The development of an aircraft maintenance technician headset
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The goal is to reduce maintenance error

- Traditionally, aviation has mainly focused on the air crew, pilot error or cockpit environment situations
- Maintenance violations and that maintenance related accidents have had a higher fatality rate than accidents overall in general
- Aircraft maintenance is an exceptionally difficult and complex field of actions
- Innovative solutions are needed to address efficiency without compromising safety or quality
- Continuous development and improvement of maintenance systems design are necessary
- Easy to use tools and equipment are needed in assisting maintenance work
- Maintenance related incidents are directly related to enforcement
- There are good possibilities for implementation of a mobile device that assists technicians in their daily routine

The development process

Background research
- Pilot study of workplace and tasks
- Workplace visit (2 days and 10 interviews)

Idea generation
- Mood board
- Benchmarking

Concept generation
- Sketching
- Focus group

Detail development
- Interviews (3 specialists)
- Prototyping

Design criteria

To fulfill aircraft technicians requirements and maintenance regulations the headset holder had to fulfill several criteria.

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Purpose</th>
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</thead>
<tbody>
<tr>
<td>Light weight</td>
<td>Easy to wear long term without being physically harmful.</td>
<td>Yes, materials as light weight as possible has been chosen.</td>
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<tr>
<td>Sound</td>
<td>Flexible and elastic rather than stiff and inadaptable</td>
<td>Yes, the headset is soft and elastic</td>
</tr>
<tr>
<td>Hygiene</td>
<td>Possible to wear long term, by different personnel without causing dissatisfaction</td>
<td>Yes, the electronic piece is easily removed from the headset which cannot be washed often. It is also easily replaceable with a new one due to cost efficiency</td>
</tr>
<tr>
<td>Comfortable wearing</td>
<td>Not hard to put on/off, no need for taking on/off frequently to communicate smoothly. Easily adaptable to different users.</td>
<td>Yes, fit without dissatisfaction. Continuous and exact connection with both environment and technology simultaneously</td>
</tr>
<tr>
<td>Material</td>
<td>Comfortable against the skin.</td>
<td>Yes, the selected material has been chosen.</td>
</tr>
<tr>
<td>Construction</td>
<td>One-piece, no loose ends, no parts accidentally falling off.</td>
<td>Yes, the construction is one-piece and encapsulates the technology entirely with no loose or detachable parts.</td>
</tr>
<tr>
<td>Simplicity</td>
<td>Possible to handle with gloves, not break easily, stable, not fragile, not too small details.</td>
<td>Yes, it is soft thus does not break when dropped. Details are not too small for gloves. The headset is foam padded on the inside which protects the technology</td>
</tr>
<tr>
<td>Fixed</td>
<td>Steadily fastened to the head, no sliding around during usage.</td>
<td>Yes, The headset is firmly attached to the head during usage due to elasticity with Velcro.</td>
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<tr>
<td>Disappearing</td>
<td>Not draw attention, not too futuristic looking, discreet.</td>
<td>Yes, the headset is as small, thin and insignificant as possible on every aspect that has been considered.</td>
</tr>
<tr>
<td>Colour</td>
<td>Black or white or something in between suits electronic equipment well, is unisex, timeless and discreet.</td>
<td>Yes, black was chosen instead of white because it is easier to keep it clean.</td>
</tr>
<tr>
<td>Aesthetic</td>
<td>Delicate combination of features together in the design, satisfactory appealing.</td>
<td>Yes, the design has been developed according to the wishes of the users.</td>
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</tbody>
</table>

Holder for Augmented Reality headset

Easy to use, no loose parts, comfortable and adjustable for users. Needs to be designed for different technologies, such as, Google Glass. The next generation Augmented Reality technologies will soon be released and the present technology is out of date, therefore the headset holder design did not focus on a specific technological solution.

A big challenge is user acceptance for a head mounted device and therefore its usability was focused upon.

Footnotes


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