JavaScript for Automation (JXA)
https://configautomation.com

Automator actions for Apple Configurator
Automating the Setup of iOS Devices

Device preparation for the “Accidental Administrator”
Automation and OS X
Supporting the Enterprise with OS X Automation
Automation and OS X
Supporting the Enterprise with OS X Automation

Workflow Strategies

• Use all available tools
• Eliminate bottlenecks, repetition, and complexity
• Success = AND not OR
Automation and OS X

Supporting the Enterprise with OS X Automation

Workflow Strategies
- Use all available tools
- Eliminate bottlenecks, repetition, and complexity
- Success = AND not OR

Resources
- photosautomation.com
- configautomation.com
- iworkautomation.com
- macosxautomation.com
| What’s New in Managing Apple Devices | Nob Hill | Tuesday 11:00AM |
## Related Labs

<table>
<thead>
<tr>
<th>Education and Enterprise Development and Deployment Lab</th>
<th>Frameworks Lab D</th>
<th>Thursday 12:00PM</th>
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<tbody>
<tr>
<td>Education and Enterprise Development and Deployment Lab</td>
<td>Frameworks Lab C</td>
<td>Friday 2:30PM</td>
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