Information Visualization For Mobile Applications

Information visualization is the methodology of visual representation of huge amount of data using various techniques to help people understand and analyze data in the most convenient manner. This article explains the need for and use of this technique in mobile applications.

Need for information visualization for mobile applications?

Mobile devices have many restrictions as compared to desktop computers that should be taken in to account when developing mobile applications.

- Small screen size
- Low resolution
- Fewer colors
- Difference in aspect ratio
- Hardware limitation – slow CPU speed, less powerful Graphics CPU, memory limitation
- Difference in Input Mechanism
- Variable physical environment
- Slow internet Connectivity
- Limited graphics tools

Mobile Visualization Design Guidelines

The following guidelines will help designers in developing effective mobile visualization application:

- ### Selection
  Only necessary and relevant information must be displayed to the user from the available data. Too less or too more information can cause difficulty to the user to in performing the task. Selection is especially critical in case of mobile device visualizations because the limited space restricts how much information can be displayed on the screen.

- ### Data and visual mapping
  Remember 'A picture speaks a thousand words!', the selected data must be appropriately mapped to visual objects (e.g. chart, graphs,images,animation, etc.) which will provide the information to the users in the most effective manner. The data and visual mapping must be consistently applied throughout the application.

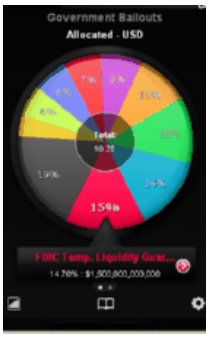
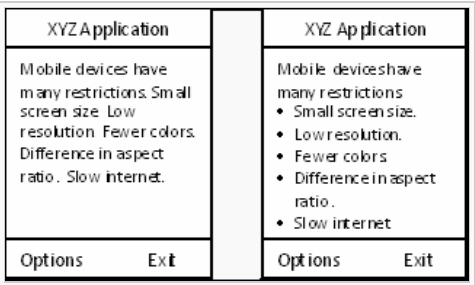


Chart representation instead of textual representation of data.

- ### Presentation
  The central purpose of visual presentation is to effectively communicate the information to the user.



Avoid / prefer

Above is an example where data selection and its representation is done correctly, but in left image the presentation is not effective as compared to the right image because of unformatted text.

- ### Innovative screen usage
  Remember that you can do different things with the display: Sometimes you can just turn things around!
  Full Screen Mode - This will increase the space for visualizing information of the application. But keep in mind that the user may lose important information, such as the battery, network, and other indicators at the top of the screen.

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Media Player using horizontal full screen for displaying movie.

User Interactivity

Keep in mind the input devices available to explore and rearrange the visualization. A high level of user interactivity is necessary for productive usage of the application.

Keep it Simple

Too much complex Information visualization can confuse the user. Investigate the core usage of the application and keep the visualization simple. Give options to drill down, if additional information is required. Don't get overwhelmed by the technology, new but complex visualization technology should not compromise the usability.

Avoid / Prefer

Ergonomic considerations

Consider human perceptual and cognitive capabilities. Users must be able to easily recognize and interpret the visualization.
More information on ergonomic design : Ergonomic Design

Testing

The visualization's effectiveness should be tested thoroughly.

--Submitted by - Aadhar14b, 29 June 2009

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