### Michael Plagge Sneak Peak at Passbook



### Passbook for Developers

Passbook gives users a whole new way to organize boarding passes, tickets, gift cards, and loyalty cards. You can bring up passes in your app with PassKit APIs, send them via email, or post them on the web. You can also set items to appear at certain times or locations and update items with push notifications.



# Contents

- Motivation
- Sample Passes
- Perspectives
- Passbook Ecosystem (Live Cycle, Use Cases, Types of Data)
- Functionality
- Properties
- Pass Kit
- Updating a Pass

"Sneak Peak at Passbook" (Michael Plagge) - CocoaHeads Aachen 2015-07-30

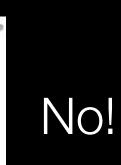


#### Motivation René's Farewell @ dorkbot

⊖ ⊖       ⊡ Your Tickets for René's Farewell -         ⊡ ♥       ←	dorkbot Aachen Special	•	Event
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	1 Anhang, 150 KB Sichern - Vorschau	93438	Date+nme
Eventbrite	Find events My Tickets	439593436555676865001	Wednesday, July 15, 2015 6:00 PM to 11:30 PM (0 Order Info
Hi m, this is your order confirm Farewell - dorkbot Aachen Sp Organized by <u>René Bohne</u>			Order #43959343
Here are your tickets			App Store > Unterhaltung > Eventbrit
Available on App Store Coogle play	Paper Tickets Open the email attachment or download here		Laden ~



René's FAREWELL	- dorkbot Aachen Special	well
Payment Status Free Order	Location FabLab Aachen Ahornstraße 55 52074 Aachen Germany	5 from CEST)
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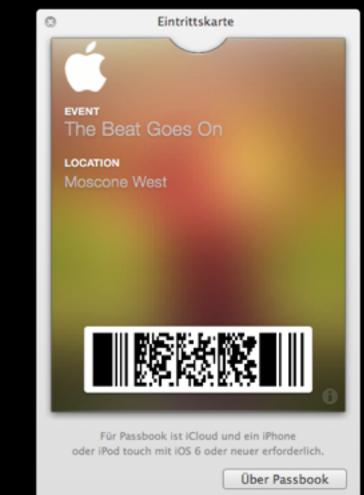
#### Sample Passes Multiple Use Cases

0	Bordkarte
	Skyport Airways 23
Í	SAN FRANCISCO NEW YORK
	SFO 🧲 JFK
	DEPARTFLIGHTDESIG.DATE2:25 PM815Coach7/22
	PASSENGER John Appleseed
	Für Passbook ist iCloud und ein iPhone oder iPod touch mit iOS 6 oder neuer erforderlich.
	Über Passbook

**Boarding Pass** 

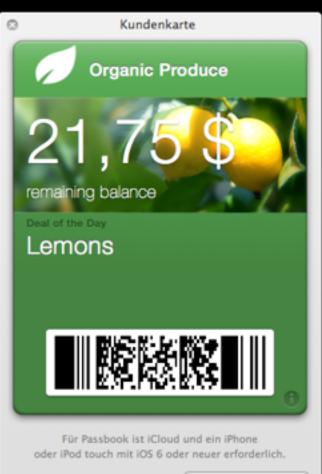


Coupon



#### Event Ticket





Über Passbook

#### Balance Card

#### Perspectives Role Models

- Developer (Certificates require Membership)
  - Generate
  - Provide
  - Update
  - Redeem / validate (externally)
- User



# Passbook Ecosystem

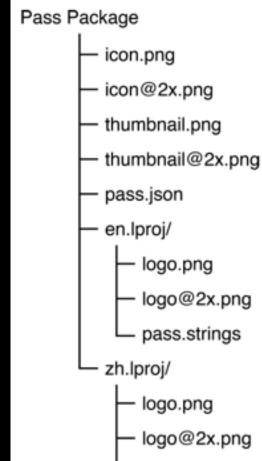
- Creation
- Distribution
- Management
- Update
- Redemption



### Passbook Ecosystem Live Cycle: Creation

- Developer's job
- Package containing images and some JSON
- Pass Identification:
  - Pass Type Identifier
  - Serial Number
- Cryptographically signed
  - Tool: signpass (cmdline)





Directory structure of a sample pass

pass.strings

pass.json

Visual Appearance (different type templates, colors, formatting)

- iOS
- Apple Watch
  - re-renders content automatically
  - reduced information on display



Content

- Serial Number
- Text Fields
- Images (different versions)

Barcode

- several formats supported
- reading requires optical scanner (no laser)



```
"description": "SECRET LOCATION 003(DAY 2)",
  "formatVersion": 1,
  "organizationName": "Ticketscript BV",
  "passTypeIdentifier":
"pass.ticketscript.passbook2",
  "serialNumber": "T48370073",
  "teamIdentifier": "J6TRY962DZ",
  "eventTicket": {
   "headerFields": [],
    "primaryFields": [],
    "secondaryFields": [
        "key": "Location",
        "value": "Secret Location",
        "label": "Location"
     },
• • •
```

```
• • •
        "key": "Date",
        "value": "01 Aug 15",
        "label": "Date"
  },
  "barcode": {
   "altText": "JP4781",
   "format": "PKBarcodeFormatPDF417",
   "message": "061027JP4781011E81",
   "messageEncoding": "iso-8859-1"
 },
  "backgroundColor": "rgb(0, 174, 239)",
```

```
"foregroundColor": "rgb(255, 255, 255)",
"labelColor": "rgb(109, 110, 113)",
"logoText": "SECRET LOCATION 003(DAY 2)"
```

#### pass.json



- Lock Screen Support
- makes relevant Passes easily accessible
- defined by relevant date and location information
  - used as passive information
  - can be tailored and updated
  - to be tested on a device
- somehow similar to iBeacons



### Passbook Ecosystem Live Cycle: Distribution

- MIME type: application/vnd.apple.pkpass
- Supporting Apps: Mail & Safari
- OS X: via iCloud
- iOS: automatically
- Pass Kit framework
  - Passbook library access
  - by matching App Entitlement & Pass Type ID



#### Passbook Ecosystem Live Cycle: Management

- User's job
- Passbook
- Lock Screen



### Passbook Ecosystem Live Cycle: Update

- Push Notification
- Snapshot / Latest Version
- Example: Updated (delayed) train departure schedule
- Fixed Properties: Pass Type ID & Serial Number
- Warning: Do not (confuse the user)...
  - "replace" semantic content
  - remove (expired) passes without user consent



### Passbook Ecosystem Live Cycle: Redemption

- Developer's job
- Do not solely rely on information that comes with the Pass
  - Passes can be duplicated or maybe altered
  - Passes can survive their expiration date
- Always rely on own / local Infrastructure / Database and Logic
  - (see Examples)



#### Passbook Ecosystem Use Cases

- Coupon (One-Time-Use)
  - manage redemption in OWN infrastructure
- Voucher with Balance
  - manage balance in OWN infrastructure
- Season Membership
  - Offline Case: Year of Validity cryptographically signed and verified



### Passbook Ecosystem Types of encoded Data

- Passes (in general) have limited trustworthyness
  - Information can be duplicated / reused
- Passes are only a mean of identification
  - similar to website cookies or even more limited
- Storage of Raw Data is also possible
  - signing recommended



#### Pass Kit Enriching own Applications

- Don't duplicate Passbook functionality
- Manage Passes
- Access the Passes on the Device
- Create calendar entries etc.



#### Pass Kit Tools and Requirements

- Classes
  - PKPass
  - PKPassLibrary
- Requirements
  - availability of Pass Library on Device



### Pass Kit Interactions (with the pass library)

- Check whether a specific Pass is in the Library
- Getting Passes (with matching entitlements)
- Reading a Pass
  - Pass Type Identifier
  - Serial Number
- Adding a new Pass
- Changing a Pass (requires server signing)
- Removing a Pass



#### Updating a Pass Connecting to the Real World

- Uses Push Notifications
  - but in a different manner
  - in a standardized way (for the Passbook app)
  - based on shared secrets
    - between Server and Device

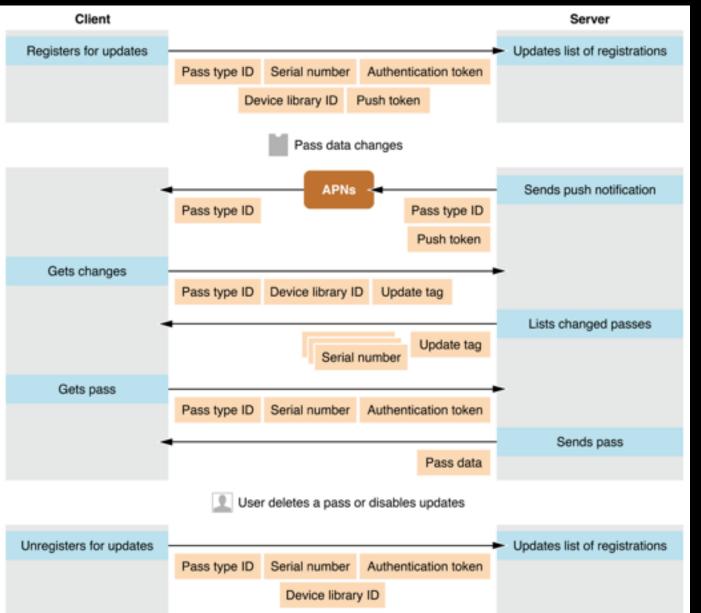


#### Updating a Pass Flow of Control

- Device registers for Updates
- Server sends Push Notifications
- Device asks for changed Serial Number of Pass
- Device asks for latest version of Pass
- Device displays Change Message



#### Updating a Pass Flow of Control



## Interaction between the client and your server

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# Thank you!

https://developer.apple.com/passbook/ https://developer.apple.com/library/ios/documentation/ <u>UserExperience/Conceptual/PassKit\_PG/Chapters/</u> Introduction.html

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