CITY
UNIVERSITY OF LONDON
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Oregon State University

Making technology gender-inclusive through GenderMag

gendermag.org

www.city.ac.uk

oregonstate.edu

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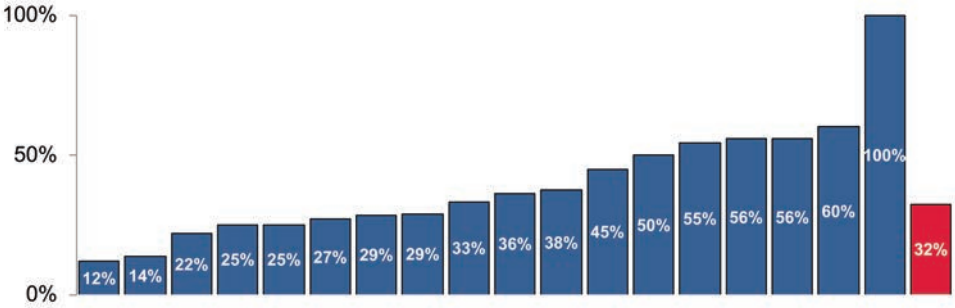
Gender and technology

Issues are prevalent

Is gender a big problem for technology and digital design?

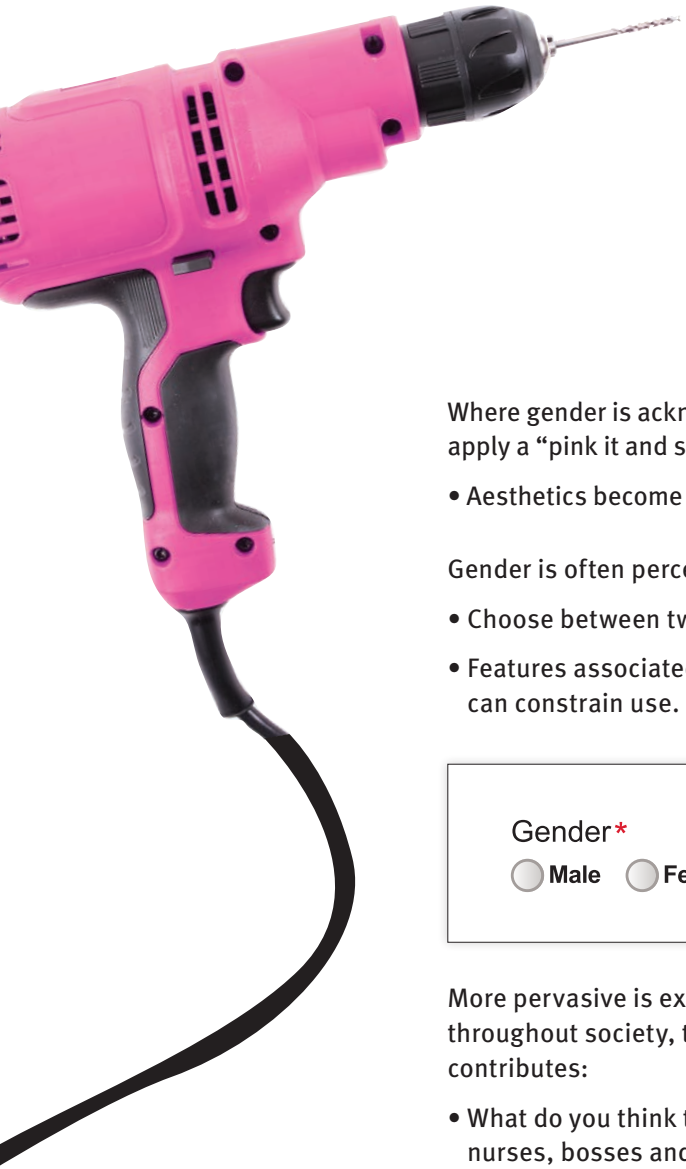
- Our research indicates that most technology will have gender-inclusion issues.
  - Programming environments.
  - Web Sites and Mobile Apps.
  - E-Learning systems.
  - Help Systems.
  - Robots and Voice Assistants.
- 17 teams using the GenderMag approach found gender-inclusion issues in almost a third of features they looked at.



Gender stereotypes

Like the rest of society, misunderstanding and stereotyping have made their way into tech. Like:

- Women are emotional, men are more logical.
- Men are better at Maths, women are better at languages.
- Men make great computer scientists, women make great nurses.
- Women like pink, men like blue.



Where gender is acknowledged, the tendency is to apply a “pink it and shrink it” approach to design.

- Aesthetics become genderised.

Gender is often perceived as binary.

- Choose between two options: Male or Female.
- Features associated with these binary choices can constrain use.

Gender*

Male Female

More pervasive is expectation of gender roles throughout society, to which technology contributes:

- What do you think the genders of doctors and nurses, bosses and secretaries are?
- Furthermore, this is perpetuated in novel technology such as voice assistants.

Sex vs gender

Before continuing, it's worth briefly discussing how gender is defined.

- In alignment with current views, your sex is viewed as a biological difference, i.e. physiological and genetic differences.
- In contrast, gender concerns how we identify, how we define ourselves and how we behave given a cultural or societal expectations.
- Gender identity and expression is along spectrum.

Cognitive and behavioural impacts

- Research shows, however, that there is a difference between genders and their technology use.
- Not accounting for this in design can lead users to pay a ”cognitive tax”.
- Differences include:
  - Perception of vision and sound, such as colour blindness.
  - Language and communication.
  - Information processing styles.
  - Attitudes to risk.
  - Self-confidence and the belief in ability to succeed doing tasks (self-efficacy).
  - Reasons for using technology.
- However, there’s no evidence in the research that there is a difference based on intelligence, drive to succeed or mathematical ability.

Why gender-inclusion matters

Market and market potential

- There's a roughly equal split between men and women in the worldwide population.
- Our research showed that for some applications, women make up more than 50% of the market.
- By failing to heed gender-inclusion issues:
  - You may have created a weaker user experience for half – or more than half – of your target market.
  - You've wasted some of your team's efforts.

	Women	Men
Monthly usage of apps	30 hours 58 minutes	29 hours 32 minutes
Monthly usage of mobile web	3 hours 46 minutes	3 hours 45 minutes
App purchases	+17% more	
App installations	+40% more	
App spending value	+87% more	
Productivity apps	+89% more	
News apps	+90% more	
Social media apps	+611% more	
Health and Fitness		+10% more
Travel apps		+19% more
Navigation apps		+40% more
In-app spending value		+42% more
Games		+61% more
Business apps		+85% more

Inclusion and the wider society

- Gender-inclusion is ‘the right thing to do’.
- If we don’t design gender-inclusively we might:
  - Impair one section of society’s ability to achieve their goals – personally or professionally. Surely that’s not fair or equitable.
  - Cause an imbalance in participation, knowledge and skills throughout society.
  - Contribute negatively to issues of education and career choices, recruitment into STEM fields and disciplines
  - Reinforce stereotypes.

But remember, it’s not about building different versions of your products. Just make one version that lets everyone have a great experience!

Why gender-inclusion matters

With what you now know, what technology in your organisation may be falling short in terms of gender-inclusion?

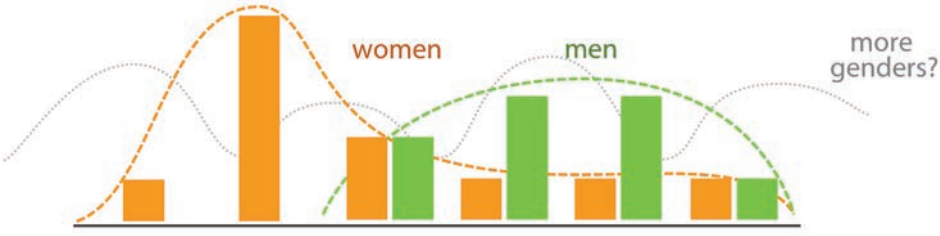
Introduction to GenderMag

A method for making technology gender-inclusive

- GenderMag is a well-researched, structured approach for evaluating – and fixing – technology products and services.
- It consists of three parts:
  - A set of cognitive styles for using technology that statistically cluster by gender. These are the **5 facets**.
  - A set of a fictional people who have a particular value for each of the 5 facets, plus some background and other characteristics to bring the facets to life. These are **personas**.
  - A prescribed series of steps a team can take to see how these personas might carry out a function using specific technology to uncover gender-inclusion issues. This is the **evaluation walkthrough**.

5 Facets

- It's worth noting that these facets are tendencies of behaviour along a spectrum.
- Behaviour will vary according to every individual.
- However, there are clusters of behaviour that tend to show more prevalently according to gender.



1 Information processing style

- To solve problems with technology, people need to look at, and understand, new information.
- Research showed that men tended to select promising leads, then backtrack if needed when using technology.
- Women tended to gather information more comprehensively, collecting a fairly complete set of necessary information before proceeding.

2 Learning style for new technology

- In our research, men were much more likely than women to "tinker". That is, playfully engage with a piece of technology on the way to learning it.
- Women tended to follow process when it came to learning.
- Note though that when women did tinker, they tended to do so more mindfully than men, and learned more thoroughly.

3 Computer self-efficacy

- This concerns a person's confidence that they'll succeed at a specific task using technology.
- It's important because it concerns how likely a person is to give up on a task, cognitive strategies, and how they cope when presented with obstacles.
- Research showed that men tended to have higher computer self-efficacy than women.

4 Attitude to risk

- Research has indicated that women tended to be more risk-averse than men.
- This means that women may not engage with certain feature sets and waste their valuable time as they may consider the risk of using them to be too high.

5 Motivations

- Why is the person using this technology?
- Research showed that the tendency to use technology for the love of technology is more prevalent among men.
- Women tended to use technology because they had a particular task to carry out.

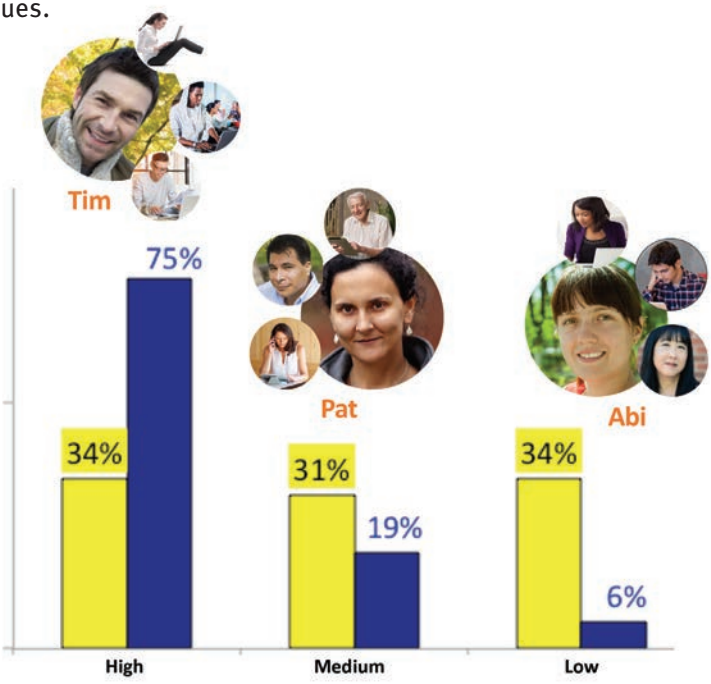
Personas

What is a persona?

- If you're unfamiliar with the concept, a persona is a fictitious but research-grounded user of a technology product or service.
- They are described as if they are real people, with their own sets of backgrounds and behaviours.
- They are stand-ins representing user groups, often used in UX.
- GenderMag uses personas to evaluate how technology functions or features might be used – or not – when considered against the 5 facets previously discussed.

GenderMag personas

- GenderMag uses 3 personas: Abi, Tim and Pat.
- Each has a customisable 'back story', so they're very flexible; they're designed to work across a wide range of setting.
- Each persona has facet characteristics that correspond to research-backed facet values.



Here's Abi!

- Her behaviour reflects facet values commonly seen in women during the research, such as high risk-aversion, low self-efficacy, and so on.
- For GenderMag evaluations, you're likely to use this persona a lot; how you do so will be revealed shortly.
- Abi contrasts heavily with Tim, who we'll meet soon.

Abi (Abigail/Abishek)[1]

- **28 years old**
- **Employed as an Accountant**
- **Lives in Cardiff, Wales**

Abi has always liked music. When Abi is on their way to work in the mornings, they listen to music that spans a wide variety of styles. But when they arrive at work, Abi turns it off, and begins the day by scanning all their emails first to get an overall picture before answering any of them. (This extra pass takes time but seems worth it.) Some nights Abi exercises or stretches, and sometimes plays computer puzzle games like Sudoku.

Background and skills

Abi works as an accountant. Abi is comfortable with the technologies she uses regularly, but she just moved to this employer 1 week ago, and their software systems are new to her.

Abi says she's' a "numbers person", but she has never taken any computer programming or IT systems classes. She likes Math and knows how to think with numbers. She writes and edits spreadsheet formulas in her work.

In her free time, she also enjoys working with numbers and logic. She especially likes working out puzzles and puzzle games, either on paper or on the computer.

Motivations and Attitudes

- ***Motivations:*** Abi uses technologies to accomplish her tasks. She learns new technologies if and when she needs to, but prefers to use methods she is already familiar and comfortable with, to keep her focus on the tasks she cares about.
- ***Computer Self-Efficacy:*** Abi has lower self confidence than her peers about doing unfamiliar computing tasks. If problems arise with her technology, she often blames herself for these problems. This affects whether and how she will persevere with a task if technology problems have arisen.
- ***Attitude toward Risk:*** Abi's life is a little complicated and she rarely has spare time. So she is risk averse about using unfamiliar technologies that might need her to spend extra time on them, even if the new features might be relevant. She instead performs tasks using familiar features, because they're more predictable about what she will get from them and how much time they will take.

How Abi Works with Information and Learns:

- ***Information Processing Style:*** Abi tends towards a *comprehensive information processing style* when she needs to more information. So, instead of acting upon the first option that seems promising, she gathers information comprehensively to try to form a complete understanding of the problem before trying to solve it. Thus, her style is "burst-y"; first she reads a lot, then she acts on it in a batch of activity.
- ***Learning: by Process vs. by Tinkering:*** When learning new technology, Abi leans toward process-oriented learning, e.g., tutorials, step-by-step processes, wizards, online how-to videos, etc. She doesn't particularly like learning by tinkering with software (i.e., just trying out new features or commands to see what they do), but when she does tinker, it has positive effects on her understanding of the software.

[1]For distribution data on users similar to and different from Abi, see http://gendermag.org/ . Also includes customizable versions including customizable pronouns.

Here's Tim!

- His behaviour reflects facet values strongly associated with men.
- Significantly, Tim and Abi have exactly the same background and job; they should only be different when it comes to the way they reflect the 5 facets.

Tim (Timara/Timothy)[1]

- **28 years old**
- **Employed as an Accountant**
- **Lives in Cardiff, Wales**

Tim loves public transportation. He knows several routes to get there from home and he's always exploring ways to optimize his trips into the office. Work starts with email, which he answers one at a time, as soon as he reads them. (Sometimes this backfires, if there is a second related message he hasn't read yet, but he doesn't mind sending a follow-up email.) Some nights he plays computer games with his online friends.

Background and skills

Tim works as an accountant. He just moved to this employer 1 week ago, and their software systems are new to him. For Tim, technology is a source of fun, and he is always on the lookout for new computer software. He likes to make sure he has the latest version of all software with all the new features.

Tim says he's a "numbers person", but he has not taken any computer programming or IT classes. Tim likes Math and knows how to think in terms of numbers. He writes and edits spreadsheet formulas for his work.

He plays the latest video games, has the newest smart phone and a hybrid car. He downloads and installs the latest software, and experiments with its settings. He is comfortable and confident with technology and he enjoys learning about it and using new technologies.

Motivations and Attitudes

- ***Motivations:*** Tim likes learning all the available functionality on all of his devices and computer systems he uses, even when it may not be necessary to help him achieve his tasks. He sometimes finds himself exploring functions of one of his gadgets for so long that he loses sight of what he wanted to do with it to begin with.
- ***Computer Self-Efficacy:*** Tim has high confidence in his abilities with technology, and thinks he's better than the average person at learning about new features. If he can't fix the problem, he blames it on the software vendor; it's not his fault if he can't get it to work.
- ***Attitude toward Risk:*** Tim doesn't mind taking risks using features of technology that haven't been proven to work. When he is presented with challenges because he has tried a new way that doesn't work, it doesn't change his attitudes toward technology.

How Tim Works with Technology and Learns

- ***Information Processing Style:*** Tim leans towards a *selective information processing style* or "depth first" approach. That is, he usually delves into the first promising option, pursues it, and if it doesn't work out he backs out and gathers a bit more information until he sees another option to try. Thus, his style is very incremental.
- ***Learning: by Process vs. by Tinkering:*** Whenever Tim uses new technology, he tries to construct his own understanding of how the software works internally. He likes tinkering and exploring the menu items and functions of the software in order to build that understanding. Sometimes he plays with features too much, losing focus on what he set out to do originally, but this helps him gain better understanding of the software.

[1] For distribution data on users similar to and different from Tim, see http://gendermag.org/ for customizable versions including customizable pronouns.

Here's Pat!

- They're designed to cover the large fraction of users – men and women – who don't fit Abi's or Tim's behaviour profile. They are somewhere in-between the spectrum.
- Again, they have exactly the same profile background as Abi and Tim, only varying regarding their alignment with the 5 facets.

Pat (Patricia/Patrick)[1]

- **43 years old**
- **Employed as an Accountant**
- **Lives in Cardiff, Wales**

Pat loves public transportation and knows at least three routes to get there from home. When they arrive at work, they scan all emails first to get an overall picture before answering any of them. (This extra pass takes time but seems worth it.) Some evenings Pat plays computer puzzle games like Sudoku before bed.

Background knowledge and skills

Pat works as an accountant in a consulting firm. They prefer to stay with the technologies for which they've has already mastered the peculiarities. Pat just moved to this employer 1 week ago, and their software systems are new to them.

Pat describes themselves as a "numbers person", but is not a professional programmer and has never taken any computer programming or IT systems classes. Pat has a degree in accounting so they know plenty of Math and how to think in terms of numbers.

In their free time, even though they're an accountant and deals with numbers all day at work, Pat likes working with numbers in their free time, too. They especially like Sudoku and other computer games that involve puzzling.

Motivations and Attitudes

- ***Motivations***: Pat learns new technologies when they need to, but doesn't spend their free time exploring technology or exploring obscure functionality of programs and devices that they use. They tend to use methods they are already familiar and comfortable with to achieve their goals.
- ***Computer Self-Efficacy***: Pat has medium computer self-efficacy about doing unfamiliar computing tasks. If problems arise with their technology, they will keep on trying to figure out how to achieve what they have set out to do for quite awhile; Pat doesn't give up right away when computers or technology present a challenge to them.
- ***Attitude toward Risk:*** Pat is busy, so they rarely have spare time. So Pat is risk averse and worries that they will spend time and not get any benefits from doing so. They prefer to perform tasks using familiar features, because they're more predictable about what they will get from them and how much time they'll take.

How Pat Works with Information and Learns

- ***Information Processing Style:*** Pat leans towards a *comprehensive information processing style* when they need to gather information to problem-solve. So, instead of acting upon the first option that seems promising, they first gather information comprehensively to try to form a complete understanding of the problem before trying to solve it. Thus, their style is "burst-y"; first reading a lot, then acting on it in a batch of activity.
- ***Learning: by Process vs. Tinkering***: When Pat sees a need to learn new technology, they do so by trying out new features or commands to see what they do and to understand how the software works. When doing this, they do so purposefully; that is, reflecting on each bit of feedback they get along the way to understand how the feature might benefit them. Eventually, if they don't think it will get them closer to what they want to achieve, Pat will revert back to ways that they already knew worked.

[1]For distribution data on users similar to and different from Pat, see http://gendermag.org/ for customizable versions including customizable pronouns.

Personas

- Abi's background and skills can be customised to make her relevant to your particular project, or your culture.
- However, it's crucial that all the highlighted sections aren't altered. These match the facets.

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- **Employed as an Accountant**
- **Lives in Cardiff, Wales**

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Introduction to GenderMag

What persona do you think your organisation has in mind when designing technology?

Applying GenderMag

The Walkthrough

- GenderMag uses a variation of a usability evaluation process called a **Cognitive Walkthrough**.
- Rather than testing design features directly with users, a walkthrough enables non-users to work with a paper or implemented interface.
- Following a strictly defined set of questions, the evaluator can ascertain whether a prospective user is likely to be able to use the feature or function in question.
- This process is part of the GenderMag evaluation.

Preparation

It's crucial to be fully prepared before you begin your GenderMag evaluation. These steps will get you on your way.

Preparation step 1

- The first step of your GenderMag evaluation is to choose the technology and use case to evaluate.
  - Consider choosing one or two use cases focusing on especially problematic or critical parts of features.

Preparation step 2

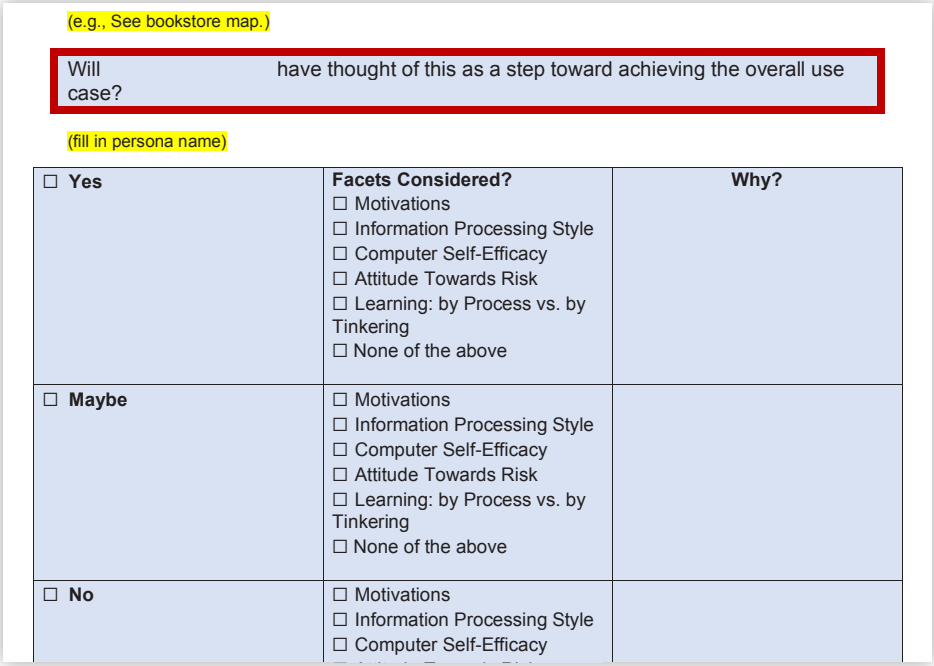
- Next, choose a persona and customise it.
  - The persona is representing your users, so make sure you give it a suitable background; if possible, base it on research you have about your customers.
  - You'll use one persona per session. Abi provides the strongest inclusion focus.

Preparation step 3

- Schedule your walkthrough session:
  - Set aside 2 hours, including a 30 minute debrief.
  - Get your evaluation team together.
  - Ideally, your evaluation team will consist of 3-5 people who understand how the technology should work and how to fix it. But, in a pinch, it can be done by one person.

Preparation step 4

- Prepare your materials:
  - Customise the report forms, which you'll use to document the walkthrough.
  - We will see the forms in detail in a few pages' time.



(e.g., See bookstore map.)

Will have thought of this as a step toward achieving the overall use case?

(fill in persona name)

☐ **Yes**	**Facets Considered?** ☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	**Why?**
☐ **Maybe**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **No**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy	

Evaluation

Once you're fully prepared, you can get on with your actual evaluation. Here's a step-by-step sequence to help you on your way.

Evaluation step 1

- Decide on and write down your use case's subgoals.
- A subgoal is what you as the developer or designer hope the user is thinking of doing next.
  - Subgoals usually start with a verb, like "Find" something, "Create" something or "Add" something.
  - They're different from Actions; these involve clicking on or tapping something. It's important to make that distinction.

Evaluation step 2

- Evaluate the subgoal:
  - Remember, it is your persona, not you, that should have reached this subgoal.
  - Ask why they did or didn't reach the subgoal, and what facets are involved.
  - If you're doing this as a team, record everyone's answers to the subgoal question as well as any facets and reasons they mention.

Evaluation step 3

- Decide and document the action you hope your persona would take within the current subgoal.
- As with the previous step, it is your persona, not you, that is undertaking this action.
  - Part 1 - Before taking this action, consider whether the persona would think of doing it. Ask why or why not, and what facets are involved.
  - If you're doing this as a team, record everyone's answers to the action question, as well as any facets and reasons they mention.

- Part 2 - After you've performed the action, consider whether the persona would know they've done the right thing and is making progress along this use case.
- If the use case is not complete, cycle back through Steps 2.1 and 2.2 again
- When you've finished the use case, you're ready for Step 3.

Evaluation Step 4

- Debrief:

– Count all 'no' and 'maybe' answers on the form; these are the issues that need to be resolved.

– If a facet is checked, it's a gender-inclusion issue; if not, it's a general usability issue.

– Discuss these findings with the team and consider a brainstorming or other planning session to resolve uncovered issues.

The Subgoal Report form

This is the form you'll use to evaluate the success of your subgoal. It clearly states:

- The use case
- The current subgoal
- The single question "Will [persona name] have thought of this as a step toward achieving the overall use case?"
- This form also documents the evaluation

Date of evaluation: Team:

Subgoal report form

Use case (What is to be achieved overall):

(e.g., Abi wants to find a science fiction book.)

Subgoal:

(e.g., See bookstore map.)

Will have thought of this as a step toward achieving the overall use case?

(fill in persona name)

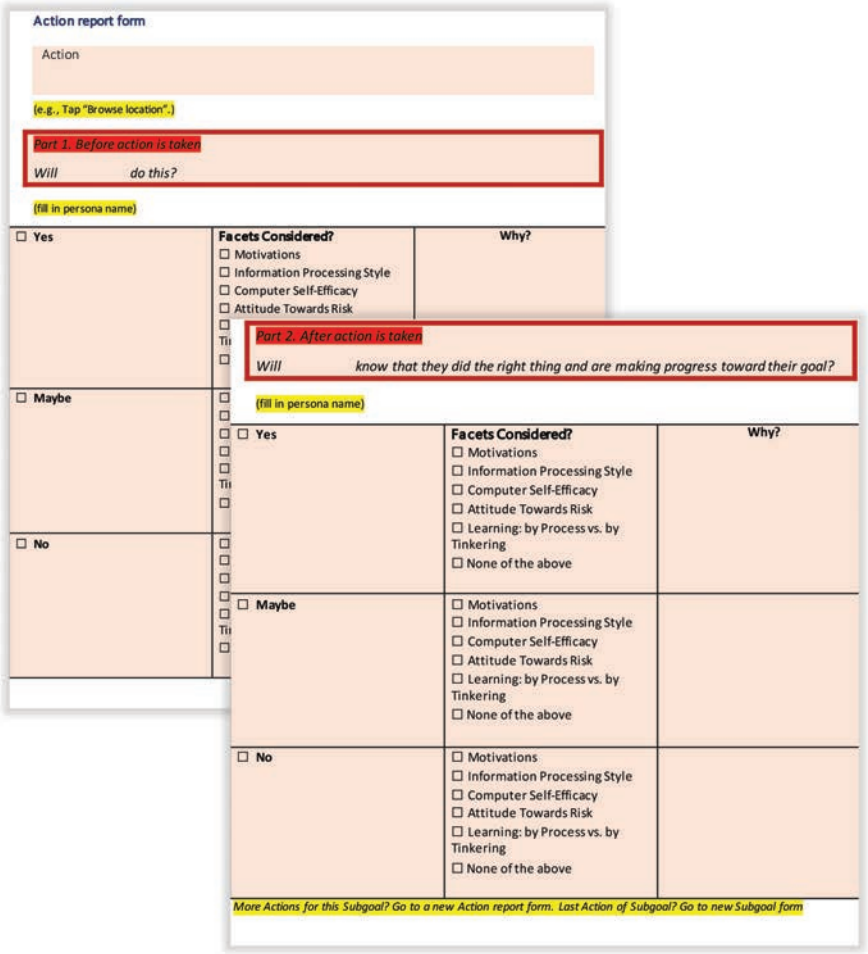
☐ **Yes**	**Facets Considered?** ☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	**Why?**
☐ **Maybe**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **No**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	

Go to Action report form next.

The Action Report form

You'll use this to record actions taken along the use case.

- It's in two parts: before and after.
- The first part asks whether the persona would take the action.
- The second part asks whether the persona would know they're making progress toward their goal.
- Again, it forms part of your evaluation's documentation.



Action report form

Action

(e.g., Tap "Browse location".)

Part 1. Before action is taken

Will do this?

(fill in persona name)

	Facets Considered?	Why?
☐ Yes	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk	
☐ Maybe		
☐ No		

Part 2. After action is taken

Will know that they did the right thing and are making progress toward their goal?

(fill in persona name)

	Facets Considered?	Why?
☐ Yes	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ Maybe	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ No	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	

More Actions for this Subgoal? Go to a new Action report form. Last Action of Subgoal? Go to new Subgoal form

The evaluation team

Ideally, you'll have a team of 3-5 people for GenderMag evaluations.

- The team is divided into tasks, or roles.
- The most critical roles are that of Facilitator, Driver and Reporter. These will be discussed shortly.
- If your team is smaller than this, you can combine roles.
- In a pinch, one person can carry out all three roles.

Team roles

Facilitator

The Facilitator leads the team through the walkthrough. This involves:

- Making sure everyone follows the ground rules.
- Keeping the discussion on-track.
- Managing any counter-productive group dynamics.
- Ensuring proceedings keep to time.
- Making sure everyone contributes to discussion and has their voice heard.

Driver

The Driver works the technology – they click the prototype. It's important that the driver:

- Only clicks the prototype at the appropriate point in the evaluation.
- Does not click ahead or explore the interface.
- Does not explain or demo the interface.

Recorder

The Recorder looks after the evaluation response forms – Subgoals and Actions as we've seen earlier.

- They record the team's answer to each question at the appropriate time in the process.
- It's not their job to find consensus; rather, they should aim to collect everyone's input.
- That input includes both answers to the questions on the form as well as recording facets involved.

Ground rules

Five things to remember are:

1 Stay true to the persona

- It's not about what you or people you know might do.

2 Follow the sequence

- Don't try to predict a sequence of events that the persona might follow.
- Only evaluate the set of actions the designer or developer wants the persona to do.

3 Answer every question

- Don't skip any question or step.
- Answer them all as if your persona has gone this far.

4 Just find the issues

- Don't try to fix issues during the walkthrough; wait until you're finished.

5 You don't have to agree with each other

- This is not an exercise in consensus building. If one person in a team finds an issue, chances are a percentage of users will have that issue too. Note them all during the walkthrough.

GenderMag example walkthrough

Preparation

The first step will be to customise your persona. In this case we'll use Abi.

- Make it clear that she is a Computer Science lecturer teaching module CS 567.

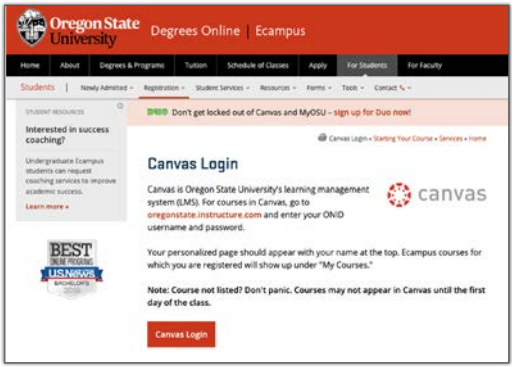
Then set your use case:

- Abi wants to make the captioned instructional stats video (on statistics) available to her CS 567 students.
- She has been told it's in her 'My media' Space on Canvas (the virtual learning environment the university uses).

Then set your subgoals:

- Abi wants to get the captioned video.
- Abi wants to make it available to her students.

Subgoal 1: Get to the captioned video



Use case (What is to be achieved overall): Share captioned video with her students
Subgoal: Get to the captioned video
Will Abi have thought of this as a step toward achieving the overall use case?

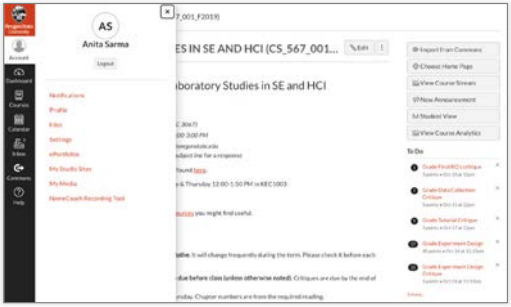
	Facets Considered?	Why?
☐ **Yes**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **Maybe**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **No**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	

- Action 1, Part 1: Click on Account

Action: ***Click on Account***
Part 1. Before action is taken Will Abi do this?

	Facets Considered?	Why?
☐ **Yes**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **Maybe**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **No**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	

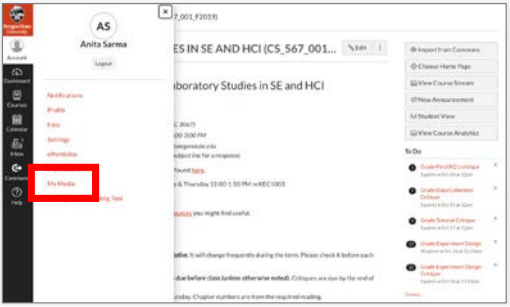
- Action 1, Part 2: Click on Account



Action: ***Click on Account***
Part 2. After action is taken Will Abi know that they did the right thing and are making progress toward their goal?

	Facets Considered?	Why?
☐ **Yes**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **Maybe**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **No**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	

- Action 2, Part 1: Click on My Media



Action: ***Click on My Media***
Part 1. Before action is taken Will Abi do this?

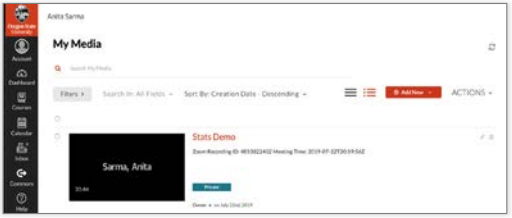
	Facets Considered?	Why?
☐ **Yes**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **Maybe**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **No**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	

- Action 2, Part 2: Click on My Media

Action: ***Click on My Media***
Part 2. After action is taken, Will Abi know that they did the right thing and are making progress toward their goal?

	Facets Considered?	Why?
☐ **Yes**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **Maybe**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **No**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	

Subgoal 2: Make it available



Use case (What is to be achieved overall): Share captioned video with her students
Subgoal: Make it available
Will Abi have thought of this as a step toward achieving the overall use case?

	Facets Considered?	Why?
☐ **Yes**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **Maybe**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **No**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	

- Action 1, Part 1: Tick checkbox

Action: ***Tick checkbox***
Part 1. Before action is taken Will Abi do this?

	Facets Considered?	Why?
☐ **Yes**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **Maybe**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **No**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	

- Action 1, Part 2: Tick checkbox

Action: ***Tick checkbox***
Part 2. After action is taken Will Abi know that they did the right thing and are making progress toward their goal?

	Facets Considered?	Why?
☐ **Yes**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **Maybe**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **No**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	

- Action 2, Part 1: Click on Actions pull-down

Action: ***Click on Actions***
Part 1. Before action is taken, Will Abi do this?

	Facets Considered?	Why?
☐ **Yes**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **Maybe**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **No**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	

- Action 2, Part 2: Click on Actions pull-down

Action: ***Click on Actions***
Part 2. After action is taken, Will Abi know that they did the right thing and are making progress toward their goal?

	Facets Considered?	Why?
☐ **Yes**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **Maybe**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **No**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	

- Action 3, Part 1: Select Publish

Action: ***Select Publish***
Part 1. Before action is taken Will Abi do this?

	Facets Considered?	Why?
☐ **Yes**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **Maybe**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **No**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	

- Action 3, Part 2: Select Publish

Action: ***Select Publish***
Part 2. After action is taken Will Abi know that they did the right thing and are making progress toward their goal?

	Facets Considered?	Why?
☐ **Yes**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **Maybe**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **No**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	

Embedding GenderMag in your organisation

Tips and advice

GenderMag is intended to be used by any organisation that designs technology – hardware, software, or web. To make it work at your workplace, here are a few tips.

Tip 1

Find a champion. Top down support is most effective.

Tip 2

Integrate GenderMag into existing processes and practices, including:

- UX and Design
- Accessibility
- QA

Tip 3

Use GenderMag moments:

- If you're sufficiently familiar with GenderMag, run some design spot checks.
- At any point during a feature's design or evaluation, ask, will [persona name] do this [according to their facet values]? Why?
- If [persona name] does the right thing, will they know they did the right thing and are making progress toward their goal [according to their facet values]? Why?
- Fix revealed inclusion issues on the spot or add to the design backlog for prioritising.

Common mistakes

In carrying out your walkthrough, there are several common pitfalls to avoid.

Pitfall 1: "I" Methodology.

- Evaluators might drift away from the persona and start answering questions from their perspective rather than that of the persona.
- They might start saying "If I wanted to … ".

If this happens:

- Tell the evaluators that phrases like "If I …" , "If you …", "If the user …", "If people …" are not allowed.
- They must refer to the persona by name; for example, "If Abi …", "If Tim …".

In carrying out your walkthrough, there are several common pitfalls to avoid.

Pitfall 2: "Look-ahead" problems.

- An action is performed before the part 1 question is asked.
- This brings in information the persona would not have had before taking the action.

How to avoid:

- Hands off the computer until the evaluators have answered the question!

In carrying out your walkthrough, there are several common pitfalls to avoid.

Pitfall 3: Confusing subgoals with actions.

- It can be tricky structuring the walkthough and being clear of the sequence of steps to take at the right time.
- It's possible to mix up a persona's conceptual understanding of a task with knowing what buttons they need to press.

How to avoid:

- A simple rule of thumb: Subgoals are done in the head, while actions are done with the fingers.

GenderMag best practices

1. Evaluate early to save on costly redevelopment later.
2. Establish a designated subteam to carry out GenderMag walkthroughs.
3. Use Abi first, as Abi covers cognitive styles most often overlooked in technology designs.
4. Carry out multi-path evaluations that start and end at the same place so they can be compared.
5. Focus on commonly used UI patterns that can give quick wins if fixed.
6. Debrief after evaluation to identify fixes.
7. Categorise fixes and their feasibility.
8. Use facets to inspire fixes.
9. Use facets in user research to find out about your target group.
10. Keep the personas in mind by displaying them in the office.
11. Use GenderMag moments as you embed this into your processes.

Do you currently have a method for revealing issues with gender-inclusion in your organisation's technology?

Embedding GenderMag in your organisation

Resources

The GenderMag web site:
gendermag.org

Download:

- the GenderMag kit
- Customisable GenderMag personas
- GenderMag reporting forms
- The GenderMag Recorder's Assistant – a Chrome extension to help you record your walkthrough
- Flyers and Webinars
- Research publications

Contact us on

gendermag.method@gmail.com

GenderMag reporting forms

The Subgoal Report form

Date of evaluation: Team:

Subgoal report form

Use case (What is to be achieved overall):

(e.g., Abi wants to find a science fiction book.)

Subgoal:

(e.g., See bookstore map.)

Will have thought of this as a step toward achieving the overall use case?

(fill in persona name)

☐ **Yes**	**Facets Considered?** ☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	**Why?**
☐ **Maybe**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **No**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	

Go to Action report form next.

The Action Report form

Date of evaluation: Team:

Action report form

Action

(e.g., Tap "Browse location".)

Part 1. Before action is taken

Will do this?

(fill in persona name)

☐ **Yes**	**Facets Considered?** ☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	**Why?**
☐ **Maybe**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **No**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	

Date of evaluation: Team:

Part 2. After action is taken

Will know that they did the right thing and are making progress toward their goal?

(fill in persona name)

☐ **Yes**	**Facets Considered?** ☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	**Why?**
☐ **Maybe**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	
☐ **No**	☐ Motivations ☐ Information Processing Style ☐ Computer Self-Efficacy ☐ Attitude Towards Risk ☐ Learning: by Process vs. by Tinkering ☐ None of the above	

More Actions for this Subgoal? Go to a new Action report form. Last Action of Subgoal? Go to new Subgoal form

- **28 years old**
- **Employed as an Accountant**
- **Lives in Cardiff, Wales**

Abi has always liked music. When Abi is on their way to work in the mornings, they listen to music that spans a wide variety of styles. But when they arrive at work, Abi turns it off, and begins the day by scanning all their emails first to get an overall picture before answering any of them. (This extra pass takes time but seems worth it.) Some nights Abi exercises or stretches, and sometimes plays computer puzzle games like Sudoku.

Background and skills

Abi works as an accountant. Abi is comfortable with the technologies she uses regularly, but she just moved to this employer 1 week ago, and their software systems are new to her.

Abi says she's' a "numbers person", but she has never taken any computer programming or IT systems classes. She likes Math and knows how to think with numbers. She writes and edits spreadsheet formulas in her work.

In her free time, she also enjoys working with numbers and logic. She especially likes working out puzzles and puzzle games, either on paper or on the computer.

Motivations and Attitudes

- ***Motivations***: Abi uses technologies to accomplish her tasks. She learns new technologies if and when she needs to, but prefers to use methods she is already familiar and comfortable with, to keep her focus on the tasks she cares about.
- ***Computer Self-Efficacy***: Abi has lower self confidence than her peers about doing unfamiliar computing tasks. If problems arise with her technology, she often blames herself for these problems. This affects whether and how she will persevere with a task if technology problems have arisen.
- ***Attitude toward Risk:*** Abi's life is a little complicated and she rarely has spare time. So she is risk averse about using unfamiliar technologies that might need her to spend extra time on them, even if the new features might be relevant. She instead performs tasks using familiar features, because they're more predictable about what she will get from them and how much time they will take.

How Abi Works with Information and Learns:

- ***Information Processing Style:*** Abi tends towards a *comprehensive information processing style* when she needs to more information. So, instead of acting upon the first option that seems promising, she gathers information comprehensively to try to form a complete understanding of the problem before trying to solve it. Thus, her style is "burst-y"; first she reads a lot, then she acts on it in a batch of activity.
- ***Learning: by Process vs. by Tinkering***: When learning new technology, Abi leans toward process-oriented learning, e.g., tutorials, step-by-step processes, wizards, online how-to videos, etc. She doesn't particularly like learning by tinkering with software (i.e., just trying out new features or commands to see what they do), but when she does tinker, it has positive effects on her understanding of the software.

[1]For distribution data on users similar to and different from Abi, see http://gendermag.org/ . Also includes customizable versions including customizable pronouns.

- **28 years old**
- **Employed as an Accountant**
- **Lives in Cardiff, Wales**

Tim loves public transportation. He knows several routes to get there from home and he's always exploring ways to optimize his trips into the office. Work starts with email, which he answers one at a time, as soon as he reads them. (Sometimes this backfires, if there is a second related message he hasn't read yet, but he doesn't mind sending a follow-up email.) Some nights he plays computer games with his online friends.

Background and skills

Tim works as an accountant. He just moved to this employer 1 week ago, and their software systems are new to him. For Tim, technology is a source of fun, and he is always on the lookout for new computer software. He likes to make sure he has the latest version of all software with all the new features.

Tim says he's a "numbers person", but he has not taken any computer programming or IT classes. Tim likes Math and knows how to think in terms of numbers. He writes and edits spreadsheet formulas for his work.

He plays the latest video games, has the newest smart phone and a hybrid car. He downloads and installs the latest software, and experiments with its settings. He is comfortable and confident with technology and he enjoys learning about it and using new technologies.

Motivations and Attitudes

- ***Motivations***: Tim likes learning all the available functionality on all of his devices and computer systems he uses, even when it may not be necessary to help him achieve his tasks. He sometimes finds himself exploring functions of one of his gadgets for so long that he loses sight of what he wanted to do with it to begin with.
- ***Computer Self-Efficacy***: Tim has high confidence in his abilities with technology, and thinks he's better than the average person at learning about new features. If he can't fix the problem, he blames it on the software vendor; it's not his fault if he can't get it to work.
- ***Attitude toward Risk:*** Tim doesn't mind taking risks using features of technology that haven't been proven to work. When he is presented with challenges because he has tried a new way that doesn't work, it doesn't change his attitudes toward technology.

How Tim Works with Technology and Learns

- ***Information Processing Style:*** Tim leans towards a *selective information processing style* or "depth first" approach. That is, he usually delves into the first promising option, pursues it, and if it doesn't work out he backs out and gathers a bit more information until he sees another option to try. Thus, his style is very incremental.
- ***Learning: by Process vs. by Tinkering***: Whenever Tim uses new technology, he tries to construct his own understanding of how the software works internally. He likes tinkering and exploring the menu items and functions of the software in order to build that understanding. Sometimes he plays with features too much, losing focus on what he set out to do originally, but this helps him gain better understanding of the software.

[1]For distribution data on users similar to and different from Tim, see http://gendermag.org/ for customizable versions including customizable pronouns.

- **43 years old**
- **Employed as an Accountant**
- **Lives in Cardiff, Wales**

Pat loves public transportation and knows at least three routes to get there from home. When they arrive at work, they scan all emails first to get an overall picture before answering any of them. (This extra pass takes time but seems worth it.) Some evenings Pat plays computer puzzle games like Sudoku before bed.

Background knowledge and skills

Pat works as an accountant in a consulting firm. They prefer to stay with the technologies for which they've has already mastered the peculiarities. Pat just moved to this employer 1 week ago, and their software systems are new to them.

Pat describes themselves as a "numbers person", but is not a professional programmer and has never taken any computer programming or IT systems classes. Pat has a degree in accounting so they know plenty of Math and how to think in terms of numbers.

In their free time, even though they're an accountant and deals with numbers all day at work, Pat likes working with numbers in their free time, too. They especially like Sudoku and other computer games that involve puzzling.

Motivations and Attitudes

- ***Motivations***: Pat learns new technologies when they need to, but doesn't spend their free time exploring technology or exploring obscure functionality of programs and devices that they use. They tend to use methods they are already familiar and comfortable with to achieve their goals.
- ***Computer Self-Efficacy***: Pat has medium computer self-efficacy about doing unfamiliar computing tasks. If problems arise with their technology, they will keep on trying to figure out how to achieve what they have set out to do for quite awhile; Pat doesn't give up right away when computers or technology present a challenge to them.
- ***Attitude toward Risk:*** Pat is busy, so they rarely have spare time. So Pat is risk averse and worries that they will spend time and not get any benefits from doing so. They prefer to perform tasks using familiar features, because they're more predictable about what they will get from them and how much time they'll take.

How Pat Works with Information and Learns

- ***Information Processing Style:*** Pat leans towards a *comprehensive information processing style* when they need to gather information to problem-solve. So, instead of acting upon the first option that seems promising, they first gather information comprehensively to try to form a complete understanding of the problem before trying to solve it. Thus, their style is "burst-y"; first reading a lot, then acting on it in a batch of activity.
- ***Learning: by Process vs. Tinkering***: When Pat sees a need to learn new technology, they do so by trying out new features or commands to see what they do and to understand how the software works. When doing this, they do so purposefully; that is, reflecting on each bit of feedback they get along the way to understand how the feature might benefit them. Eventually, if they don't think it will get them closer to what they want to achieve, Pat will revert back to ways that they already knew worked.

[1]For distribution data on users similar to and different from Pat, see http://gendermag.org/ for customizable versions including customizable pronouns.