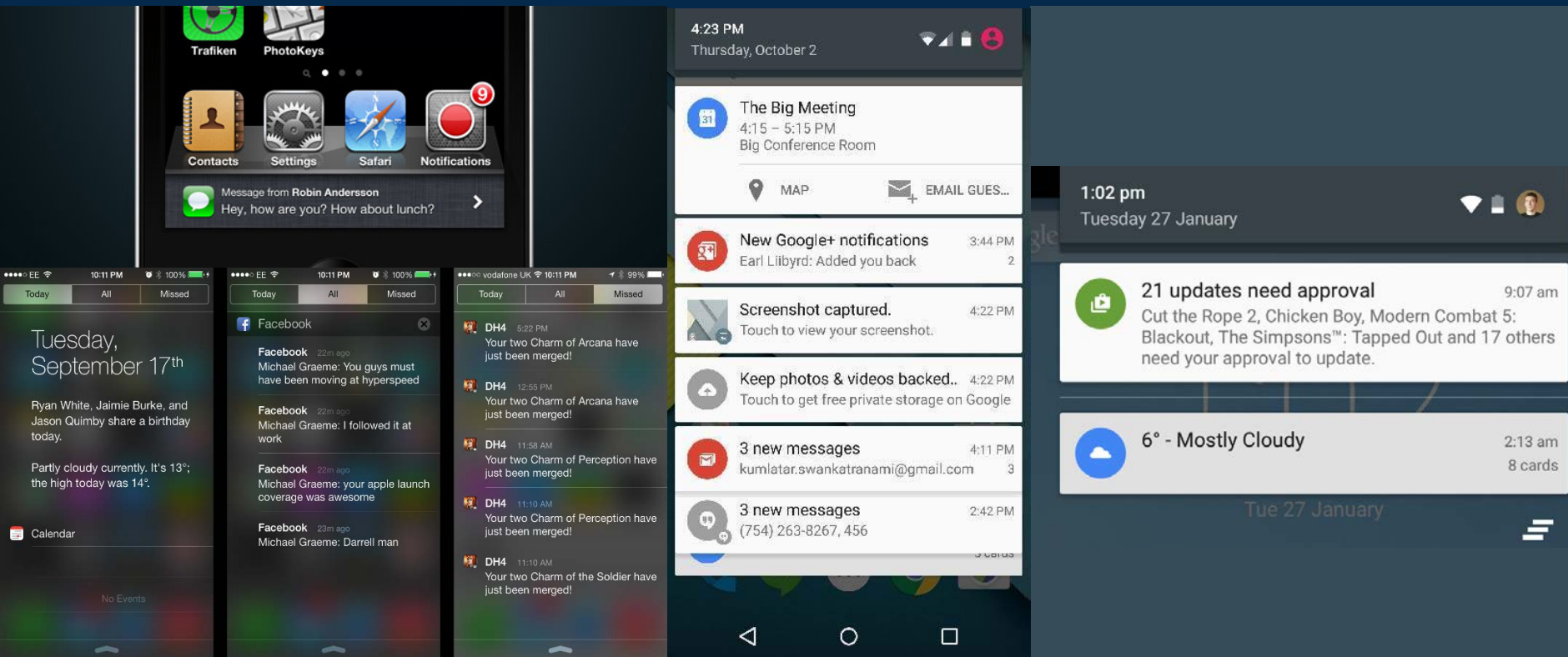


Adding Notifications to Mobile Applications

Prepared for FedCASIC 2017

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Motivation

- Help women interested in preconception health.
- No data gathered, simply informative.
- Users can set reminders such as taking vitamins.
- Also get helpful tips based on questionnaire responses.
- Free and open to the public.


Reminder Settings

Add New

Take my medicine >

Remind me about 

Take my medicine

Remind me when 

Daily >

Turn off/on

Done Delete this reminder

Objectives

Goal: Provide comprehensive messaging support for mobile health intervention research

- Provide app use reminders
- Support intervention reminders and educational messages
- Support Local, Push, and SMS messaging
- Support single and repeat message scheduling
- Support message groups (intervention domains)
- Flexible enough for a variety of use cases
- Allow more complex schedules than built in services

Message Delivery Methods

- SMS

- Requires service to send
- User can opt out
- Target other devices

- Local

- Not reliant on data connection
- Same device only
- Limited off device control

- Push

- Customizable messages
- No need for phone numbers
- Can target groups or individuals

Reminder Messages

- Usually a simple repeating message
- User can schedule themselves or programmer can do it in an instrument
- Makes the app useful for interviewers and participants
- Increases the likelihood of remembering tasks
- Can be updated or removed as needed
- Custom recurrence that allows for complex rules.

Intervention Messages

- Usually not the same message twice
- Can be tailored based on inputs using domains and subdomains
- Random vs ordered message selection
- User can select topic or process can be hidden.
- Can help with behavior modification or provide useful tips to the user.
- More generically, grouped messages with high level controls

Notification Components

▪ Subdomain

- Parent “categories” intervention messages.
- Can also have a domain for further grouping.
- Can turn on/off whole subdomains.

▪ Message Data

- The text and service used
- Reminder messages are a single message data
- Granular control of intervention messages shown.

Notification Components

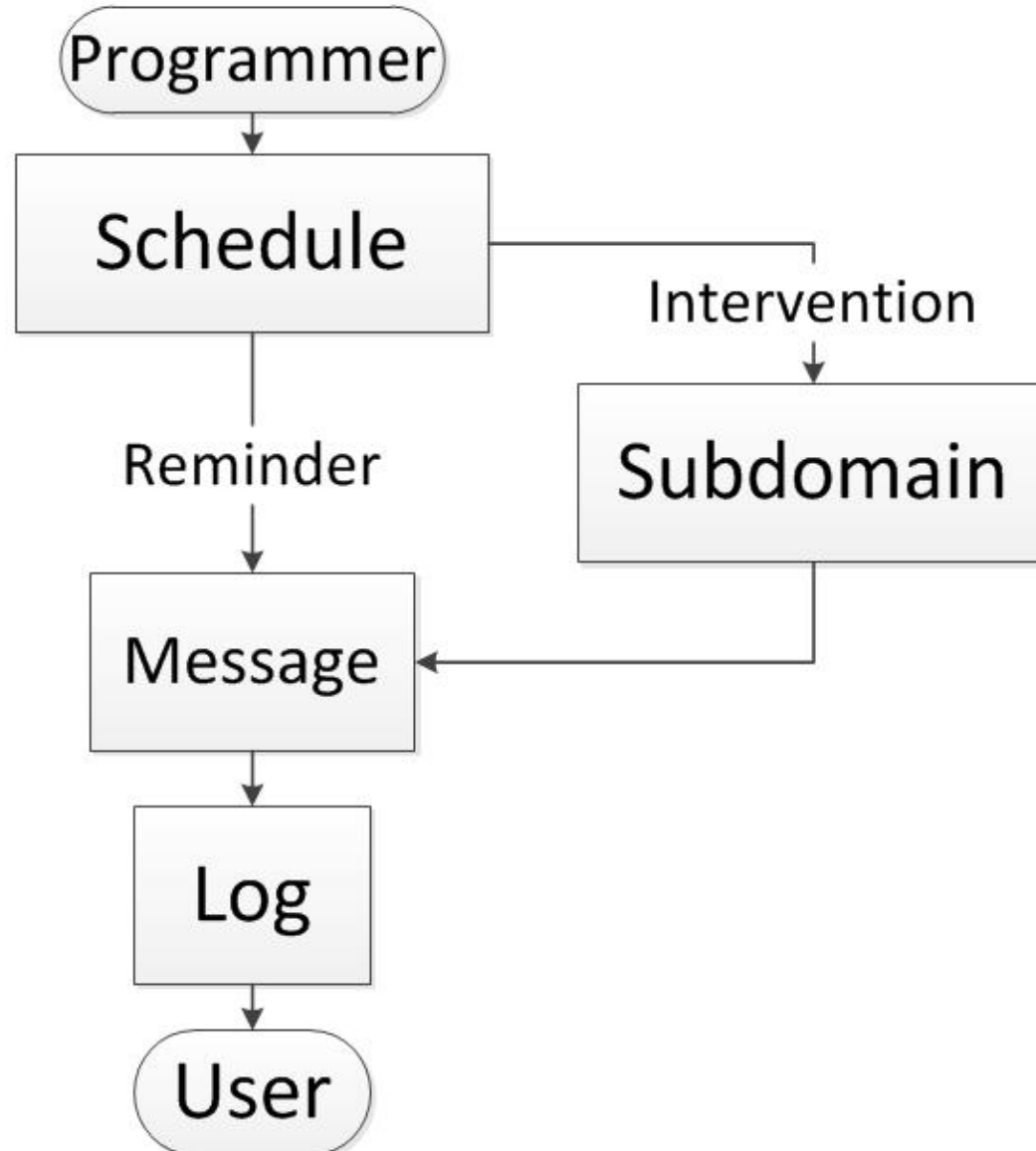
▪ Schedule

- Uses iCal RFC
- Required for all message types, even if shown only 1x
- Can use complex recurrence rules

▪ Log Data

- Every notification to be shown has a log entry
- Provides history of what the user saw
- Can be used to build past notifications section

Putting it Together



Potential Uses

- Remind Interviewers to complete recurring tasks.
- Remind participants to complete activities like logs.
- Can add utility to app, increasing use and retention.
- Push can be used to target messages by geographic location or some other metric.
- SMS can allow notification if app is only installed on a tablet.

Challenges

- Platform Differences: iOS limits, different layouts, bugs
- Keeping track of what is scheduled when
- Character count and space limitations
- When events are fired and what code hooks you get
- Limiting number of notifications sent
- Users interacting with notifications
- Language support dependent on device

Lessons Learned

- Keep user experience principals in mind
- Keep it generic when possible for flexibility
- Know your platform and its limitations
- Depending on study design not all features are needed
- Differences in needs for participants and interviewers

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