

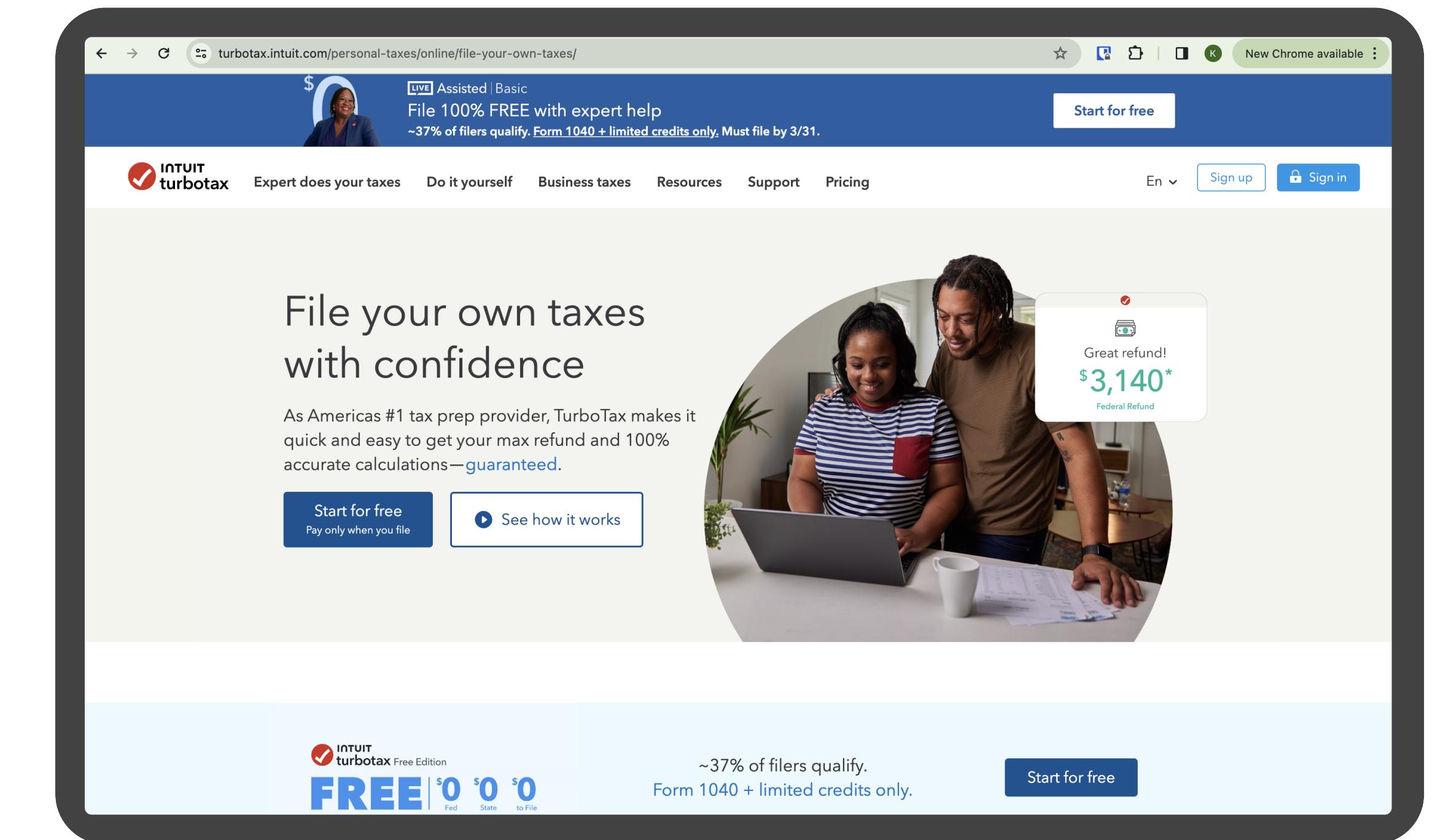
Automating data entry through tax filing

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.



Problem statement

As a tax filer, I am trying to...

Enter data into my tax return

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 Minimize the number of errors I enter

02 Minimize the time it takes to complete taxes

03 Reduce anxiety, stress, 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

3 months

Timeframe

Product & Engineering

Team

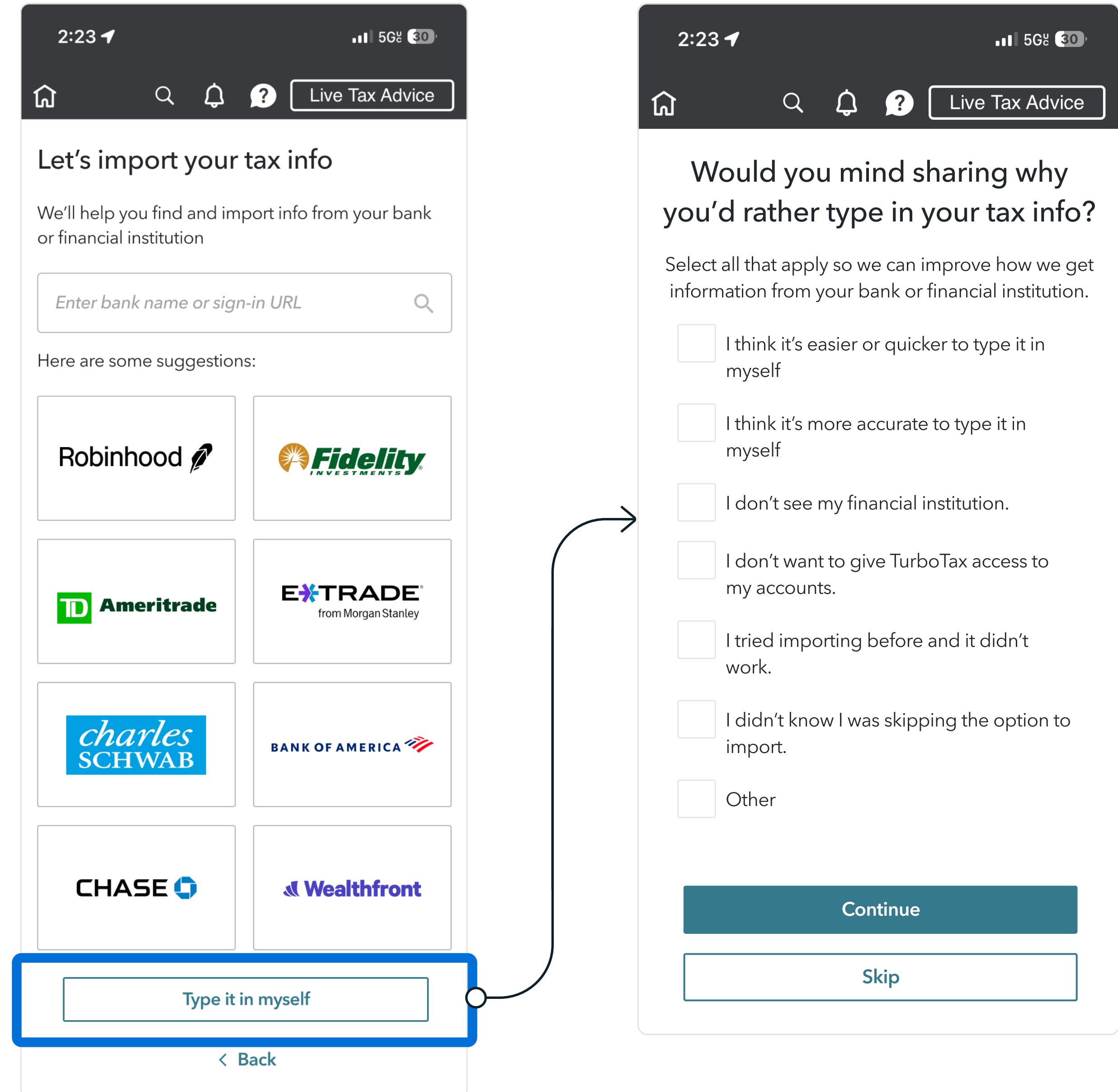
01

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.



Importing tax docs for easier data entry wasn't a one size fits all solution

Top survey responses

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

Creating a plan

The vision for data entry

What we learned proved that automating data entry wasn't going to be a one-size fits all solution too. To meet user and business goals, we'd need various auto-entry methods.

2:23 5G 30

Live Tax Advice

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

Type it in myself

< Back

2:23 5G 30

Live Tax Advice

Upload your 1098-T

Use a PDF or even a picture of your form saved as JPG or PNG.

Browse

How can I get a digital copy of my form?

How many forms can I upload at once?

I'll type it in myself

< Back

2:23 5G 30

Live Tax Advice

Great choice! We'll get your form entered in no time

We'll help you take a picture-perfect image and then copy the info right to your tax return.

All you'll have to do is review.

Continue

< Back



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?

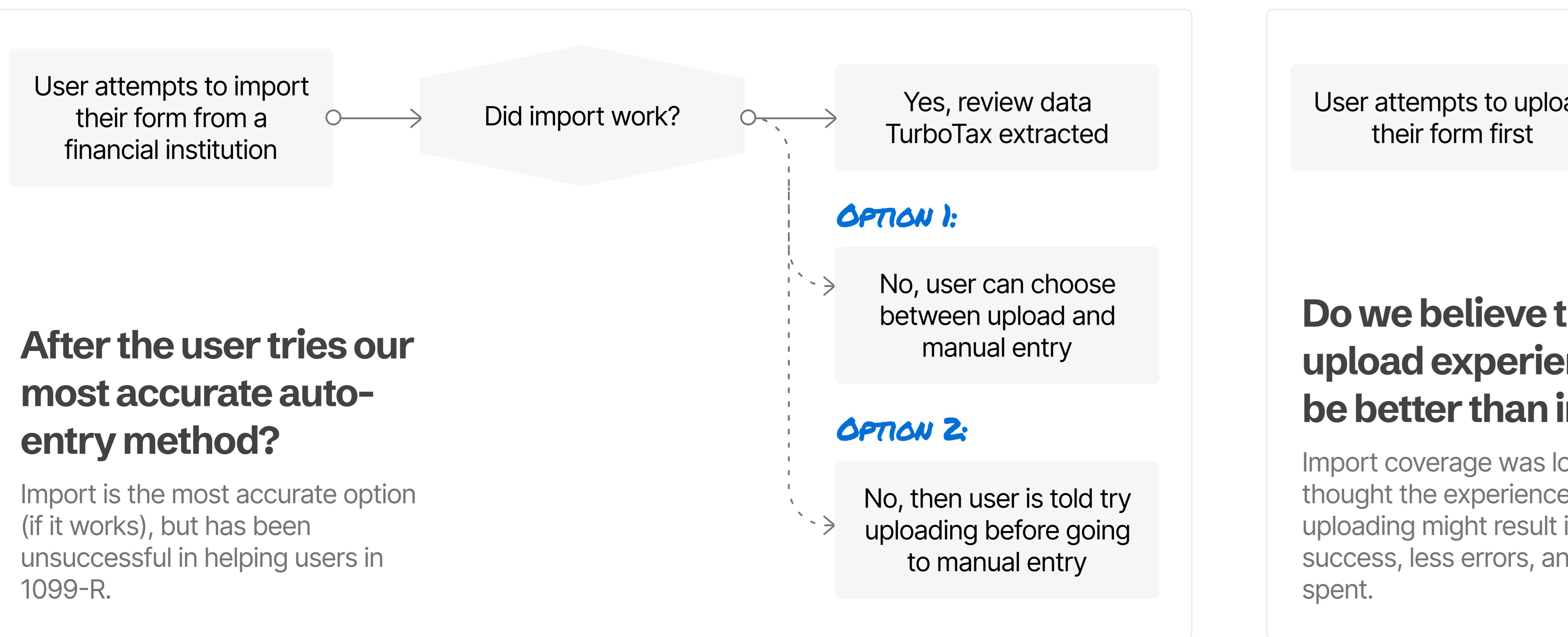
Import was the fastest and most accurate data entry method offered. If upload is just as good, should users be able to self select which method they want to use?

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

02

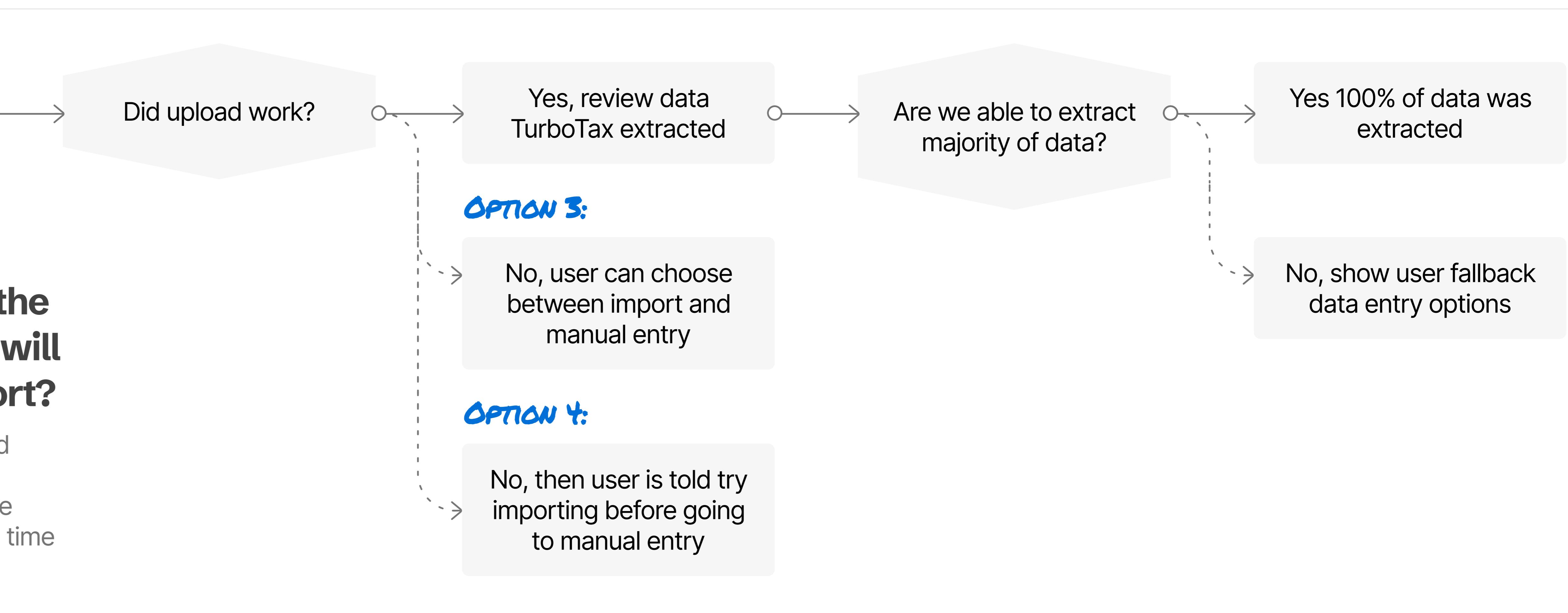
Design explorations

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

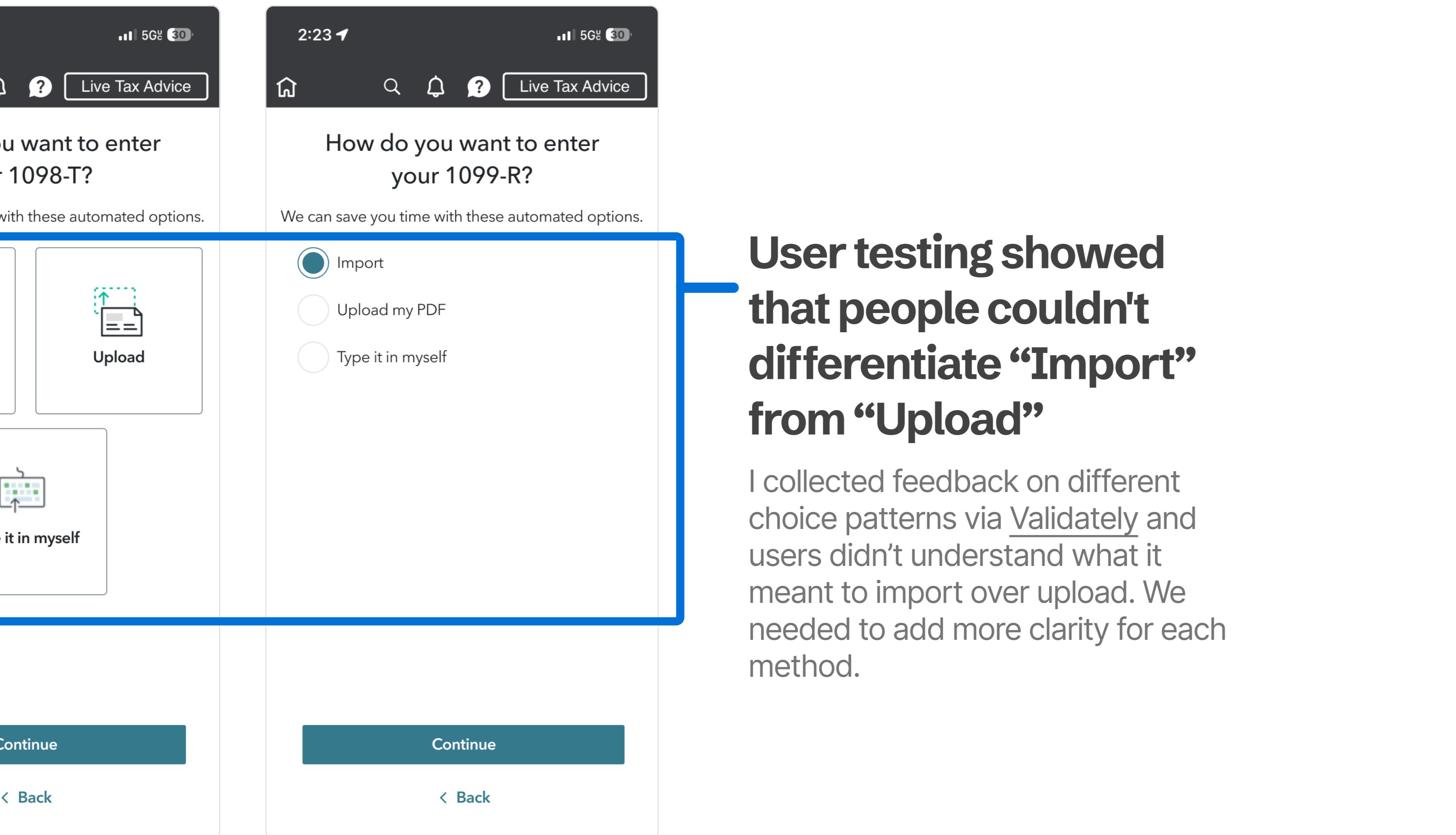
Should we just let users choose their method of choice?

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.

Focused explorations for presenting choice

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

IDEA 1: ALL OPTIONS VISUALLY TREATED EQUAL

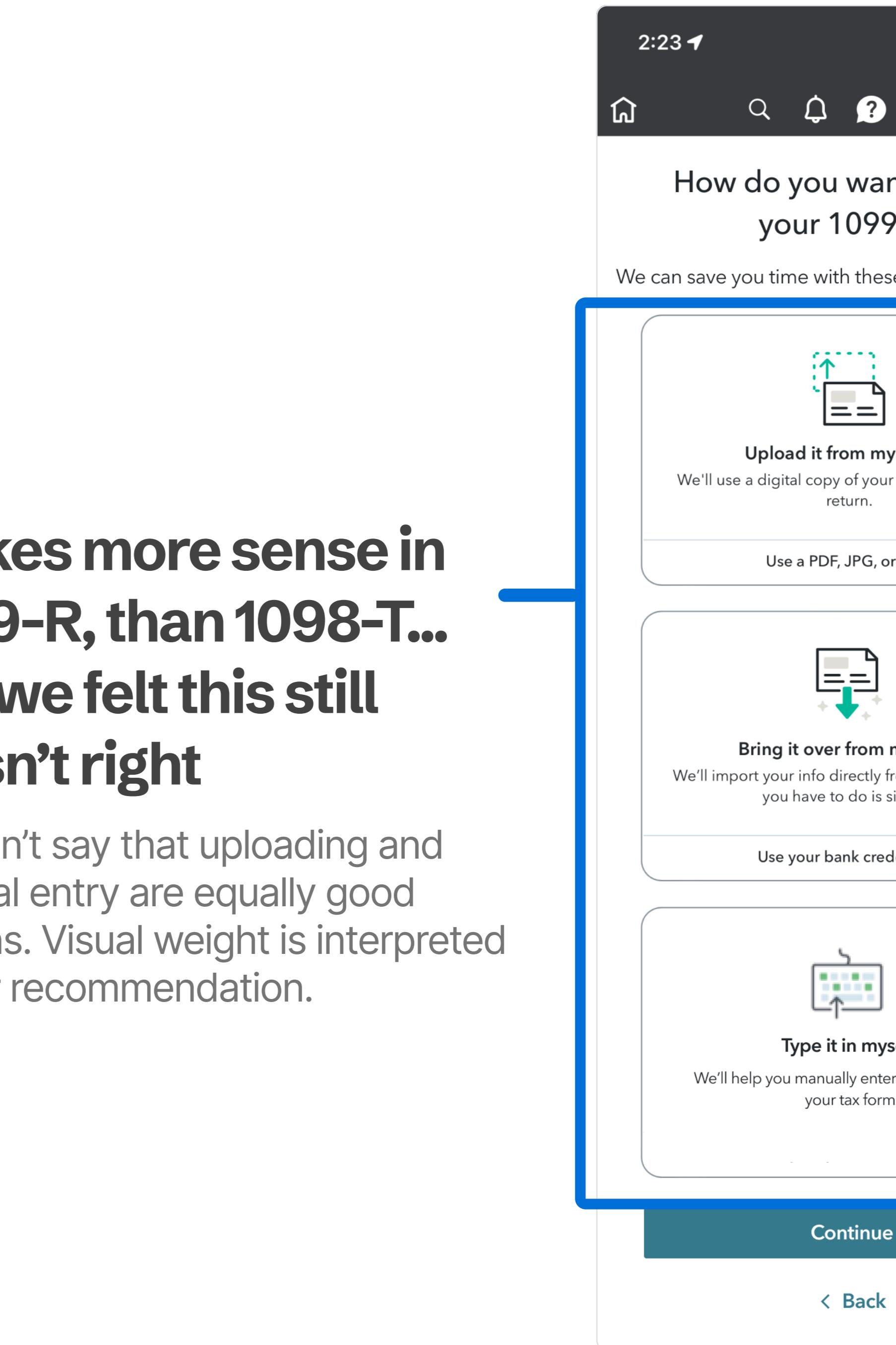


User testing showed that people couldn't differentiate "Import" from "Upload"

I collected feedback on different choice patterns via Validately and users didn't understand what it meant to import over upload. We needed to add more clarity for each method.

Makes more sense in 1099-R, than 1098-T... but we felt this still wasn't right

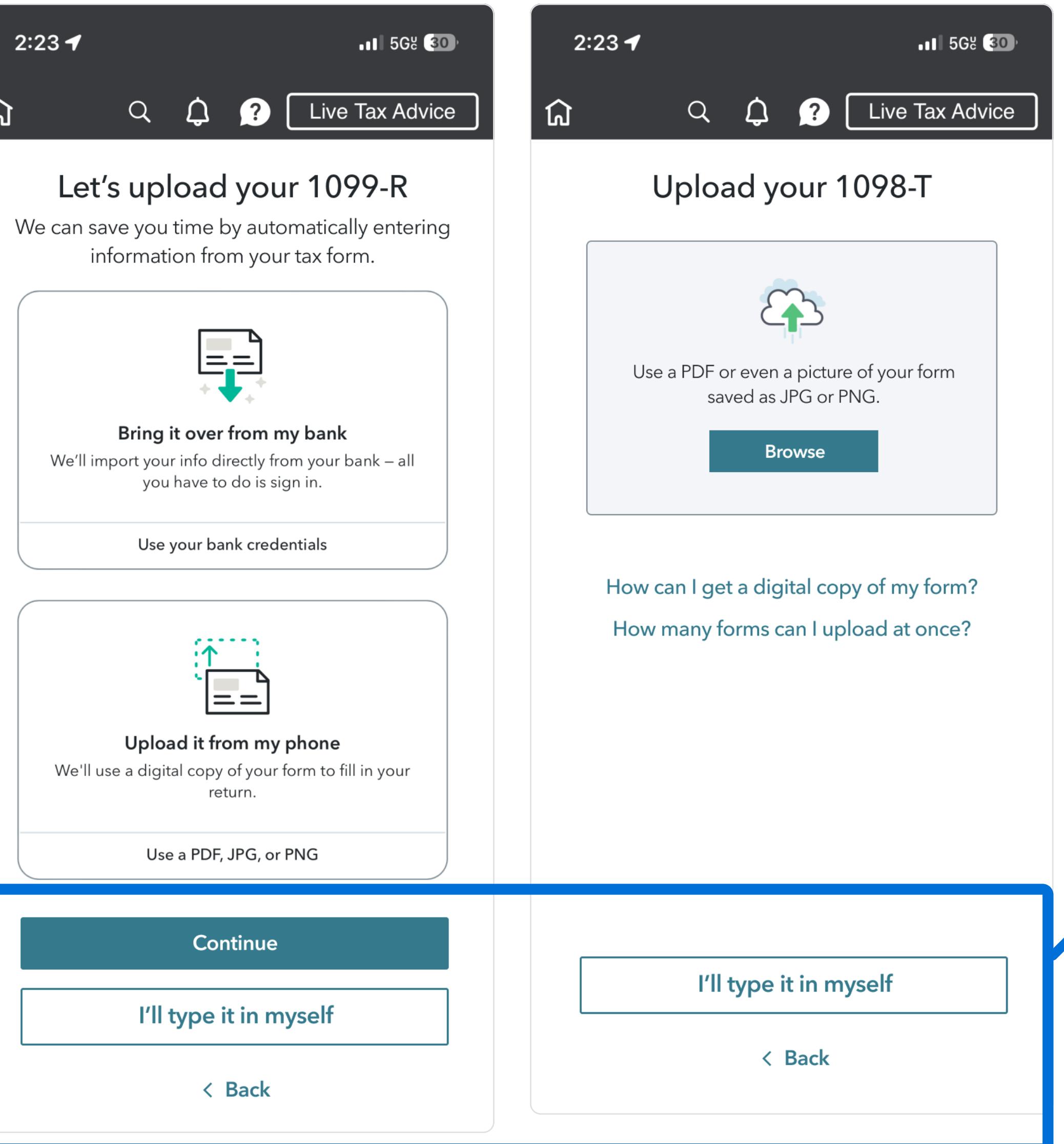
We can't say that uploading and manual entry are equally good options. Visual weight is interpreted as our recommendation.



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. This is why we gave it less visual weight on the screen.

Design explorations

Focused explorations for reviewing extracted information

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

IDEA 1: UPDATE TITLE COPY WI CONTENT DESIGN

The image shows two side-by-side mobile application screenshots. Both screens have a header bar with a home icon, a search icon, a bell icon, a question mark icon, and a 'Live Tax Advice' button. The top screen displays the text 'We got your 1099-R! Review your form and fill in any missing info'. The bottom screen displays the text 'Got it! Now let's review your 1099-R info'. Both screens show a list of tax form fields with their values and associated checkboxes.

Field	Value	Status
Box 1 - Gross distribution	\$50,000	
Box 2a - Taxable amount	\$50,000	
Box 2a - Taxable amount checked	<input type="checkbox"/>	Taxable amount checked
Box 2a - Total distribution	<input type="checkbox"/>	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	\$12,200	

IDEA 2: ADD BANNER MESSAGE

This mobile application screenshot shows a banner message at the top: 'Got it! Now let's review your 1099-INT'. Below the banner is a list of tax form fields with their values and associated checkboxes.

Field	Value	Status
Box 1 - Gross distribution	\$50,000	
Box 2a - Taxable amount	\$50,000	
Box 2a - Taxable amount checked	<input type="checkbox"/>	Taxable amount not determined box is checked
Box 2a - Total distribution	<input type="checkbox"/>	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	\$12,200	

• 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

• Make changes if any info is missing

The banner felt unnecessarily alarming

On top of being a bit too alarming, we felt that it took up too much vertical space, since some forms have 10+ fields and checkboxes

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

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

Distribution info

Box 1 - Gross distribution

\$

Box 2a - Taxable amount

\$

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

We tried, but couldn't get all the info from your form

Please review and fill in any missing info

Distribution info

Box 1 - Gross distribution

\$

⚠ Missing information

Box 2a - Taxable amount

\$

⚠ Missing information

Box 3 - Capital gain

\$12,200

Box 4 - Federal income tax withheld

\$1,300

Box 5 - Employee contributions or insurance premiums

\$400

IDEA 4: ERROR STATES

Hmm... we're having trouble uploading your file

INTUIT(W-2).pdf

Here are some common fixes that might help:

- 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.

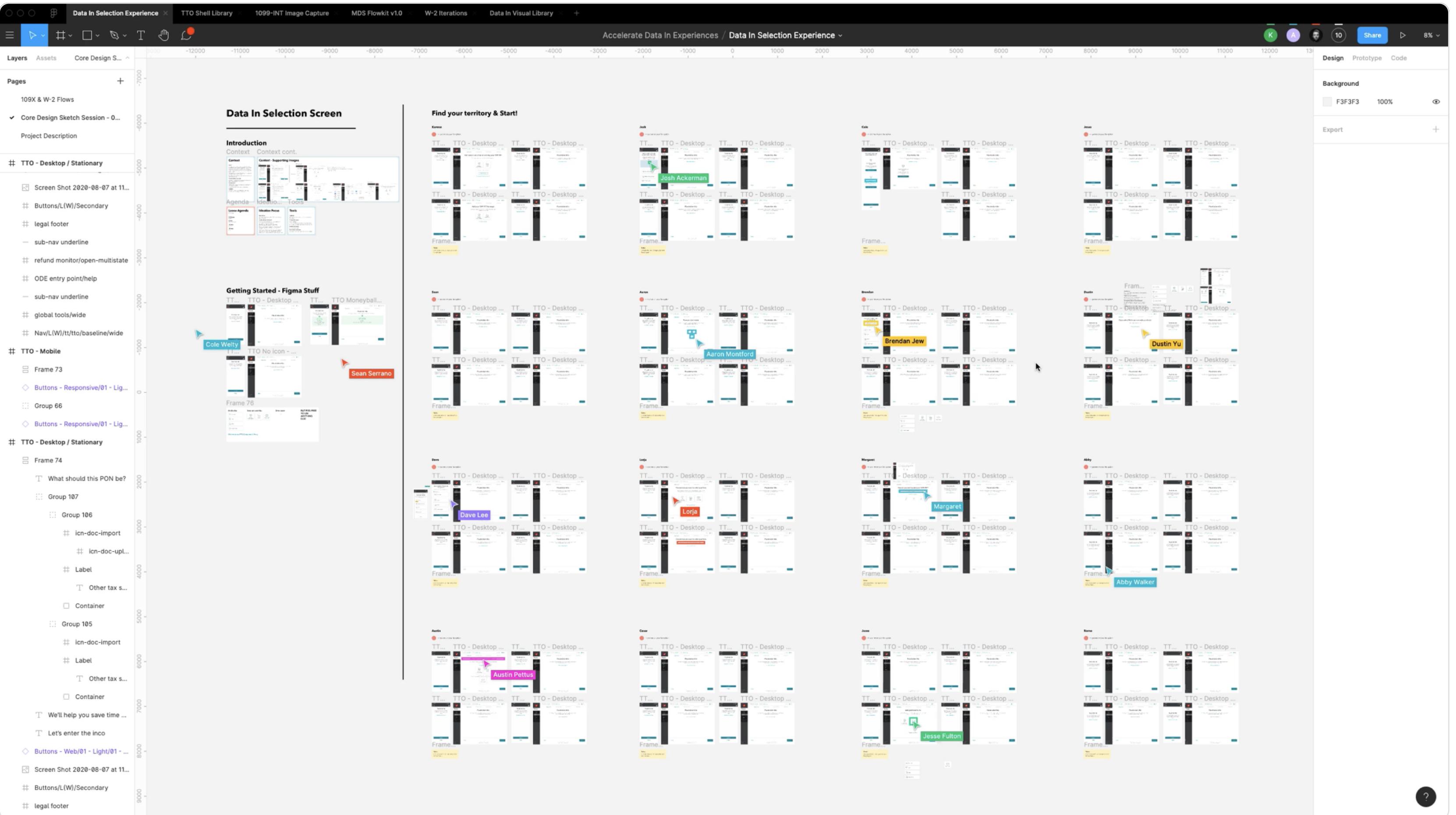
Try uploading again

Change how I enter my form

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Group brainstorm

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

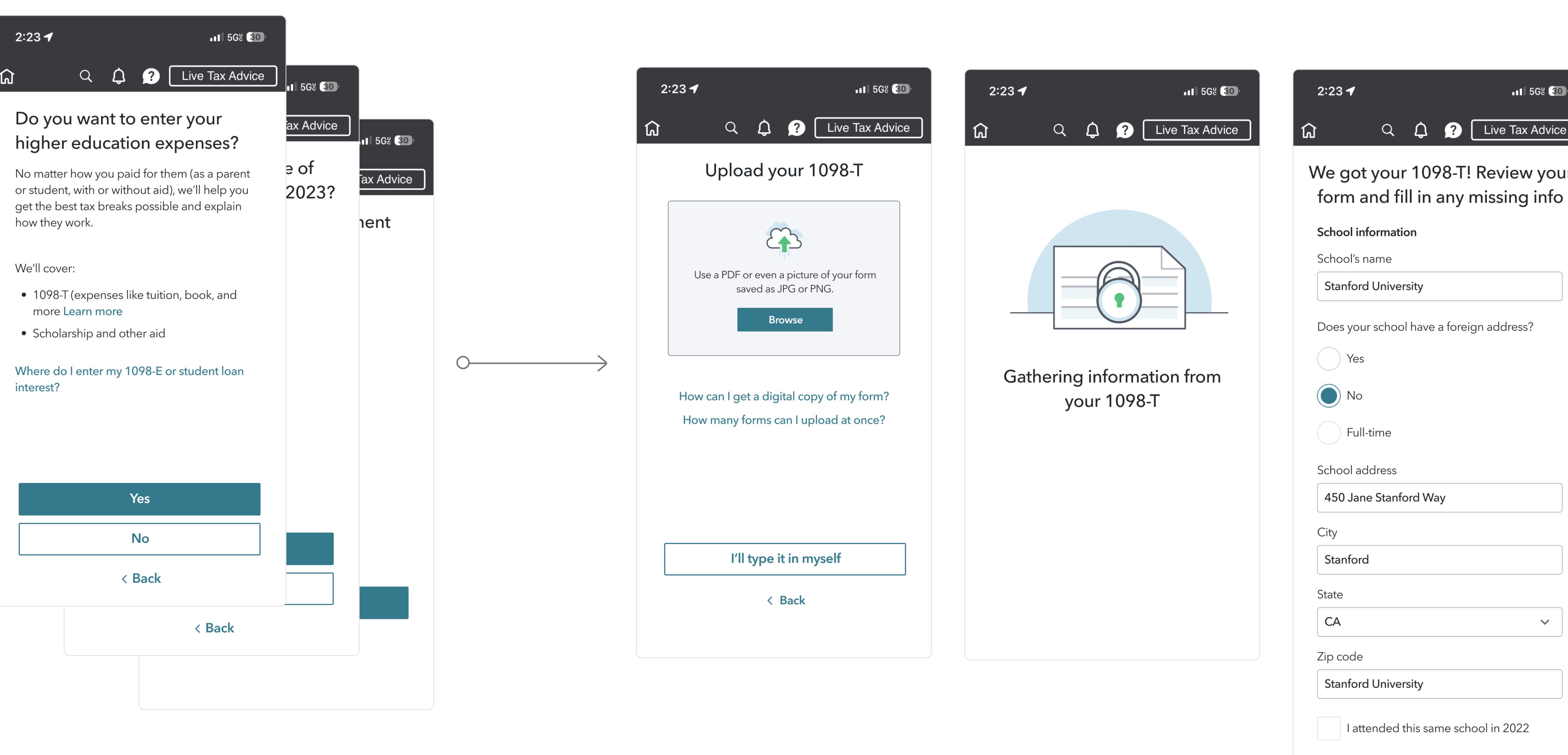


03

A/B test treatments

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

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

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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

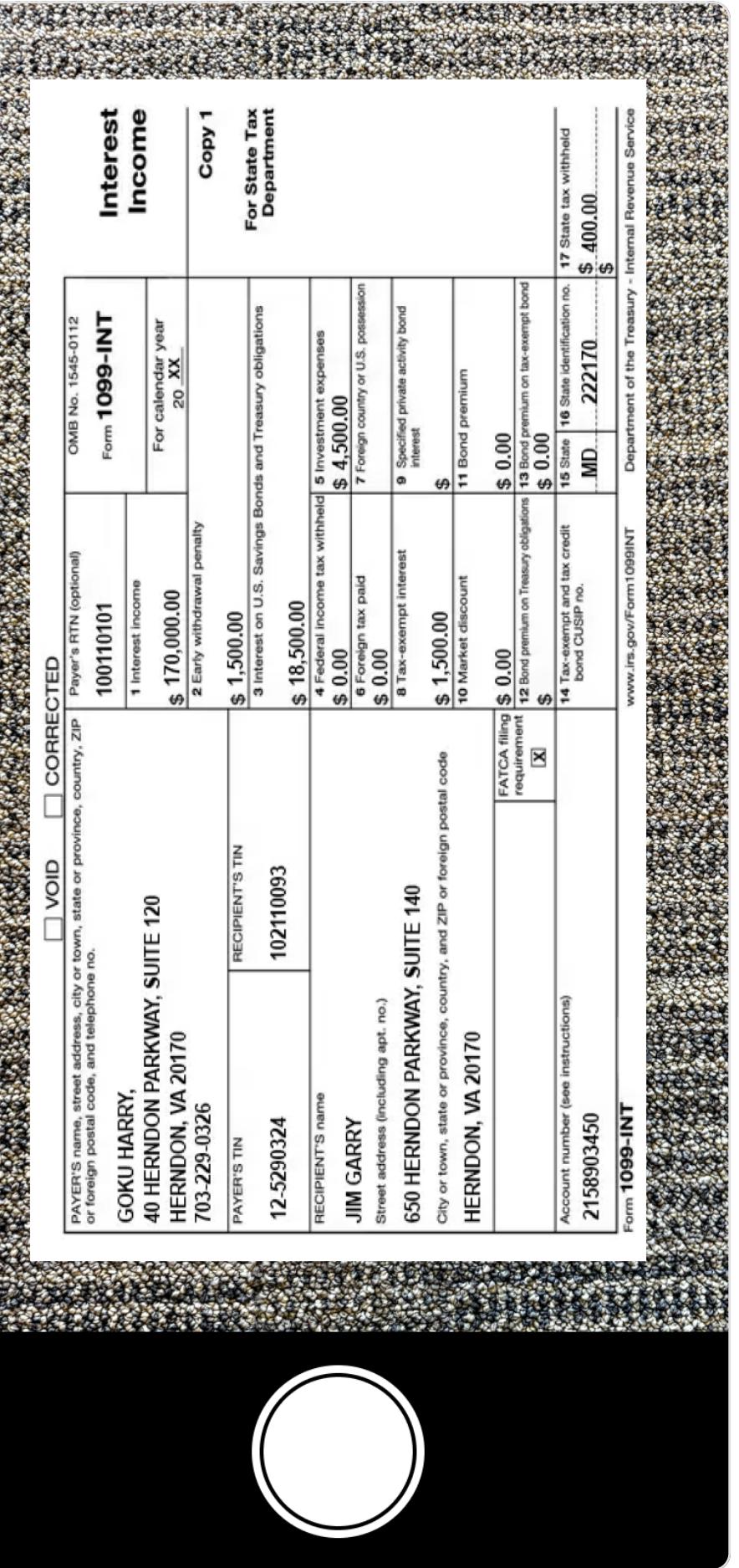
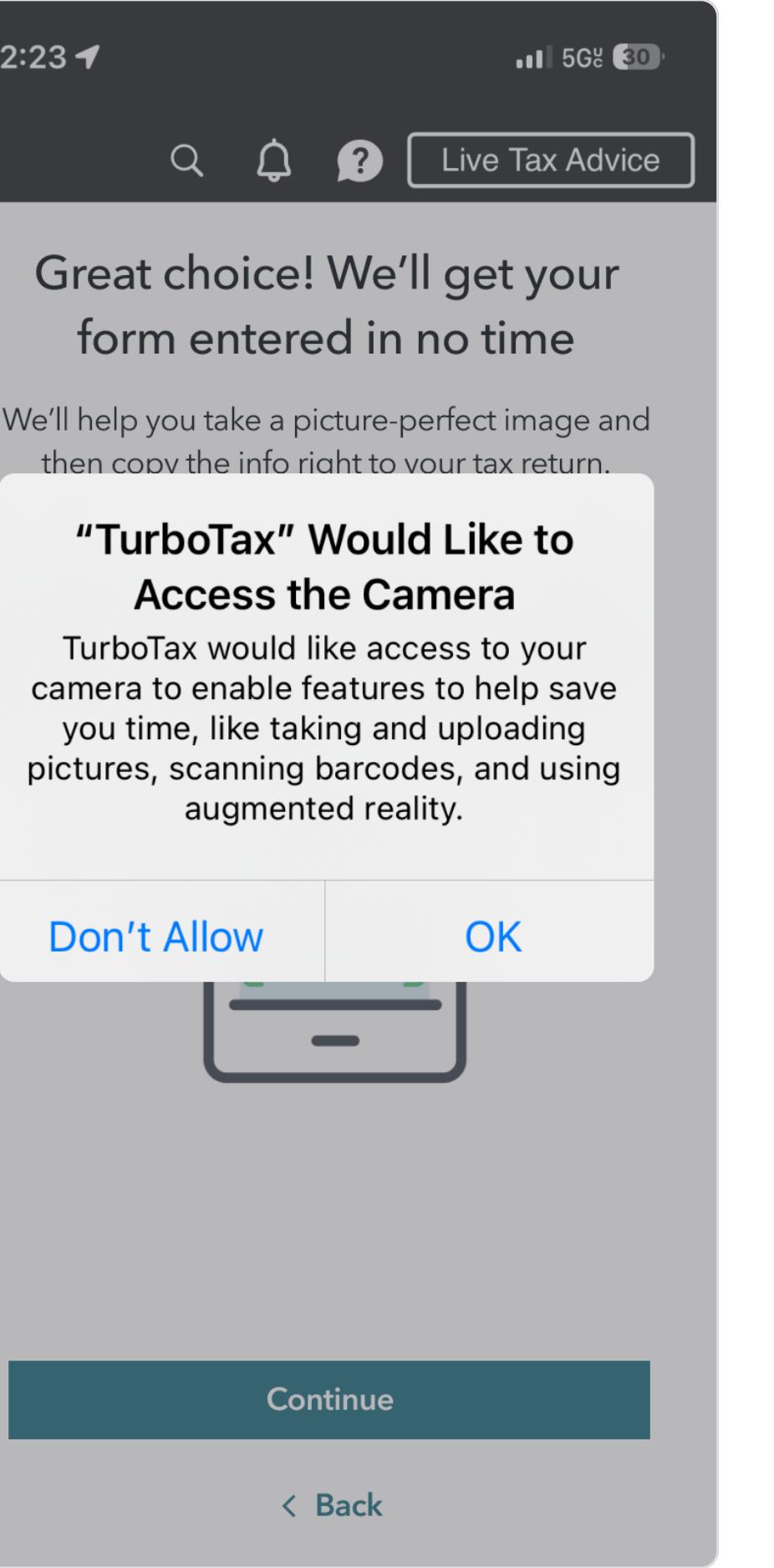
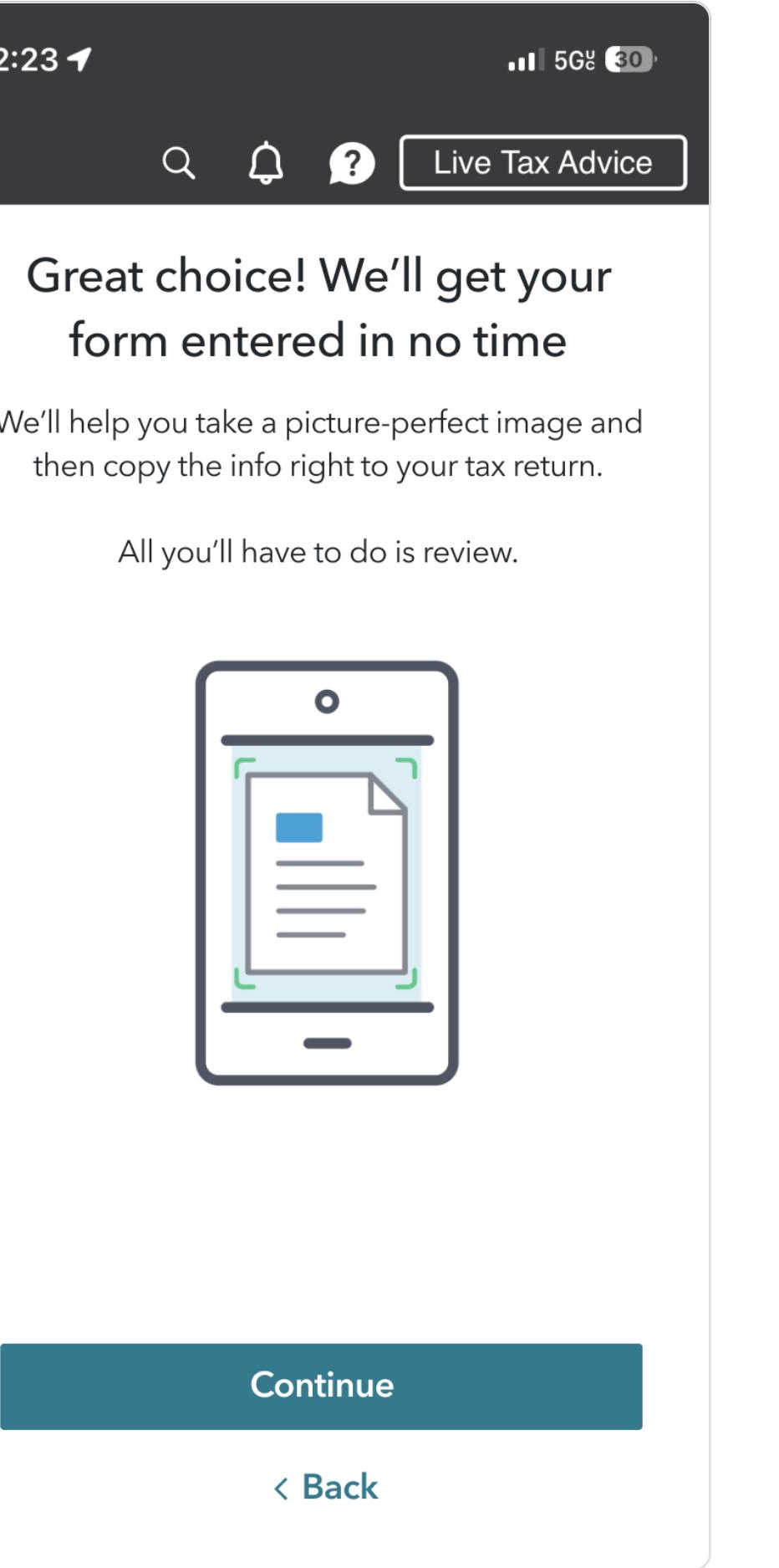
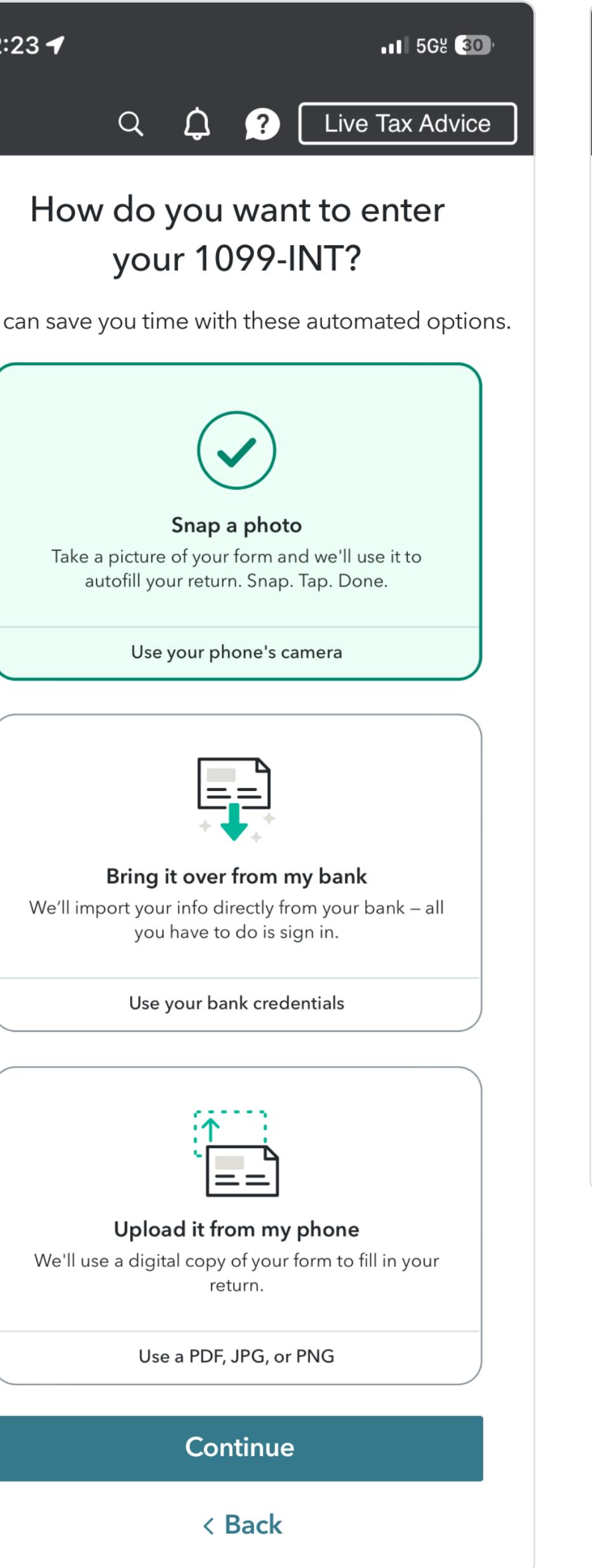
Form	Results	Details
1098-T	Successful!	50,000 forms automatically entered, 93% accuracy rate, and did no harm to conversion
1099-R	Needs improvement	10,000 forms uploaded, but had poor extraction accuracy (at 50%). Conversion rate dropped from 60% to 50%. We turned off upload until our sister team could 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. We made a multi-year roadmap to assess and expand to the top 10 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 one of their first projects.

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 behaviors of people who use your products.