MATERIAL DESIGN

Principles.

- Material is the metaphor
- bold, graphic, intentional
- Motion provides meaning.

3D environment (x, y, z) dimensions.
Z direction points to user holding the device.

key light creates directional shadows
ambient light creates soft shadows.

Every sheet of material occupies a single position along the Z axis & has standard 1 dp thickness.

- Z axis is for layering on wed & is not is perceptive.

On web shadows are depicted by manipulating the Y axis only.

Material properties

1) solid
2) occupies unique points in space
3) Impenetrable
4) Changes in size only along its plane
5) Unbendable.
6) Can join to other material
7) Can separate, split & heal
8) Can be created or destroyed.
9) Moves along any axis.

- varying x, y dimensions (measured in dp) and uniform thickness. (1 dp).

- Content can behave independently of material, doesnot add thickness but is limited within the bounds of the material.

- Multiple material elements cannot occupy the same point in space simultaneously.
  - to prevent this use elevation to separate material elements.

- one material cannot pass through other.

Transforming material

- can change shape.
- grows, shrinks only along its plane.
- never bends / folds.
- can join together.
- when split, it can heal.

Movement of the material

- can be spontaneously generated or distroyed anywhere in environment.
- can move along the axis.
- Z axis — user interaction axis.

Elevation

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- measured from front of one surface to front of another, an element's elevation indicates distance between surfaces & the depth of its shadow.

- All material elements have resting elevations. Dynamic elevation offsets are goal elevation that components move towards

Resting elevation

- default elevation that does not change
- it should return to its resting elevation as soon as possible.
- Desktop resting elevation is 2dp below the listed values to accomodate mouse and non-touch environment.

larger the screen, greater the depth

Shadows

Object relationships

- object hierarchy
- Exceptions
- Interactions
- Elevation.

How objects are organized in app, defines how they will move.
They can move independently or can be constrained by objects higher in hierarchy.

parent child relationships.

specifications

- each obj. can have one parent.
- each obj. can have any # of children.
- inheritance of position, rotation, scale & elevation.
- siblings have same level of hierarchy.

Exceptions

Items parented to root, such as primary UI elements move independently of other objects. e.g. floating action button does not scroll with content.

other e.g.

- apps side nav drawer
- the actionBar
- Dialogues.

Interactions

- how objects interact with each other is determined by their place in hierarchy.
- if siblings, all move in-tandem.

Motion

provides:
- focus between views.
- hints of what'll happen when user completes goal.
- Distraction from what's happening behind the scenes.
  Character, polish delight

Motion specs:
it is responsive
objects can follow curve.
- motion is natural.
- aware of surrounding.
- it is intentional.
- it is Quick
- it is clear - simple, avoid too much at time.
- it is cohesive.
  should be consistent throughout app.

Style, split screen,

Components

- chips.- represent complex entity in small block

Expansion panel-
contain creation panel flow, allow light weight editing,

Grid list - alternative to standard listview.

Steppers - Display progress through numbered steps.

9 patch images

button has 9 pieces.
4 corners, 4 edges & center area.

for taller button
left, middle, right should be duplicated

for wider button
~~right~~, top, middle, bottom should be duplicated.

Layer list

array of drawables that creates LayerDrawable instance.

they are drawn in order in which they use declared.

InsetDrawable

Insets other drawable by specified distance

Transitions

ImageSwitchers
ViewSwitchers
StackView
MediaController.