# GenderMag Report: ScoreGen

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# 1 Revision History

| Date | Version | Notes |
|------|---------|-------|
| 2025-03-18 | 1.0 | Initial version. |

# 2 Symbols, Abbreviations and Acronyms

| Symbol | Description |
|--------|-------------|
| GM | GenderMag. |
| PDF | Portable Document Format. |
| UC | Use Case. |
| UI | User Interface. |

# Contents

# 3  Introduction

This document details the results of the usage of the GenderMag method to evaluate gender inclusivity as an aspect of ScoreGen's usability. It uses empirically based personas to simulate the software system's use from diverse perspectives, revealing design issues that might be missed.

This document is organized into sections covering use cases, customized personas, reporting forms, and the design changes implemented based on the GenderMag evaluation. Each section provides a focused look at how GenderMag helps improve software inclusiveness.

# 4  Methodology

The team followed the prescribed GenderMag evaluation methodology, engaging collaboratively throughout the process. In each of the two sessions, we formed our own individual perspectives and insights and then consolidated them in unified decisions on whether a persona would or would not formulate/undertake a specific subgoal/action. This approach was chosen as it maximized the diversity of perspectives and minimized the risk of bias from any one team member.

# 5  Use Cases

The GenderMag method was applied to the following two use cases of the software system:

UC1. Recording audio

UC2. Generating sheet music from audio

# 6  Customized Personas

## 6.1  Abi

Abi is designed to represent users with facet values often seen in females, such as comprehensive information processing and higher risk aversion. For more details, see the full persona: View the Abi Persona PDF.

## 6.2 Tim

Tim represents users with facet values commonly found among males, characterized by a selective information processing style and an impulse for exploring new functionalities. For additional details, see the full persona: View the Tim Persona PDF.

# 7 Report Forms

The GenderMag method uses three types of reporting forms: subgoal, action, and result. The subgoal reporting form is used to document the steps that the persona formulates themselves and tries to achieve, while the action reporting form is used to document the actions the persona takes to achieve the subgoals. The subgoal reporting form is filled out first, followed by the action reporting form. After all subgoal and action reporting forms are filled, the results reporting form tallies the results and identifies general UI issues and/or gender-inclusion issues with the application.

All raw reporting forms for each use case are provided in this document.

## 7.1 Use Case 1 Reports

Use Case 1 is the recording audio use case. The Abi persona reflects facet values commonly seen in women, such as high risk-aversion, low self- efficacy, and so on.

### 7.1.1 Subgoal Reporting Forms

**Scenario (Overall Goal): Abi wants to record some audio of her playing the piano.**

**Subgoal #1: Get to the audio recording page.**

1. **Will Abi have formed this sub-goal as a step to their overall goal? Why?**

| ☒ **Yes** | ☐ **Maybe** | ☐ **No** |
|---|---|---|
| *Which, if any, of Abi facets did you use to answer the question?* | | |
| ☒ Motivations<br>☒ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |
| *Why?* | | |
| Abi knows she has a particular task to do using this application, this is the first step in working towards completing that task (**Motivations**).<br><br>She will also likely notice that there are different pages for different features as she gathers comprehensive information about the application home page (**Information Processing Style**). | | |

*Subgoal #2: Identify the button that starts recording audio.*

1. **Will Abi have formed this sub-goal as a step to their overall goal? Why?**

| ☒ **Yes** | ☐ **Maybe** | ☐ **No** |
|---|---|---|
| **Which, if any, of Abi's facets did you use to answer the question?** | | |
| ☒ Motivations<br>☒ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☒ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |
| **Why?** | | |
| Abi will have likely looked at all the buttons and their symbols before clicking any (***Information Processing Style***).<br><br>The record button is the logical next step in achieving her overall goal, she has started the process of recording, which she would have figured is very straight-forward so she can learn the process while doing the steps necessary (***Motivations, Learn by Process vs. Tinkering***). | | |

*Scenario (Overall Goal): Abi wants to record some audio of her playing the piano.*

*Subgoal #3: Identify the 'Stop' button to end the recording.*

### 1. Will Abi have formed this sub-goal as a step to their overall goal? Why?

| ☒ **Yes** | ☐ **Maybe** | ☐ **No** |
|---|---|---|
| *Which, if any, of Abi's facets did you use to answer the question?* | | |
| ☒ Motivations<br>☒ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☒ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |
| *Why?* | | |
| Again, Abi would have already known this is the next logical step due to her consolidating her previous knowledge of recording audio with other technology. Furthermore, if she had never done this before (unlikely) she would have done research on the process or read relevant documentation (**Learn by Process vs. Tinkering**). | | |

*Subgoal #4: Abi wants to save the recording to her computer's drive.*

1. **Will Abi have formed this sub-goal as a step to their overall goal? Why?**

| ☒ **Yes** | ☐ **Maybe** | ☐ **No** |
|---|---|---|
| **Which, if any, of Abi's facets did you use to answer the question?** | | |
| ☐ *Motivations*<br>☒ *Information Processing Style*<br>☐ *Computer Self-Efficacy*<br>☒ *Attitude Towards Risk*<br>☐ *Learn by Process vs. Tinkering*<br>☐ *None of the above* | ☐ *Motivations*<br>☐ *Information Processing Style*<br>☐ *Computer Self-Efficacy*<br>☐ *Attitude Towards Risk*<br>☐ *Learn by Process vs. Tinkering*<br>☐ *None of the above* | ☐ *Motivations*<br>☐ *Information Processing Style*<br>☐ *Computer Self-Efficacy*<br>☐ *Attitude Towards Risk*<br>☐ *Learn by Process vs. Tinkering*<br>☐ *None of the above* |
| **Why?** | | |
| Abi would have noticed the Save button and its icon in previous steps (**Information Processing Style**) and she its very presence would have motivated her to form this as a subgoal because she would not want to lose the recording and have this entire process go to waste (**Attitude Towards Risk**). | | |

*Subgoal #5: Save the recording to a particular (non-default) directory.*

1. **Will Abi have formed this sub-goal as a step to their overall goal? Why?**

| ☐ Yes | ☐ Maybe | ☒ No |
|---|---|---|
| **Which, if any, of Abi's facets did you use to answer the question?** | | |
| ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☒ Motivations<br>☐ Information Processing Style<br>☒ Computer Self-Efficacy<br>☒ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |
| **Why?** | | |
| | | At this point, Abi has completed the task she set out to do (***Motivations***).<br><br>Her confidence in her ability to complete the task would have been reinforced by the action of saving the file (something that was not explicitly in her overall goal) and she would want to avoid taking any steps that would reverse this reinforcement (***Computer Self-Efficacy***).<br><br>She is also only comfortable using software she is used to, this is a new application and even though selecting a destination directory is trivial, this action still puts her audio recording at risk (***Attitude Towards Risk***). |

### 7.1.2 Action Reporting Forms

**Action #1: Click on the red 'Record' button.**

**1a. Will Abi do this? Why?**

| ☒ Yes | ☐ Maybe | ☐ No |
|---|---|---|
| **Which, if any, of Abi's facets did you use to answer the question?** | | |
| ☒ Motivations<br>☒ Information Processing Style<br>☐ Computer Self-Efficacy<br>☒ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |
| **Why?** | | |
| The description above the button clearly indicates this is relevant to the task she has set out to do (**Motivations**). | | |
| **What in the UI helped/confused Abi in this step?** | | |
| There are two buttons that say 'Record', both of which lead to this subgoal's achievement. However, the nav bar button is more ambiguous (Attitude Towards Risk) and it does not have a description like the red one does (**Information Processing Style**). | | |

**1b. If Abi does this, will they know they did the right thing and are making progress toward their goal? Why?**

| ☒ Yes | ☐ Maybe | ☐ No |
|---|---|---|
| **Which, if any, of Abi's facets did you use to answer the question?** | | |
| ☐ Motivations<br>☒ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |
| **Why?** | | |
| The recording page shows a large audio visualizer and various buttons with symbols related to audio recording (**Information Processing Style**). | | |
| **What in the UI helped/confused Abi in this step?** | | |

| N/A. | | |
|------|---|---|

**Action #2: Click on the record button (red button with the while circle).**

**2a. Will Abi do this? Why?**

| ☒ Yes | ☐ Maybe | ☐ No |
|---|---|---|
| **Which, if any, Abi's facets did you use to answer the question?** | | |
| ☒ Motivations<br>☒ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☒ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |
| **Why?** | | |
| Similar to the justifications for Abi forming the subgoal in the first place. This is the next logical next step in the process she has set out to do. There are also not (too many) other confusing options she could mistake for this step (**Motivations, Learn by Process vs. Tinkering, Information Processing Style**). | | |
| **What in the UI helped/confused Abi in this step?** | | |
| The play button at the bottom of the interface. However, the time scrubbing bar directly beneath shows that there is 0:00 – 0:00 minutes of audio recorded. This is information she would have gathered as she processed the entire UI page before engaging in any action (**Information Processing Style**). | | |

**2b. If Abi does this, will they know they did the right thing and are making progress toward their goal? Why?**

| ☐ Yes | ☒ Maybe | ☐ No |
|---|---|---|
| **Which, if any, of Abi facets did you use to answer the question?** | | |
| ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☒ Information Processing Style<br>☒ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☒ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |

| | | |
|---|---|---|
| | ***Why?*** | |
| | There will be subtle indications on the page that the recording has started, in particular, the greyed out Pause and Stop buttons will have changed colour. This is information she would have gathered previously, but there is no stark, obvious indication like a pop-up or warning message (***Information Processing Style***).<br><br>The immediate start of the recording may have startled Abi and caused her to panic, thinking too much is happening right off the bat and she didn't have time to prepare her hands on her piano (***Computer Self-Efficacy, Learn by Process vs. Tinkering***). | |
| | ***What in the UI helped/confused Abi in this step?*** | |
| | The previously greyed-out buttons becoming interactable would have helped Abi. The lack of warning, countdown, or preparation time before the recording begins may have confused Abi. | |

**3a. Will Abi do this? Why?**

| ☐ Yes | ☒ Maybe | ☐ No |
|---|---|---|
| **Which, if any, Abi's facets did you use to answer the question?** | | |
| ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☒ Motivations<br>☒ Information Processing Style<br>☐ Computer Self-Efficacy<br>☒ Attitude Towards Risk<br>☒ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |
| **Why?** | | |
| | She has made significant progress towards the task she wants to complete; she will be motivated to see it through whether successful or not (**Motivations**).<br><br>The Stop button is the next logical step (Learn by Process vs. Tinkering, Information Processing Style) and although the Pause button may be confusing her, she is risk-averse and knows for certain that the Stop button will Stop and is unsure if the Pause button will Stop or do something else, so she will not waste her valuable time figuring it out (**Attitude Towards Risk**). | |
| **What in the UI helped/confused Abi in this step?** | | |
| | The Pause button is now interactable and is yellow (a significantly noticeable change in the UI), this confused Abi as it makes it less clear which stops a recording in progress. | |

**3b. If Abi does this, will they know they did the right thing and are making progress toward their goal? Why?**

| ☒ Yes | ☐ Maybe | ☐ No |
|---|---|---|
| **Which, if any, of Abi facets did you use to answer the question?** | | |
| ☐ Motivations<br>☒ Information Processing Style | ☐ Motivations<br>☐ Information Processing Style | ☐ Motivations<br>☐ Information Processing Style |

| | | |
|---|---|---|
| ☐ *Computer Self-Efficacy*<br>☐ *Attitude Towards Risk*<br>☐ *Learn by Process vs. Tinkering*<br>☐ *None of the above* | ☐ *Computer Self-Efficacy*<br>☐ *Attitude Towards Risk*<br>☐ *Learn by Process vs. Tinkering*<br>☐ *None of the above* | ☐ *Computer Self-Efficacy*<br>☐ *Attitude Towards Risk*<br>☐ *Learn by Process vs. Tinkering*<br>☐ *None of the above* |
| **Why?** | | |
| The UI updates will be sufficient information for her to deduce that a recording has been made and that the Stop button has ended the recording (**Information Processing Style**). | | |
| **What in the UI helped/confused Abi in this step?** | | |
| Some buttons will return to grey scale which would help Abi deduce that the recording was successful and stopped. The audio scrubbing bar will have also updated the ending timestamp, indicating a certain amount of audio was captured. | | |

**4a. Will Abi do this? Why?**

| ☒ Yes | ☐ Maybe | ☐ No |
|---|---|---|
| **Which, if any, Abi's facets did you use to answer the question?** | | |
| ☒ Motivations<br>☒ Information Processing Style<br>☐ Computer Self-Efficacy<br>☒ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |
| **Why?** | | |
| Similar to the subgoal justifications, Abi would not want her pursuit of this task to have been a waste of time (***Motivations, Attitude Towards Risk***).<br><br>Abi would have also previously seen the Save button's icon and understood its meaning (***Information Processing Style***). | | |
| **What in the UI helped/confused Abi in this step?** | | |
| The familiar and widely used Save icon on the button, which clearly indicates its function. | | |

**4b. If Abi does this, will they know they did the right thing and are making progress toward their goal? Why?**

| ☐ Yes | ☐ Maybe | ☐ No |
|---|---|---|
| **Which, if any, of Abi facets did you use to answer the question?** | | |
| ☐ Motivations<br>☒ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |
| **Why?** | | |
| The UI initiates the native system's OS save pop-up, which is more than enough indication that this button is indeed saving her audio recording (***Information Processing Style***). | | |

| | | |
|---|---|---|
| **What in the UI helped/confused Abi in this step?** | | |
| Her processing style would have made her notice the name of the file she's saving (i.e., 'recording.wav'), and the destination that it defaults to (i.e. on OSX it is 'Downloads') in this particular case, Abi would realize that downloading would be synonymous with the function of saving. | | |

**Action #5: Click/open the destination directory drop down menu.**

**5a. Will Abi do this? Why?**

| ☐ Yes | ☐ Maybe | ☒ No |
|---|---|---|
| *Which, if any, Abi's facets did you use to answer the question?* | | |
| ☐ *Motivations* ☐ *Information Processing Style* ☐ *Computer Self-Efficacy* ☐ *Attitude Towards Risk* ☐ *Learn by Process vs. Tinkering* ☐ *None of the above* | ☐ *Motivations* ☐ *Information Processing Style* ☐ *Computer Self-Efficacy* ☐ *Attitude Towards Risk* ☐ *Learn by Process vs. Tinkering* ☐ *None of the above* | ☐ *Motivations* ☐ *Information Processing Style* ☐ *Computer Self-Efficacy* ☐ *Attitude Towards Risk* ☐ *Learn by Process vs. Tinkering* ☐ *None of the above* |
| *Why?* | | |
| | | Making a change not necessary, her overall goal been achieved. |
| *What in the UI helped/confused Abi in this step?* | | |
| | | N/A. The native OS pop-up is not confusing for Abi as she has used her own computer many times and is comfortable with this software. |

**5b. If Abi does this, will they know they did the right thing and are making progress toward their goal? Why?**

| N/A, Abi does not perform this action. |
|---|

### 7.1.3 Results Reporting Form

## *Debrief: Abi's Results for Use Case 1*

**Count the answers:**

1. How many questions (forms) were answered?

= **15** questions/forms

*2. How many of the questions (forms) in item 1 had EITHER a "no" or "maybe" answer?*

= **4** questions/forms

*3. How many of the questions (forms) in item 2 had "no" or "maybe" answers that were **tied to facet(s)**?*

= **3** questions/forms

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**Percentage of usability issues**

= *4 / 15*

= **26.67%**

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**Percentage of gender-inclusion issues**

= *3 / 15*

= **20.00%**

## 7.2 Use Case 2 Reports

Use Case 2 is the generating sheet music from audio use case. The Tim persona reflects facet values strongly associated with men. Significantly, Tim and Abi have very similar backgrounds; they are primarily different when it comes to the way they reflect the 5 facets.

### 7.2.1 Subgoal Reporting Forms

*Scenario (Overall Goal): Generate sheet music for a recording Tim has of him playing on his electronic keyboard.*

*Subgoal #1: Navigate to the recording page.*

1. **Will Tim have formed this sub-goal as a step to their overall goal? Why?**

| ☒ Yes | ☐ Maybe | ☐ No |
|---|---|---|
| **Which, if any, of Tim's facets did you use to answer the question?** | | |
| ☒ Motivations <br> ☐ Information Processing Style <br> ☒ Computer Self-Efficacy <br> ☒ Attitude Towards Risk <br> ☒ Learn by Process vs. Tinkering <br> ☐ None of the above | ☐ Motivations <br> ☐ Information Processing Style <br> ☐ Computer Self-Efficacy <br> ☐ Attitude Towards Risk <br> ☐ Learn by Process vs. Tinkering <br> ☐ None of the above | ☐ Motivations <br> ☐ Information Processing Style <br> ☐ Computer Self-Efficacy <br> ☐ Attitude Towards Risk <br> ☐ Learn by Process vs. Tinkering <br> ☐ None of the above |
| **Why?** | | |
| Despite recording audio not being a part of his initial plan, Tim wants to understand the interactions the application has with his new keyboard (**Motivations**). <br><br> Tim also doesn't mind taking risks with new technology through exploration and is confident he can work his way back to the homepage if things go awry (**Attitude Towards Risk, Learn by Process vs. Tinkering, Computer Self-Efficacy**). | | |

*Subgoal #2: Identify the 'Upload' button.*

1. **Will Tim have formed this sub-goal as a step to their overall goal? Why?**

| ☒ *Yes* | ☐ *Maybe* | ☐ *No* |
|---|---|---|
| **Which, if any, of Tim's facets did you use to answer the question?** | | |
| ☒ *Motivations*<br>☒ *Information Processing Style*<br>☐ *Computer Self-Efficacy*<br>☐ *Attitude Towards Risk*<br>☒ *Learn by Process vs. Tinkering*<br>☐ *None of the above* | ☐ *Motivations*<br>☐ *Information Processing Style*<br>☐ *Computer Self-Efficacy*<br>☐ *Attitude Towards Risk*<br>☐ *Learn by Process vs. Tinkering*<br>☐ *None of the above* | ☐ *Motivations*<br>☐ *Information Processing Style*<br>☐ *Computer Self-Efficacy*<br>☐ *Attitude Towards Risk*<br>☐ *Learn by Process vs. Tinkering*<br>☐ *None of the above* |
| **Why?** | | |
| At this point, not enough tinkering has caused him to forget what his original intentions were (**Motivations**).<br><br>He knows he has to give the application the audio file somehow and has most likely already clicked on the Upload button (**Learn by Process vs. Tinkering, Information Processing Style**) and knows that it prompts him to select a .WAV file. | | |

*Subgoal #3: Find and select his audio file.*

1. **Will Tim have formed this sub-goal as a step to their overall goal? Why?**

| ☒ *Yes* | ☐ *Maybe* | ☐ *No* |
|---|---|---|
| **Which, if any, of Tim's facets did you use to answer the question?** | | |
| ☐ *Motivations*<br>☐ *Information Processing Style*<br>☐ *Computer Self-Efficacy*<br>☐ *Attitude Towards Risk*<br>☐ *Learn by Process vs. Tinkering*<br>☒ *None of the above* | ☐ *Motivations*<br>☐ *Information Processing Style*<br>☐ *Computer Self-Efficacy*<br>☐ *Attitude Towards Risk*<br>☐ *Learn by Process vs. Tinkering*<br>☐ *None of the above* | ☐ *Motivations*<br>☐ *Information Processing Style*<br>☐ *Computer Self-Efficacy*<br>☐ *Attitude Towards Risk*<br>☐ *Learn by Process vs. Tinkering*<br>☐ *None of the above* |
| **Why?** | | |
| His discovery in subgoal #2 naturally leads him to the formation of this subgoal. | | |

*Scenario (Overall Goal): Generate sheet music for a recording Tim has of him playing on his electronic keyboard.*

*Subgoal #4: Identify the process audio file/export to MusicXML button.*

### 1. Will Tim have formed this sub-goal as a step to their overall goal? Why?

| ☒ **Yes** | ☐ **Maybe** | ☐ **No** |
|---|---|---|
| *Which, if any, of Tim's facets did you use to answer the question?* | | |
| ☐ *Motivations*<br>☐ *Information Processing Style*<br>☐ *Computer Self-Efficacy*<br>☐ *Attitude Towards Risk*<br>☒ *Learn by Process vs. Tinkering*<br>☐ *None of the above* | ☐ *Motivations*<br>☐ *Information Processing Style*<br>☐ *Computer Self-Efficacy*<br>☐ *Attitude Towards Risk*<br>☐ *Learn by Process vs. Tinkering*<br>☐ *None of the above* | ☐ *Motivations*<br>☐ *Information Processing Style*<br>☐ *Computer Self-Efficacy*<br>☐ *Attitude Towards Risk*<br>☐ *Learn by Process vs. Tinkering*<br>☐ *None of the above* |
| *Why?* | | |
| Tim has now constructed an understanding of how the application internally performs the sheet music generation. This happens to be right and his understanding of the system is that now that the system has the audio file, he needs to tell it to generate the sheet music from it (**Learn by Process vs. Tinkering**). | | |

### 7.2.2 Action Reporting Forms

### 1a. Will Tim do this? Why?

| ☒ Yes | ☐ Maybe | ☐ No |
|---|---|---|
| **Which, if any, Tim's facets did you use to answer the question?** | | |
| ☒ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☒ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |
| **Why?** | | |
| Since the nav bar 'Record' button is at the top of the application, it is likely Tim will notice this first (**Information Processing Style**). His depth-first approach will lead him to follow this lead to satisfy his curiosity (**Computer Self-Efficacy, Attitude Towards Risk**), despite it not being obviously relevant to his overall goal (**Motivations**). | | |
| **What in the UI helped/confused TIm in this step?** | | |
| The nav bar makes it easy for him to break down the application. The second, red 'Record' button is slightly confusing. | | |

### 1b. If Tim does this, will they know they did the right thing and are making progress toward their goal? Why?

| ☒ Yes | ☐ Maybe | ☐ No |
|---|---|---|
| **Which, if any, of Tim facets did you use to answer the question?** | | |
| ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☒ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |
| **Why?** | | |
| Tim will have tinkered with some of the available buttons on the page and noticed the | | |

| | | |
|---|---|---|
| 'Upload' button that only accepts .WAV files, accompanied with the obvious main function of the application, this is sufficient for him to understand that after uploading, transcription is the next logical step the application will encourage him to take (**Learn by Process vs. Tinkering**). | | |
| *What in the UI helped/confused Tim in this step?* | | |
| The distinguishable icons that each interactable has clearly indicates its function, this allows Tim to thoroughly understand which button performs which action after coupling it with pressing on them and seeing their change to the UI/pop-ups that open. | | |

**2a. Will Tim do this? Why?**

| ☒ Yes | ☐ Maybe | ☐ No |
|---|---|---|
| **Which, if any, Tim's facets did you use to answer the question?** | | |
| ☒ Motivations<br>☒ Information Processing Style<br>☐ Computer Self-Efficacy<br>☒ Attitude Towards Risk<br>☒ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |
| **Why?** | | |
| Tim knows that the logical next step towards his goal is to upload the audio file. His curiosity, discovery of this promising lead (***Motivations, Information Processing Style***) and disregard for risk (***Attitude Towards Risk***) when using new technology leads him to click this button impulsively (***Learn by Process vs. Tinkering***). | | |
| **What in the UI helped/confused TIm in this step?** | | |
| N/A. | | |

**2b. If Tim does this, will they know they did the right thing and are making progress toward their goal? Why?**

| ☒ Yes | ☐ Maybe | ☐ No |
|---|---|---|
| **Which, if any, of Tim facets did you use to answer the question?** | | |
| ☒ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |
| **Why?** | | |
| The UI prompts Tim to choose a file to upload, rather than backing out, he explores different directories and notices that the only files that are clickable are .WAV files. (***Motivations***). | | |

| What in the UI helped/confused Tim in this step? | | |
|---|---|---|
| The UI's usage of the host system's native OS allows Tim to easily explore his file system. This is enough to identify the file extensions the application is asking for. | | |

**Action #3: Double-click on his audio file.**

### 3a. Will Tim do this? Why?

| ☒ Yes | ☐ Maybe | ☐ No |
|---|---|---|
| **Which, if any, Tim's facets did you use to answer the question?** | | |
| ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☒ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |
| **Why?** | | |
| With the subgoal already formed, Tim sees no reason to back out now, he will proceed whether this is correct or not (**Attitude Towards Risk**). | | |
| **What in the UI helped/confused TIm in this step?** | | |
| The OS file system is familiar and easy for him to use. | | |

### 3b. If Tim does this, will they know they did the right thing and are making progress toward their goal? Why?

| ☒ Yes | ☐ Maybe | ☐ No |
|---|---|---|
| **Which, if any, of Tim facets did you use to answer the question?** | | |
| ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☒ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |
| **Why?** | | |
| Tim notices the change in colour of the buttons and connects the dots in his mind that the application has the audio and now he needs to process it to get the MusicXML sheet music he wants. This is a result of his learning style, prior to action 2, he constructed assumptions about the buttons he saw on the page, and he takes the removed grey scale on the buttons as an indication he | | |

| | | |
|---|---|---|
| was right. (*Learn by Process vs. Tinkering*). | | |
| **What in the UI helped/confused Tim in this step?** | | |
| The UI will have removed the grey scale on some of the buttons, making them interactable and more noticeable. | | |

**4a. Will Tim do this? Why?**

| ☒ Yes | ☐ Maybe | ☐ No |
|---|---|---|
| **Which, if any, Tim's facets did you use to answer the question?** | | |
| ☒ Motivations<br>☐ Information Processing Style<br>☒ Computer Self-Efficacy<br>☒ Attitude Towards Risk<br>☒ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |
| **Why?** | | |
| Tim's hypothesized understanding of the system works leads him to this action (**Motivations**).<br><br>He is confident in his understanding and believes he has worked out how the system's audio to sheet music pipeline works (**Computer Self-Efficacy**).<br><br>This is the most promising lead he has discovered thus far towards his overall goal, he will pursue it (**Attitude Towards Risk**). | | |
| **What in the UI helped/confused TIm in this step?** | | |
| The removed grey scale of the button has helped Tim. | | |

**4b. If Tim does this, will they know they did the right thing and are making progress toward their goal? Why?**

| ☒ Yes | ☐ Maybe | ☐ No |
|---|---|---|
| **Which, if any, of Tim facets did you use to answer the question?** | | |
| ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☒ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above | ☐ Motivations<br>☐ Information Processing Style<br>☐ Computer Self-Efficacy<br>☐ Attitude Towards Risk<br>☐ Learn by Process vs. Tinkering<br>☐ None of the above |
| **Why?** | | |

| | | |
|---|---|---|
| The application shows a pop-up dialog box that states that a 'MusicXML file was exported successfully'. | | |
| **What in the UI helped/confused Tim in this step?** | | |
| The clear, un-ignorable pop-up was more than enough for Tim to understand his subgoal has been achieved at this point. | | |

### 7.2.3  Results Reporting Form

## *Debrief: Tim's Results for Use Case 2*

| |
|---|
| *Count the answers:* |
| 1. How many questions (forms) were answered? <br><br>       = **12** questions/forms <br><br> *2. How many of the questions (forms) in item 1 had EITHER a "no" or "maybe" answer?* <br><br>      = **0** questions/forms <br><br> *3. How many of the questions (forms) in item 2 had "no" or "maybe" answers that were **tied to facet(s)**?* <br><br>      = **0** questions/forms |

**No usability issues discovered!**

**No gender-inclusion issues discovered!**

# 8 Changes Due to GenderMag Evaluation

Based on the GenderMag evaluation, several issues were identified exclusively for the persona, Abi. This outcome is expected, as the Abi persona is specifically designed to target important gender-inclusion challenges through her facets. The evaluation revealed four issues, of which the first three relate to gender inclusion, while the fourth is a general usability matter. The following subsections outline these issues and provides rationale for the associated proposed changes or lack thereof.

## 8.1 Subgoal 5: Saving the Recording

- Observation (NO): Abi did not choose to save the recording to a non-default directory.

- Rationale: This behavior is observed and although it is related to Abi's facet values and is therefore technically a gender inclusion issue, the team has decided to not consider this a gender inclusion issue as it strictly reflects a personal preference rather than a design barrier.

- **Proposed Change:** No change is proposed, the ability to select a destination remains available to users.

## 8.2 Action 2b: Visual Feedback on Recording Start

- Observation (MAYBE): After clicking the record button, Abi is unsure whether the recording has started. Although her comprehensive information processing suggests she can infer that a change occurred, the UI does not explicitly confirm that recording has begun.

- Rationale: The subtle feedback may negatively impact her self-efficacy. Due to her "learn by process" versus "tinkering" facet, the absence of a clear indicator might cause her to abandon or restart the process.

- **Proposed Change:** Enhance the UI by adding explicit visual feedback (e.g., a clear animation, color change, or status message) immediately after the record button is pressed, to confirm that recording has started.

## 8.3   Action 3a: Stopping the Recording

- Observation (MAYBE): There is confusion regarding which button stops the recording. While a red button with a stop symbol is present, a previously greyed-out pause button has become interactable and is now colored yellow.

- Rationale: This design ambiguity causes uncertainty, particularly for risk-averse users like Abi, who may hesitate or click the wrong button. Clear differentiation between stopping and pausing is essential to avoid wasted effort.

- **Proposed Change:** Redesign the stop function interface by:

  - Restoring the pause button to a non-interactable state during recording, or
  - Differentiating the buttons more clearly using consistent color schemes and intuitive icons so that the stop action is unmistakable.

## 8.4   Action 5a and 5b: Destination Directory Selection

- Observation (NO): Abi does not engage with the destination directory drop-down menu.

- Rationale: This is not a gender inclusion issue but rather a general usability observation. Since the option is available and the decision to select a directory is a matter of personal preference, the design does not restrict user freedom.

- **Proposed Change:** No modifications are proposed.

**Summary:** The proposed changes focus on providing clearer feedback during the recording process, specifically addressing the start and stop actions, which are directly tied to gender inclusion issues identified in the evaluation. The destination directory selection is left unchanged as it does not adversely affect user inclusion.

# Appendix – Reflection

1. What lessons did you learn from the GenderMag process that you will carry forward to your Software Engineering career?"