

**PLAINTIFF**

U.S. District Court - NDCAL

**4:20-cv-05640-YGR-TSH**

Epic Games, Inc. v. Apple Inc.

**Ex. No. PX-0335**

Date Entered \_\_\_\_\_

By \_\_\_\_\_

**From:** Trystan Kosmyntka [REDACTED]  
**To:** Ricardo Cortes [REDACTED]  
**CC:** Trystan Kosmyntka [REDACTED]  
**BCC:**  
**Subject:** Columbus Deck  
**Attachments:** Columbus - 07242015.key;  
**Sent:** 09/30/2015 09:31:05 PM 0000 (GMT)

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Here's the deck in the event my laptop fails me...

**Exhibit  
PX 335**

PX-0335.1

APL-APPSTORE\_09310119



# Columbus

App review automation and efficiency

“Anything Apple can do structurally to scale this better and reduce review times would be perhaps the single most impactful change to our ability to ship great apps”

- Mike Beltzner, Pinterest

added name

# The Problem

Volume (61,277 submissions - 7 days)

Complexity (155 countries, 24 categories, 910 snippets)

Manual & Slow

- Here's the problem, the volume is immense and continues to grow. The complexity is insane... 155 countries and 910 different types rejections reasons today. They are looked at manually everytime starting from scratch and by different people (inconsistent). And all of this results in an SLA longer than developers should expect and even worse creates a great deal of anxiety and ill will between Apple and developers.

# Goals

Reduce # of manual reviews

Reduce developer perceived review time

Improve consistency

Improve quality

Slimmed it down

Matt's Note: Ton of scam apps in store, it's called out in the reviews. To good to be true.

And we can continue to audit catalog for scam apps



## Start in highest impact areas

There are a couple specific areas that are prime for automation...

# Top 10 rejection reasons

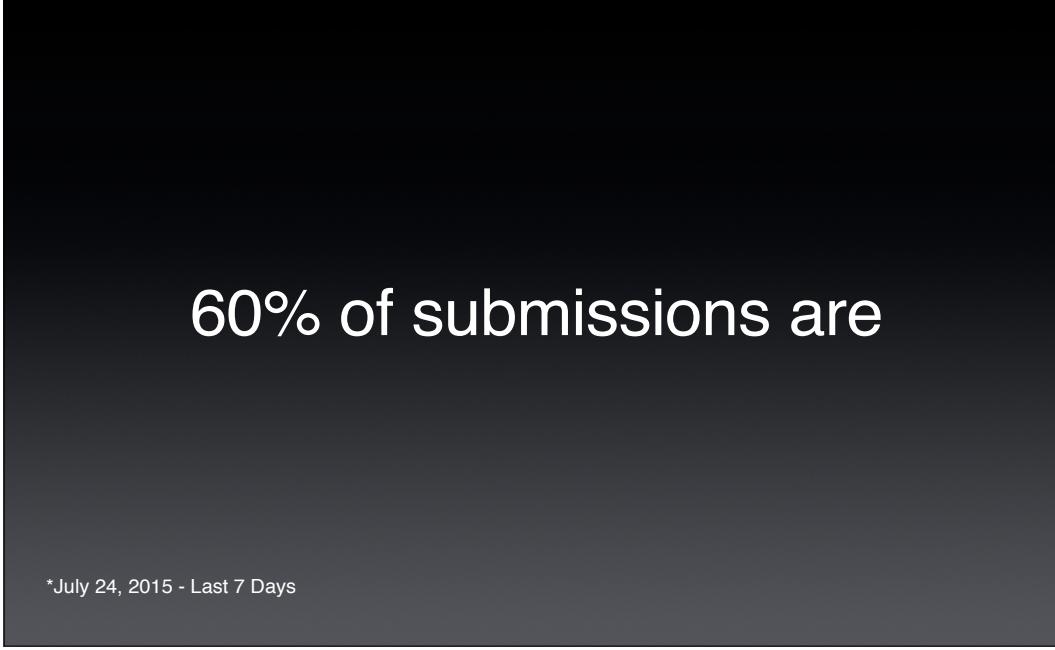
14%	Information Needed
10%	2.2 Apps that exhibit bugs will be rejected
5%	10.6 Apple and our customers place a high value on simple, refined, creative, well thought through interfaces. They take more work but are worth it. Apple sets a high
3%	3.8 Developers are responsible for assigning appropriate ratings to their Apps. Inappropriate ratings may be changed/deleted by Apple
3%	3.1 Apps or metadata that mentions the name of any other mobile platform will be rejected
3%	2.1 Apps that crash will be rejected
3%	3.3 Apps with names, descriptions, screenshots, or previews not relevant to the content or functionality of the App will be rejections
3%	22.2 Apps that contain false, fraudulent or misleading representations or use names or icons similar to other Apps will be rejected
2%	3.4 App names in iTunes Connect and as displayed on a device should be similar, so as to not cause confusion
2%	17.2 Apps that require users to share personal information, such as email address and date of birth, in order to function will be rejections
52%	Other Reasons (< 2% each)

\*June 17, 2015 - 7 Day Report

Changed title



App updates



60% of submissions are

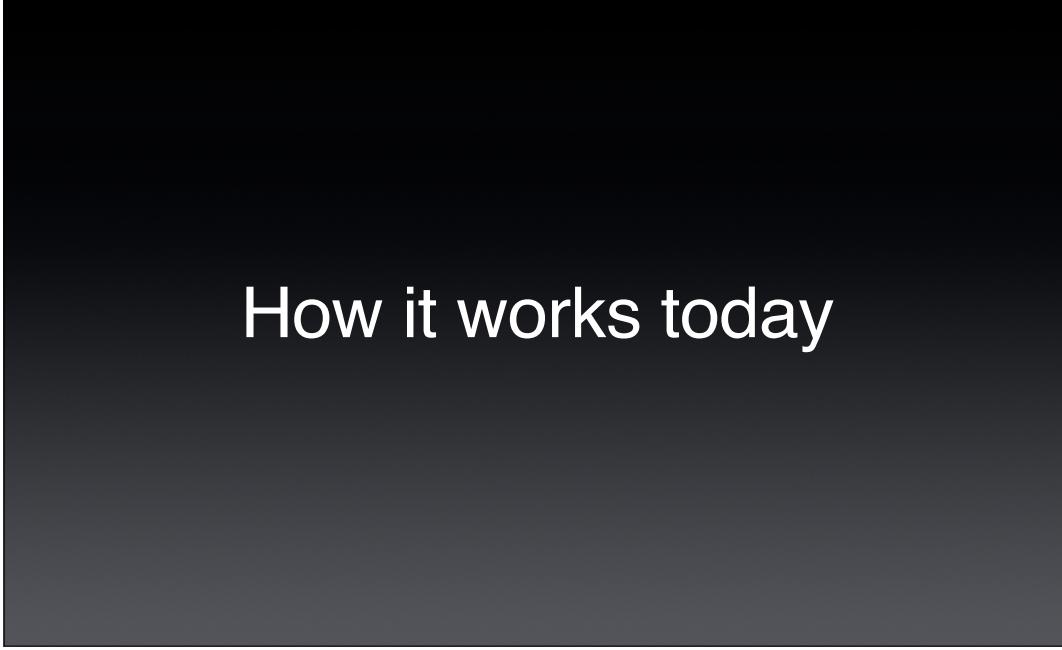
\*July 24, 2015 - Last 7 Days

# 60% of Reviews Are Updates

20% are “fixes”

\*July 24, 2015 - Last 7 Days





# How it works today

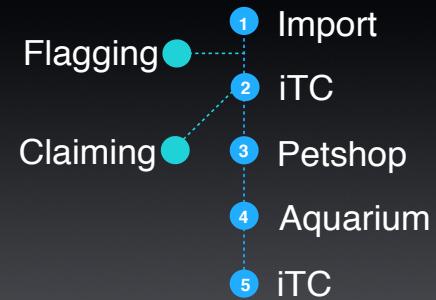
# Existing Flow

- ① Import
- ② iTC
- ③ Petshop
- ④ Aquarium
- ⑤ iTC

# Existing Flow



# Existing Flow



# Existing Flow



# Tracks

## Reduce Manual Reviews

Automation

Validation

## Reduce Review Time

Assisted Review

Tool Efficiency

## Tool Efficiency

- 1 Import
- 2 iTC
- 3 Petshop
- 4 Aquarium
- 5 iTC

## Tool Efficiency

### Stability

- 1 Import
- 2 iTC
- 3 Petshop
- 4 Aquarium
- 5 iTC

# Stability

## Short Term

- Improved deployment playbook
- Improve monitoring & alerting
- Slow rollout deployment pool

## Long Term

- Infrastructure improvements (in progress & ongoing)
- Aquarium offline mode

Slimmed it down

Matt's Note: Ton of scam apps in store, it's called out in the reviews. To good to be true.

And we can continue to audit catalog for scam apps

## Tool Efficiency

### Stability

- 1 Import
- 2 iTC
- 3 Petshop
- 4 Aquarium
- 5 iTC

## Tool Efficiency

Stability  
Claiming & Distribution

- 1 Import
- 2 iTC
- 3 Petshop
- 4 Aquarium
- 5 iTC

## Tool Efficiency

Stability

Claiming & Distribution

Desktop Aquarium

- 1 Import
- 2 iTC
- 3 Petshop
- 4 Aquarium
- 5 iTC

# Tracks

## Reduce Manual Reviews

Automation

Validation

## Reduce Review Time

Assisted Review

Tool Efficiency

## Automation

- 1 Import
- 2 iTC
- 3 Petshop
- 4 Aquarium
- 5 iTC

## Automation

### Content Eval

- 1 Import
- 2 iTC
- 3 Petshop
- 4 Aquarium
- 5 iTC

Evals were successful in books, touch on this

## Automation

Content Evaluations  
Petshop UI Testing

- 1 Import
- 2 iTC
- 3 Petshop
- 4 Aquarium
- 5 iTC

## Automation

Content Evals  
Petshop UI Testing  
Dynamic Analysis

- 1 Import
- 2 iTC
- 3 Petshop
- 4 Aquarium
- 5 iTC

# Dynamic Analysis

SPI	Network
Crash Logs	Memory
CPU	File System Access
Battery Usage	iCloud Usage
IDFA Usage	canOpenURL
Link Analysis	Text Analysis
Screenshot Recording	Video Recording
UI Testing	Access Contacts
Location Services	Access Photos
Access Microphone	Access Bluetooth
Access Camera	Access Health
Access HomeKit	Access Motion & Fitness
Use Apple Pay	Use IAP

# Dynamic Analysis

SPI	Network
Crash Logs	Memory
CPU	File System Access
Battery Usage	iCloud Usage
IDFA Usage	canOpenURL
Link Analysis	Text Analysis
Screenshot Recording	Video Recording
UI Testing	Access Photos
Location Services	Access Contacts
Access Microphone	Access Bluetooth
Access Camera	Access Health
Access HomeKit	Access Motion & Fitness
Use Apple Pay	Use IAP

## ● Functionality

# Dynamic Analysis

SPI	Network
Crash Logs	Memory
CPU	File System Access
Battery Usage	iCloud Usage
IDFA Usage	canOpenURL
Link Analysis	Text Analysis
Screenshot Recording	Video Recording
UI Testing	Access Photos
Location Services	Access Contacts
Access Microphone	Access Bluetooth
Access Camera	Access Health
Access HomeKit	Access Motion & Fitness
Use Apple Pay	Use IAP

● Functionality ● Safety

# Dynamic Analysis

SPI	Network
Crash Logs	Memory
CPU	File System Access
Battery Usage	iCloud Usage
IDFA Usage	canOpenURL
Link Analysis	Text Analysis
Screenshot Recording	Video Recording
UI Testing	Access Photos
Location Services	Access Contacts
Access Microphone	Access Bluetooth
Access Camera	Access Health
Access HomeKit	Access Motion & Fitness
Use Apple Pay	Use IAP

● Functionality ● Safety ● Diagnostics

# Dynamic Analysis

SPI	Network
Crash Logs	Memory
CPU	File System Access
Battery Usage	iCloud Usage
IDFA Usage	canOpenURL
Link Analysis	Text Analysis
Screenshot Recording	AV Recording
UI Testing	Access Photos
Location Services	Access Contacts
Access Microphone	Access Bluetooth
Access Camera	Access Health
Access HomeKit	Access Motion & Fitness
Use Apple Pay	Use IAP

- Functionality
- Safety
- Diagnostics
- User Experience

# Dynamic Analysis

SPI	Network
Crash Logs	Memory
CPU	File System Access
Battery Usage	iCloud Usage
IDFA Usage	canOpenURL
Link Analysis	Text Analysis
Screenshot Recording	AV Recording
UI Testing	Access Photos
Location Services	Access Contacts
Access Microphone	Access Bluetooth
Access Camera	Access Health
Access HomeKit	Access Motion & Fitness
Use Apple Pay	Use IAP

● Functionality ● Safety ● Diagnostics ● User Experience ● Input

# Dynamic Signature

SPI	Network
Crash Logs	Memory
CPU	File System Access
Battery Usage	iCloud Usage
IDFA Usage	canOpenURL
Link Analysis	Text Analysis
Screenshot Recording	AV Recording
UI Testing	Access Photos
Location Services	Access Contacts
Access Microphone	Access Bluetooth
Access Camera	Access Health
Access HomeKit	Access Motion & Fitness
Use Apple Pay	Use IAP

## 1.0 Dynamic Signature



# Static Signature

Screenshots

IAP

Size

Name

What's New

Entitlements

Assembly Analysis

Preview

Description

Keywords

Localizations

Static Analysis

RDiff

Strings

## 1.0 Static Signature



# App Signature

1.0 Static Signature + 1.0 Dynamic Signature = 1.0 App Signature



# App Signature

1.0 App Signature



Compare

1.1 App Signature



# App Signature

1.0 App Signature



Compare

1.1 App Signature



Delta Review

# Tracks

## Reduce Manual Reviews

Automation

Validation

## Reduce Review Time

Assisted Review

Tool Efficiency

## Validation

- 1 Import
- 2 iTC
- 3 Petshop
- 4 Aquarium
- 5 iTC

## Validation

### Import Validations

- 1 Import
- 2 iTC
- 3 Petshop
- 4 Aquarium
- 5 iTC

## Validation

### Import Validations iT C Validations

- 1 Import
- 2 iT C
- 3 Petshop
- 4 Aquarium
- 5 iT C

## Validation

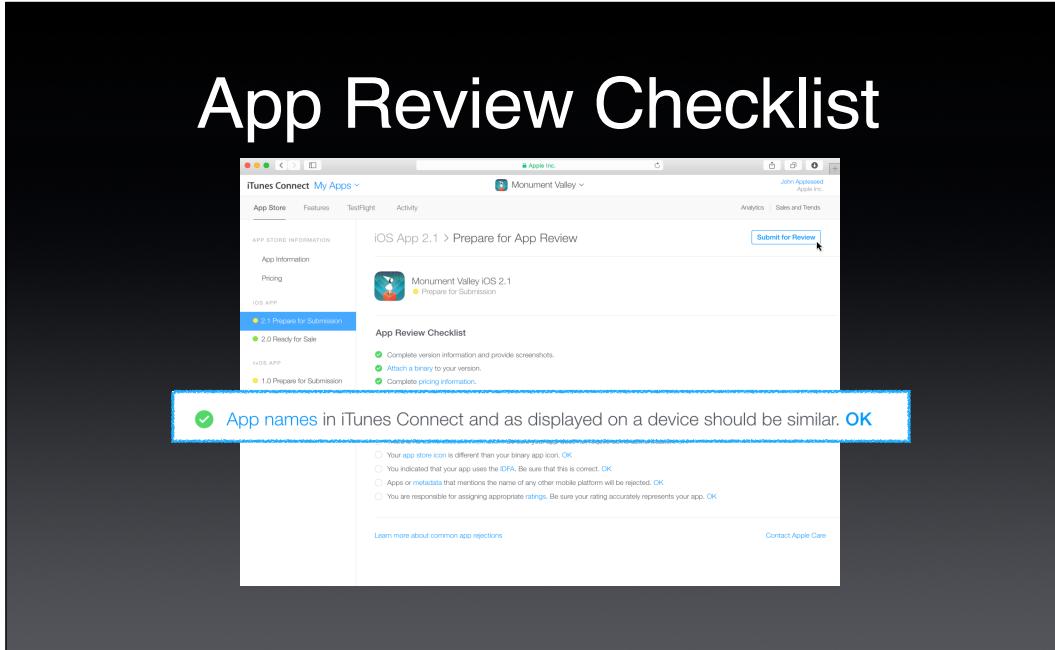
Import Validations

iTC Validations

Review Checklist & Summary

- 1 Import
- 2 iTC
- 3 Petshop
- 4 Aquarium
- 5 iTC

# App Review Checklist



# Tracks

## Reduce Manual Reviews

Automation

Validation

## Reduce Review Time

Assisted Review

Tool Efficiency

## Assisted Review

- 1 Import
- 2 iTC
- 3 Petshop
- 4 Aquarium
- 5 iTC

## Assisted Review

### Delta Review

- 1 Import
- 2 iTC
- 3 Petshop
- 4 Aquarium
- 5 iTC

## Current Aquarium

# Delta Review

NETFLIX  
Netflix, Inc.  
Apple TV Template • 2.0.6 (Pending Analysis)  
3 Platforms, 2 Beta Trans

Claimed by Evain Burns

Launch

English Overview Provider Notes Details Bad Words

SHARED ATTRIBUTES

Name: Netflix >  
Categories: Entertainment >  
Privacy URL: <https://www.netflix.com/privacypolicy>  
Privacy Text: This Privacy Policy explains our policy regarding the collection, use, disclosure and transfer of certain information, including your personal information, by the Netflix family of companies ("Netflix")  
Computed Rating: CV RV PV+ Pr MT HF Med ATD Ga Sk Sx+ Web Ga+ 12+ >  
Kids Age Band: None

# Delta Review

## Change Detection

SHARED ATTRIBUTES

- Name: Netflix > Entertainment >
- Categories:
- Privacy URL: <https://www.netflix.com/privacypolicy>
- Privacy Text: This Privacy Policy explains our policy regarding the collection, use, disclosure and transfer of certain information, including your personal information, by the Netflix family of companies ("Netflix")
- Computed Rating: CV, RV, PV+, Pr, MT, HF, Med, ATD, Ga, Sk, Sx+, Web, Ga+, 12+ >
- Kids Age Band: None

# Delta Review

The screenshot shows a software interface for managing media profiles. At the top, there's a header bar with the Netflix logo, the word "Netflix" and "Netflix, Inc.", and a note about an "Apple TV Template". To the right of the header are buttons for "Launch" and "Edit". Below the header, there are tabs for "English" (selected), "What's New", "Provider", "Notes", "Details", and "Bad Words".  
  
The main area displays a "SHARED ATTRIBUTES" section with two entries:

- Name: Netflix >
- Categories: Entertainment, Lifestyle >

  
Below that is a "PLATFORM ATTRIBUTES" section with one entry:

- Copyright: 2011 Netflix, Inc.

  
On the left side of the main window, there's a dark sidebar with the text "What's New".

## Assisted Review

### Delta Review

- 1 Import
- 2 iTC
- 3 Petshop
- 4 Aquarium
- 5 iTC

## Assisted Review

### Delta Review

- 1 Import
- 2 iTC
- 3 Petshop
- 4 Aquarium
- 5 iTC

# Tracks

## Reduce Manual Reviews

Automation

Validation

## Reduce Review Time

Assisted Review

Tool Efficiency

Changed title

# Resources Needed

Area	#
Data / APIs	4
Aquarium	2
Petshop UI Testing	1
Content Evaluations	2
Dynamic Analysis	6
App Review Checklist / Summary	1
Infrastructure	4
<b>Total</b>	<b>20</b>

# Potential Acquisition

SourceDNA

5 Engineers, Local Team

Experts in cryptography, binary & security analysis

Well Aligned Talent & Tools

Static Analysis

Code Similarity

# Potential Acquisition

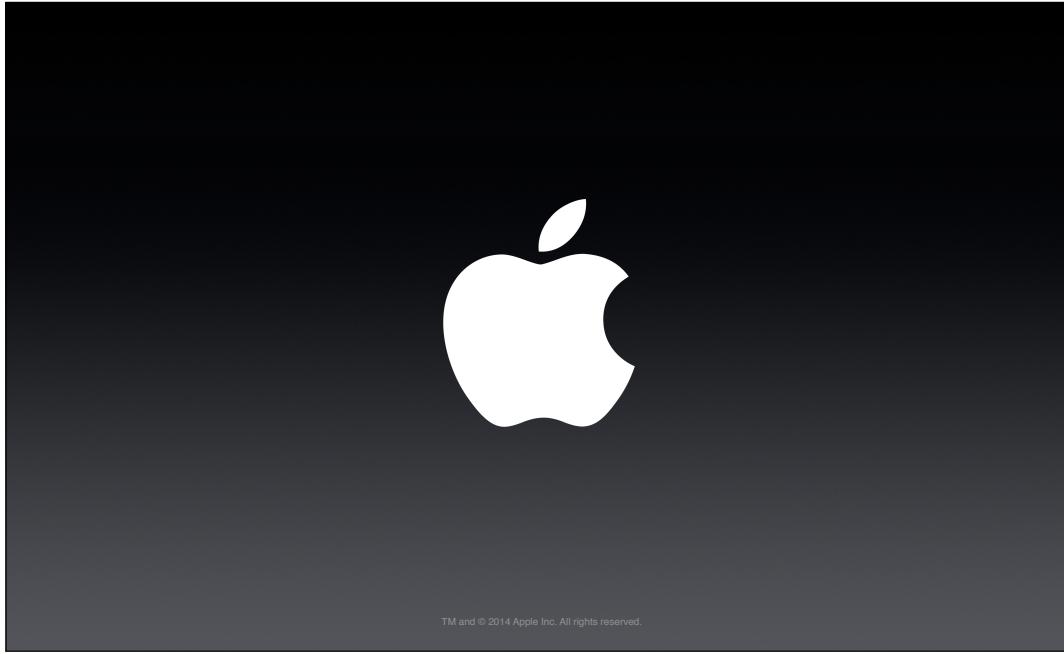
AppThority

30 Employees (20-25 engineers), Local Team

Well Aligned Talent & Tools

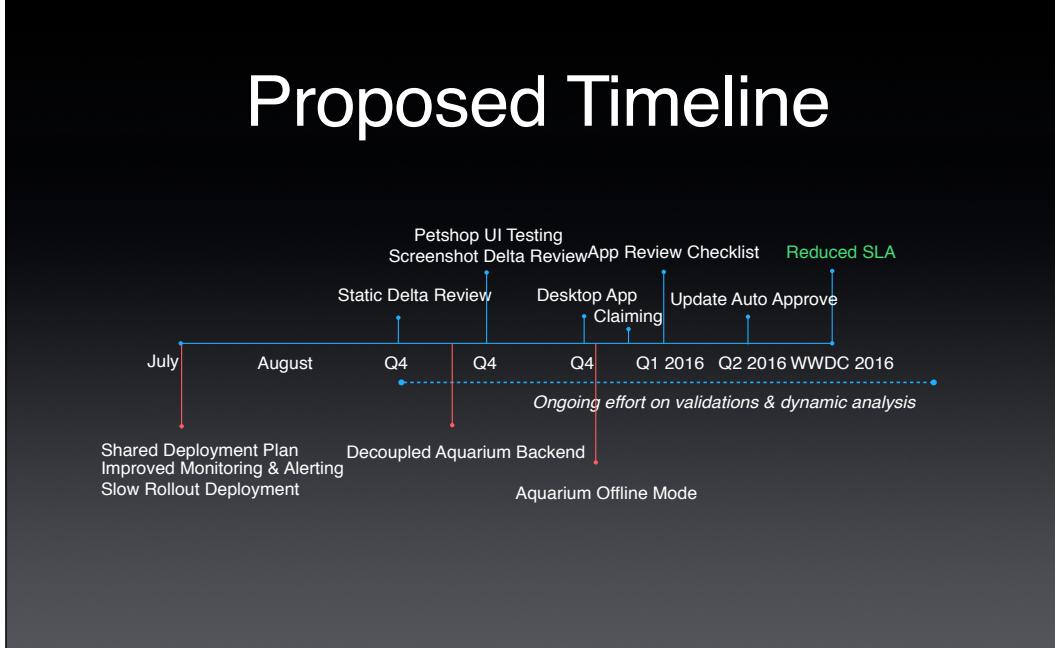
Static Analysis

Dynamic Analysis



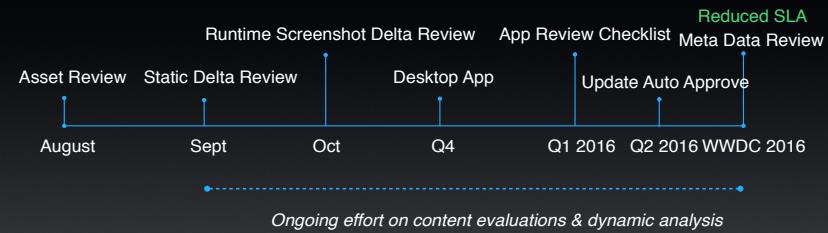
TM and © 2014 Apple Inc. All rights reserved.

# Proposed Timeline



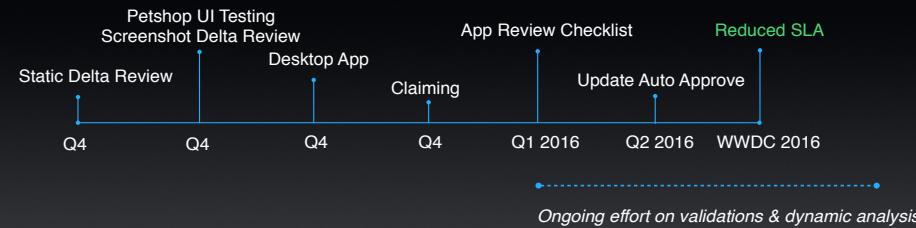
Changed title

# Proposed Timeline



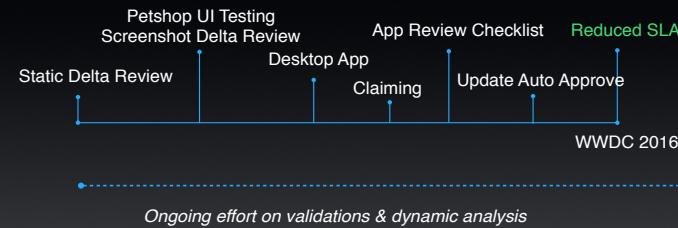
Changed title

# Proposed Timeline



Changed title

# Proposed Timeline



Changed title