



Going edge-to-edge on Android Q

Lucas

Growth Session #26 - July 25-26 2019

History of Android Navigation

History of Android Navigation



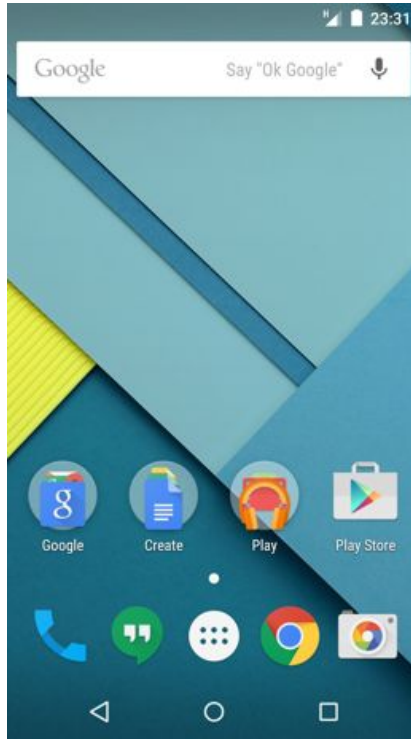
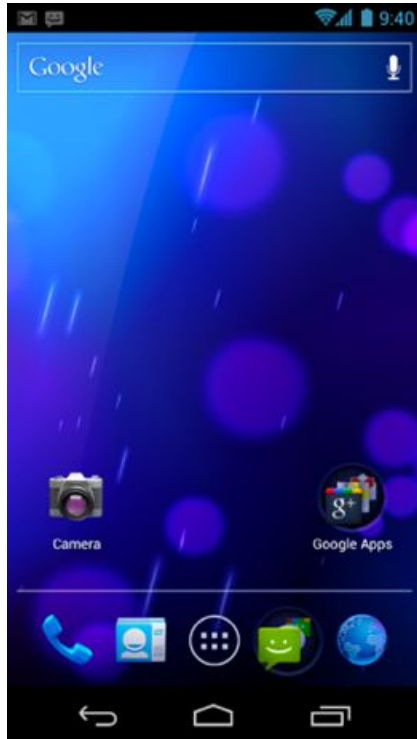
Physical buttons + trackball

History of Android Navigation



Physical buttons

History of Android Navigation



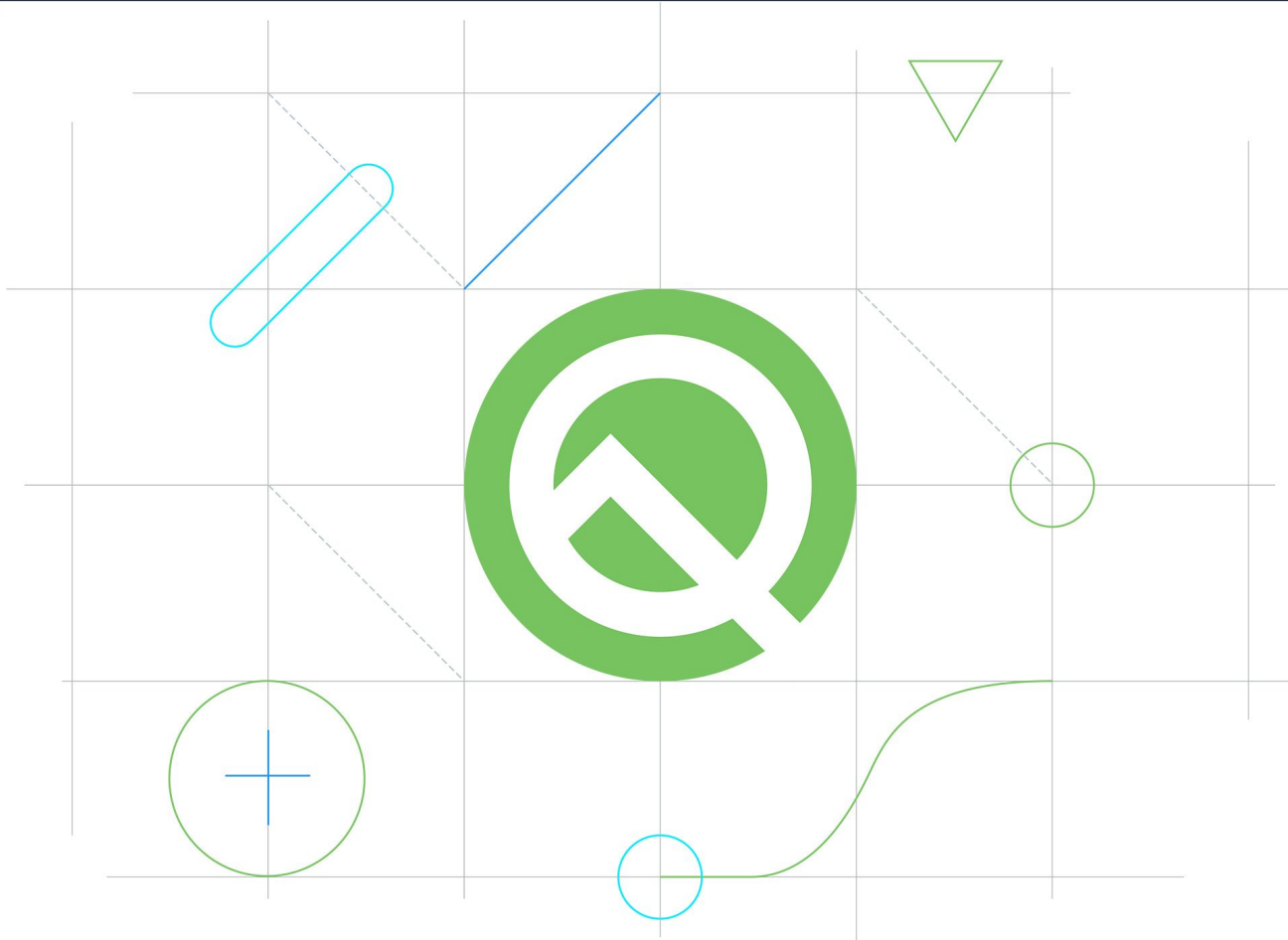
3 on-screen buttons

History of Android Navigation

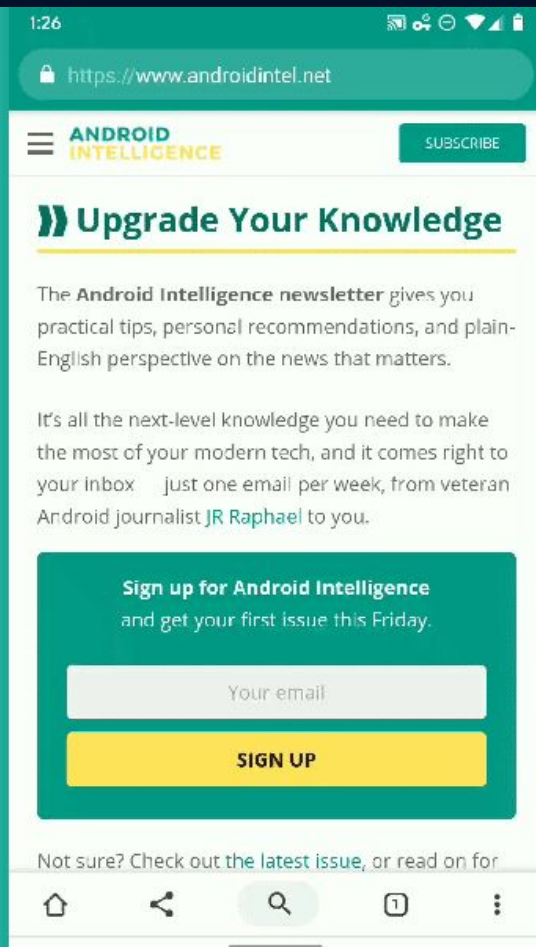
New System Navigation



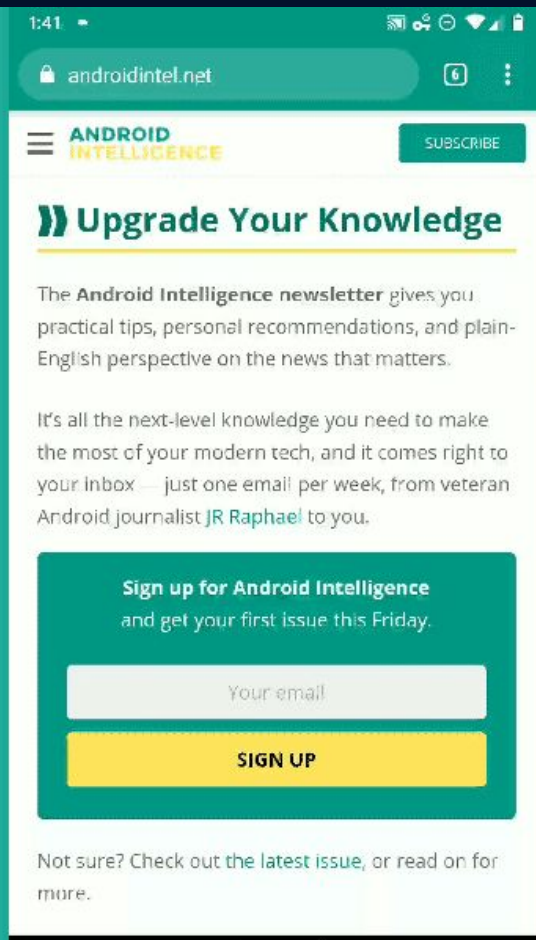
What's next? 🤔



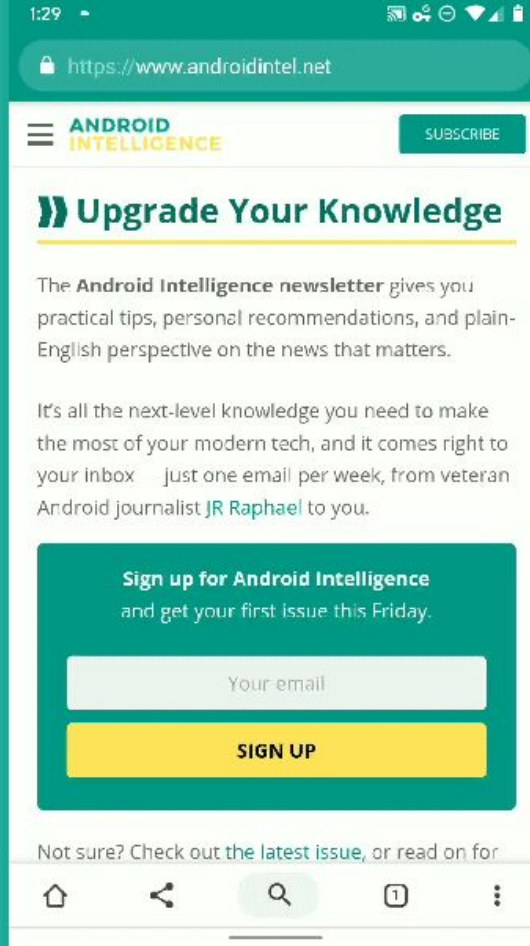
New Android Gesture Navigation on Android O



New Android Gesture Navigation on Android O



New Android Gesture Navigation on Android O



New Android Gesture Navigation on Android O





Making the apps ready with new Gesture Navigation

Making your app ready with new Gesture Navigation

Gaining an edge on UX given market desire for beautiful UI

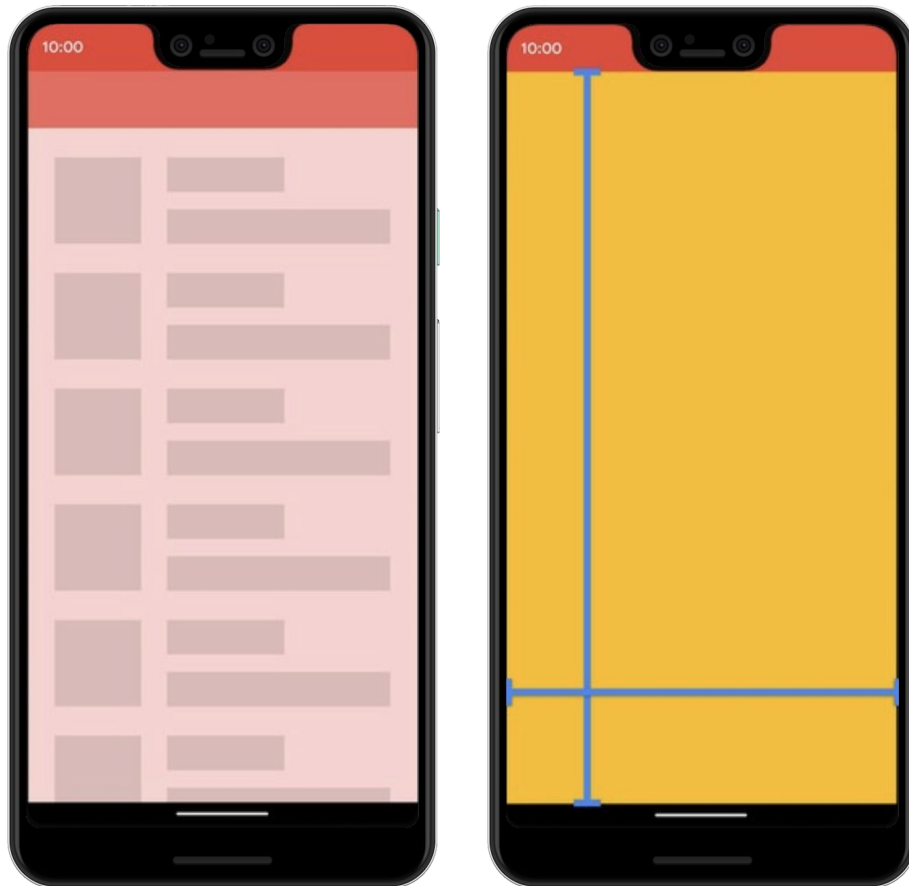
Handling conflicts with gestures for optimal UX

Making your app ready with new Gesture Navigation

1. Make the UI edge-to-edge
2. Leverage insets for better UI
3. Override system gestures

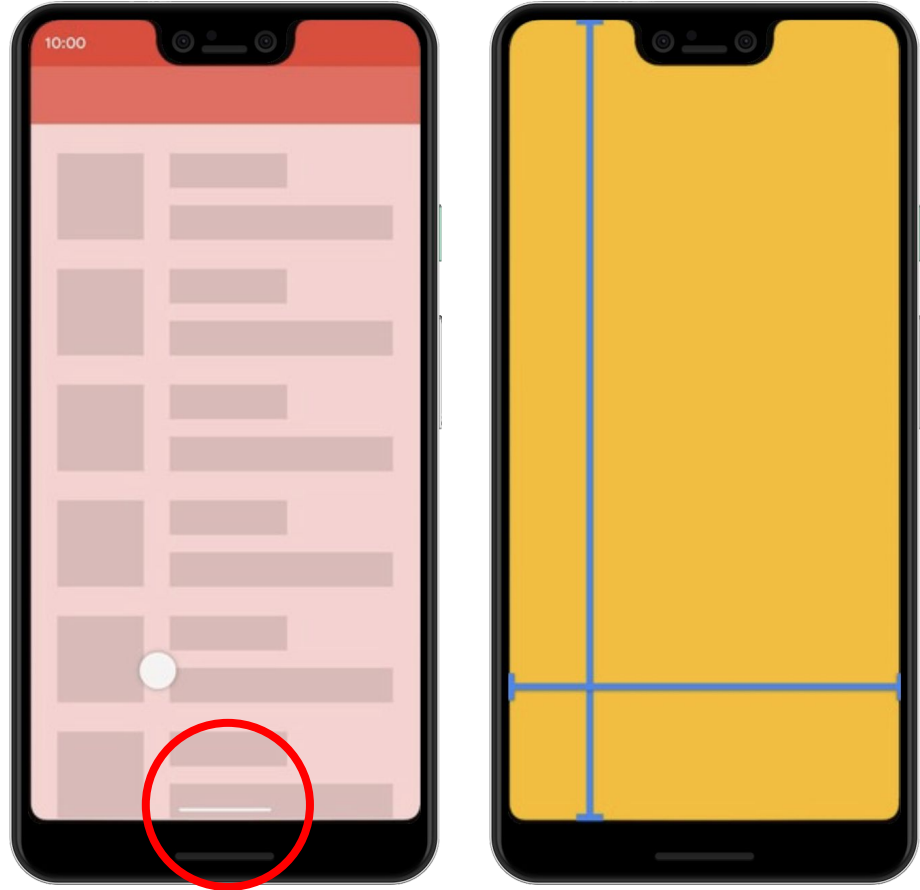
Edge-to-edge?

Normal app bound



Edge-to-edge?

Immersive app bound



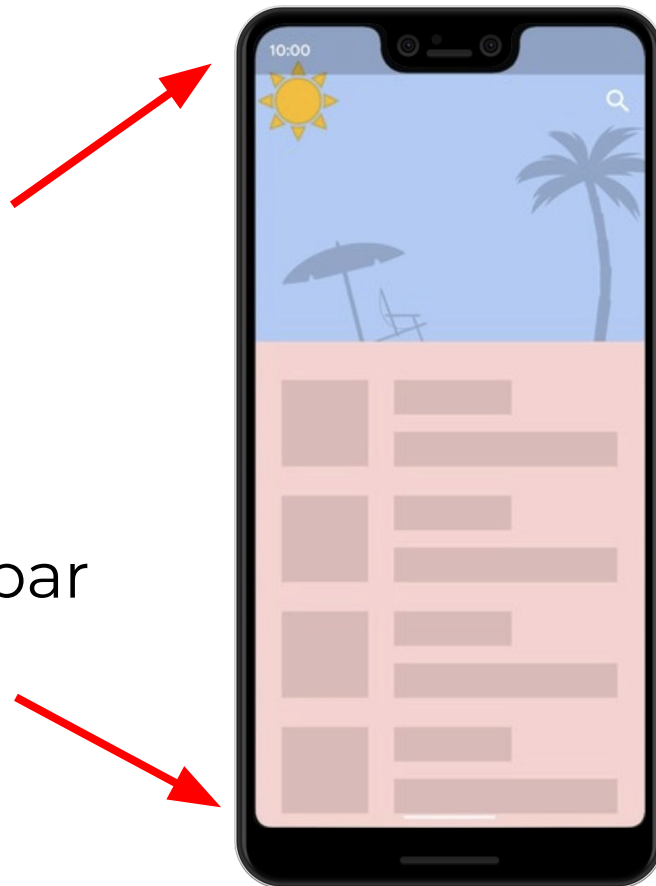
Edge-to-edge?

Drawing behind the status bar

- Recommend on Q
- Optional before Q

Drawing behind the navigation bar

- Recommend on Q
- Optional before Q



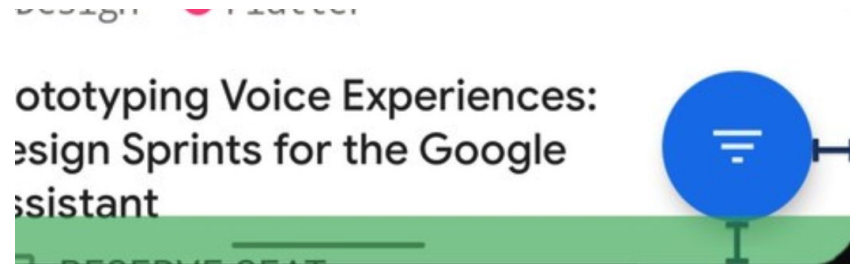
Insets?

A collection of values which tell you how much to inset (move) content in by

Which content to move, depends on the inset type and its purpose

System window insets

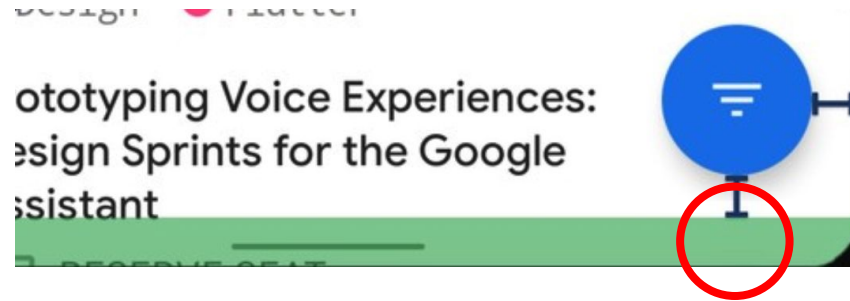
Where the **system ui** is being displayed over the app



System window insets

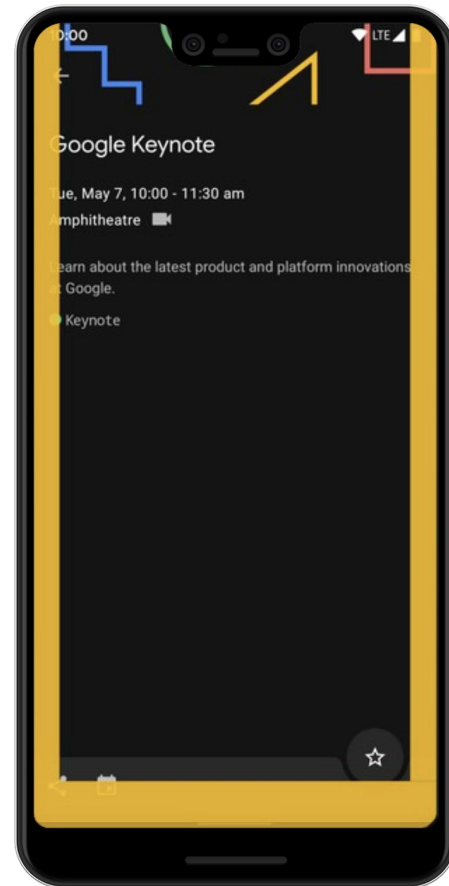
Where the system ui is being
displayed over the app

Use to move **clickable** views away
from edges



System gesture insets (new in Android Q)

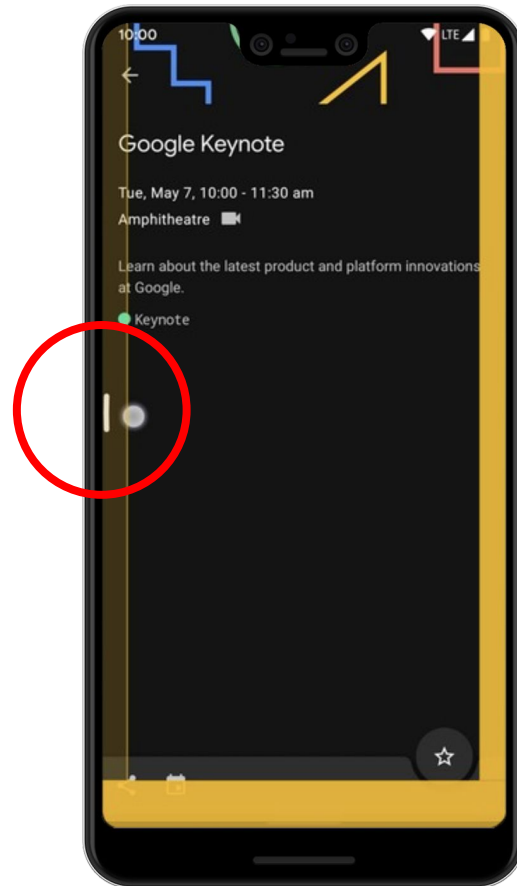
Which areas of the window where
system gestures **take priority**



System gesture insets (new in Android Q)

Which areas of the window where system gestures take priority

Includes the **vertical edges** for swiping back and **bottom edge** for home

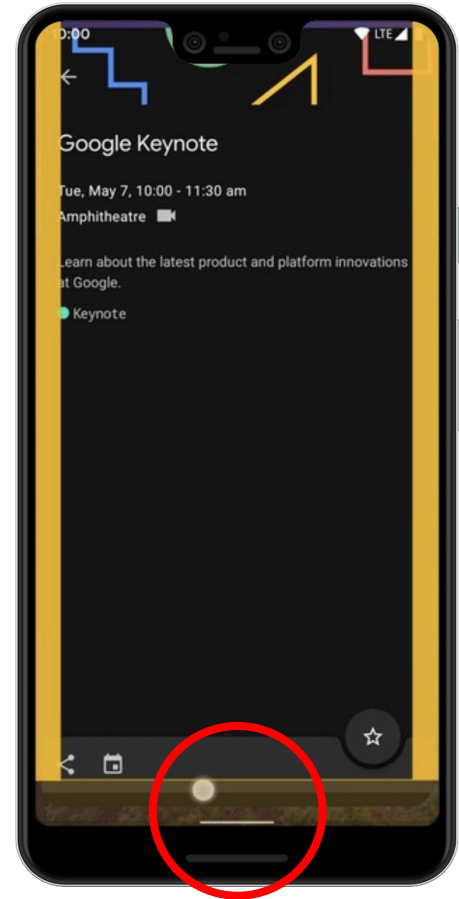


System gesture insets (new in Android Q)

Which areas of the window where system gestures take priority

Includes the vertical edges for swiping back and bottom edge for home

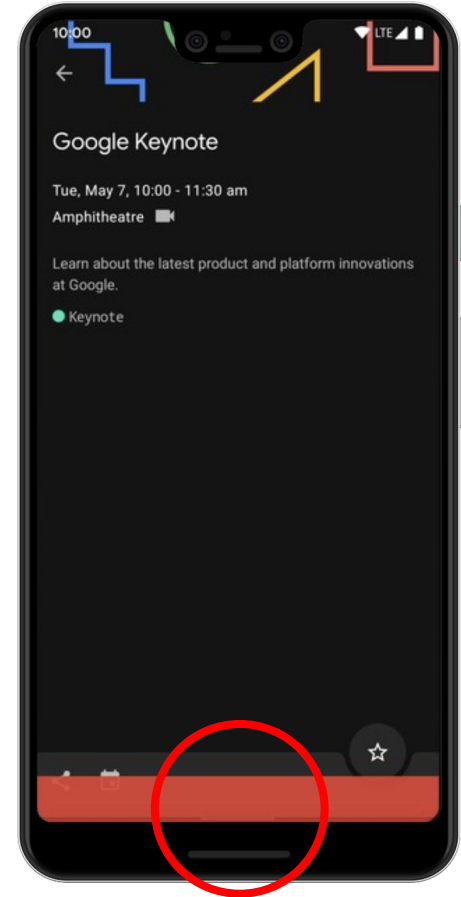
Use to move **draggable** views away from edges



Mandatory system gesture insets (new in Android Q)

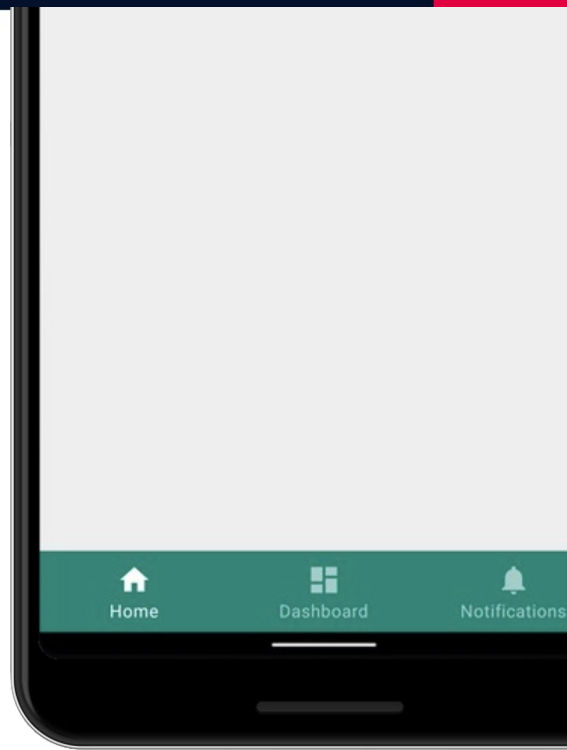
Which areas **cannot be overridden** by apps

Use to check what gesture areas can not be executed



Make the UI edge-to-edge

1. Setting transparent system bars
2. Setting UI visibility flag
3. Consuming insets manually

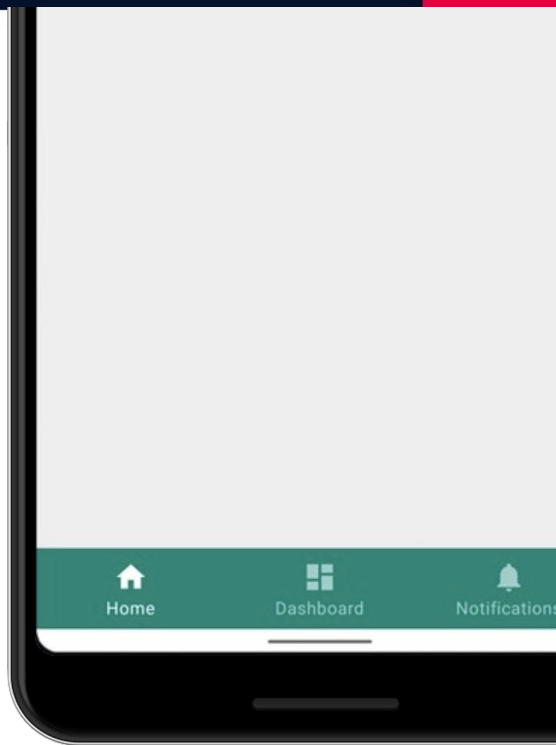


1. Setting transparent system bars

```
<!-- values-29/themes.xml: -->

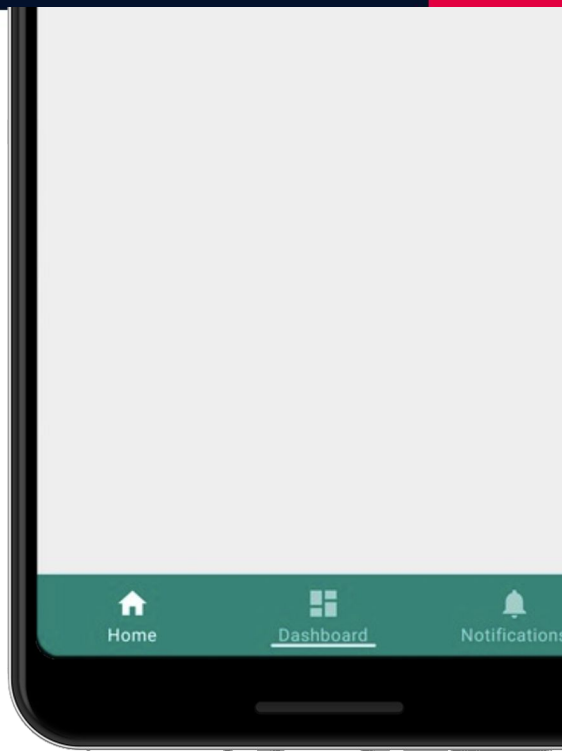
<style name="AppTheme" parent="...">
    <item name="android:navigationBarColor">@android:color/transparent</item>

    <!-- Optional, but recommended for full edge-to-edge rendering -->
    <item name="android:statusBarColor">@android:color/transparent</item>
</style>
```



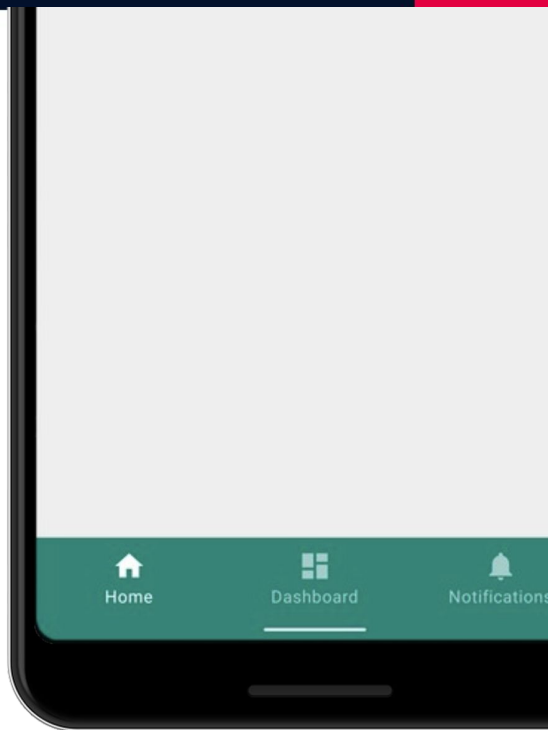
2. Setting UI visibility flag

```
window.decorView.setSystemUiVisibility(  
    View.SYSTEM_UI_FLAG_LAYOUT_HIDE_NAVIGATION  
    or View.SYSTEM_UI_FLAG_LAYOUT_STABLE)
```



3. Consuming insets manually

```
ViewCompat.setOnApplyWindowInsetsListener(view) { v, insets ->  
    v.updatePadding(bottom = insets.systemWindowInsetBottom)  
    insets  
}
```

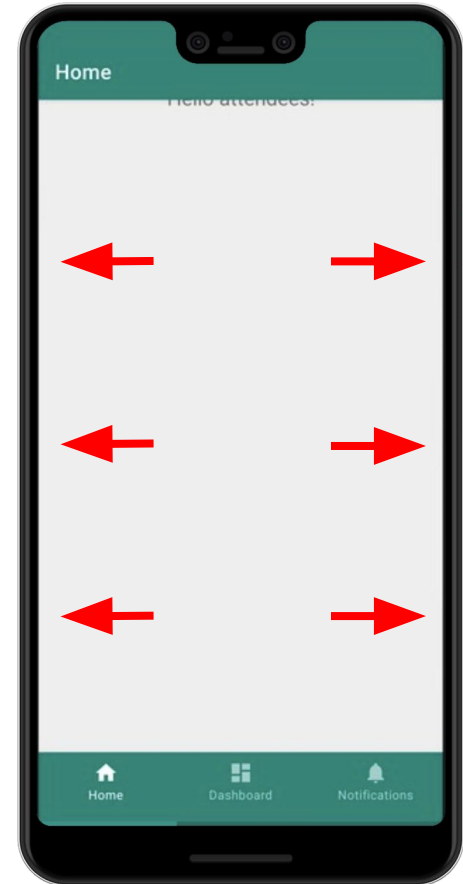


Handling conflicting app gestures

Conflicts with Back gestures

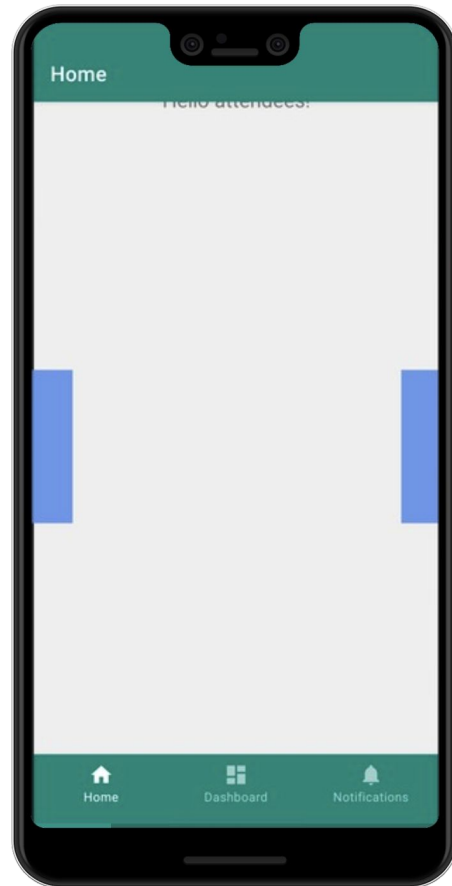
The gesture for Back is an inward swipe from either the left or the right edge.

Need to **opt out** of the Back gesture selectively by indicating to the system which regions need to receive touch input.



Conflicts with Back gestures

Use **`View.setSystemGestureExclusionRects()`** to exclude areas that overlap with areas reserved for system gestures.

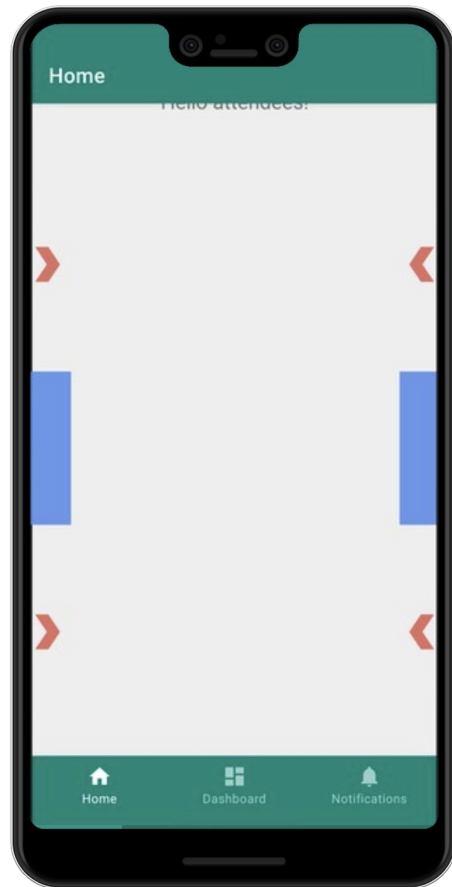


Conflicts with Back gestures

```
var exclusionRects = listOf(rect1, rect2, rect3)

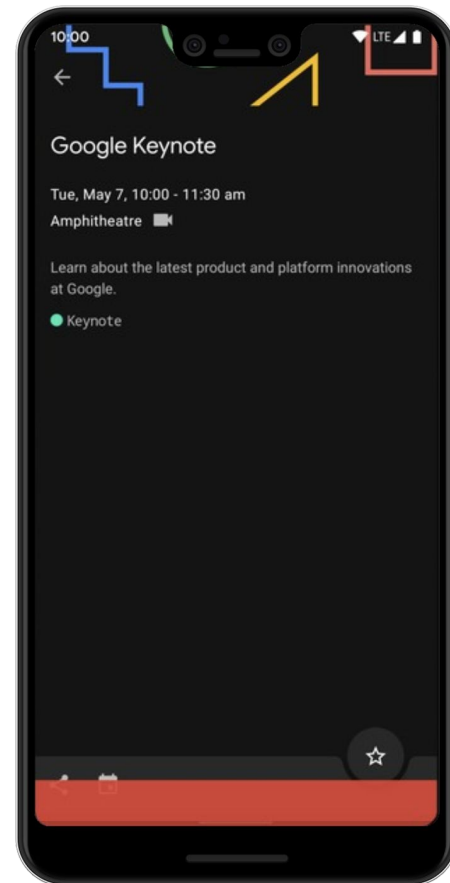
fun onLayout(changedCanvas: Boolean, left: Int, top: Int, right: Int,
bottom: Int) {
    // Update rect bounds and the exclusionRects list
    setSystemGestureExclusionRects(exclusionRects)
}

fun onDraw(canvas: Canvas) {
    // Update rect bounds and the exclusionRects list
    setSystemGestureExclusionRects(exclusionRects)
}
```



Conflicts with Home/Quick Switch gestures

Apps cannot opt out of Home and Quick Switch gestures.



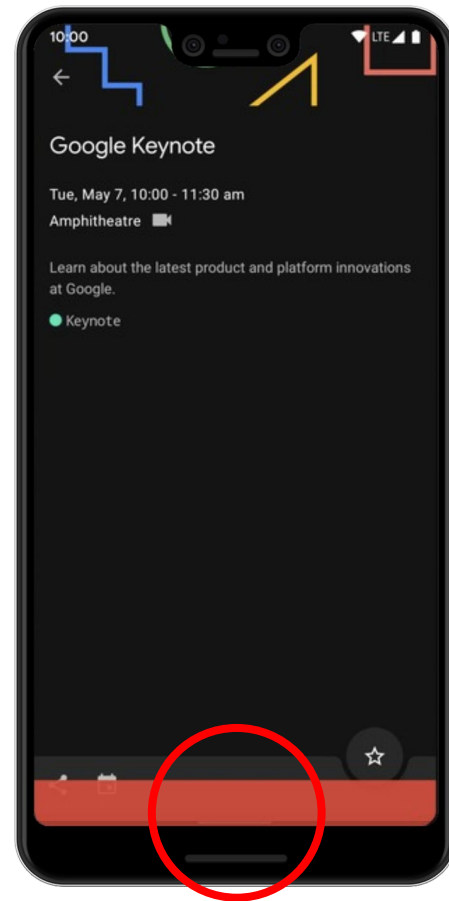
Conflicts with Home/Quick Switch gestures

Apps cannot opt out of Home and Quick Switch gestures.

Use

`WindowInsets.getMandatorySystemGestureInsets()`

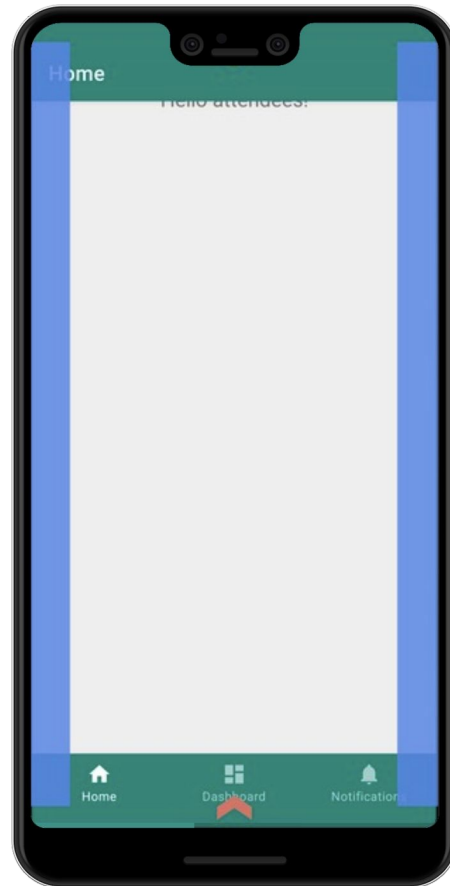
API, which informs apps of the touch recognition thresholds.



Games and other non-View apps

Can request to be **laid out** in immersive mode to disable the system gestures,

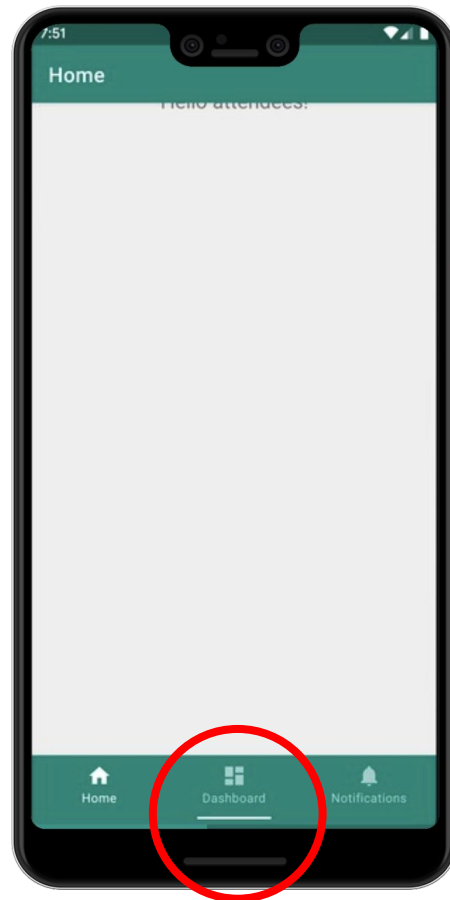
but allows the user to **re-enable** the system gestures by swiping from the bottom of the screen.



Games and other non-View apps

Can request to be **laid out** in immersive mode to disable the system gestures,

but allows the user to **re-enable** the system gestures by swiping from the bottom of the screen.



Common use cases












Scrolling views, list views

Window insets  bottom

2:44 19 43%

Messages

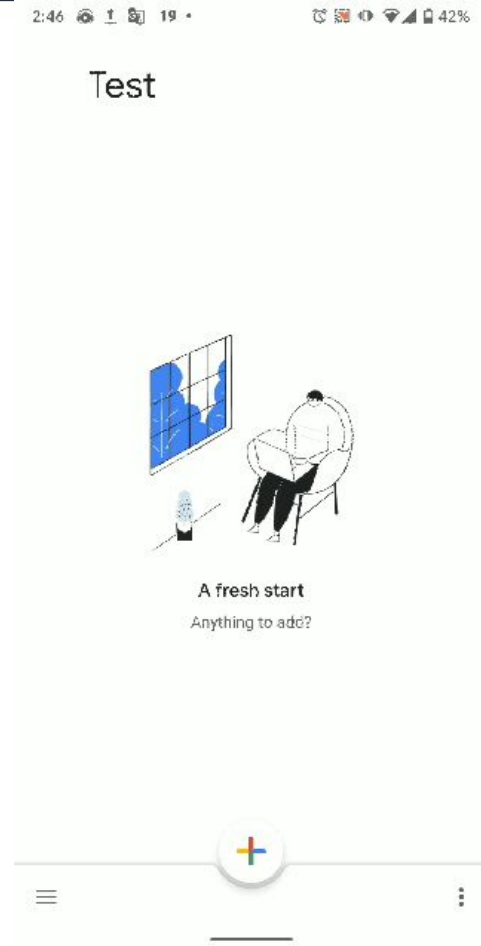


-  TrueYou Wed
กดเลข <https://ct.elinks.io/17Se-Apu> ลด 5% ...
-  TrueMove H Wed
Please be informed that from 1 Sep 19 onw...
-  Shopee Jul 19
รหัสในการยืนยันแอป Shopee คือ 980915. มี...
-  TrueID Jul 16
TrueID LITE แอปดูทีวีออนไลน์ฟรี ใช้ได้ทุกเค...
-  *12398 Jul 10
โทรฟรี 130 วัน เพลงรอสายโหลดไม่ขึ้นจากนกร...
-  *12378 Jul 1
เพลงดังเสียงรอสายจากนกรมี ให้เจ็ดมีฯพบล...
-  TrueMoveH May 30
คุณได้สิทธิ HD TV ฟรีช่วงเที่ยงคืน-5 โมงเช้าน...
-  9789 May 30
You: B
-  TrueMoney May 7
แจ้งภัยเฝ้าระวัง 1.5GB ชั่วโมง 06/05/19 น...
-  True You May 4
You've received 4 TruePoint ...
-  NBTC Apr 29
4-6 พ.ค. ขอเชิญร่วมเป็นส่วนหนึ่งไปประวัต...

Start chat

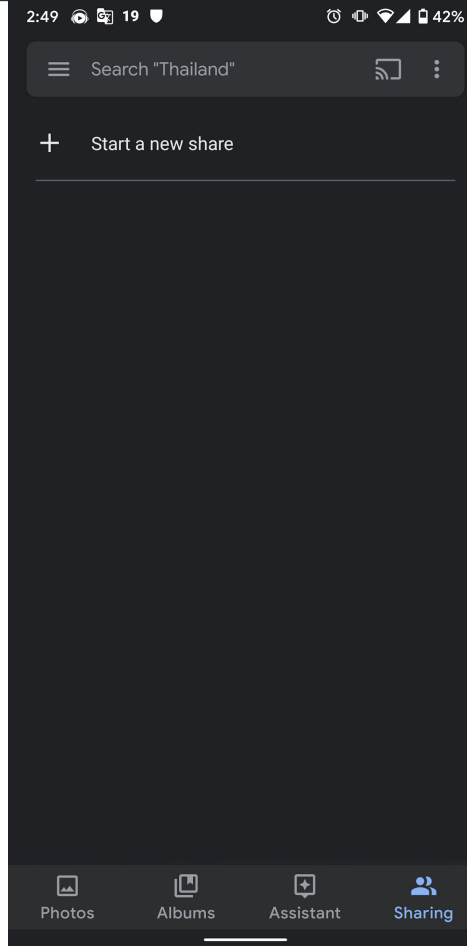
Bottom sheets, snack bar

Window insets  bottom



Bottom navigation

Window insets 🙌 bottom

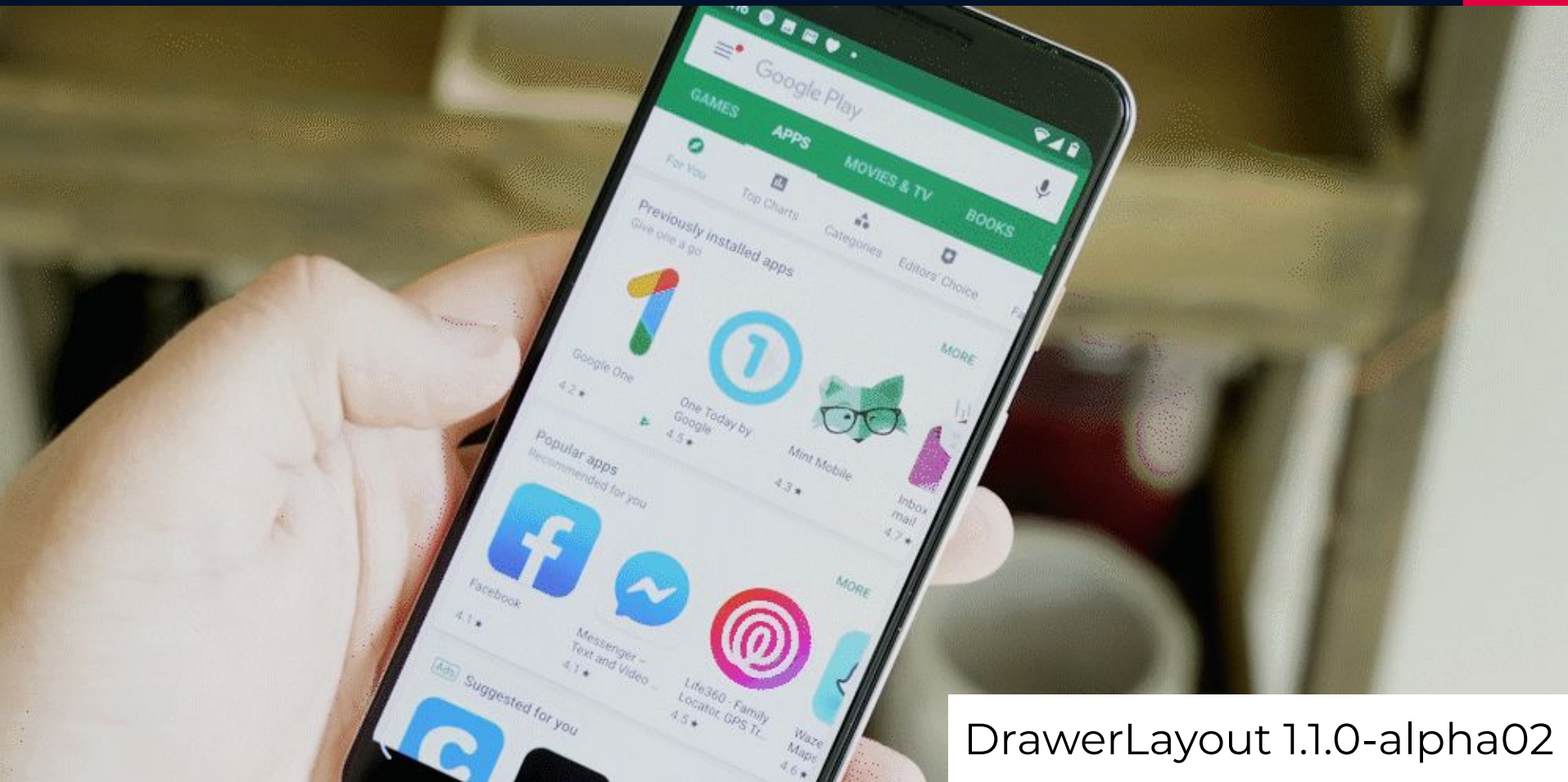


Carousels, view pagers and horizontal scrolling/dragging views

`setSystemGestureExclusionRects`

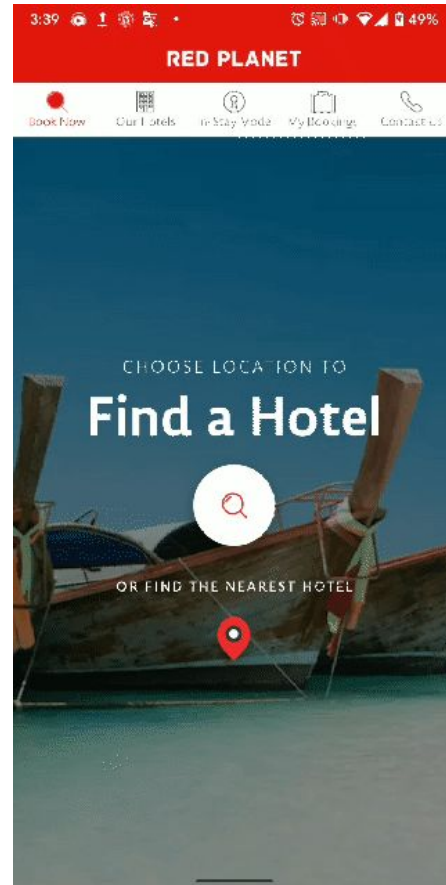


Navigation Drawers

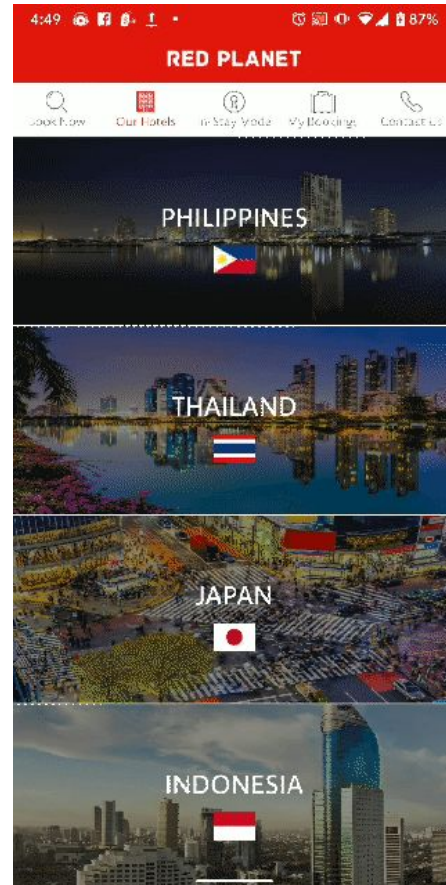


DrawerLayout 1.1.0-alpha02

Achievement and Progress



Achievement and Progress



Conclusion

Going edge-to-edge is strongly recommended on Android Q to improve user experiences

[https://developer.android.com/preview/features/gesturalnav.](https://developer.android.com/preview/features/gesturalnav)

⇒ Reduce conflicts with system gestures.

“People ignore design
that ignores people.”

Frank Chimero
Designer



Thanks!

Contact Nimble

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