Usability & Accessibility

可用性与可访问性

•customer-centric design

- ISO 9241-11 defines usability as the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.

- Accessibility is usability extended to broader audiences including the segments of society not originally perceived as the intended target user demographics e.g. all age groups and physical abilities etc.

•以客户为中心的设计

- ISO 9241-11 将可用性定义为：在特定使用情境下，指定用户为实现指定目标而使用产品的有效程度、效率和满意度。

- 可访问性是可用性的延伸，面向更广泛的受众，包括最初未被视为目标用户群体的社会群体，例如所有年龄段和不同身体能力的人等。

- Usability (Nielsen's usability model)
- efficiency, satisfaction, learnability, memorability and errors as the five key attributes of usability.
- Efficiency is a measure of resources expended to help user achieve goals with accuracy and completeness;
- Satisfaction is freedom from discomfort and positive attitudes towards the use of the product;
- Learnability is ease with which a user can rapidly start getting work done with the system;
- Memorability Is the ease with which a casual user is able to return to the system (after having not used it at all for a while) and use it without having to learn everything all over again
- Errors imply that the system should have a low error rate to begin with but in case the errors occur the users shall easily recover from them.
- Usability (ISO 9241-11, 1998 on the other hand defines usability as possessing three key attributes namely effectiveness, efficiency and satisfaction. While efficiency and satisfaction mean the same as in Nielson's usability model, the new attribute effectiveness means the accuracy and completeness with which a user achieves specified goal.

- 可用性（Nielsen 的可用性模型）
- 效率、满意度、可学习性、记忆性和错误率是可用性的五个关键属性。
- 效率是指为帮助用户准确且完整地实现目标所消耗的资源量度；
- 满意度是指消除不适感以及用户对产品使用的积极态度；
- 可学习性是指用户能够快速上手并开始使用系统完成工作的难易程度；
- 记忆性是指普通用户在一段时间未使用系统后再次返回时，无需重新学习所有内容即可使用的难易程度
- 错误意味着系统从一开始就应该具有较低的错误率，但一旦发生错误，用户应能轻松恢复。
- 可用性（ISO 9241-11, 1998则将可用性定义为具有三个关键属性，即有效性、效率和满意度。虽然效率和满意度在尼尔森的可用性模型中含义相同，但新增的属性有效性指的是用户准确且完整地达成指定目标的程度。

Usability Metrics

- time taken to complete a task,
- ratio of task successes to failures,
- %age of a task completed,
- frequency of program help use,
- the time spent in dealing with program errors.

Exploring correlation of such measures with the user interface characteristics such as the number, placement, coloring and sizes of the on-screen user interface elements etc. can help quantify user's ability to complete tasks given the user interface of the application.

The context of use is important e.g. user may be sitting, standing, walking or in a vehicle while interacting with the app. The user may also be interacting with others thus creating distractions.

可用性指标

- 完成任务所用的时间，
- 任务成功与失败的比率，
- %age 的任务完成度，
- 程序帮助使用的频率，
- 处理程序错误所花费的时间。

探索这些度量与用户界面特征（如屏幕上的用户界面元素的数量、位置、颜色和大小等）之间的相关性，有助于量化用户在给定应用程序用户界面的情况下完成任务的能力。

使用环境很重要，例如用户可能在坐着、站着、行走或在交通工具中与应用程序交互。用户也可能正在与他人互动，从而产生干扰。

Tools

- Recording and analyzing
- Layout Inspector e.g. (Pixel Perfect) Android
- Firebase A/B Testing (testing multiple variants of the app)
- Google Analytics
- Lint, JSLint etc

工具

- 录制和分析
- 布局检查器，例如（像素完美）Android
- Firebase A/B 测试（测试应用的多个变体）
- Google Analytics
- Lint、JSLint 等