



<b>PLAINTIFF</b>
U.S. District Court - NDCAL
4:20-cv-05640-YGR-TSH
Epic Games, Inc. v. Apple Inc.
<b>Ex.No. PX-0072</b>
Date Entered _____
By _____

# App Store Feature Definition Review

Whitetail

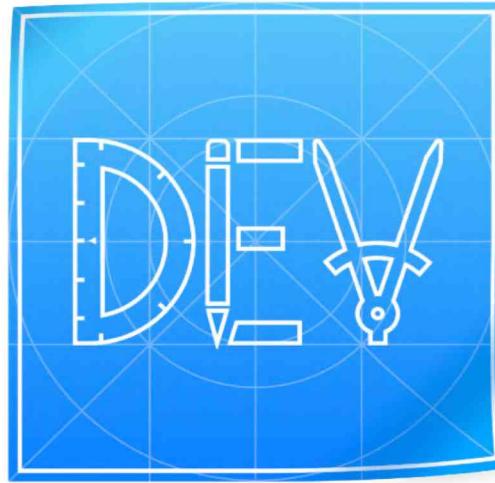
December 17, 2015

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**Exhibit  
0072**

PX-0072.1  
APL-APPSTORE\_09145562

# App Store | Vision



Whitetail App Store Feature Definition

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- Since the launch of App Store in July 2008, our goals have remained the same:

- Help customers discover great apps
- Enable developers to build successful global businesses

# App Store | Agenda

## Customer

- Sticker Store
- Subscriptions 2.0
- Sponsored Search
- App Store Enhancements

## Developer

- Siri Synapse Support
- TestFlight 1.1
- Columbus
- Crossfire Enhancements

## Infrastructure

- Streamline Daemons
- Installation Improvements

# Sticker Store

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# App Store | Sticker Store

## Support for the Expressive Messaging initiative

- Full featured App Store experience within Messages
  - Search
  - Charts
  - Categories and subcategories
  - Editorially driven pages

## App Store | Sticker Store | Risks

- Search implementation coming in post feature-complete
- Sticker evaluation requirements on App Review
- Sticker bundle format currently undefined

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bundle format and image types impact app ingestion and app review

# App Store | Sticker Store | Target Schedule

	M1	M2	M3	M4
<b>Core Client Development</b>		Expose API for Store sheet in Messages Sample sticker app for testing	Addition of Search capability	
<b>Core Server Development</b>		Create FC Keys in Store Bag Provide Search endpoint/url Determine sticker categorization approach	Manual sticker app ingestion into QA Test Sticker App in QA env Sticker app indicators plumbed through to Storefront Grouping pages are programmed with QA Sticker apps	
			Search endpoint returns unfiltered results	

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iTC Flows coming in post M4  
 Still evaluating schedule across teams



# App Store | Sticker Store | Acceptance Criteria

M1	M2	M3	M4
	<p>Sticker store can be launched in Messages</p> <p>Confirm Search endpoint is accessible and functional automation can be written.</p> <p>Sample Stickers can be purchased</p>	<p>Verify Search results are accessible from Messages and sticker apps can be discovered.</p> <p>Sticker app can be ingested and pushed to the store with no manual intervention.</p> <p>Sticker app indicators are viewable as per spec in the store</p> <p>Sticker apps can be featured and purchased.</p>	<p>Stickers can be purchased refunded and redownloaded</p> <p>Grouping pages can be used and rendered per spec</p> <p>Stickers are restorable via backup</p>

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iTC Flows coming in post M4  
 Still evaluating schedule across teams

# Expressive Messaging | Stickers

M0	M1	M2	M3	M4
<b>Core Development</b> <ul style="list-style-type: none"> <li>Prototype of sending a sticker</li> </ul>	<ul style="list-style-type: none"> <li>Browser for individual stickers</li> <li>Caching of stickers</li> <li>Stickers in transcript</li> </ul>	<ul style="list-style-type: none"> <li>Store sheet in Messages</li> <li>Place stickers on a bubble</li> <li>Sticker format finalized</li> <li>Plan for stickers app ingestion to App Store determined</li> <li>Sample sticker app for testing</li> <li><b>Design for favorite and recent stickers created</b></li> </ul>	<ul style="list-style-type: none"> <li>Final stickers transport</li> <li>Store sheet support for title-bar and back-arrow</li> <li>Stickers haptics support</li> <li>QA environment supports stickers apps submission</li> <li>Xcode tools work begins for building sticker bundling, preview, and submission</li> <li><b>Implementation of favorites and recent stickers</b></li> <li><b>Me-stickers bundle generated</b></li> </ul>	<ul style="list-style-type: none"> <li>Xcode tools work completed for building sticker bundling, preview, and submission</li> <li>App Store review process defined</li> </ul>
<b>Acceptance Criteria</b>	<ul style="list-style-type: none"> <li>Browsing and sending of stickers functioning</li> </ul>	<ul style="list-style-type: none"> <li>Initial sticker store can be seen in Messages</li> <li>Stickers can be rotated and scaled</li> </ul>	<ul style="list-style-type: none"> <li>Sticker store is browsable, app can be downloaded in QA</li> <li>Stickers present haptics on D10</li> </ul>	<ul style="list-style-type: none"> <li>Xcode used to create stickers and submitted to QA environment</li> </ul>

Expressive Messaging

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Items in red are assumed and/or need confirmed dates

# Subscriptions 2.0

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# App Store | Subscriptions 2.0

- Offer subscription to all apps
- Commission change after one year for all subscriptions
- Geo specific pricing for in-app purchases
- Consent dialog for price change notifications
- Grandfathering
- Upgrade and downgrade support
- Additional price tiers for in-app purchase

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15% after one year

Consent dialog for price change notifications  
Grandfathering  
Upgrade and Downgrade support  
Additional price tiers for in-app purchases

# App Store | Subscriptions 2.0 | Acceptance Criteria



- Verify Apps can be updated to new subscription model & new Apps can include the offering
- Verify initial standard commission and updated commissions after one year.
- All currencies can pricing is verified along with new commission model
- Subscriptions can be managed in existing and Whitetail UI
- SAP/Finance Integration and Acceptance tests are passed.

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iTC Flows coming in post M4  
Still evaluating schedule across teams

# App Store | Subscriptions 2.0 | Developer Benefits

- Commission Change after one year
  - Increased developer compensation for customer retention
- Add 200 new price tiers for in-app purchases
  - Allows subscriptions to keep pace with other physical/digital distribution channels
- Region-specific pricing for in-apps to address market disparities

# App Store | Subscriptions 2.0 | New Features

## • Commission Change after one year

- To pass the benefits of the savings of customer acquisition costs after a 1year.
- Increased compensation for customer retention

## • Add additional price tiers

- Enable developers to price their subscriptions on par with other available distribution channel's (physical & digital) by exposing 200 additional tiers available for IAPs.
- Geo-specific pricing for subscriptions IAPs to account for market disparities.

## • Subscription Management

- Add additional marketing information to customer on the available subscriptions through improved dialogs and updates to Manage Your Subscription page

# App Store | Subscriptions 2.0 | Development Impacts

- Update the App Model
- Updates to the Pricing rules and structures
- Updates to the Commerce buy and dialog experience
- **Full iTunes Connect redesign of the developer IAP management experience, including adding the mechanism to manage the new subscription features.**
- Updates to App Ingestion flow
- Store display and consumptions
- .....?No Client features identified yet (potentially none)

# App Store | Subscriptions 2.0 & In App Purchase

	M1	M2	M3	M4
Core Development				
Acceptance Criteria				

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Items in red are assumed and/or need confirmed dates

## Sponsored Search

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## App Store | Sponsored Search

- Personalized ads per user
  - First slot on search result page (keyword and user targeted)
  - First position on trending search (user targeted)
- Infrastructure enhancements for search personalization and performance improvements
- Self-serve interface for app developers to set up their

App Store

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Speak to trending search item being user targeted. Not keyword targeted

# App Store | Sponsored Search | Target Schedule

	M1	M2	M3	M4
<b>Core Client Development</b>		Prototype for Sponsored Search	Render Sponsored Search Results Render Sponsored Trending App	
<b>Core Server Development</b>	Integration design Proof of concept testing SFEedge development	Pluggable Algorithm Marketplace design SFEedge development	In Production AdLib with CoreDuet User segments integration Relevance algo Ad Server Request logging Marketplace Auction	Ad Transparency A/B Testing Attribution Initial Campaign flow KW Suggestion Targeting jobs Core ETL Load testing

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# App Store | Sponsored Search | Target Schedule

	M1	M2	M3	M4
Core Client Development		Prototype for Sponsored Search	Render Sponsored Search Results Render Sponsored Trending App	
Core Server Development	Integration design Proof of concept testing SFEedge development	Pluggable Algorithm Marketplace design SFEedge development	In Production AdLib with CoreDuet User segments integration Relevance algo Ad Server Request logging Marketplace Auction	Ad Transparency A/B Testing Attribution Initial Campaign flow KW Suggestion Targeting jobs Core ETL Load testing
Acceptance Criteria		Ad appears in the prototype*	Ads will appear during carry* BET relevance testing Client -> Server events loaded	Ad transparency (Privacy) Attribution API functional Data flowing through iAd stack

\* Relevance test – all apps deemed as advertisers – no paid



# App Store | Sponsored Search | Acceptance Criteria

M1	M2	M3	M4
	Validate Ad appears in prototype	<p>Verify that Ads render in client app as intended</p> <p>Verify appropriate logs and data are sent to the store as expected</p>	<p>Store services passes load testing</p> <p>Attribution is functional and API tests can be authored</p> <p>Data is flowing to the iAd stack</p> <p>Privacy is validated</p>

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iTC Flows coming in post M4  
 Still evaluating schedule across teams

## App Store Enhancements

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## App Store | Enhancements

- Bringing back the category tab
- Introducing My Apps tab
  - Updates
  - Purchases
- Filter out apps if installed on device
- Extend personalized game recommendations
- (Scoping) Merchandising in-app purchase
- (Open) Desktop iTunes iOS App Store

Whitetail App Store Feature Definition

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Editorial resourcing to program out all category pages. No one uses top left switcher

## App Store | 2.0 | Merchandising In-App Purchases

- Feature an in-app purchase on main, or genre pages
- Remove featured placement if parent app is not owned
- Add Screenshots, Titles, Tag Lines
- Surface key in-apps on Product details page
- Developers choose which in-App are featured on product pages

# App Store | Enhancements | Charts

- Use additional signals to improve charts and reduce fraud
- Proposed charts
  - Free only
  - Free, with in-app
  - Paid
- Remove Top Grossing chart

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Team working for a year  
No longer a science experiment

Risk: Crossfire data not scoped beyond Feb  
Using Crossfire data to create chart-specific aggregations to create signals

App usage session length  
How often apps are launched  
Exact set of signals are tbd .  
Building an eval dashboard, with additional sources to review  
All whitetail timeframe

# App Store | Enhancements | Target Schedule

	M1	M2	M3	M4
<b>Core Client Development</b>	Definition/Scoping/Resourcing	Designs for category root and My Apps	My Apps tab Charts with usage data Filter installed apps from browse Categories tab	
<b>Core Server Development</b>	Definition/Scoping/Resourcing	Editorial key to tag containers for app filtering when on device		
<b>Acceptance Criteria</b>		Container key for filtering is exposed to client	Installed apps are removed from browse <i>Categories and My Apps tabs</i>	
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# App Store | Enhancements | Acceptance Criteria

M1	M2	M3	M4
	<p>Container key for filtering is exposed</p>	<p>Installed apps are removed from browse</p> <p>Categories and My Apps tab appear</p> <p>Validate layout and design using server side tools to generate charts</p> <p>Validate removal of Top Grossing chart from Whitetail</p> <p>Ensure layout and design of screen captions, compatible platforms and reviews</p> <p>Use existing review data from production in QA environments</p>	

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 Still evaluating schedule across teams

# Streamline Daemons

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# App Store | Streamline Daemons

- Reduce footprint of store daemons as part of Memory and IO Tentpole
- Move Music specific functions of itunesstored to medialibraryd and air traffic control
- Move users of Download Manager in itunesstored to call NSURLConnection directly
- Create appstored to centralize work that is currently spread out across a number of different daemons
  - Responsible for downloading, installing, updating and restoring Apps
  - Manages on-demand resources
- Create storemetricsd

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Everything backwards compatible to not break test flight

# App Store | Streamline Daemons

M0	M1	M2	M3	M4
Core Development	Planning	<p>Create appstored</p> <p>Move App downloading and installation from itunesstored into appstored</p> <p>Move App Update polling from itunesstored into appstored</p>	<p>Create storemetricsd</p> <p>Move metrics related code from itunesstored into storemetricsd</p> <p>Move downloading and managing of on-demand resources into appstored</p> <p>Retire ondemandd</p>	Performance

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# App Store | Daemons | Acceptance Criteria

M1	M2	M3	M4
	<p>Verify app download and installation is routed to appstored in all cases</p> <p>Verify traffic from all other store related apps are routed to itunesstored</p>	<p>Verify metrics parity with store metricsd</p> <p>Full regression of on-demand resources with appstored</p>	<p>Validate performance using shipping clients as a baseline</p>

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iTC Flows coming in post M4  
 Still evaluating schedule across teams

# App Installation Improvements

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# App Store | App Installation Improvements

- Hit a breaking point in iOS 9
  - App Thinning, ODR, VPP, ATB, Sochi Rescue, Edu Mode
- Cross functional effort between MobileInstallation, LaunchServices, ATC and Springboard
- Transaction log added in Eagle
- Automated testing for common install paths
- Re-architect APIs to be declarative

App Store

backwards compatible to not break test flight

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# App Store | App Installation Improvements | Target

M0	M1	M2	M3	M4
Core Development	<p>Scoping</p> <p>Goal Agreement</p>	<p>New APIs created for Install Coordinator</p> <p>launchservicesd and MobileInstallation create shims for new APIs</p>	<p>launchservicesd and MobileInstallation adopt new APIs</p> <p>appstored takes over from itunesstored with the new APIs</p>	<p>Performance</p> <p>Deploy Continuous Automated Tests for App Installation</p>
Acceptance Criteria		<p>Typical app install paths are executed and continue to function</p> <p>TestFlight, VPP, Columbus function</p>	<p>Typical app install paths are executed and continue to function</p> <p>TestFlight, VPP, Columbus function</p>	<p>Dashboard showing results of automation</p>

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# Siri Synapse Support

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# App Store | Siri Synapse Support | Developer Tools

- Synapse = Siri API
- App developers will be able to register for specific “intents” (defined by Apple)
- Users will then be able to use Siri to interact with their favorite apps
- Whitetail / Daytona plan
- iOS, WatchOS, and CarPlay
- Intent categories:

Ride (Taxi)	<i>“Get me an UberX to SFO”</i>
Messages	<i>“Send a WhatsApp message to Robby I’m running late”</i>
Dialing / FaceTime	<i>“Call Vineet on Skype”</i>
Photos	<i>“Show me photos of puppies on Instagram”</i>
Fitness	<i>“Start a run with Nike+”</i>
Native / OEM Car apps	<i>“Make it warmer in here”</i>

## App Store | Siri Synapse Support | Developer Tools

- App Model updates to support intents and vocabularies
- App intents will be exposed in:
  - TestFlight
  - iTunes Connect
  - App Review Tools

# App Store | Siri Synapse Support | Risks and

Plan needs to be fleshed out across engineering	Discussions ongoing, aiming to lock down in early M2
Ingest work requires plist formats to be finalized	Close to final plist format. To be reviewed with App Store engineering team soon.
App Review tools work cannot begin until App Review policies are decided upon	Initial discussions with App Review, but AR has not finalized Synapse support plan yet. Siri planning to help AR process with automation tools
TestFlight integration not yet defined	Discussions ongoing, aiming to lock down in early M2

# TestFlight 1.1

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# TestFlight | 2.0 | Overview

- TestFlight makes it easy for developers to beta test and get feedback on their apps before releasing them on the App Store.
- With 2.0, we'll add the most requested features from the

# TestFlight | 1.1 | New Features

## •Multiple Groups and Builds

- Today, limited to only internal & external groups.
- With 1.1 we will enable developers to create & manage groups of beta testers and simultaneously distribute different builds to each of these groups

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Additionally, today we only have 2 builds that can concurrently be distributed to different teams at any given time.

E.g. v2.0 build 105 to the QA group and v1.0 build 110 to the design group.

## TestFlight | 2.0 | Quality Focus Areas

- iTunes Connect stability for TestFlight flows
- TestFlight for iOS & tvOS clients stability
- TestFlight server-side scalability

# Columbus

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## App Store | Columbus | App Review Tools & Automation

- Reduce number of manual items for app reviewers
- Reduce developer-perceived app review time
- Improve app review consistency
- Improve app store quality

App Store

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## Features

- Mac app for App Review
- Streamlined Review for App Updates (Delta Review)
- Deeper App Analysis (Binary and Dynamic)
- Datastore for App Review & App Analysis Results
- Submission and Post Submission Rulesets

App Store

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### Mac App

One stop shop for reviewers  
Currently iPad-only app. Needs more real estate and horsepower

### Streamlined Review for App Updates (Delta Review)

Currently artifacts do not carryover from app version to version, resulting in inconsistency and low quality  
Analyze app metadata, text, images, binary data for delta review  
Collect data for app review and security  
Automate app execution

### Deeper App Analysis (Binary and Dynamic)

Today we are limited to binary analysis and have nothing dynamic.

### Datastore for App Review and App Analysis Results

Today's shared infrastructure limits flexibility and performance

### Submission and Post Submission Rulesets

With newfound data from deeper app analysis, we will be able to provide additional rulesets capable of reducing number of manual app review items

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- Validate Apps as they are submitted in ITC
- Validate Apps as they are reviewed by App Review
- Have a dynamic and pluggable Rule System
- Allow Rules to generate App Attributes

# App Store | App Review Tools & Automation

	M1	M2	M3	M4
Core Development		Datastore for App Review – v1		Mac App for App Review v1
Acceptance Criteria				
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## Crossfire Enhancements

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## App Store | Crossfire Enhancements

- App Referrers
- Which channels are most important for customer acquisition
- Top queries that lead to downloads
- Conversion Rates

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## App Store | Crossfire Enhancements | Risks

- Working on feature schedule
- Analyzing impact to client for Whitetail

App Store

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- Validate Apps as they are submitted in ITC
- Validate Apps as they are reviewed by App Review
- Have a dynamic and pluggable Rule System
- Allow Rules to generate App Attributes

# App Store | App Review Tools & Automation

	M1	M2	M3	M4
Core Development		Datastore for App Review – v1		Mac App for App Review v1
Acceptance Criteria				
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