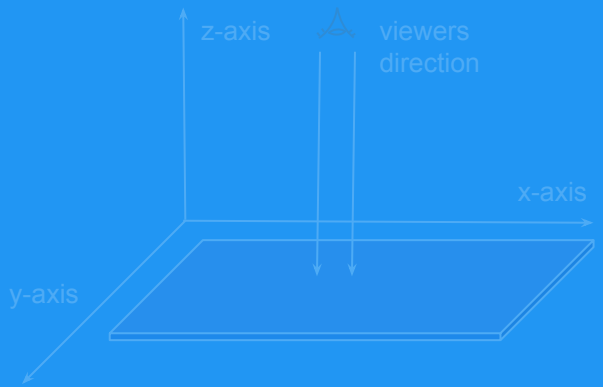

Summary of

Material Design

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Contents

Introduction to Material Design

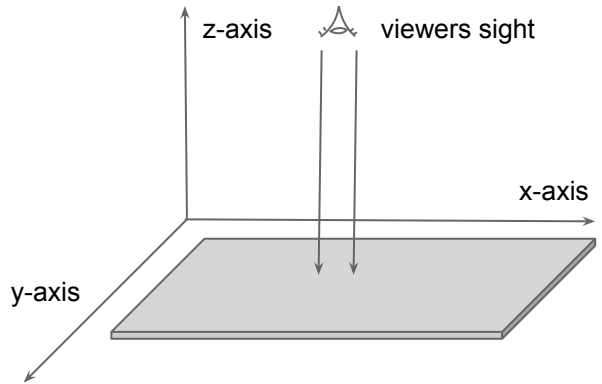
A new design language, by Google, which uniquely combines the principles of design and science to create a unified and pleasant interactive experience.

Why material design

Material Design has provided a single underlying system to design for a unified experience across platforms and devices.
It has used the principles of science and design to simulate the actual experience of interactive components on the interfaces.

What is material

In a virtual 3D space, a material sheet has a length,width and height of x,y and 1dp respectively. A material sheet is parallel to the plane of display and normal to the viewers sight.
Occlusion of light by material is shadow, which plays important role in visualizing the environment precisely.



Characteristics of Material

Physical

- Dimension - x,y,1 dp. Multiple material elements can not occupy same space simultaneously.
- Shadow - Shadows can never be approximated using material.
- Content - Content can be considered in the form of pixels on material, and does not add thickness to material. Content behavior can be different from material behavior.

Transformation

- Shape - Material can take any shape and transform into another shape.
- Size - Materials can can grow and shrink along its plane.
- Heal - Two sheets can join to form one, while one sheet can split into multiple sheets as well.

Motion

- Translate - Material can be generated and destroyed anywhere in the environment. It can move along any axis.
- Rotate - Material can rotate along any axis.

Meaningful Motion

Animation

- Authentic Motion - There should not be an abrupt start or stop, but it should follow the rules of gravity simulating the effect of weight. Unnecessary changes in velocity may create distractions.

Interaction

- User Input (via click/tap/drag) - Primary user actions are inflection points that initiate motion. The reaction of user inputs can be visualized in multiple forms like wipe-out, ripple-effect, rotational and so on.
- Surface Reaction- Wiping effect or wash-out effect are examples of surface reaction.
- Material Response- Surface Reaction + z-axis motion is an example of material response.
- Radial Action - User action points are considered as the epicenter for the reactions in a way that closer actions occur sooner than more distant ones, creating a ripple of actions.

Transitions

- Continuity - There should be a smooth transition among incoming, shared and outgoing elements.
- Hierarchical Timing - This sets a visual path for the viewer to determine an obvious hierarchy among elements.
- Consistent choreography - The whole transitional effect should follow the same pattern to create a consistent visual meaning.

Material on Interface

Style

- Color - Material design has been characterized with bold graphics. It has 19 major primary colors, its hues and accents available as secondary colors. A selection of 3 primary colors and 1 accent color can create a balanced color palette.
- Icons - Product icons and system icons should be designed following the icon grid patterns for consistency and coherence.
- Typography - Roboto and Nato has been the standard typefaces for android and chrome. The optimal scale and line-length should be maintained for better readability.
- Imagery - It should reflect the context, visualize the information and present an immersive experience as a whole.

Layout

- The layout is designed to scale across different screen sizes and will help create scalable apps.
- Layouts can be designed using the tools adapted from print design like baseline grid and structural grids.

Structure

- Content first - Putting core content right upfront, engages the user and has lesser scope of distraction.
- Navigation - App Bar, Menu Bar or Navigation drawer are the interface elements used for navigation.
- Functionality - The most prominent functionality should be well-guided using floating action buttons, and other navigational structure.

Conclusion

Following the basic principles of design and science, material design sets the framework to design a solution in a way humans understand, observe and interact with other objects in the physical world.

This new design framework has set a standard language of design for different contexts and devices. It would help facilitate creating scalable apps for different platforms and form factors.

The bold graphics is another fascinating characteristic of material design. However, we must be careful while deciding the color palette, imagery and typography that must be in line with the branding guidelines. We must not forget to take the cultural sensitivity into consideration based on geographies and different cultures while deciding on style elements.

Since the design language has just started to evolve, it needs a meticulous study of the principles which it inherits from science and evaluate those principles from all possibles perspectives.
Because, we may find some of the guidelines contradicting each other, when put in different contexts of usage.

So, a prudent application of material design guidelines can set the direction of design towards a fresh and delighting user experience.

Many thanks for the read.
Please do connect to share your comments and feedback.

Reference : Google's specification on material design.