**Question 1 – Functional & Non-functional**

**Functional Requirements**

* Visual
* Audio Language
* Navigation
* Buttons
* Social Network

**Non Functional Requirements**

* Response times - refresh

### Processing times – spinning icon

### Query and Reporting times – time to query database

### Throughput – Information being processed

### Storage – Space needed

**Target Users**

**Cognitive Issues**:

* Memory, Visual, and Auditory, attention capacity

**Population issues**:

* Decision making, language comprehension disabilities

**Technology issues:**

* Computer graphics capabilities, connection speed, compatibility of systems

**Economic / logistic realities**:

* What is the cost of the system? Benefits outweigh costs.

**Geographical -** Location

**Demographical/socioeconomic -** Stereotypes

**Psychographic -** attributes values, lifestyles

**Behavioural**

**Question 2 - ISO**

* **Identify issues** with current experience
* **Evaluate** user experience
* Identify **requirements**
* **Prototype**
* **Evaluate** if requirements have been met

**Evaluation Plan**

**Heuristic evaluation**

·         **‘Rules of thumb’** of a ‘good’ interface

·         Heuristics to **walk through** an interface, noting potential problems

·         Multiple evaluators independently evaluate, then compare results

·         Needs appropriate heuristics - Android/iOS interface design docs

·         Results comparison and agreeing output may take time

**Multiple method use allows for triangulation of data**

**Questionnaires**

·         **Fixed** **questions** Set

·         **Widely distributed**; *some control over audience*

·         Fairly straightforward **Analysis**

·         Requires **careful design**

·         **Lacks flexibility** to gather explanations for answers

·         Could be **misunderstood** or unanswered

**Interviews**

·         Fixed or **semi-structured** set of **questions**

·         More **flexible** than questionnaires

·         **One-to-one -** Rich data - *intimidating for participant*

·         Requires **time and effort**

·         **Complex** data **analysis**

**Usability Evaluation**

·         Formal **observation** of **users** carrying out **pre-defined tasks**

·         **Measurements** - *time taken, errors made, requests for help*.

·         **User opinion** after use (perhaps before as well)

·         **Controlled data** on areas of concern/interest

·         How realistic is user performance? (Hawthorne effect)

**Observation**

·         **Watching** people OR asking **people** to **record usage** ( diary, logbook)  OR **logging  use** ( *system logs, analytics*)

·         **Naturalistic** – *no control over participant*

·         Potentially **rich, realistic data** -  *Lots of data*

·         Judgement to intervene when something interesting happens

**Jacob Neeson**

1. **Visibility of system status - Feedback**
2. **Match between system and the real world – Logical Order**
3. **User control and freedom – Emergency Exit**
4. **Consistency and standards – Conventions e.g. Symbols**
5. **Error prevention – Eliminate Error prone conditions**
6. **Recognition rather than recall**
7. **Flexibility and efficiency of use - Accelerators**
8. **Aesthetic and minimalist design**
9. **Help users recognize, diagnose, and recover from errors**
10. **Help and documentation**

**User Diversity Recap**

**User diversity:**

·       Physical appearance and shape.

·       Gender.

·       Life experience.

·       Social relationships.

·       Education.

·       Emotion, values, beliefs.

·       Capability (perceptual, cognitive, motor).

**Age-related capability change:**

·       Vision (visual acuity, colour perception, field of vision).

·       Hearing.

·       Motor skills (dexterity, sensitivity in fingers).

**Age-related *cognitive* capability change:**

·       Evidence of decline in *fluid* intelligence:

o    Processing, reasoning, and aptitude for learning.

o    Making inferences.

o    Prospective memory.

o    Selection, attention to clues.

o    Spatial cognition – patterns and relationships among obj.

Evidence that *crystallised* intelligence continues to increase or

remain stable into very late life – knowledge acquired through

education and experience.

Cognitive abilities also related to technology adoption – people with higher fluid intelligence more likely to use technology.

**Question 3 - User modelling**

**Static user models**

Once data is gathered not normally changed again, they are static.

**Dynamic user models**

can be updated - takes the needs/ goals of the users into account.

**Stereotype based user models – based on demographic**

make assumptions about a user even though there might be no data about that specific area, because demographic studies have shown that other users in this stereotype have the same characteristics.

**Highly adaptive user models**

Highly adaptive user models try to represent one particular user and therefore allow a very high adaptivity of the system. In contrast to stereotype based user models they do not rely on demographic statistics but aim to find a specific solution for each user. Although users can take great benefit from this high adaptivity, this kind of model needs to gather a lot of information first.

**Question 3B – Evaluation Methods**

* Usability Evaluation – Formal Observation
* Observation
* Focus Groups
* Interviews
* Ethnography – Study of a culture of people