

# Diversity in Apps



# About me

Madushan Gamage

iOS and Accessibility @ Grab

# Outline

- How diverse iOS users.
- iOS support for customisation.
- Some Implementation details.

# Language



# Abilities



# Color Blindness

1 in 12 men

# Color Blindness

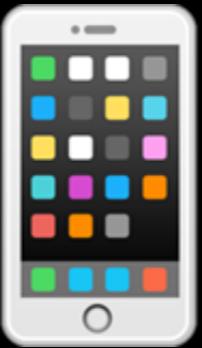
1 in 200 women

# Region and Culture



# Cognitive Ability

# 1 App for all?

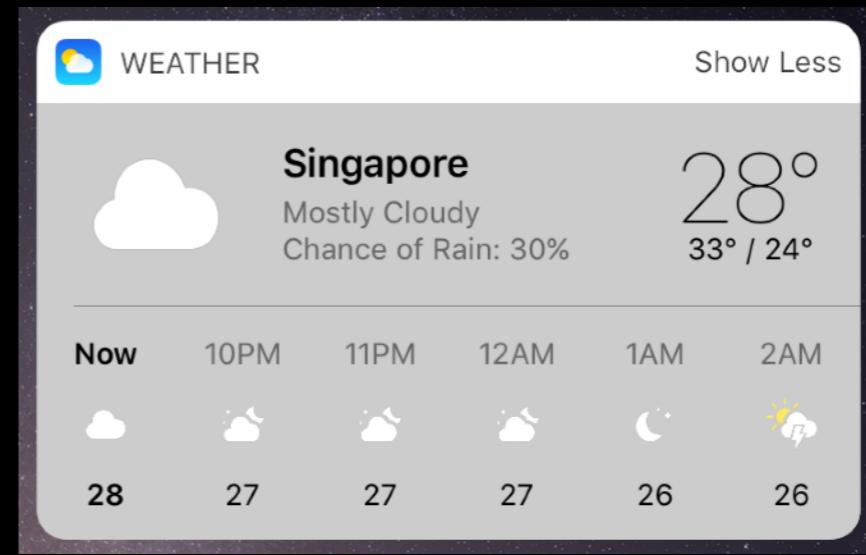


# Same but different

Default



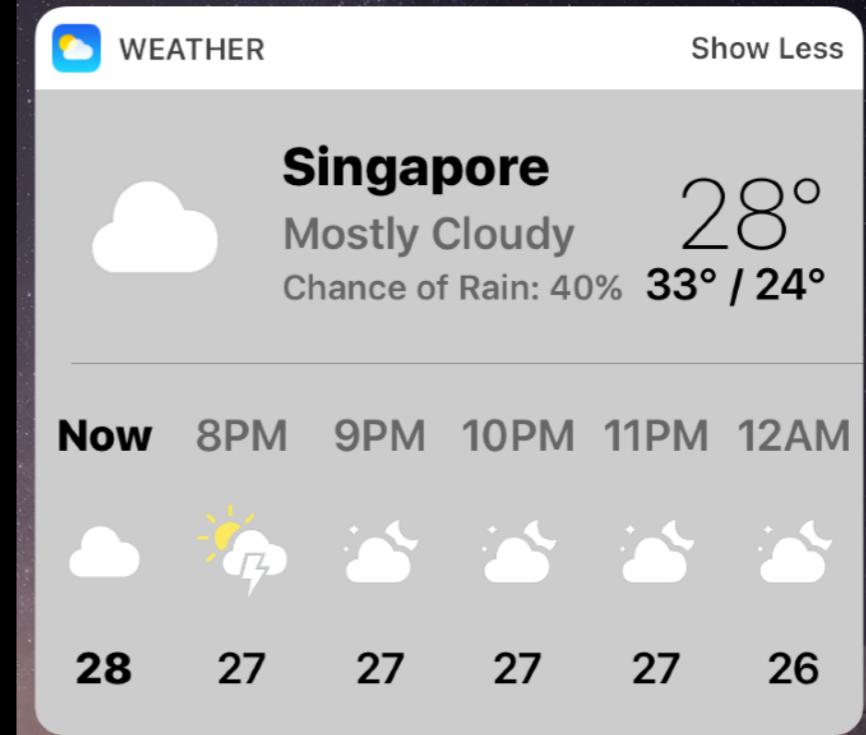
Reduced Transparency



Right to Left Language



Bold Text Enabled



# Dynamic and Adaptive Content

# NSFormatter

# Eg - DateFormatter

- `dateFormatter.dateFormat = "hh:mm a"`
- `dateFormatter.timeStyle = .shortStyle`

3:02 PM

下午3:04

Do Internationalisation  
right

# Preferred Languages and Region

The image shows two screenshots of the iPhone's "Language & Region" settings. The left screenshot displays the main screen with the following details:

- Top status bar: M1, 1:34 AM, 6% battery.
- Section title: General Language & Region.
- iPhone Language: English.
- PREFERRED LANGUAGE ORDER:
  - English
  - Sinhala (Sinhala script)
  - 繁體中文 (香港) / Chinese, Traditional (Hong Kong)
  - 简体中文 / Chinese, Simplified

The right screenshot shows the "REGION FORMATS" section with the following details:

- Text: Apps and websites will use the first language in this list that they support.
- Region: Singapore.
- Calendar: Gregorian.
- Temperature Unit: °C.
- Region Format Example:
  - 12:34 AM
  - Thursday, 5 January 2017
  - \$1,234.56 4,567.89

# Choose the right localisation

Chiga (Uganda) (cgg-UG)
Chinese (zh)
Chinese (China) (zh-CN)
Chinese (Simplified, China) (zh-Hans-CN)
Chinese (Simplified, Hong Kong [China]) (zh-Hans-HK)
Chinese (Simplified, Macau [China]) (zh-Hans-MO)
Chinese (Simplified, Singapore) (zh-Hans-SG)
Chinese (Traditional, Hong Kong [China]) (zh-Hant-HK)
Chinese (Traditional, Macau [China]) (zh-Hant-MO)
Chinese (Traditional, Taiwan) (zh-Hant-TW)
Colognian (ksh)

# Plural nouns

“1 friend is online”

“2 friends are online”

# Localizable.stringsdict

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE plist PUBLIC "-//Apple//DTD PLIST 1.0//EN" "http://
www.apple.com/DTDs/PropertyList-1.0.dtd">
<plist version="1.0">
<dict>
  <key>%d friend is online</key>
  <dict>
    <key>NSStringLocalizedFormatKey</key>
    <string>%#@friends@</string>
    <key>drivers</key>
    <dict>
      <key>NSStringFormatSpecTypeKey</key>
      <string>NSStringPluralRuleType</string>
      <key>NSStringFormatValueTypeKey</key>
      <string>d</string>
      <key>one</key>
      <string>%d friend is online</string>
      <key>other</key>
      <string>%d friends are online</string>
    </dict>
  </dict>
</dict>
</plist>
```

# Localizable.stringsdict

- **Zero.** Used to indicate a 0 quantity.
- **One.** Used to indicate a quantity of exactly 1.
- **Two.** Used to indicate a quantity of exactly 2.
- **Few.** Used to indicate a small quantity greater than 2, but this depends on the language.
- **Many.** Used to indicate a large number, but this also depends on the language.
- **Other.** Used to indicate every number that isn't covered by the above categories.

# Right to Left Languages

- Use Auto Layout.
- Additional images for right to left languages.

# Abilities

- VoiceOver
- Visual Accommodations.
- Switch Control.

# Demo (Results)



# Demo

## English - Singapore

Fixed Format date

03:02 PM

Predefined Short Date format

3:02 PM



Image Localization

Singular noun

1 friend is online

Plural noun(Same String as above)

3 friends are online

Decimal Number Formatter

34.76

Currency Number Formatter

\$99.99



# Demo

Simplified Chinese - China

固定格式日期

07:53 下午

预定义短日期格式

下午7:53



图像定位

单数名词

1位朋友在线

多个名词 (与上述相同的字符串)

3位朋友在线

十进制格式化器

34.76

货币编号格式

¥ 99.99



תאריך פורמט קבוע  
07:54 אח'

תבניתתאריך קצר מראש  
19:54

локализציה של תמונות

שם עצם ייחיד  
1 חבר מחובר

שם העצם (אותו מחרוזת כנ"ל)  
3 חברים מחוברים

מספר עשרוני מסטר  
34.76

פורמט מסטר מطبع  
₪ 99.99

# Demo

Hebrew - Israel



1x  
Left to Right



2x  
Left to Right



3x  
Left to Right



1x  
Right to Left



2x  
Right to Left



3x  
Right to Left

---

Universal

---

# Right to left Images

# Demo

Swedish - Sweden  
(Not translated to Swedish  
but focus on number and  
currency formats)

Carrier

3:06 PM



Fixed Format date

03:06 em

Predefined Short Date format

15:06



Image Localization

Singular noun

1 friend is online

Plural noun(Same String as above)

3 friends are online

Decimal Number Formatter

34,76

Currency Number Formatter

99,99 kr

# Things we didn't cover

- Measurement and Units.
- All aspects of Accessibility.
- Power of Autolayout.
- Testing and auditing for Internationalisation.

Let's improve the  
world for everyone

Thanks - Engineers SG( @engineersftw )

twitter - @itsmadnik