

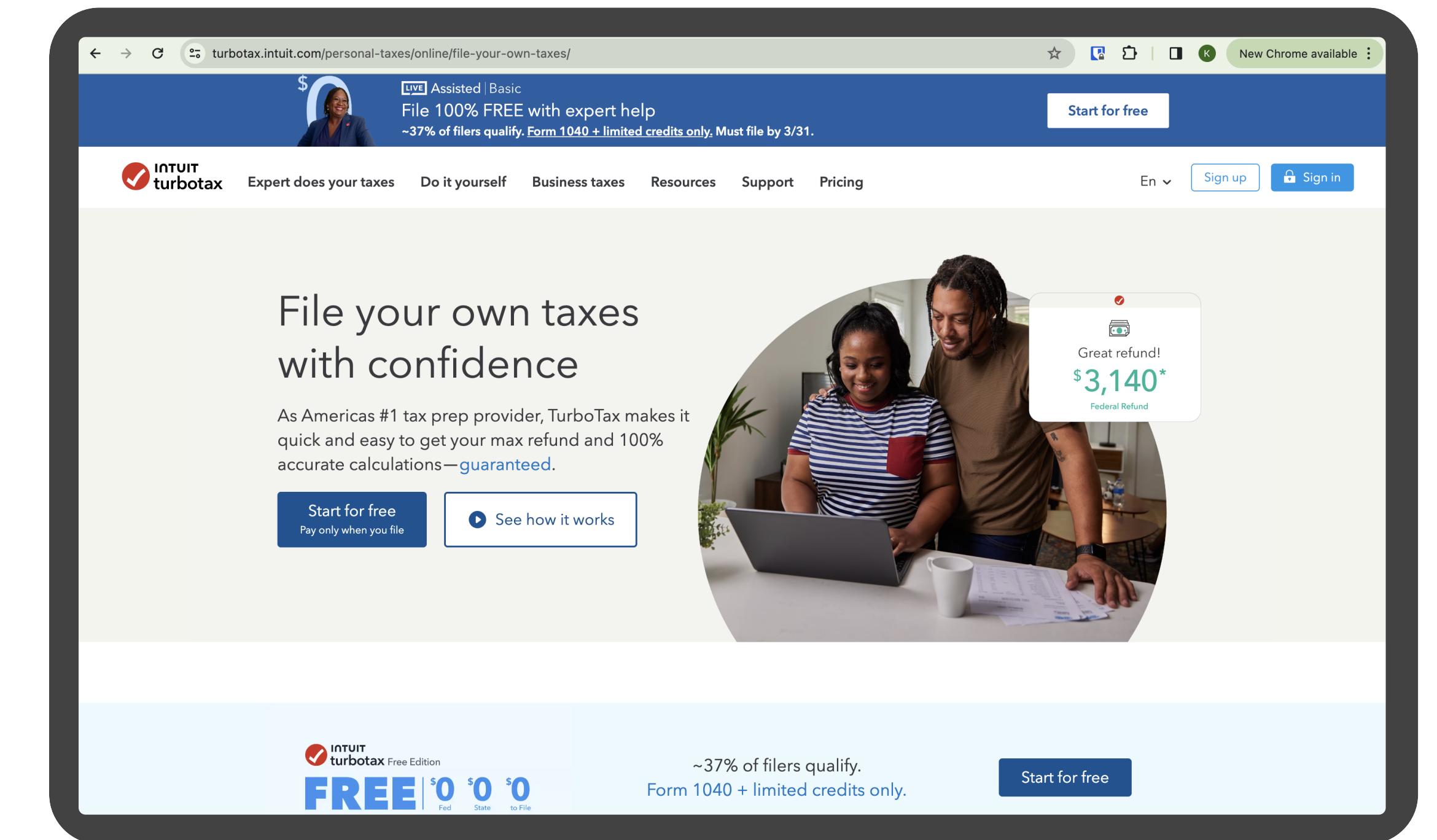
# Automating data entry through tax filing

**Karena Vongampai**

Case study from my time at Intuit TurboTax

# TurboTax is a DIY tax solution used by ~30 million customers

TurboTax is Intuit's flagship product that aims to simplify the complex and time consuming process that Americans go through each year to file their tax return.



# Understanding and extracting info from tax forms is hard

One of the most common tax forms that Americans receive is the W-2. These forms have an average of 25 fields, and takes TurboTax users roughly 12 minutes to enter. For other forms like the 1099-B (investments), which each financial institution structures differently, this problem becomes even more severe.

**01** Improve accuracy and error prevention

**02** Reduce time to complete taxes

**03** Reduce anxiety and frustration

My objective

As the lead designer, I...

**Introduced new methods to automate data entry and designed reusable layouts to expand automation to the top 10 tax forms**

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**3 months**

Timeframe

**Product & Engineering**

Team

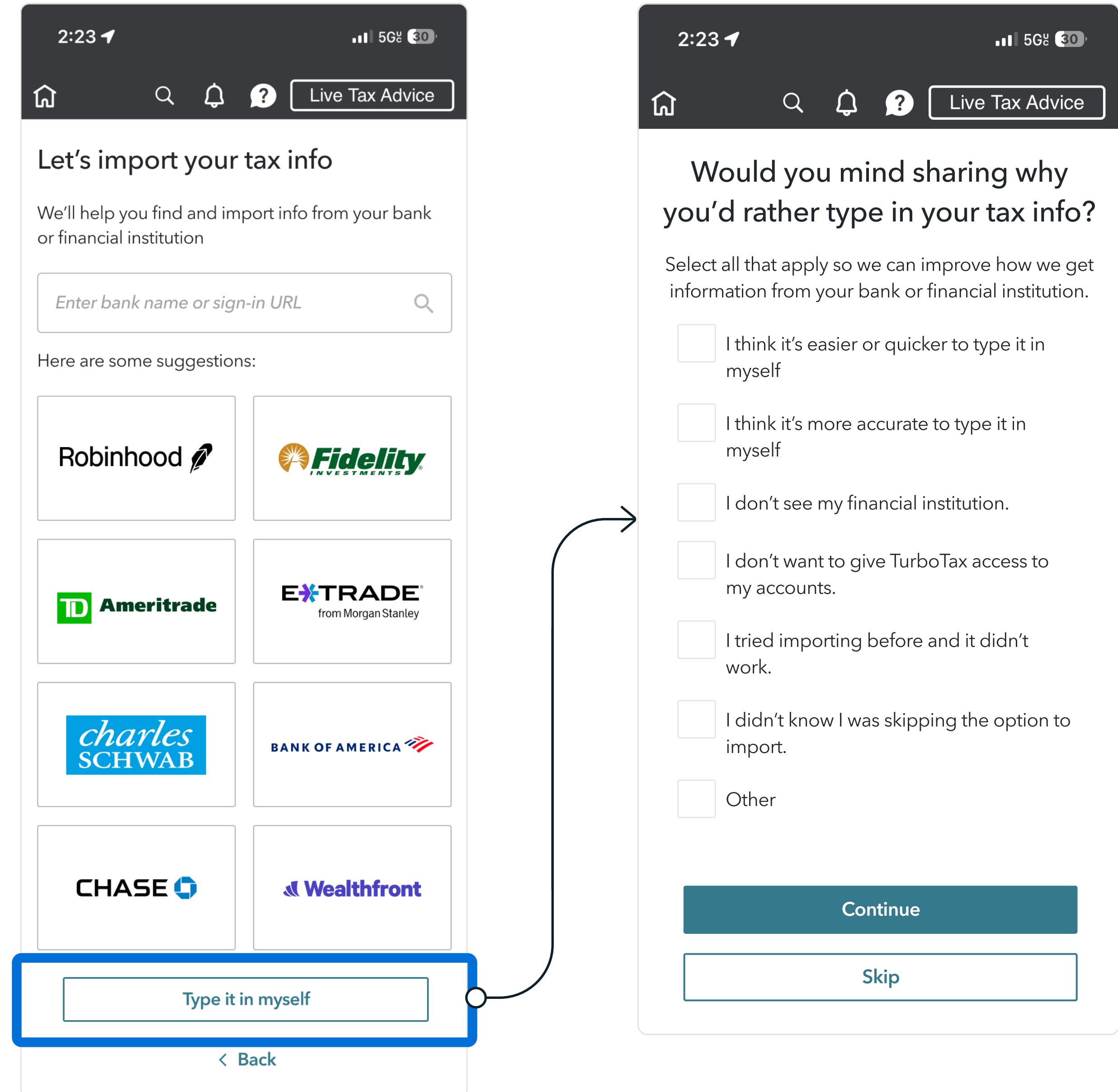
01

# Creating a plan

# Why weren't all TurboTax users importing their tax documents?

30% of all tax forms were automatically entered, but our business goal was to increase this to 55% by EOY. We had anecdotal information that explained why users did not import their forms from their financial institutions, but no quantitative data to identify the top blocker.

I pitched the idea of running a low-cost in-product survey to narrow in on the problem space.



# Import alone wouldn't help us achieve our automation goals

**01** "I tried importing before and it didn't work"



Some forms are distributed physically or digitally to the user before it's available to import in TurboTax

**02** "I don't see my financial institution"



For each form we partner with a number of financial institutions, but our coverage isn't 100%

**03** "I don't want to give TurboTax access to my accounts"



Some users expressed privacy concerns around sharing all their financial accounts with TurboTax

# A/B test document upload as an alternate method to automatically enter tax data

## Can we increase the number of documents automatically entered?

We chose to test upload in tax forms with high extraction accuracy, number of fields, and manual users.

We landed on forms 1099-R and 1098-T.

## Are our machine learning models as accurate in the field?

Our centralized data platform team was developing new technology to accurately extract and map data from PDF files.

Forms 1099-R and 1098-T had high extraction and accuracy rates that we didn't think would do harm to the user experience.

## Should users self-select their automation method?

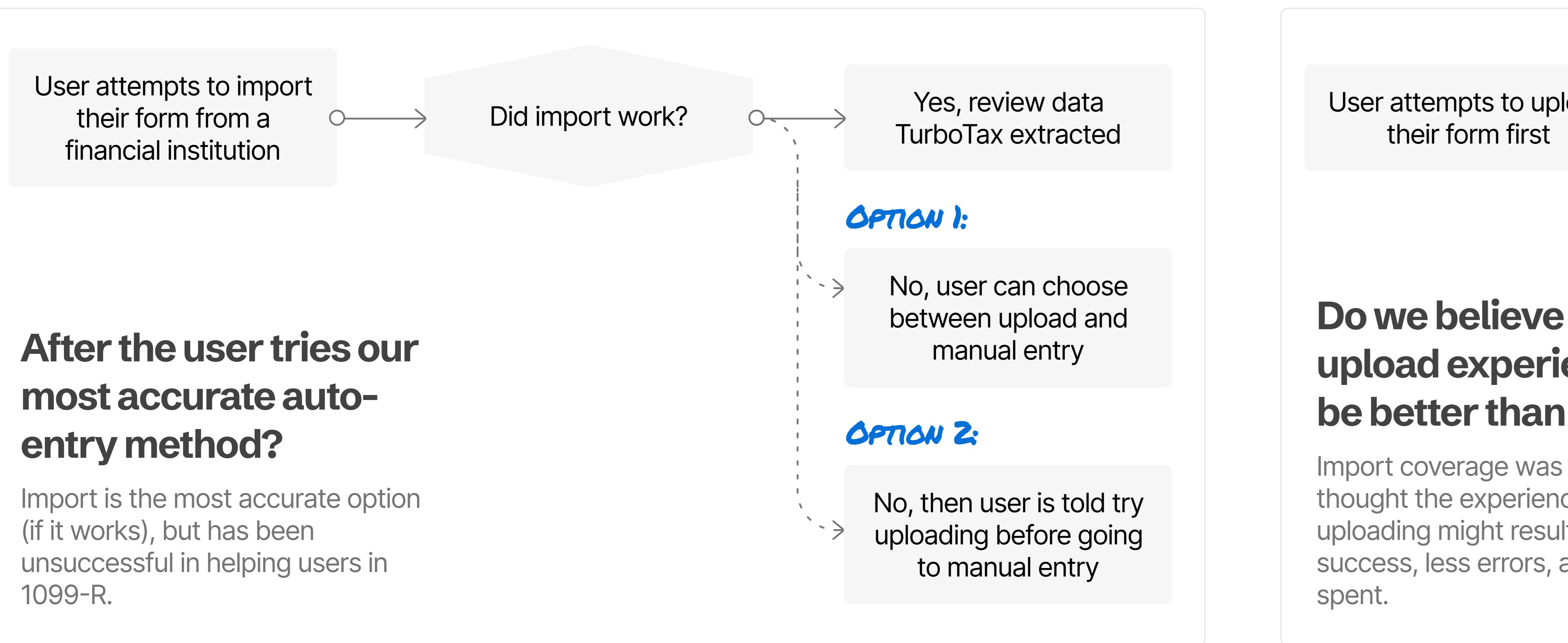
Import was the fastest and most accurate data entry method offered. If upload is just as good, should users be able to self select which method they want to use?

For 1099-R we tested 2 treatments against our existing experience.

02

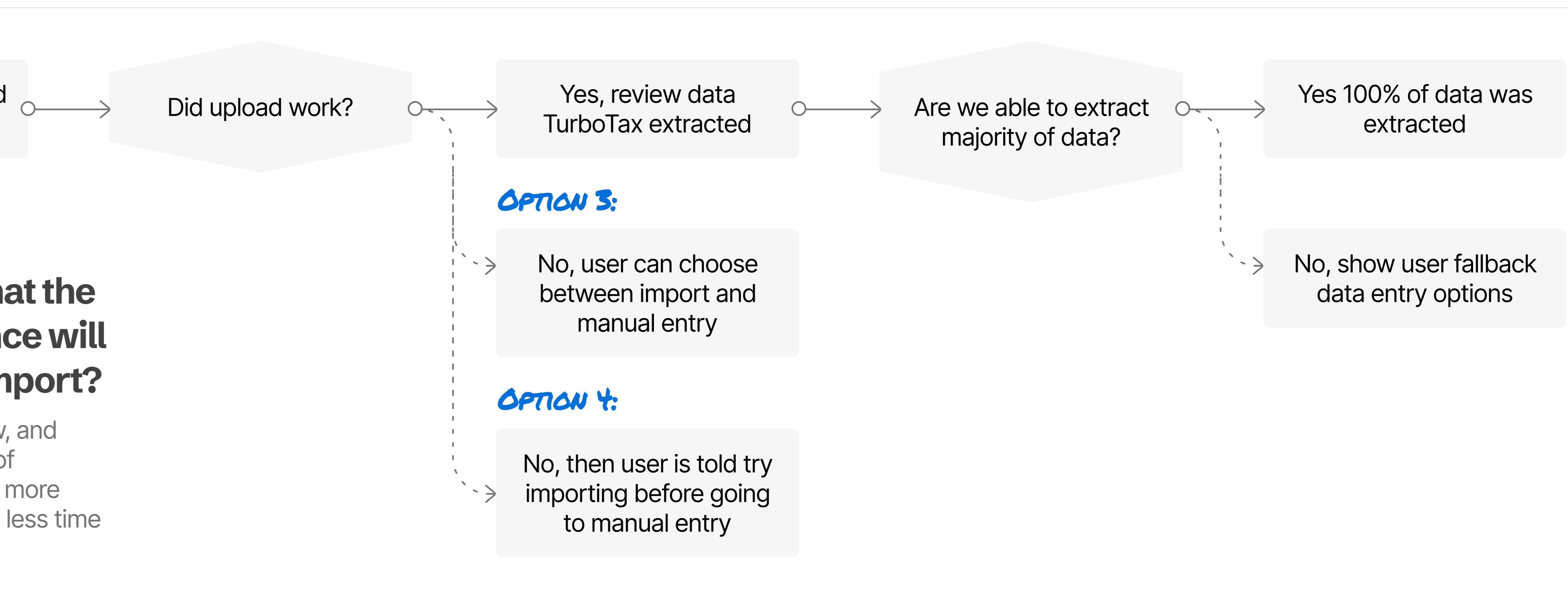
# Design explorations

# Where do we insert upload offer in 1099-R?



**After the user tries our most accurate auto-entry method?**

Import is the most accurate option (if it works), but has been unsuccessful in helping users in 1099-R.



**Do we believe that the upload experience will be better than import?**

Import coverage was low, and thought the experience of uploading might result in more success, less errors, and less time spent.

# Where do we insert upload offer in 1098-T

User attempts to upload their form first

Did upload work?

Yes, review data  
TurboTax extracted

**OPTION 1:**

No, user is prompted to do manual entry

**Do we believe that the upload experience will be better than manual entry?**

Definitely! And it should be faster, more accurate, and easier.

**OPTION 2:**

User can choose between upload and manual entry

Did upload work?

Yes, review data  
TurboTax extracted

No, user is prompted to do manual entry

**Should we just let users choose their method of choice?**

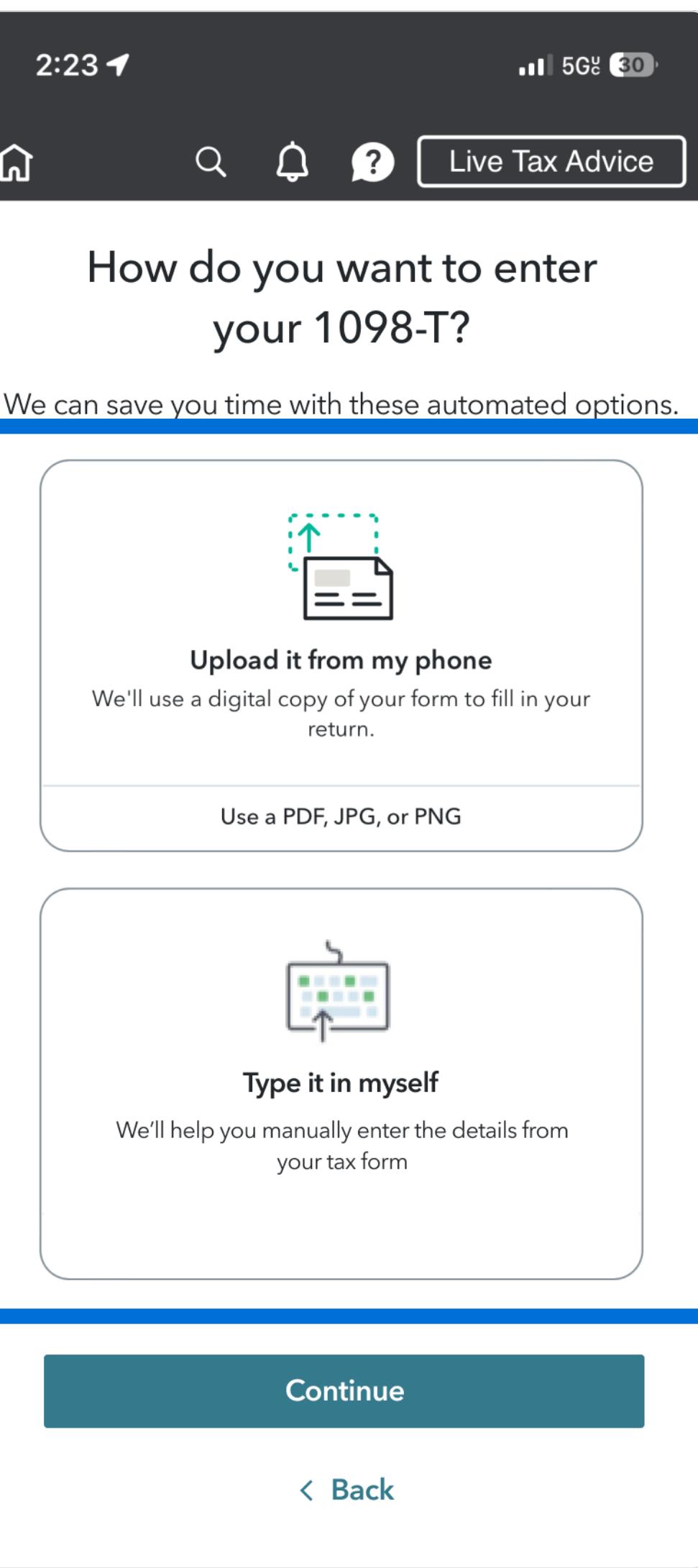
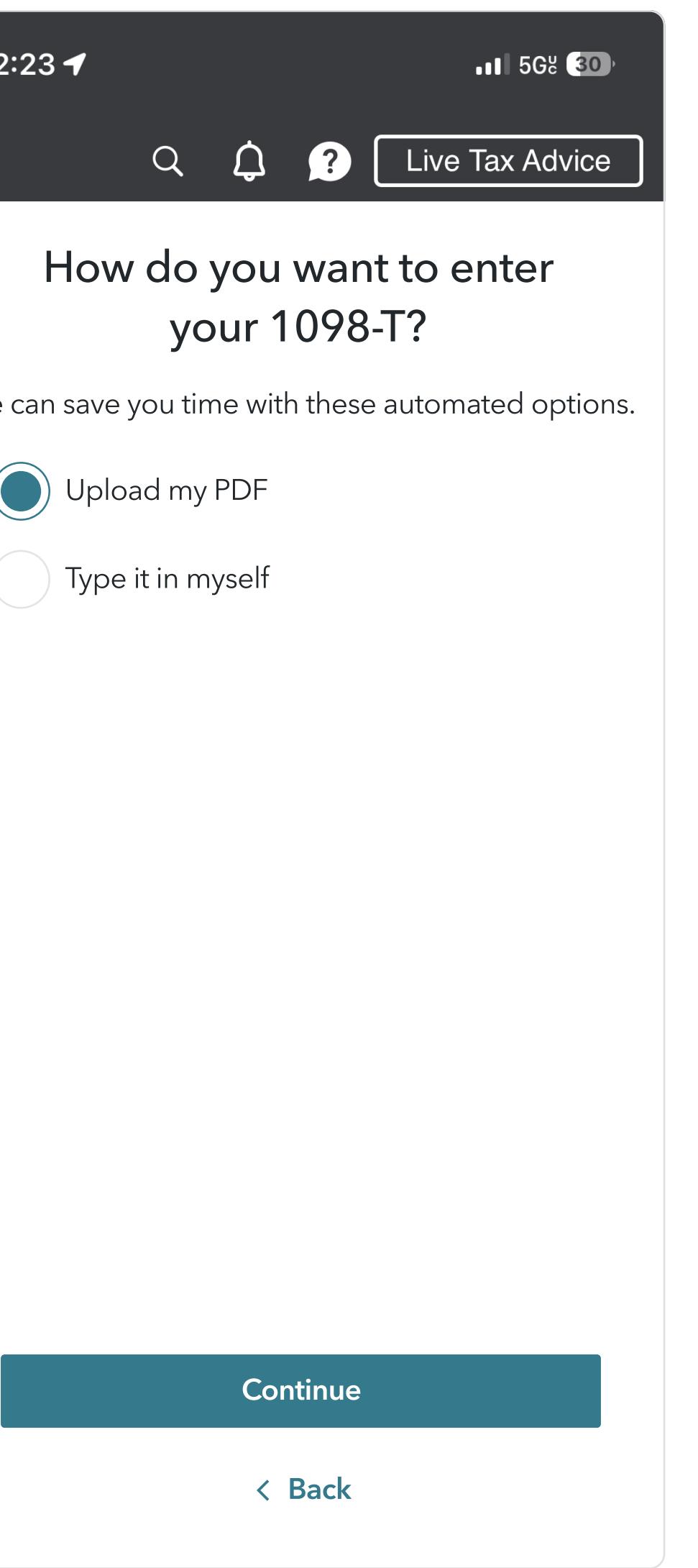
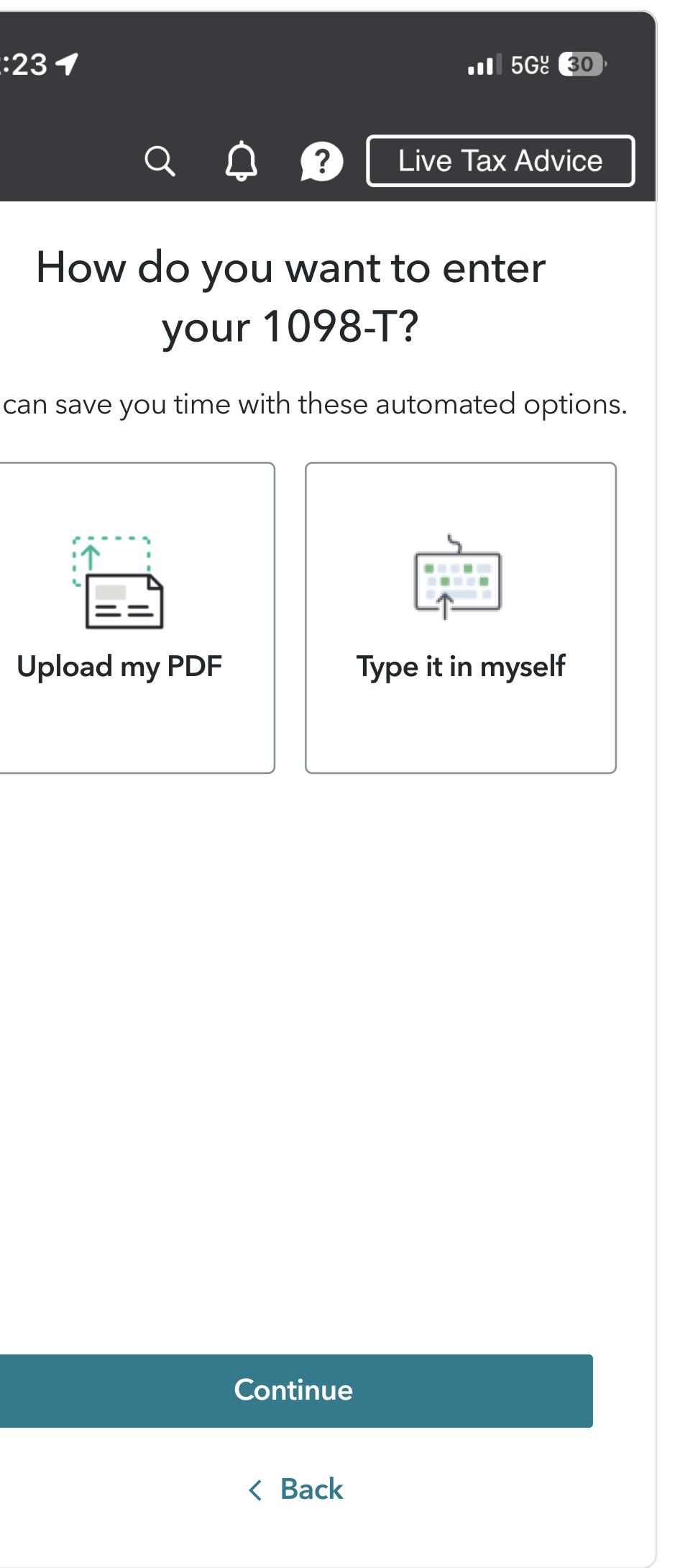
Given that many users said privacy concerns caused them to choose manual entry over import, we weren't sure if choice was the best option.

Design explorations

# Focused explorations for presenting choice

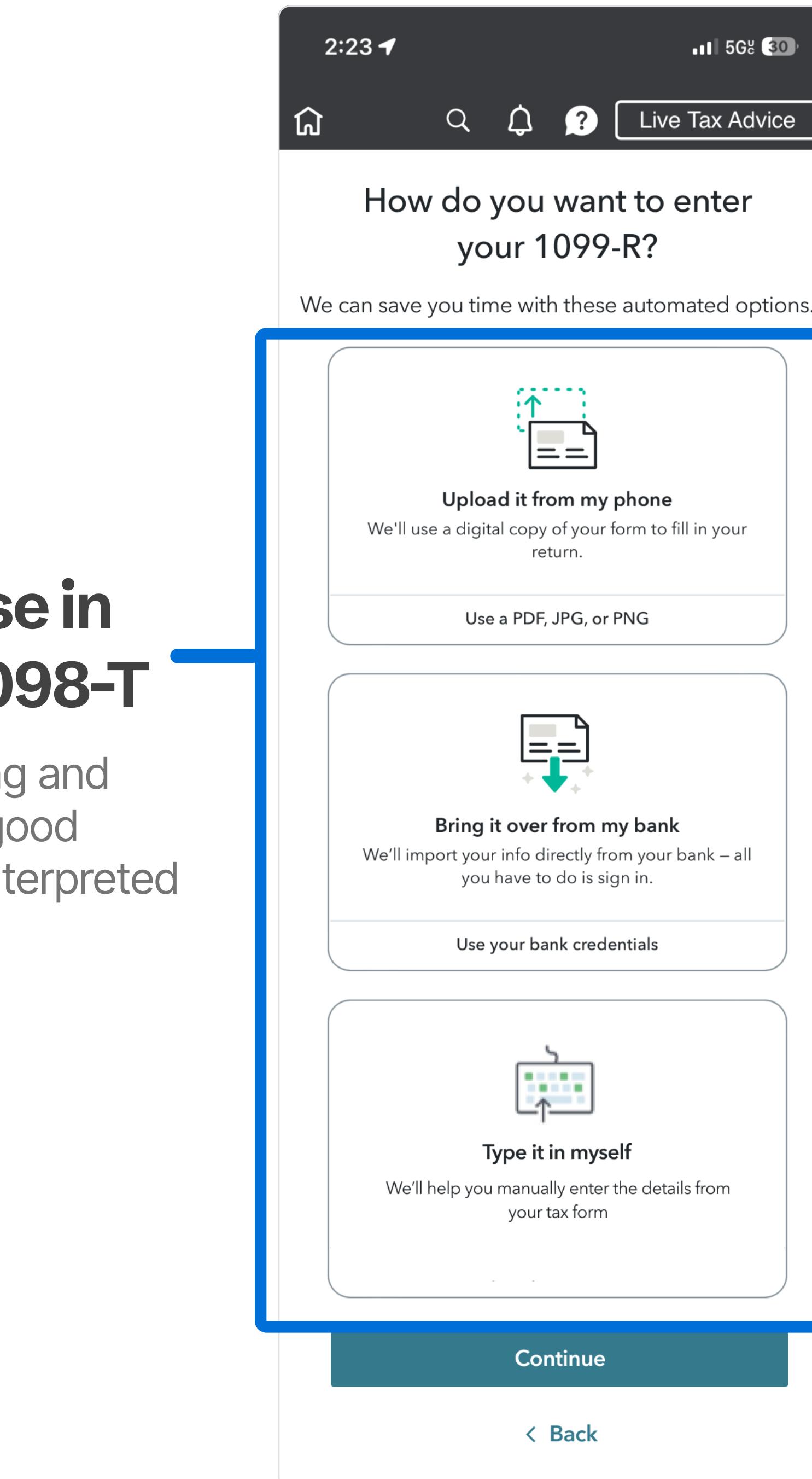
With the intention of re-using across all 10 tax forms

**IDEA I: ALL OPTIONS VISUALLY TREATED EQUAL**



**Makes more sense in 1099-R, but not 1098-T**

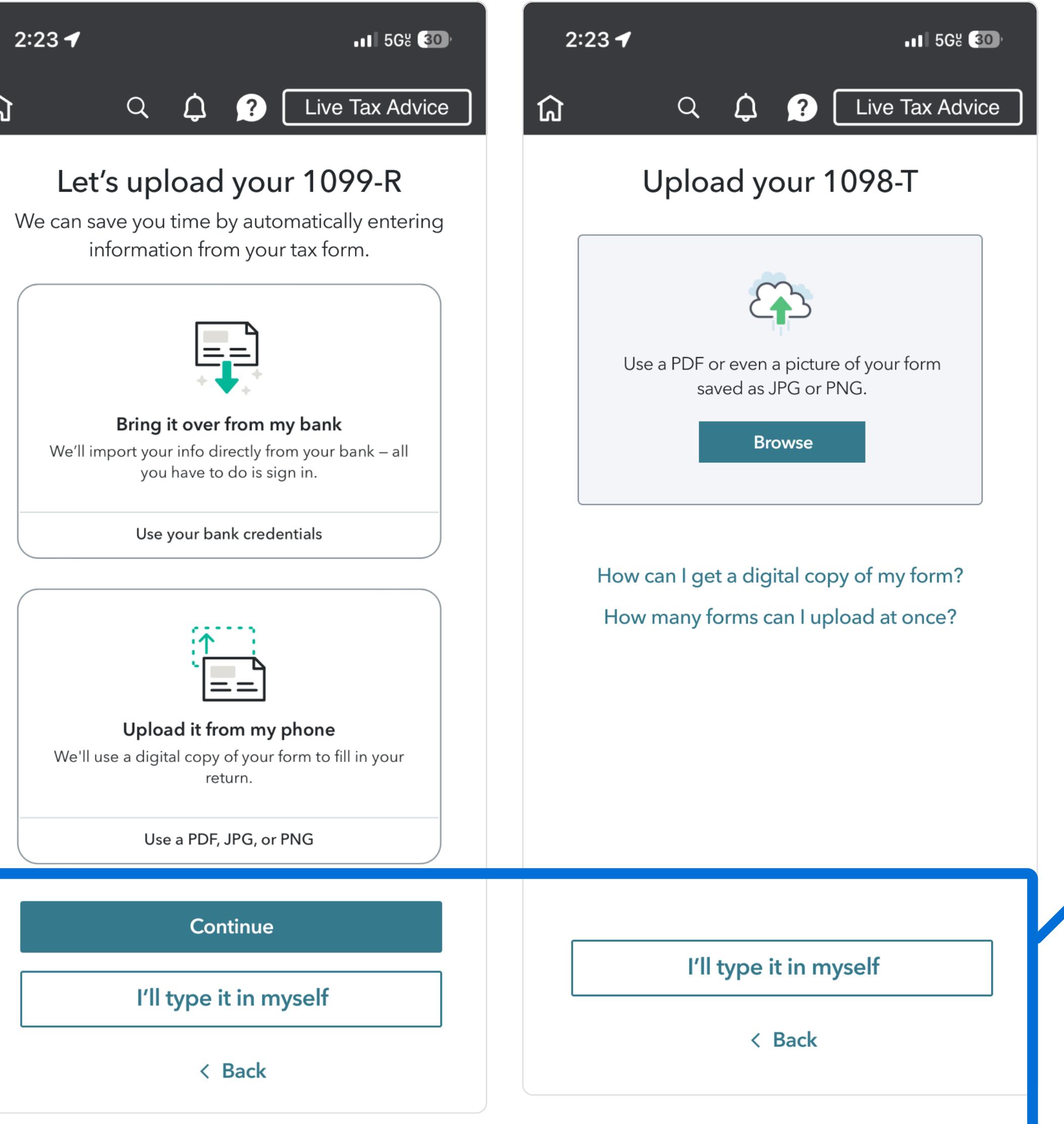
We can't say that uploading and manual entry are equally good options. Visual weight is interpreted as our recommendation.



# Focused explorations for presenting choice

With the intention of re-using across all 10 tax forms

## IDEA 2: ALL AUTOMATED OPTIONS HAVE EQUAL VISUAL WEIGHT, NOT MANUAL ENTRY



Represent options using tertiary button pattern

Typing it in requires users to do a lot more work, compared to auto-entry

Design explorations

# Focused explorations for reviewing extracted information

With the intention of re-using across all 10 tax forms

## IDEA 1: UPDATE TITLE COPY

The mobile application interface shows a title message "We got your 1099-R! Review your form and fill in any missing info" above a "Distribution info" section. The "Distribution info" section contains fields for Box 1 - Gross distribution (\$50,000), Box 2a - Taxable amount (\$50,000), and Box 2a - Taxable amount checked (unchecked). Below this is another title message "Got it! Now let's review your 1099-R info" followed by a "Distribution info" section for Box 1 - Capital gain (\$12,200) and Box 2a - Capital gain (\$400).

## IDEA 2: ADD BANNER MESSAGE

The mobile application interface shows a title message "Got it! Now let's review your 1099-INT" above a "Distribution info" section. The "Distribution info" section contains fields for Box 1 - Gross distribution (\$50,000), Box 2a - Taxable amount (\$50,000), and Box 2a - Taxable amount checked (unchecked). A blue banner message at the top right of the screen says "Double check the information we pulled". Below the distribution info are three callout boxes: "We pulled 100% of the info from your form and all you have to do is review", "We strongly suggest reviewing the information we pulled", and "Make changes if any info is missing".

# Focused explorations for reviewing poor data extraction

In the event that upload works, but a few fields are difficult to parse, users will need to fix automation's work

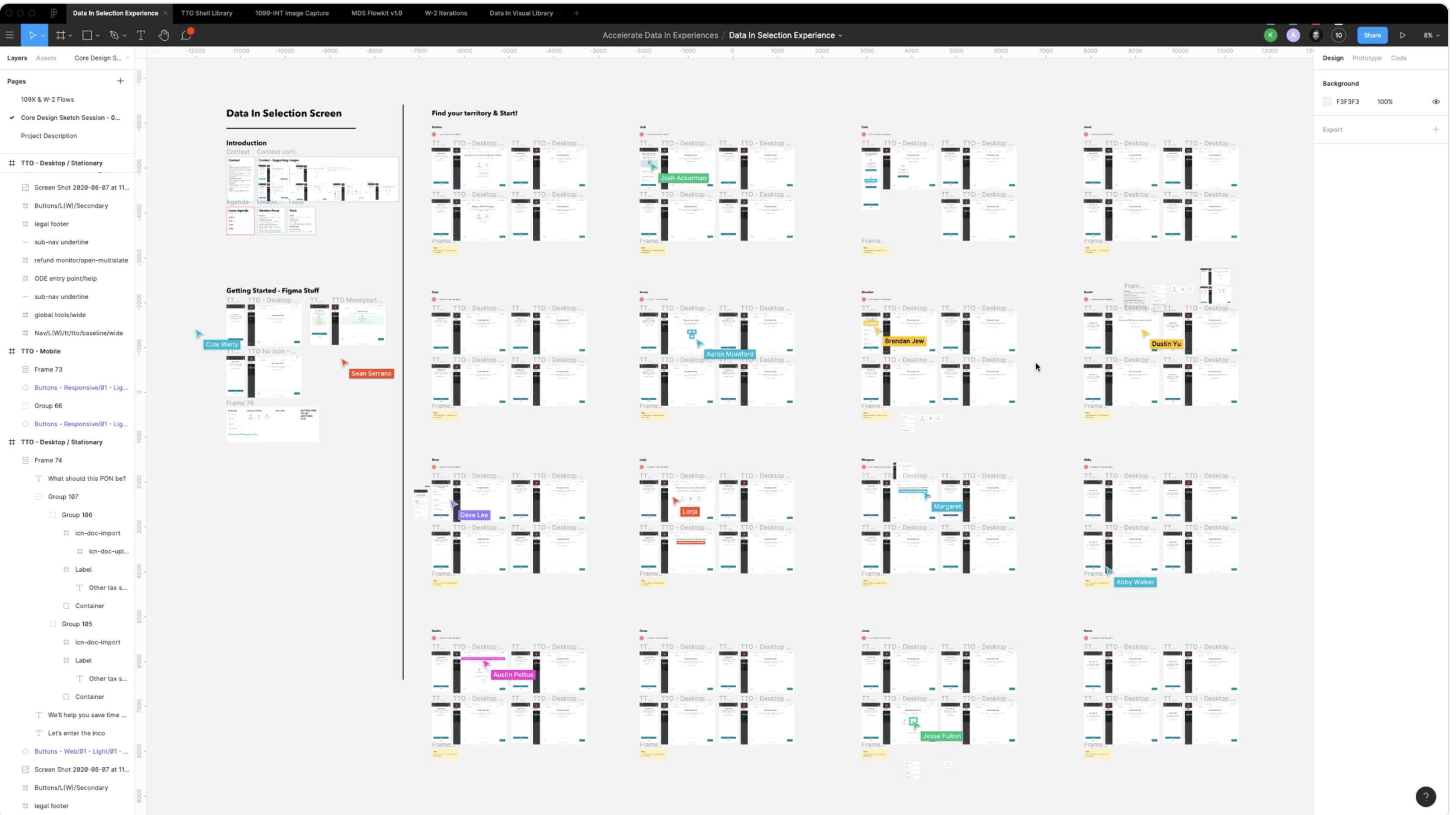
## IDEA 3: HIGHLIGHT THE PROBLEMATIC FIELDS

## IDEA 4: ERROR STATES

- Make sure the file you're uploading contains a W-2 form.
- Try downloading your file again from where you got it in case it's damaged.
- Check your internet, a slow connection can interrupt your upload.
- Make sure your file isn't password protected.
- Wait a few minutes and try again.

# Group brainstorm

To help me generate ideas I got a group of designers (visual, product, and content) together to sketch.



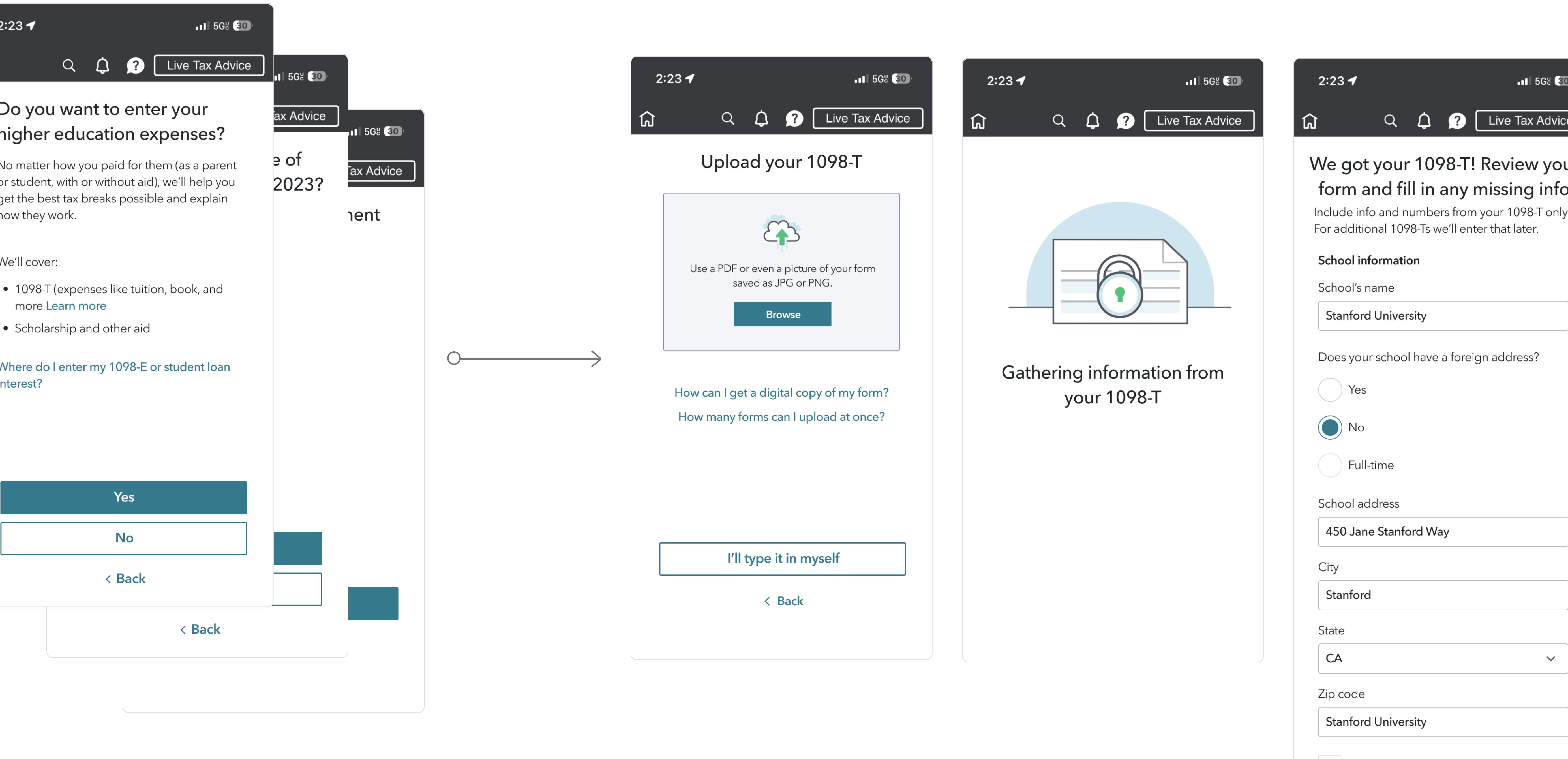
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## A/B test treatments

Design explorations

# 1098-T upload treatment

We ran the A/B test first in 1098-T, and used a choice selection screen that de-emphasized the manual entry option, because we thought upload would provide a more efficient and satisfying user experience.



## Design explorations

# 1099-R upload treatment

Next, we ran the 1099-R A/B test. This design was different compared to 1098-T, since the experience offered import. When import works, it is the fastest and most accurate automation method, so we offered upload as a fall-back option.

Let's import your tax info  
We'll help you find and import info from your bank or financial institution

Enter bank name or sign-in URL

Here are some suggestions:

- Robinhood
- Fidelity INVESTMENTS
- TD Ameritrade
- E\*TRADE from Morgan Stanley
- charles SCHWAB
- BANK OF AMERICA
- CHASE
- Wealthfront

Change how I enter my form

How do you want to enter your 1099-R?

We can save you time with these automated options.

- Upload it from my phone: We'll use a digital copy of your form to fill in your return.
- Use a PDF, JPG, or PNG
- Bring it over from my bank: We'll import your info directly from your bank – all you have to do is sign in.
- Use your bank credentials

I'll type it in myself

Continue

Type it in myself

< Back

Upload your 1099-R

We got your 1099-R! Review your form and fill in any missing info

Provider info

Who paid you? (Payer)  
Vanguard Retirement

Payer name continued (optional)

Address type  
U.S. address

Payer's address  
100 Vanguard Boulevard

City  
Malvern

State  
PA

Payer's TIN  
88-909378933

Continue

< Back

We got your 1099-R! Review your form and fill in any missing info

Distribution info

Box 1 - Gross distribution  
\$50,000

Box 2a - Taxable amount  
\$50,000

Box 2a - Taxable amount  
 Taxable amount not determined box is checked  
 Total distribution is checked

Box 3 - Capital gain  
\$12,200

Box 4 - Federal income tax withheld  
\$1,300

Box 5 - Employee contributions or insurance premiums  
\$400

Box 6 - Net unrealized appreciation  
\$0

Box 7 - Distribution code  
B

04

# Results & Reflection

# A/B test results

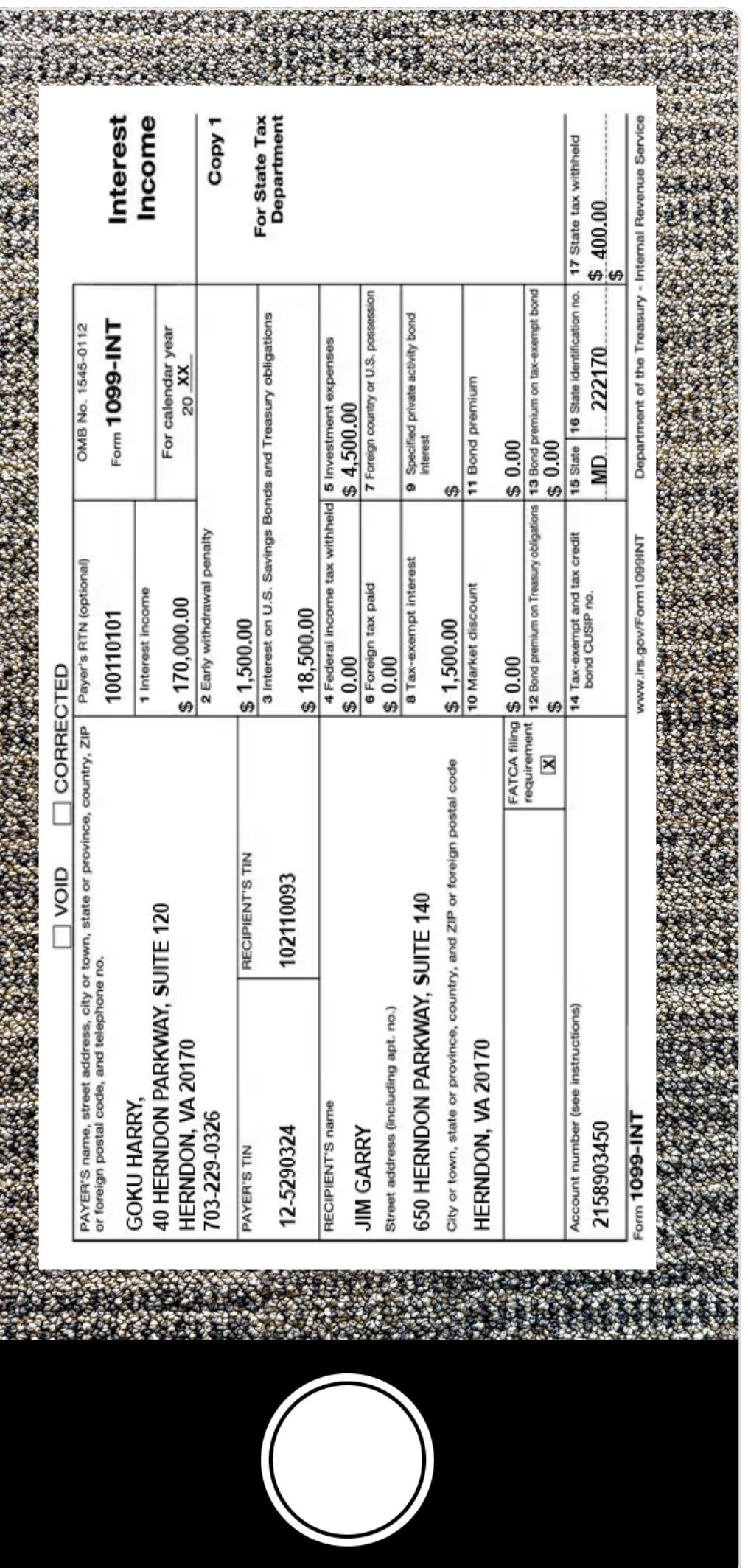
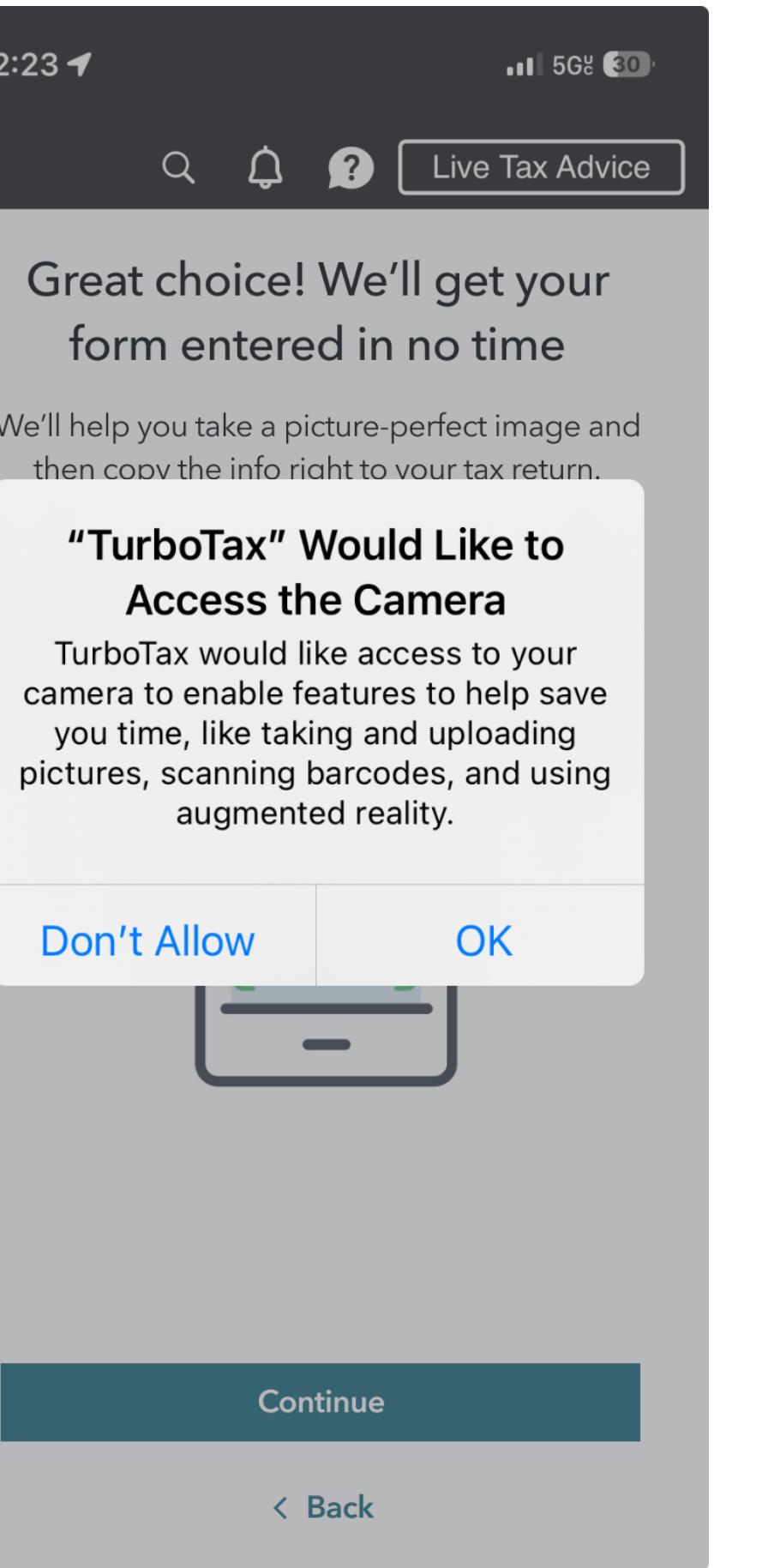
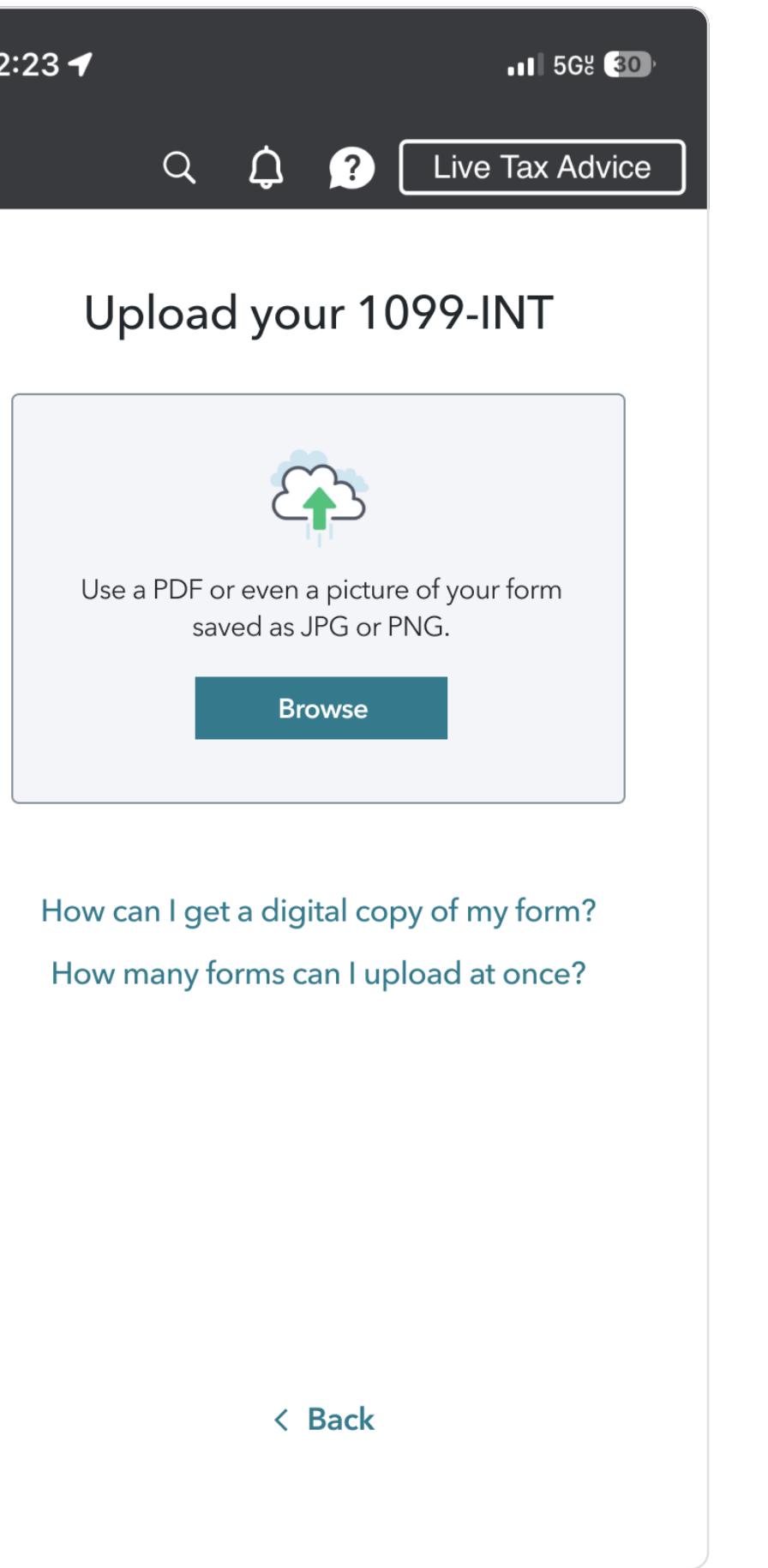
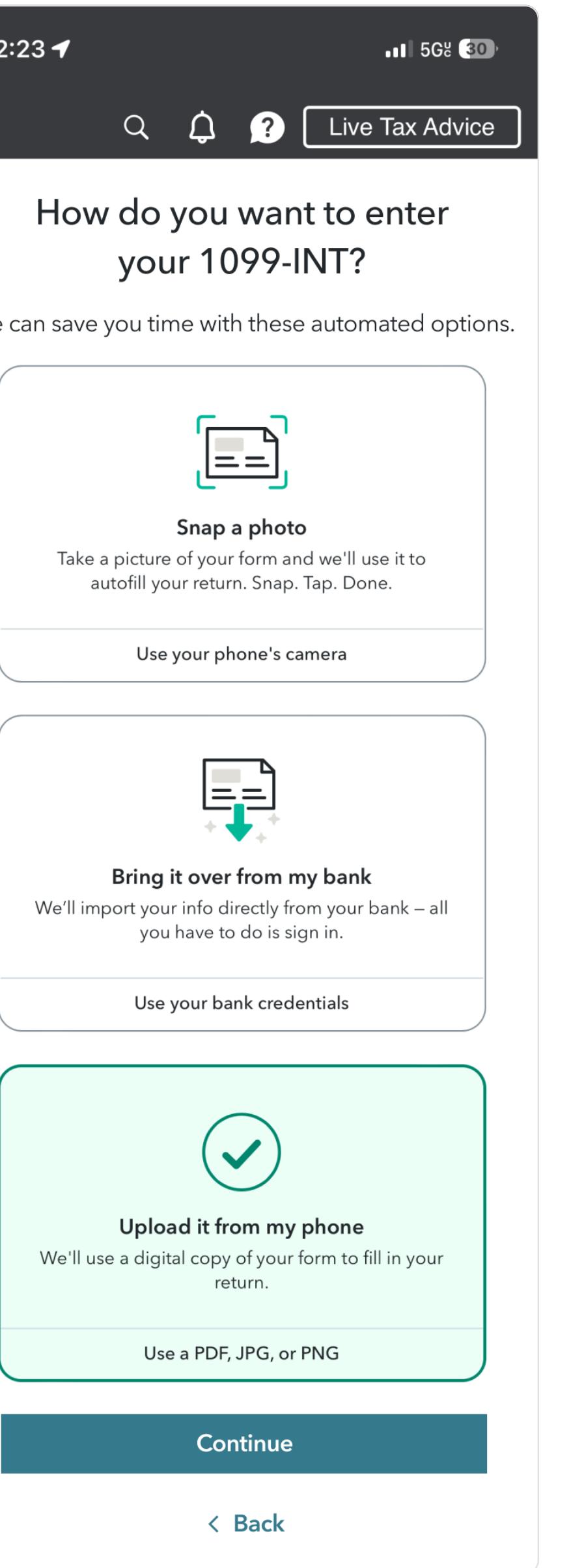
Form	Results	Details
1098-T	Successful!	50k forms automatically entered, 93% accuracy rate, and did no harm to conversion
1099-R	Needs improvement	10,000 forms uploaded, but had poor extraction accuracy (at 50%). Conversion rate dropped from 50% to 60%. We turned off upload until our sister team could improve accuracy and product could prioritize replatforming the legacy tax topic.

## Design explorations

# Related projects

We continued to also test upload inside of W-2, and the results showed that offering upload in addition to import would increase the number of users who automatically enter tax forms.

I also re-used the selection screen pattern to show the option for users to snap a photo from their mobile device to automatically enter their data too.



# Reflections

During my time on this project, my product manager changed. I was originally partnered with someone who was familiar with the business, and then a new PM was brought into the company and this was their first project.

I learned how to build trust with them quickly to keep the project moving.

- 01** Ideas should be visualized at the right fidelity. When I was working on outlining the user flow, I used flow diagrams to show my PM what our options were and we were able to quickly determine what the best way to introduce import was.
- 02** The success of your experiment, or project is dependent on more than just the design. It also depends on the system that you introduce it within and the willingness of the users.