Android material design: its impact on location-based apps

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What is material design?
Google’s answer to Apple’s design dominance…

“…a visual language for our users that synthesizes the classic principles of good design with the innovation and possibility of technology and science.”

Unified experience across platforms, device sizes and human computer interaction (touch, voice, mouse & keyboard)

Creating a Google brand AND an Android brand

From: http://www.google.com/design/spec/material-design/introduction.html#
**Principles**

- Material is the metaphor – modern tech inspired by paper and ink (not skeuomorphic – does not replicate)
- Bold, graphic, intentional – print based design guides visual treatment
- Motion provides meaning – user actions initiate movement
Lets see some then....
Structure

3d layering of content
   Elevation of elements important – conveyed by shadows
Movement of surfaces under each other
   Grouping of objects, siblings should move the same
Floating action buttons
Layout and color

Sizing of components (toolbars = 56dp / 64dp)

Never split sheets with another sheet!

Grids and templates – take care of your dp!!!

Cards for related data (not homogenous content)
  Fixed width, variable height

Color & Themes - material theme

3 from primary, one from accent palette

Chips, Snackbars and Toasts, Tasty…

Imagery - don’t use stock images

Use Hero images!

Maximise your content, take up the screen real estate

http://www.google.com/design/spec/style/imagery.html#imagery-best-practices
Meaningful transitions

Content grows/shrinks from its source to destination
Help organize the information architecture of the app
Interaction feedback

Highlight/selection of paper

Effects

- Surface reaction – touch ripple
- Material response – lift up when touched

Helps guide user in what to do next
Animations

Authentic motion and consistent choreography

http://www.google.com/design/spec/animation/authentic-motion.html#authentic-motion-mass-weight

Delightful details

http://www.google.com/design/spec/animation/delightful-details.html
Iconography

Simple, flat, consistent

Longest page in the spec, so beware....
More principals…

http://www.google.com/design/spec/material-design/introduction.html

It’s a lesson on how to write design guidelines…

https://medium.com/@orhnsnmz/how-to-upgrade-your-apps-design-from-holo-to-material-design-a-case-study-f77e33a528c8
Clarifying some unclear areas in the guidelines
Lists

Good for items with a few lines of text

Fewer actions

Similar types of information

Better for scanning text
Cards

Mixed content

Multiple actions

Different lengths of content

Strong or dominant imagery
Color

Bright colors work well in moderation.
Bright colors work well in muted environments.
Bright colors work great when they are the focal point.
Design can be fairly uneventful and yet still interesting.
Animation

When is animation too much?
Is it distracting? Is it jarring?
Is it overkill?
Hold on!
Give us a minute, we're looking for products.
Take reasonable opportunities to do something interesting.
Rule of thumb:
Enhancing the users experience

Places where you can expect enhanced design:
Start screen
Navigation Drawer
Loading Indicators
About screen
What are some changes coming to Esri mobile apps?

“Flat” style
More minimal, sleeker lines - aka “Modern”
Beginning to incorporate animations as transitions
Consistency across our apps
Old and new
Old and new
Old and new
Old and not as new...
Material design demo
ArcGIS Basemaps demo & code
Dan O’Neill
Material Design

Dan

- ArcGIS Basemaps app
  - DEMO
Material Design

Dan

- ArcGIS Basemaps app
  - Material design UI components used
    - RecyclerView
    - CardView
    - Floating Action Button
    - Animations
    - Ripples

→ https://github.com/Esri/arcgis-runtime-demos-android/tree/master/2015-DS/MtHBM
Material Design

Dan

- ArcGIS Basemaps app
  - Model - View - Presenter pattern
    - Model
      - Defines data to be displayed
    - View
      - Displays data
    - Presenter
      - Middleman
      - Retrieves data from model, formats for view
Material Design - Model

Dan

- Basemaps
  - BasemapItem
    - Defined our basemap object
      - PortalItem
      - Bitmap Image
  - BasemapAdapter
    - Extends RecyclerView.Adapter
    - ViewHolder pattern required by API
  - BasemapViewHolder
    - Stores each of the component views
  - BasemapClickListener
    - Listeners are not provided by RecyclerView
Material Design - Presenter

- ArcGIS Android Portal API
  - FetchBasemapsItemId
    - Queries ArcGIS online for Basemap items
    - Background thread
  - OnTaskCompleted
    - Interface to process response from background thread
Material Design - View

Dan

- **User Interface**
  - **MainActivity**
    - Displays results of data from Presenter
    - Basemaps images and Titles displayed as Cards
  - **MapActivity**
    - Receives BasemapItems from MainActivity
    - Creates a MapView to display the map
    - Floating Action Bar Button to turn on/off you location
Material design
ArcGIS Basemaps code

Dan O’Neill
Thanks!

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