



PHILLRIEHL

SCHWAB PORTFOLIO

Schwab - Login

Problem:

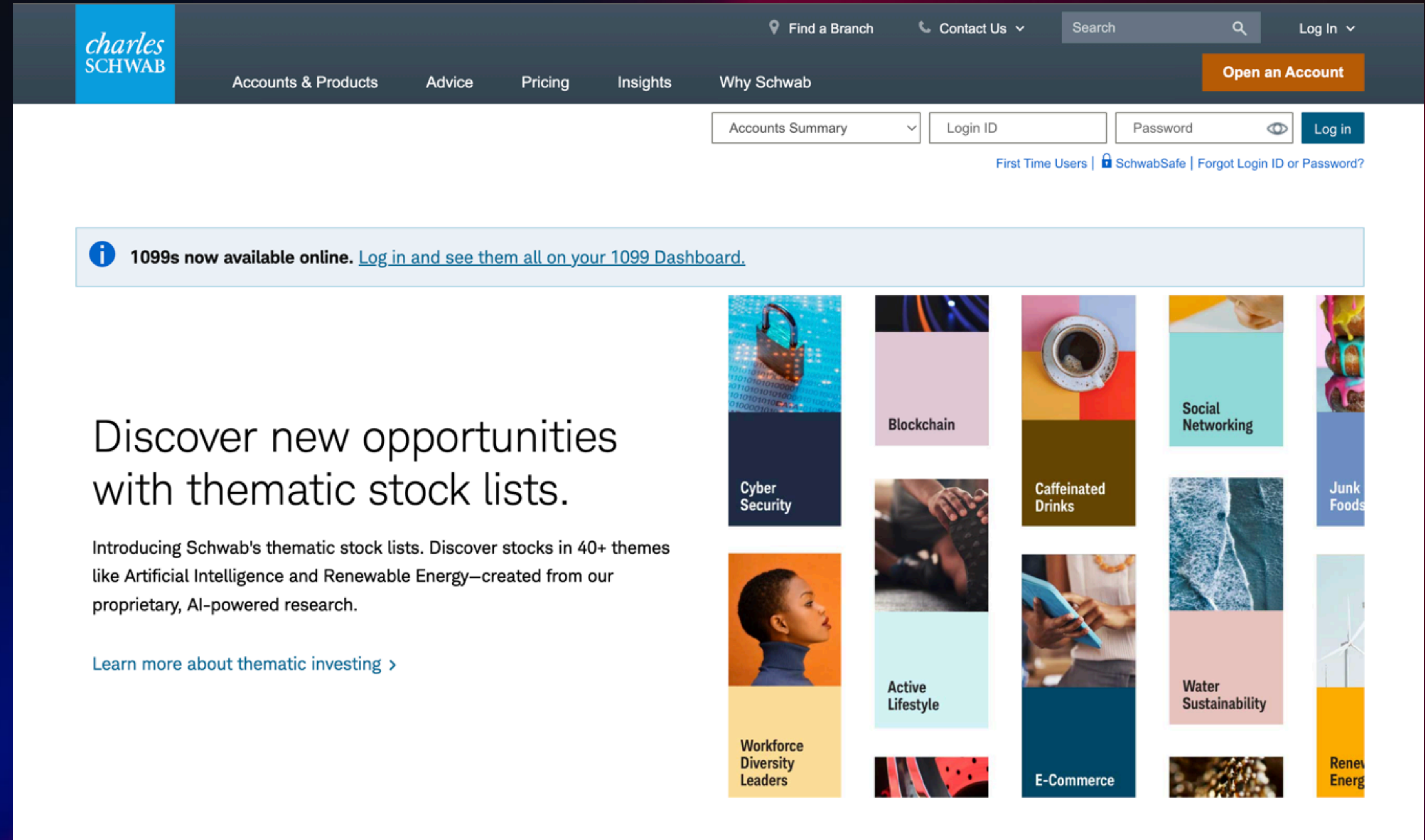
Convert single step to 2 step, maintain security

Solution:

Research, iterate, narrow down ideas

Result:

Met with PO's, arrived at one choice. Feature currently in production



Initial questions and AC

Why do we need Slim Login?

Why do we need 2 Step in Slim Login?

what problem are we solving?

Why does Slim Login exist? 2 reasons:

Legacy

(there was an LMS 2 version) and the need to maintain the same UI as we migrated from LMS2 to LMS3. This also means that the content around it is built with slim in consideration.

Real estate

the schwab.com page is premo so marketing wants to maximize their space.

AC:

1. Design within limited space
2. Create a consistent experience with stacked login →
3. Maintain security
4. Create a delightful experience
5. Satisfy management
6. Take other login methods into account

What is the stacked experience?

Competitive/Comparative Analysis

All use stacked login

apple

google

etrade

wells

merrill

facebook

interactive brokers

ally

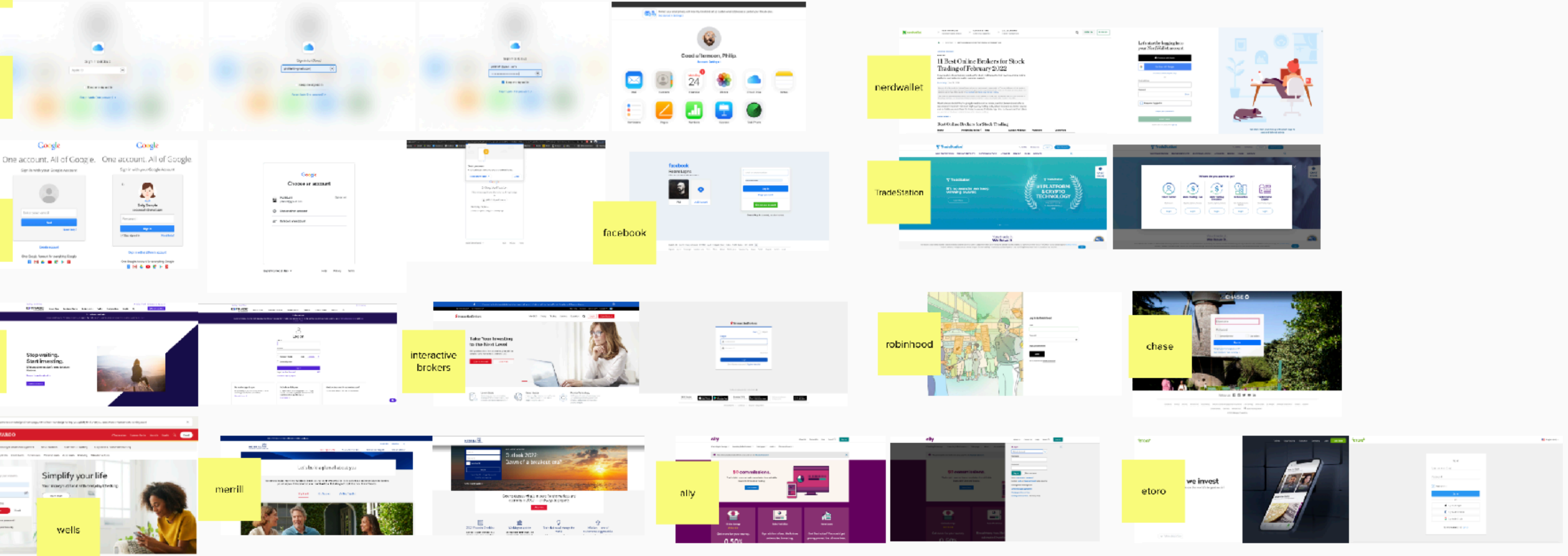
nerdwallet

TradeStation

robinhood

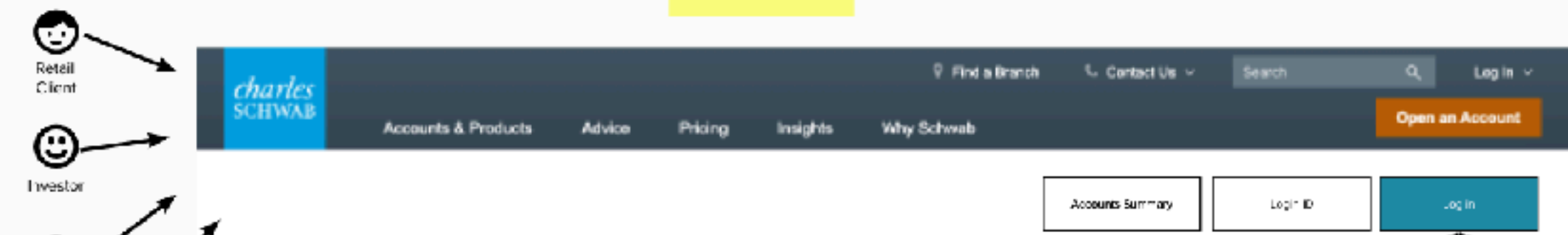
chase

etoro



who are you?
is this your first time or have you been here before?
do you want to get a new secure way you do things?
bad actors can't know what a valid login id is

2 Step Login



- Retail Client
- Investor
- Retiree
- RAT ACTOR

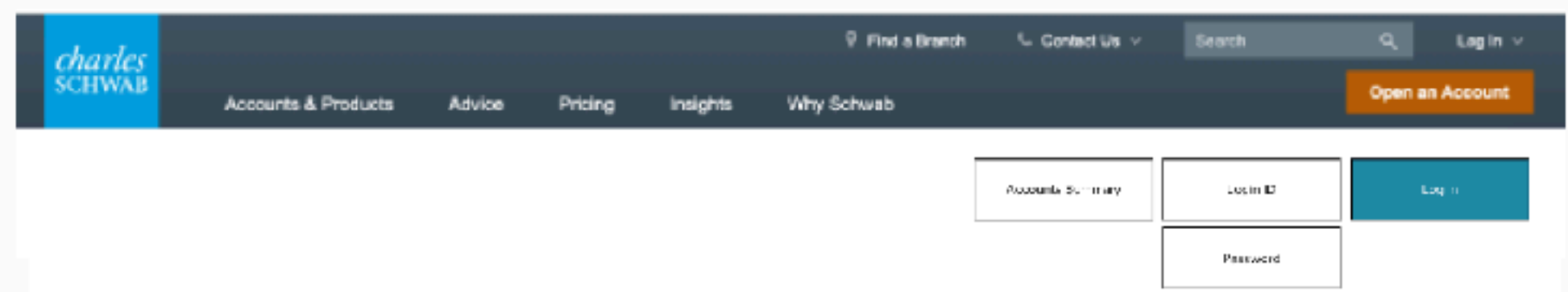
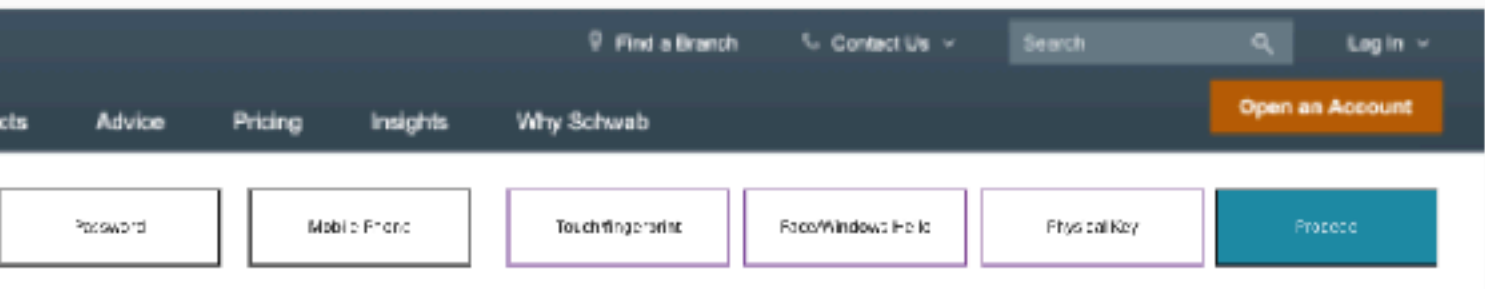
what are all the ways clients want to log in?

- Password
- Mobile Phone
- Touch/Fingerprint
- Face/Windows Hello
- Physical Key
- QR Code
- 3 party
- ???

same page, slim

new page, stacked

how do you want to get in?

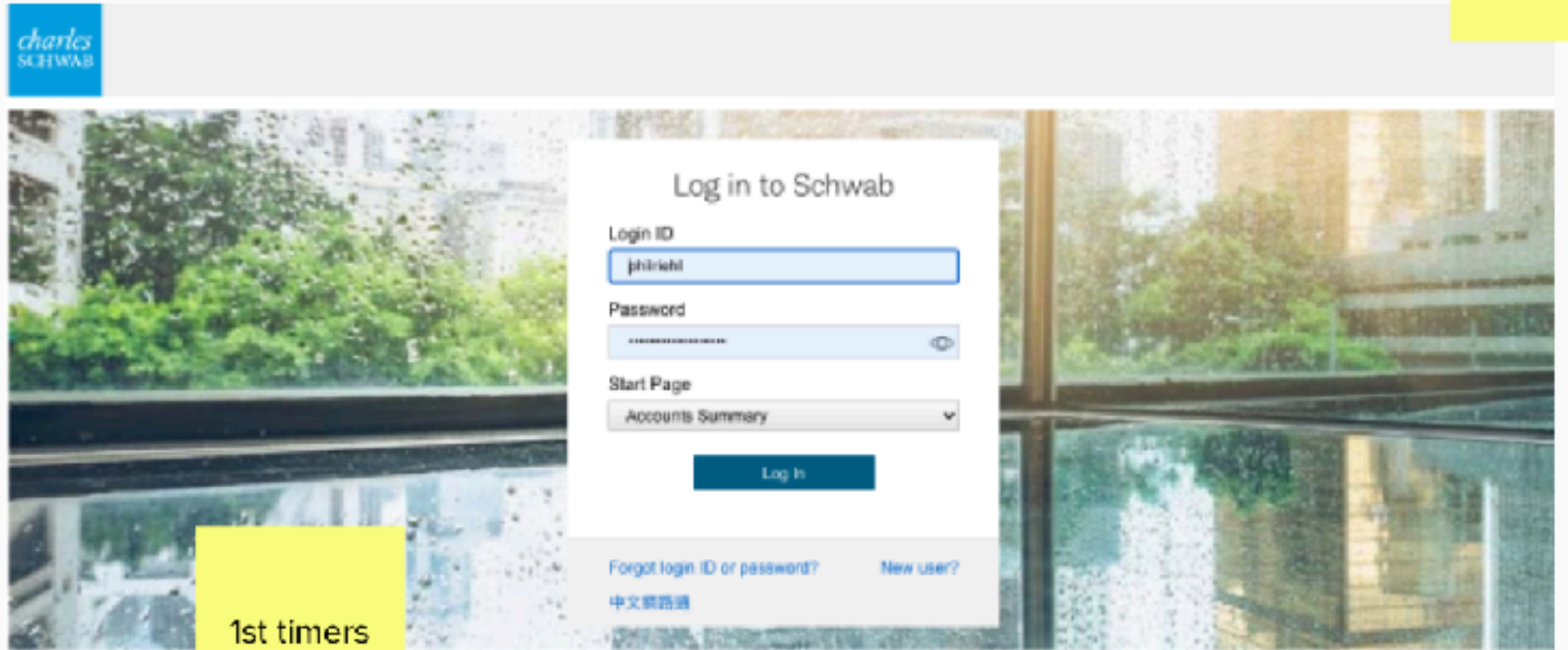


replacing login id with pw is not effective

how do you want to get in?

- Password
- Mobile Phone
- Touch/Fingerprint
- Face/Windows Hello
- Physical Key

how are they designing and implementing 2 step stacked?

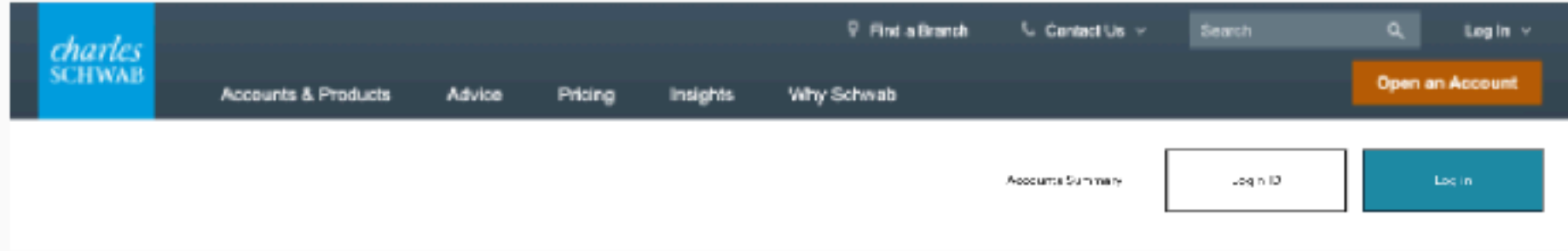


1st timers

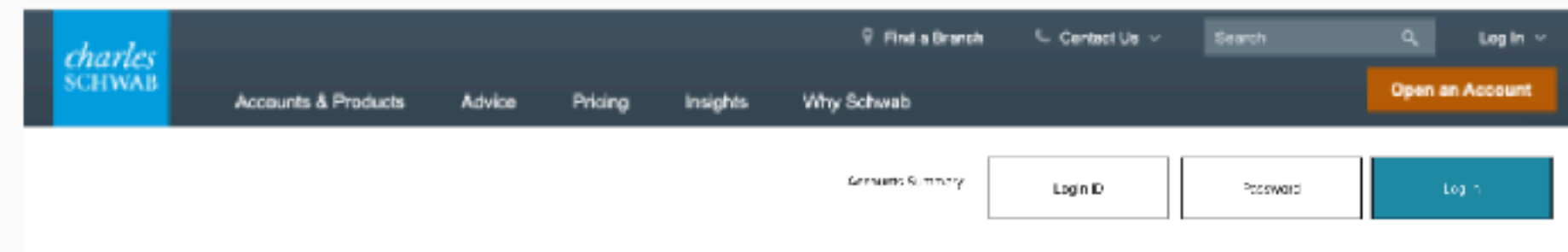
Possibilities



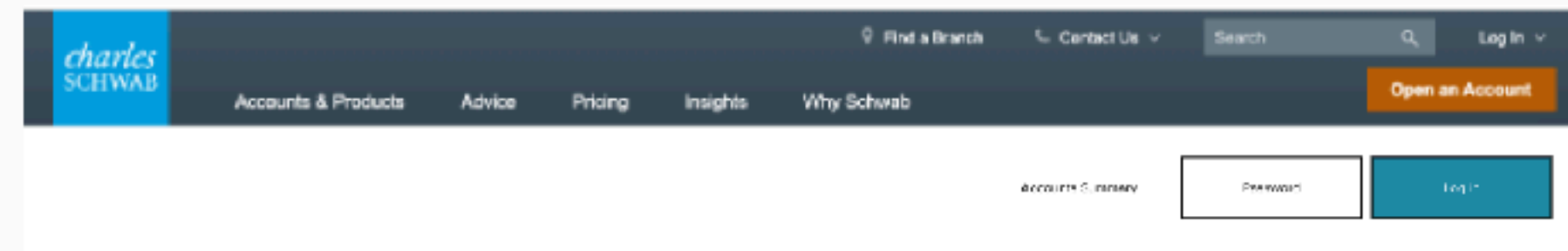
why can't we leave password field in slim?



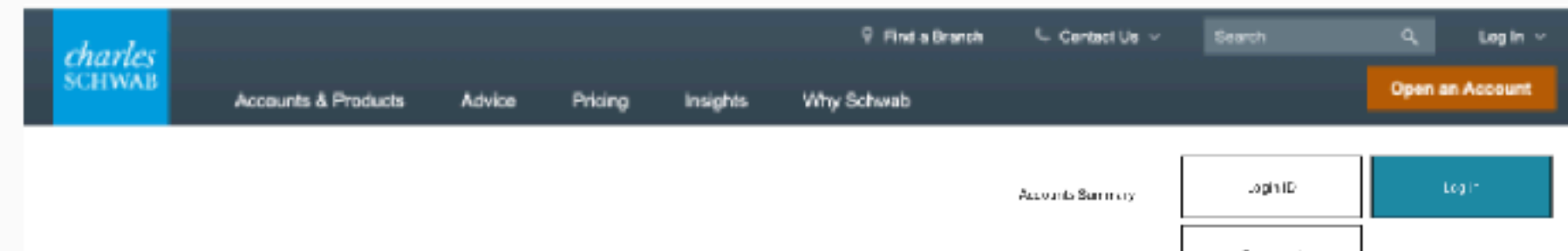
this is how 2 step could start



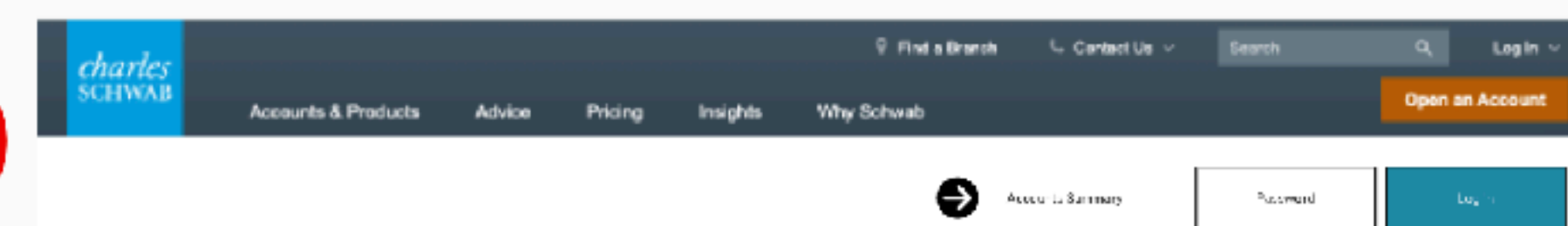
it would be poor UX to relocate UI elements



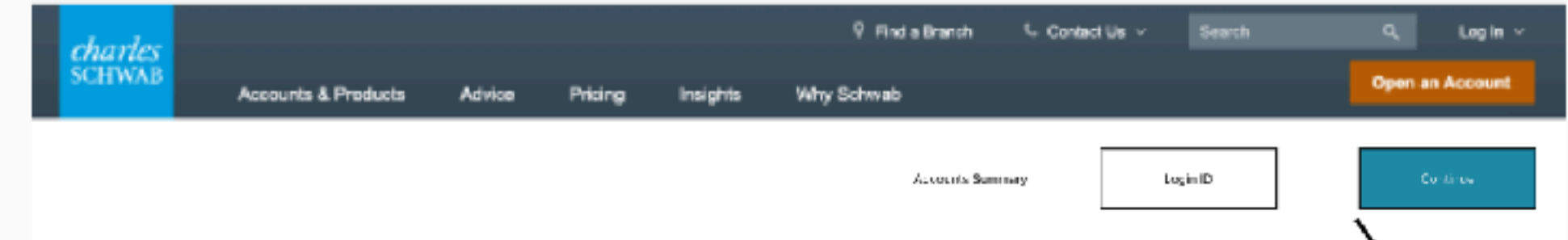
replacing login id with pw is not effective



we don't have real estate to put password below login id



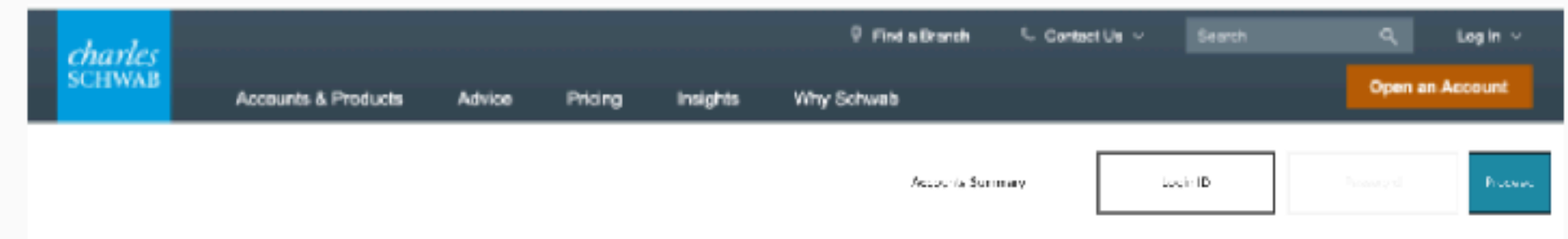
no sliders. this ain't no magic trick.



Elements don't move



Password is present but not active, warning user of what's to come



Elements don't move, password appears when editable

Option #1: Login ID to Stacked

Artboard

charles SCHWAB

Find a Branch Contact Us Search Log In

Accounts & Products Advice Pricing Insights Why Schwab Open an Account

Log In

First Time Users SchwabSafe Forgot Login ID or Password?

TAX RESOURCES

Where's my 1099?

Find out when 1099s will be available on Schwab's 1099 Dashboard.

Get a personalized view

Latest market news and insights

Surprise, Surprise: Jobs Surged

Market Volatility: Schwab's Quick Take

Bond Market: Waiting for Liftoff

Qlote Show Indices Symbol Lookup

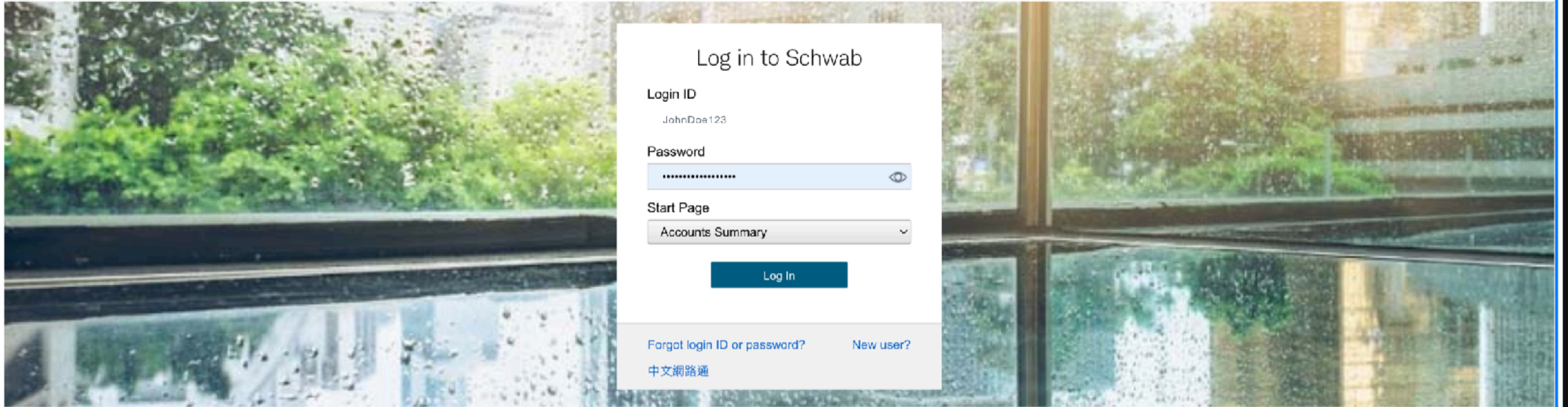
DJIA	NASDAQ	S&P 500	Russell 2000	Time (ET)
35,081.13 +1.39 (+0.00%)	14,075.67 -82.34 (-0.58%)	4,483.87 -16.66 (-0.37%)	2,012.60 -10.24 (-0.51%)	4:20:01 PM Refresh



Option #1: Login ID to Stacked

Artboard Copy

charles
SCHWAB



Log in to Schwab

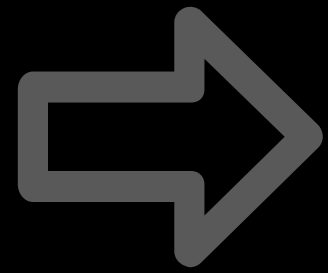
Login ID
JohnDoe123

Password
.....

Start Page
Accounts Summary

Log In

[Forgot login ID or password?](#) [New user?](#)
[中文網路通](#)



Option #2: Login ID and Password Stacked

Artboard Copy

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Accounts & Products Advice Pricing Insights Why Schwab **Open an Account**

i Where's my 1099? [Get tax information and mailing dates. >](#)

INSIGHTS & IDEAS

Are your beneficiaries up to date?

Read more



Log in to Schwab

Login ID

Password

Start Page

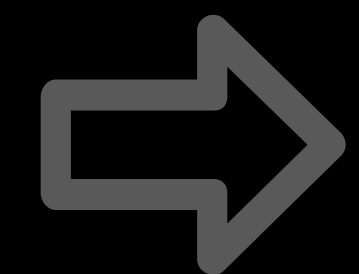
Accounts Summary ▾

Primary

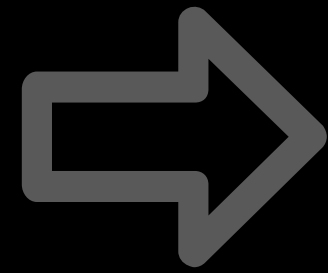
[Forgot login ID or password?](#) [New user?](#)

Quote Show Indices Symbol Lookup

DJIA 34,988.84 +422.67 (+1.21%)	NASDAQ 14,139.76 +348.84 (+2.47%)	S&P 500 4,471.07 +69.40 (+1.58%)	Russell 2000 2,076.46 +55.68 (+2.68%)	Time (ET) 5:00:51 PM Refresh
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Option #2: Login ID and Password Stacked



Artboard

charles SCHWAB Find a Branch Contact Us Search Log In

Accounts & Products Advice Pricing Insights Why Schwab **Open an Account**

i Where's my 1099? [Get tax information and mailing dates. >](#)

INSIGHTS & IDEAS

Are your beneficiaries up to date?

Read more

Log in to Schwab

Log in: johndoelD

Password

Input text

Start Page

Accounts Summary ▾

Primary

Forgot login ID or password? New user?

Quote Show Indices Symbol Lookup

DJIA	NASDAQ	S&P 500	Russell 2000	Time (ET)
34,988.84 +422.67 (+1.21%)	14,139.76 +348.84 (+2.47%)	4,471.07 +69.40 (+1.58%)	2,076.46 +55.68 (+2.68%)	5:00:51 PM Refresh

Option #3: Slim Login ID to Flyout Sidebar

Artboard

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Accounts & Products Advice Pricing Insights Why Schwab

Find a Branch Contact Us Search Log In

Open an Account

Accounts Summary philriehl Log in

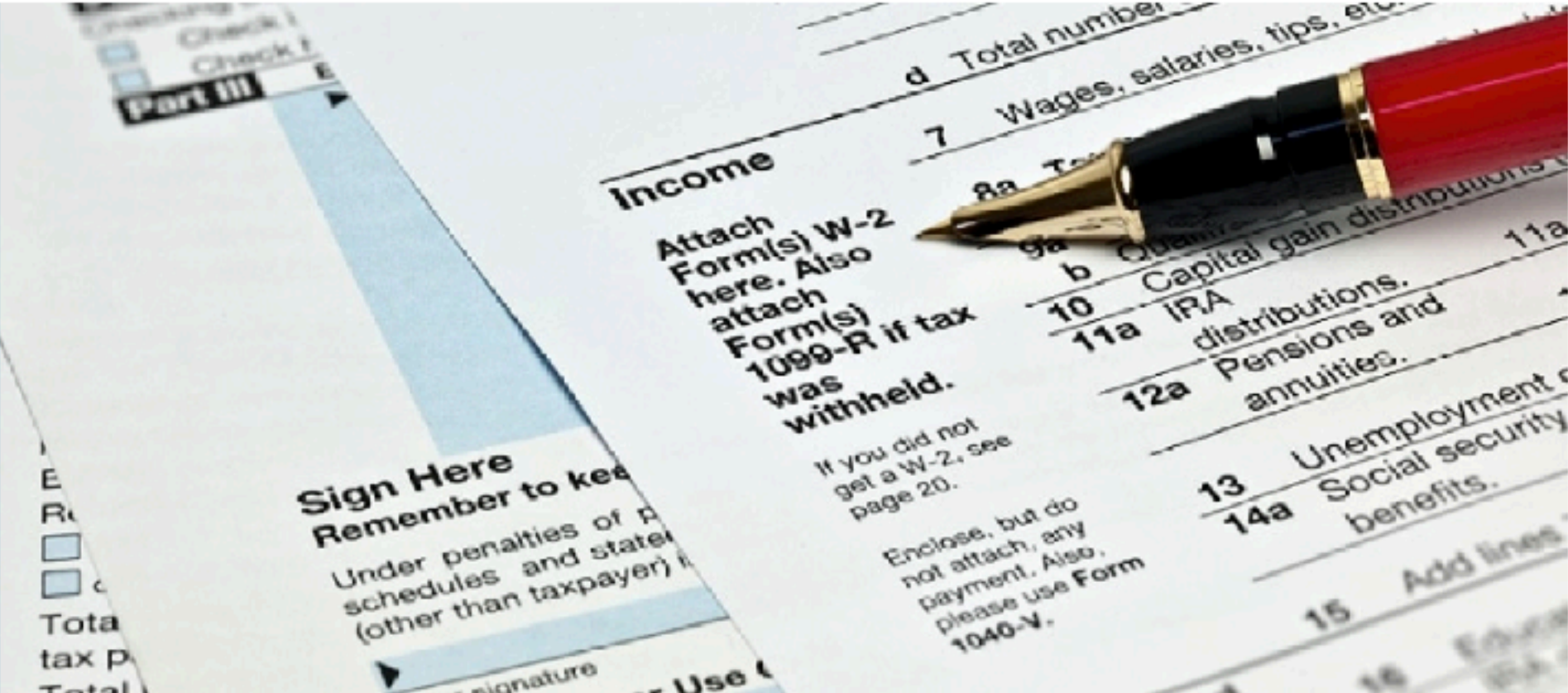
First Time Users | SchwabSafe | Forgot Login ID or Password?

TAX RESOURCES

Where's my 1099?


Find out when 1099s will be available on Schwab's 1099 Dashboard.

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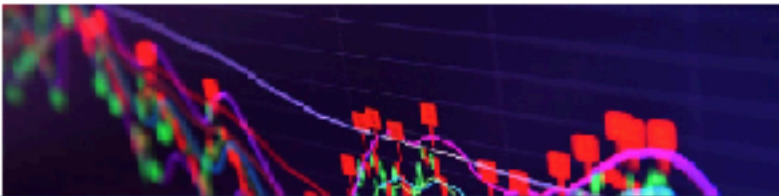


Latest market news and insights


Surprise, Surprise: Jobs Surged



Market Volatility: Schwab's Quick Take



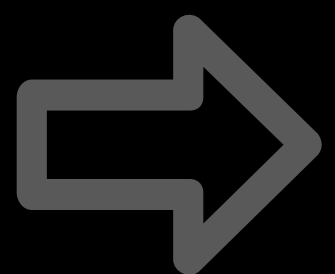
Bond Market: Waiting for Liftoff



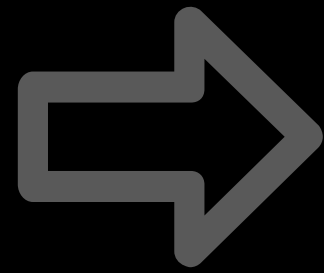
Quote Show Indices Symbol Lookup

DJIA	NASDAQ	S&P 500	Russell 2000	Time (ET)
35,081.13 +1.38 (+0.00%)	14,016.87 -82.34 (-0.58%)	4,483.87 -16.88 (-0.37%)	2,012.60 +10.24 (+0.51%)	4:20:01 PM

Refresh



Option #3: Slim Login ID to Flyout Sidebar



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Accounts Summary First Time Users

TAX RESOURCES

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Latest market news and insights

Surprise, Surprise: Jobs Surged

Market Volatility: Schwab's Quick Take

Bond Market: Liftoff

Forgot login ID or password? New user?

Quanta	Show Indices	DJIA	NASDAQ	S&P 500	Russell 2000	Time (ET)
	Symbol lookup	35,091.13 +1.39 (-0.00%)	14,015.87 -82.34 (-0.58%)	4,483.87 -18.88 (-0.37%)	2,012.80 +10.24 (-0.51%)	4:20:01 PM

Log in to Schwab

Log in: johndoeID

Password

Input text

Start Page

Accounts Summary

Primary

Schwab - Login History/Trusted Devices

Problem:

Clients don't have enough info about possible fraudulent logins

Solution:

Investigate competitors and combine login history and trusted devices

Result:

WIP

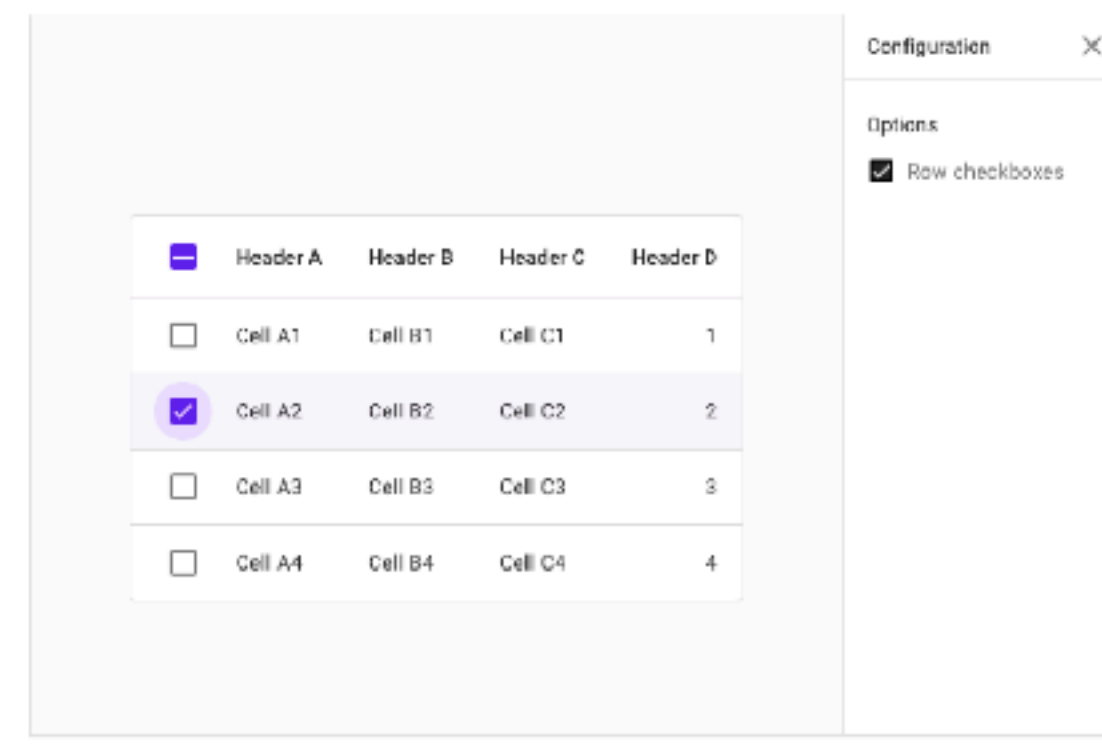
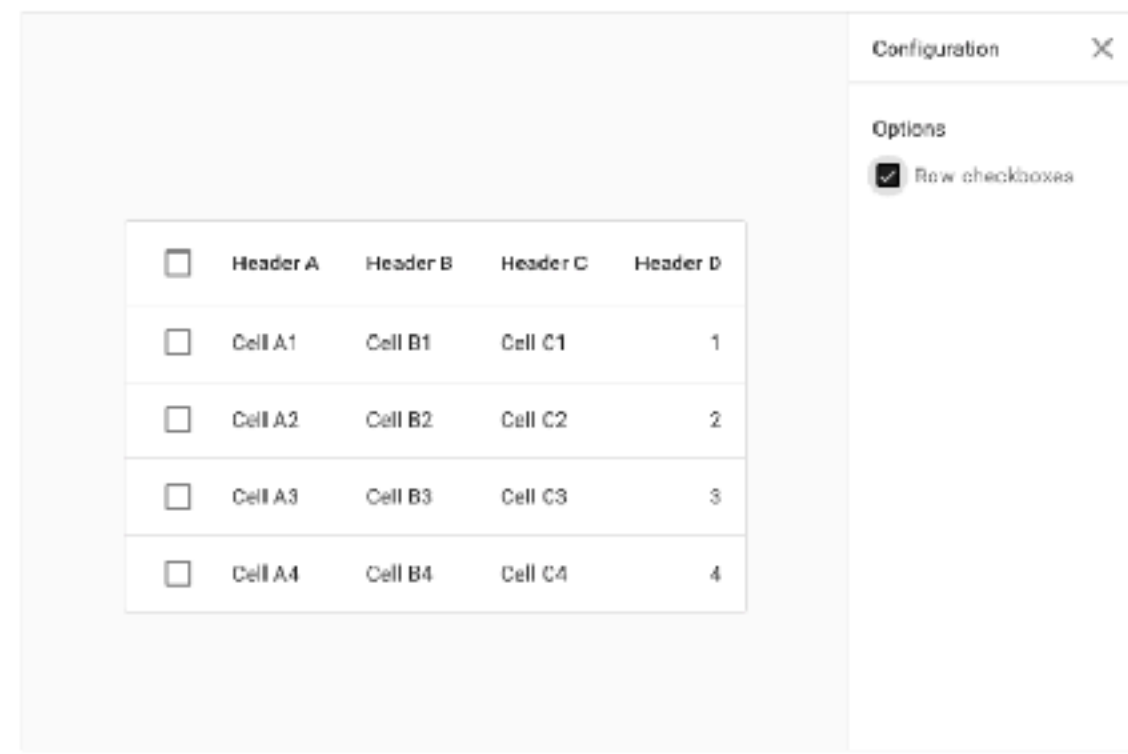
The screenshot displays the Schwab Security Center interface. The top navigation bar includes links for Accounts, Trade, Research, Products, Guidance, and Service. Below this, a secondary navigation bar lists various account management options, with 'Security Center' highlighted. The main content area is divided into several sections:

- Security Credentials:** Includes links for 'Change Password', 'Change Login ID', and 'Change Security Question and Answer'. A message states 'Your password was last updated on 06/07/2021.'
- Two-step Verification:** Offers options to 'Only on untrusted devices' (selected) or 'Always at login'. The selected option includes a sub-note: 'Verify at login only devices that you have told us not to trust, or on public or shared devices.'
- Security Alerts:** Shows 'Mobile Phone Number' as 415-699-1512 with 'Edit', 'Remove', and 'Disable SMS' options. It also includes 'Profile Change Alerts' with a checkbox for 'Notify me via text when changes occur to my login ID, password, email address, or phone number' and a 'Save' button.
- Last login info:** States 'Your last login was on 10/02/2021 at 2:00 PM ET.' and includes a link 'What to do if you don't recognize this login'. A note below explains that logins from third-party services like Mint or Expensify would also appear here.
- Trusted Devices:** A table listing devices and their login history.

On the right side of the interface, there are promotional cards for 'Important information about external client data aggregation', 'SchwabSafe' (Information Security), and 'Schwab voice ID service'.

Device Platform	Date Trusted	Last Device Login	
Schwab Mobile App/ iOS with Touch ID	09/20/2021, 1:00 PM ET	09/20/2021, 2:00 PM ET	Edit Remove
Chrome/Windows 10	09/19/2021, 1:00 PM ET	09/19/2021, 4:00 PM ET	Edit Remove

Competitive/Comparative



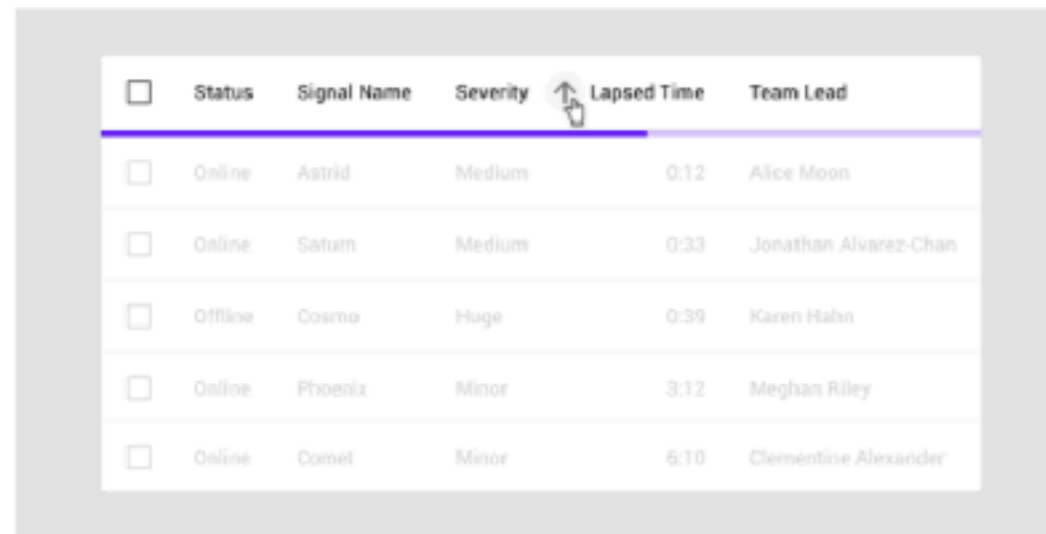
Anatomy



- Header row
- Rows
- Pagination
- Row checkbox
- Sort button
- Container

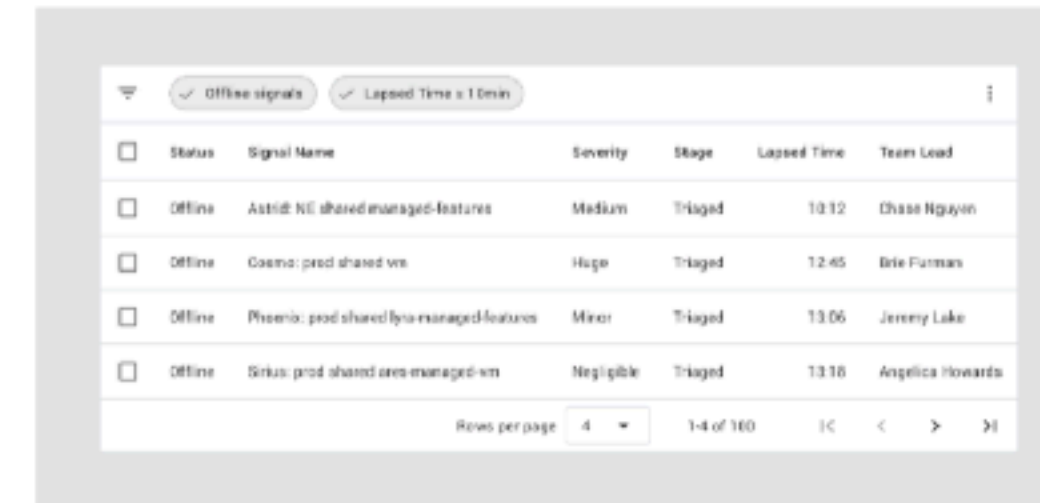
Sorting with a progress indicator

A linear progress indicator is used in data tables when sorting is initiated. The progress indicator communicates to users that sorting is in process.



A linear progress indicator signals that sorting is in process.

Pagination or filter chips: Controls that manipulate how table data is displayed should be placed directly above or below a table.

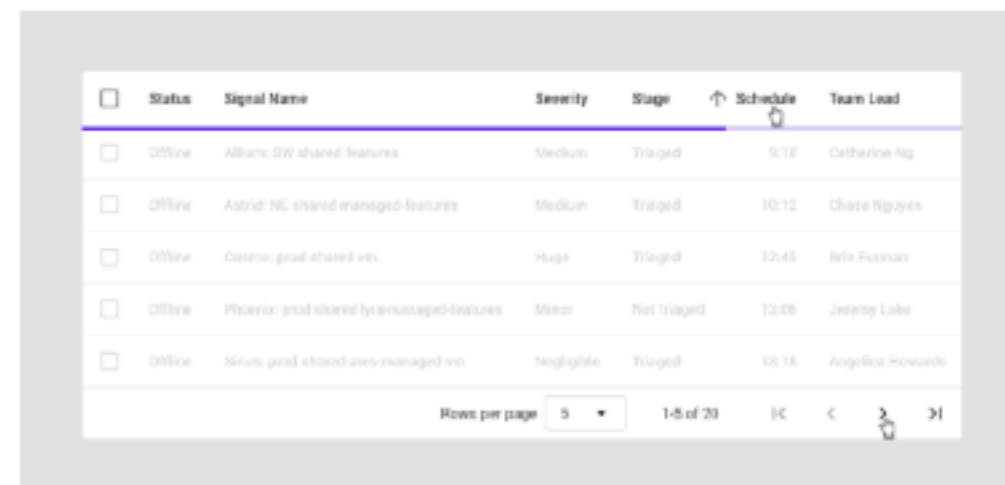


Above the header row, a filter bar shows two active filters. Pagination is shown below the bottom row.

Align numbers to the right for improved scannability.



Numbers in the column are right-aligned with the column header name



Notes from PO

Device History

NOTE: Ability to filter on only Trusted Devices (how best accomplish this?)
 NOTE: Ability to customize the device name (New Requirement)

Device History

Sort by Trusted Devices Only

Don't recognize this login?

Operating System	Device Name	Date Trusted	Last Device Login	Manage
iOS Mobile	Brian's iPhone	11/19/2021, 11:53 AM ET	11/19/2021, 11:53 AM ET	Edit Untrust More
iOS	XXXXXXXX	11/15/2021, 10:30 AM ET	11/15/2021, 10:30 AM ET	Edit Untrust More
iOS	Work	Not yet Trusted	11/15/2021, 10:30 AM ET	Edit ----- More
iOS	Home Laptop	11/12/2021, 10:05 AM ET	11/12/2021, 10:05 AM ET	Edit Untrust More
Windows	XXXXXXXX	Not yet Trusted	10/31/2021, 3:05 AM ET	Edit ----- More



Brian's iPhone 13 Login History

Don't recognize this login?

Schwab Site	Operating System	Trusted Device	Country	Login date/time
Schwab Mobile	Brians iPhone	Yes	USA	3/14/2022, 3:14 AM ET
Charitable	Windows	Yes	USA	2/14/2022, 3:05 PM ET
Think or Swim	iOS	No	China	2/22/2022, 2:22 PM ET
Street Smart	iOS	Yes	USA	1/1/2022, 12:00 AM ET
Schwab Mobile	Brians iPhone	Yes	USA	12/24/2021 11:59 AM ET
Schwab.com	Windows	No	USA	11/19/2021, 11:53 AM ET
Schwab.com	Windows	No	USA	11/15/2021, 10:30 AM ET
Schwab Mobile	Brians iPhone	Yes	USA	11/15/2021, 10:30 AM ET
Street Smart	iOS	Yes	USA	11/12/2021, 10:05 AM ET
Retirement Plan Services	Windows	No	CZ	10/31/2021, 3:05 AM ET

Previous 1 2 3 4 5 Next

Trusted Devices

Device Platform	Date Trusted	Last Device Login	Remove all
Chrome/Windows/Work	11/19/2021, 4:04 PM ET	12/01/2021, 4:24 PM ET	Edit Remove
Chrome/Windows/Home	08/03/2021, 5:53 PM ET	11/19/2021, 4:19 PM ET	Edit Remove

Login History

Don't recognize this login?

Schwab Site	Operating System	Trusted Device	Country	Login date/time
Schwab Mobile	iOS	Yes	USA	11/19/2021, 11:53 AM ET
Charitable	iOS	Yes	USA	11/15/2021, 10:30 AM ET
Think or Swim	iOS	No	Nigeria	11/15/2021, 10:30 AM ET
Street Smart	iOS	Yes	USA	11/12/2021, 10:05 AM ET
Alliance	Windows	No	CZ	10/31/2021, 3:05 AM ET

Previous 1 2 3 4 5 Next

i noted the history shares whether the login was from a trusted device or not. what is the experience if the client is a CAP user, and so trusted/un

[Yesterday 12:38 PM] Bognar, Brian

We are displaying whether the device was a trusted device at the time of login rather than currently trusted. We will leave that to the Trusted Dev

[Yesterday 12:40 PM] Jumonville, Robert

well not just CAP-MA, every CAP flow (CAP-SMS, CAP-Token, CAP-MA, including the non-happy path escape routes) will ignore device trust status

[Yesterday 12:41 PM] Jumonville, Robert

RBA Investigate flow will also override Device Trust status (though that is an infrequent edge case)

[Yesterday 12:42 PM] Bognar, Brian

Robert that is a great perspective you're sharing. I have a meeting with Maland this afternoon, let me bounce that off of him. I alluded to a scop like 1

[Yesterday 12:44 PM] Jumonville, Robert

thanks Brian. just to make it explicit - the concern would be that a client (mis)interprets that device trust was a factor in a login event where it acts

Notes from PO

at device trust was a factor in a login event where it act.

why give specifics on the date that a device was trusted if it's possible that it hasn't been trusted yet?

Device History				
Operating System	Device Name	Date Trusted	Last Device Login	Manage
Windows	John's Phone	00/00/0000, 12:00 AM ET	00/00/0000, 12:00 AM ET	Edit Untrust More
Windows	Windows	00/00/0000, 12:00 AM ET	00/00/0000, 12:00 AM ET	Edit Untrust More
Windows	Windows	00/00/0000, 12:00 AM ET	00/00/0000, 12:00 AM ET	Edit Untrust More
Windows	Windows	00/00/0000, 12:00 AM ET	00/00/0000, 12:00 AM ET	Edit Untrust More

Priority

As a user, what do I need to know first?



what do I need to know second?

1. what is it?

OS and device name

2. is it trusted?

yes or no



If yes, when was it trusted

specific date

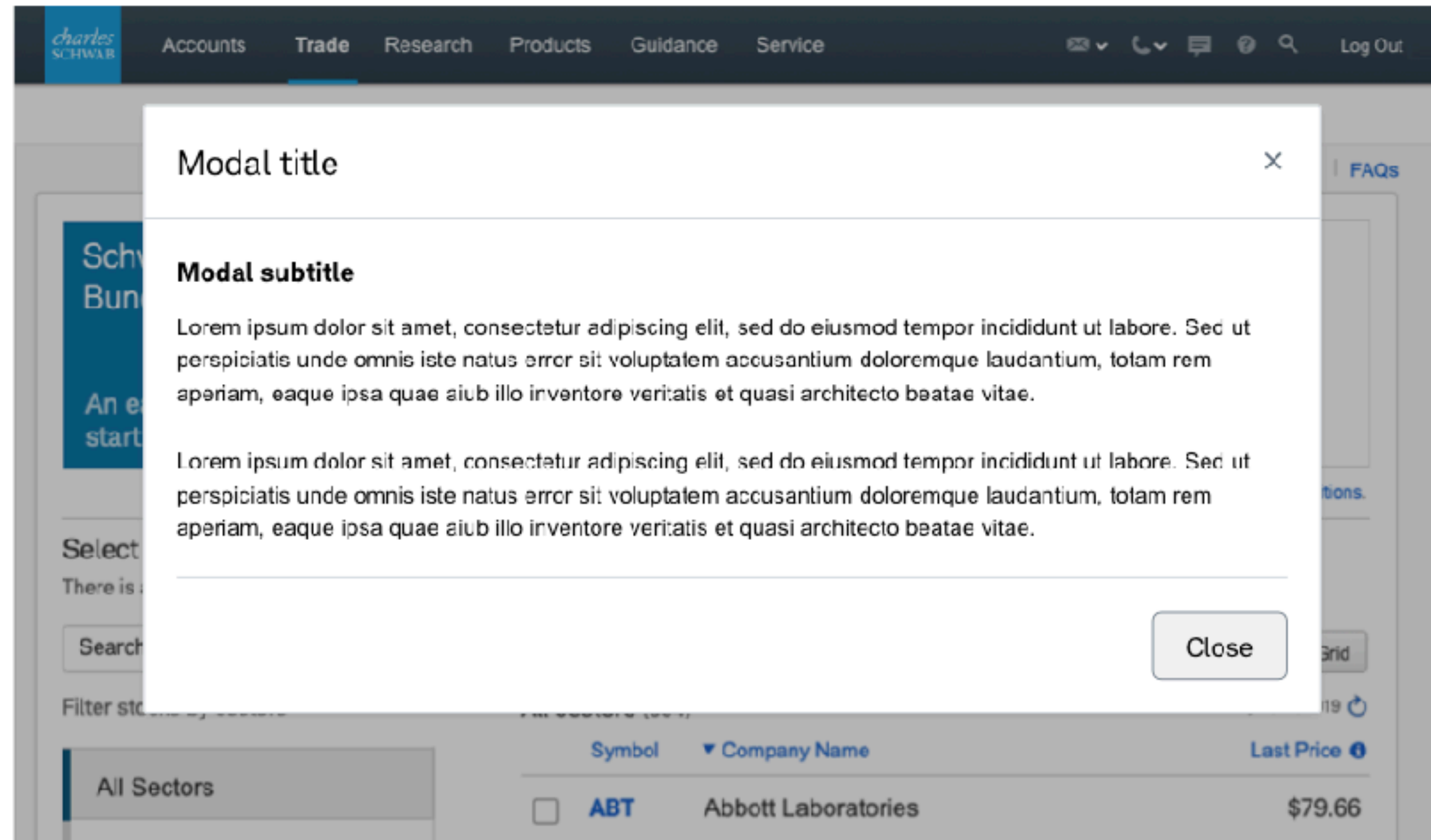
3. when

last device login

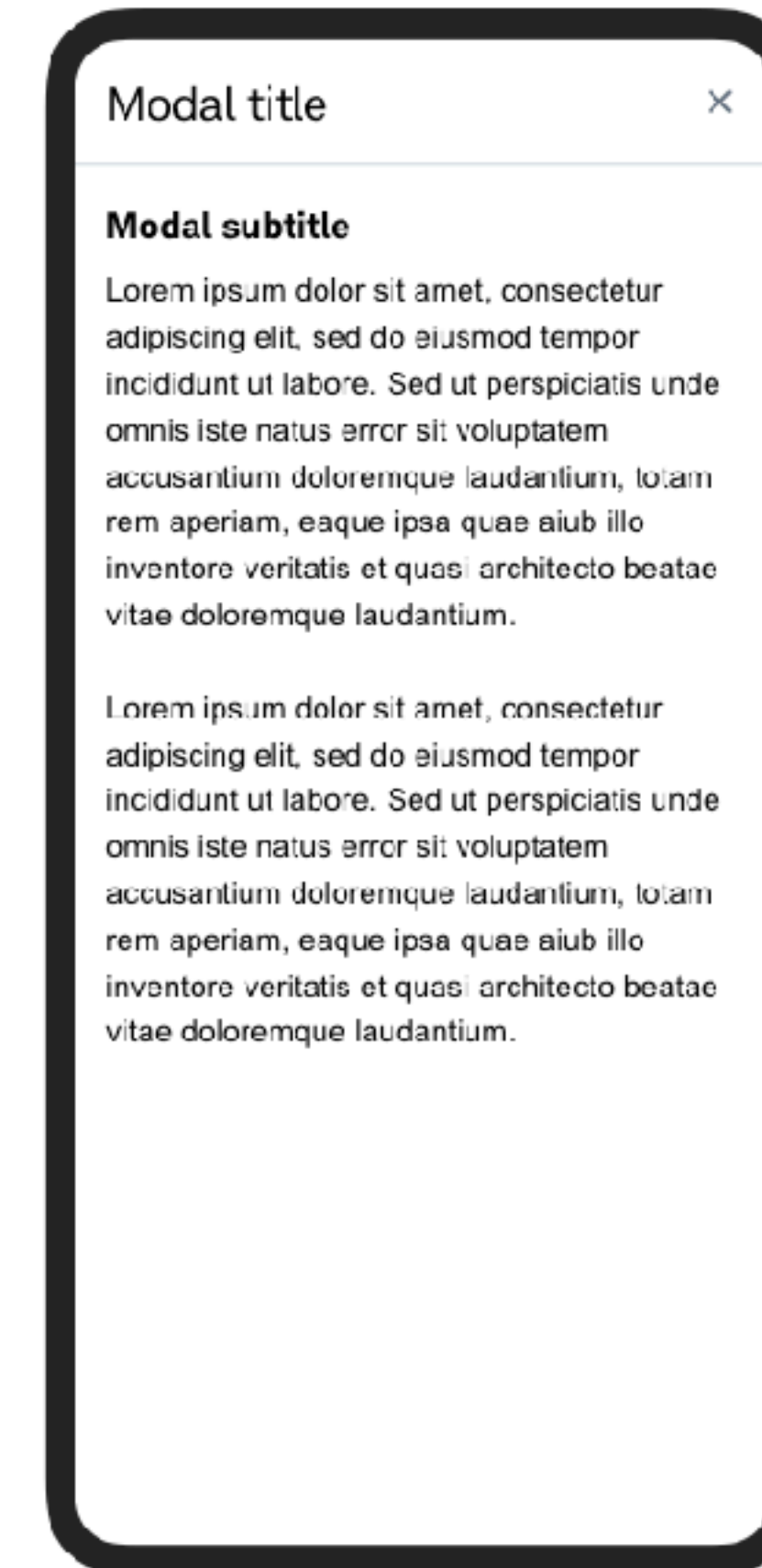
Design system pattern examples

Modals Layout Example

Centered (default)



Mobile



Device History Option #1

Device History				
Operating System	Device Name	Trusted Device? ⓘ	Last Device Login	Manage Devices
iOS	John's Phone	Yes	00/00/0000, 12:00 AM ET	Rename Untrust Details
Windows	Unnamed	No	00/00/0000, 12:00 AM ET	Rename Untrust Details
Windows	Windows	Yes	00/00/0000, 12:00 AM ET	Rename Untrust Details
Windows	Windows	No	00/00/0000, 12:00 AM ET	Rename Untrust Details

Previous **1** 2 3 4 5 6

Device Login History Option #2

Device Login History ⓘ					
Operating System	Device Name	Trusted Device?		Last Device Login	Manage Devices
iOS	John's Phone	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	00/00/0000, 12:00 AM ET	Details
Windows	Unnamed	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	00/00/0000, 12:00 AM ET	Details
Windows	Joe's Computer	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	00/00/0000, 12:00 AM ET	Details
Windows	Unnamed	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	00/00/0000, 12:00 AM ET	Details

Previous 1 2 3 4 5 6

Device Login History Modal

The screenshot displays a web application interface. At the top right, there is a 'Save' button. Below it, a 'Device History' section contains a table with two columns: 'Operating System' and 'Device Name'. The table lists several entries, including 'iOS' with 'John's iPhone' and three 'Windows' entries. A pagination control at the bottom of the table shows 'Previous', '1', '2', '3', '4', '5', and '6', with '1' highlighted and a mouse cursor over '3'. A modal dialog titled 'Edit Device Name' is open in the foreground. The modal has a close button (X) in the top right corner. It contains a label 'Current Device Name' with the value 'Brian's iPhone' below it. Below that is a label 'New Device Name' followed by a text input field containing 'Input text'. At the bottom right of the modal are two buttons: 'Close' and 'Apply'.

Operating System	Device Name
iOS	John's iPhone
Windows	Windows
Windows	Windows
Windows	Windows

Previous 1 2 3 4 5 6

Edit Device Name

Current Device Name
Brian's iPhone

New Device Name
Input text

Close Apply

Schwab - Device Ecosystem

Problem:

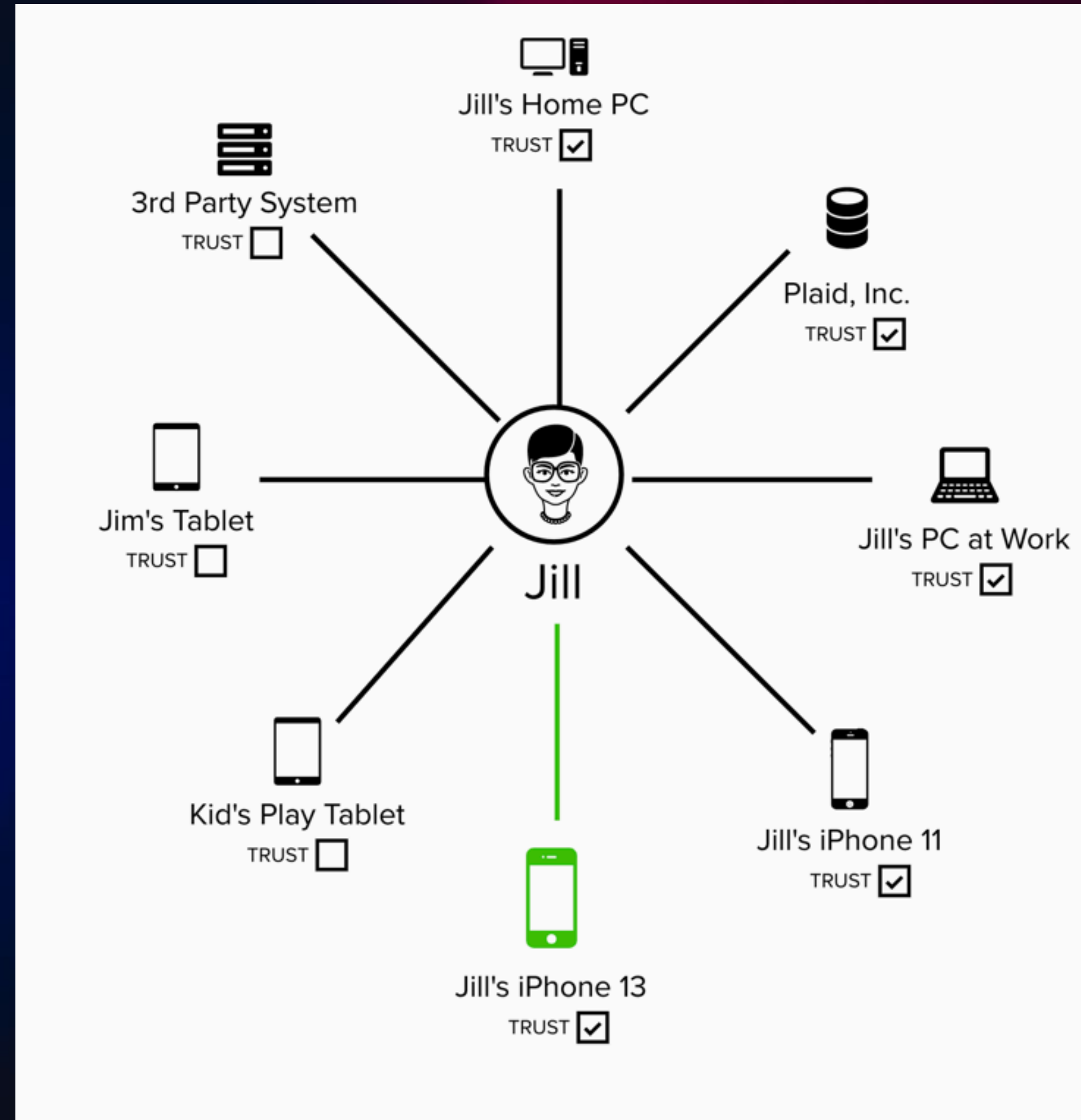
Clients need one location to visualize all devices, connected or not, trusted or not

Solution:

Discover, define, design

Result:

WIP



Device Ecosystem Exploration



what is it

when did it connect

how long was it connected

where did they connect from

connection method used

Password protection - Apple devices are connected yet each device can have their unique PW.

What kind of information the third party is passing?

Technology takes over personal life

WHO is logging in?

computer

connected at **this time**
for this long
from this place
took this action

this is how it affected your money
action of a third party

user actions

- favorite this
- block this
- report this
- contact Schwab

phone

connected at **this time**
for this long
from this place
took this action

this is how it affected your money
action of a third party

user actions

- favorite this
- block this
- report this
- contact Schwab

apple watch

connected at **this time**
for this long
from this place
took this action

this is how it affected your money
action of a third party

user actions

- favorite this
- block this
- report this
- contact Schwab

Use Cases

Client always uses computer and phone to access and trade

Client feels new devices aren't as secure

Client wants someone else to perform all actions, but wants to monitor everything

What is the acceptance criteria?

Does this live in security center?

Edge Cases

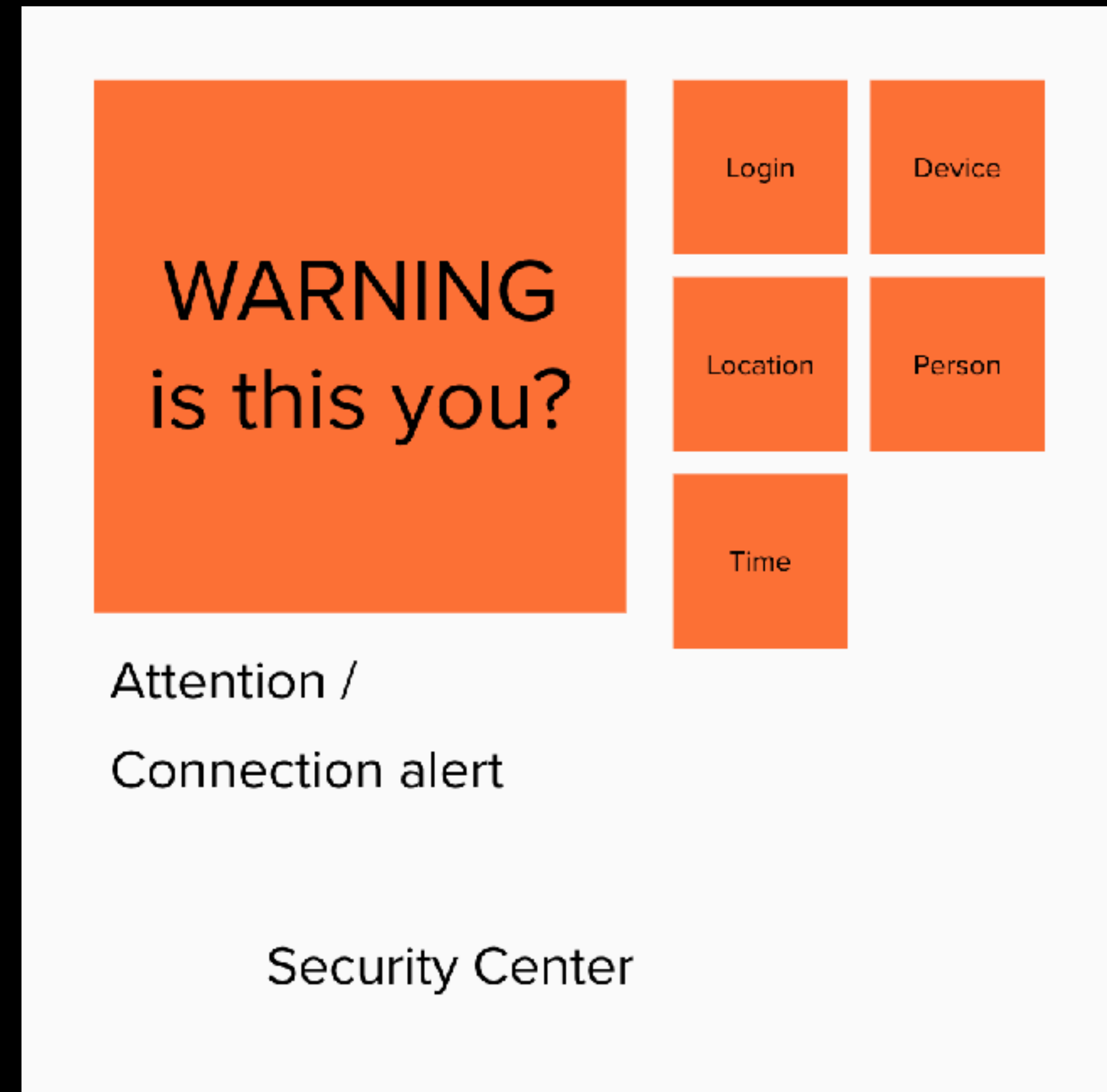
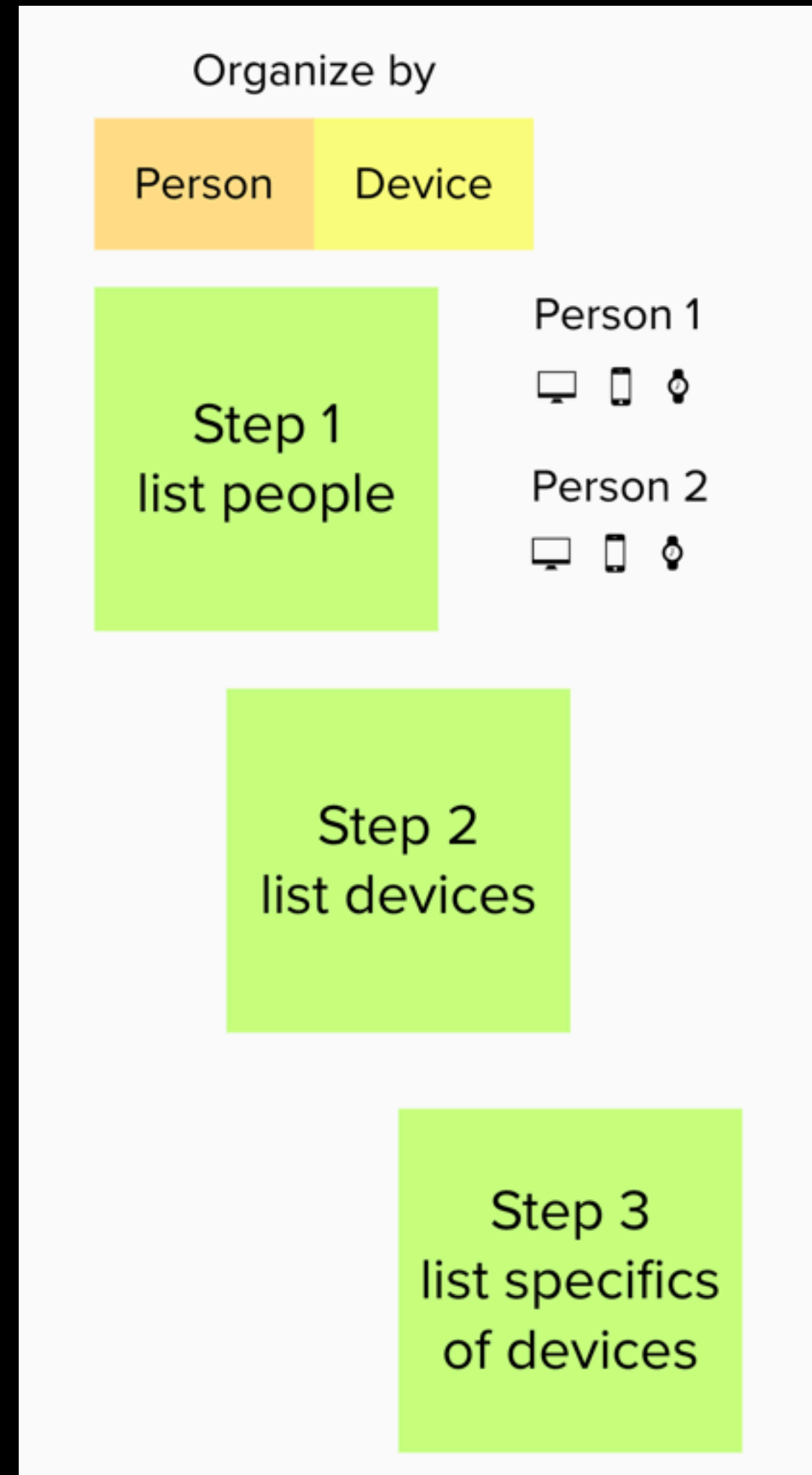
Early adopter is constantly changing and upgrading devices

Client is flippan and logs in wherever, isn't concerned about security or isn't aware

What is the due date?

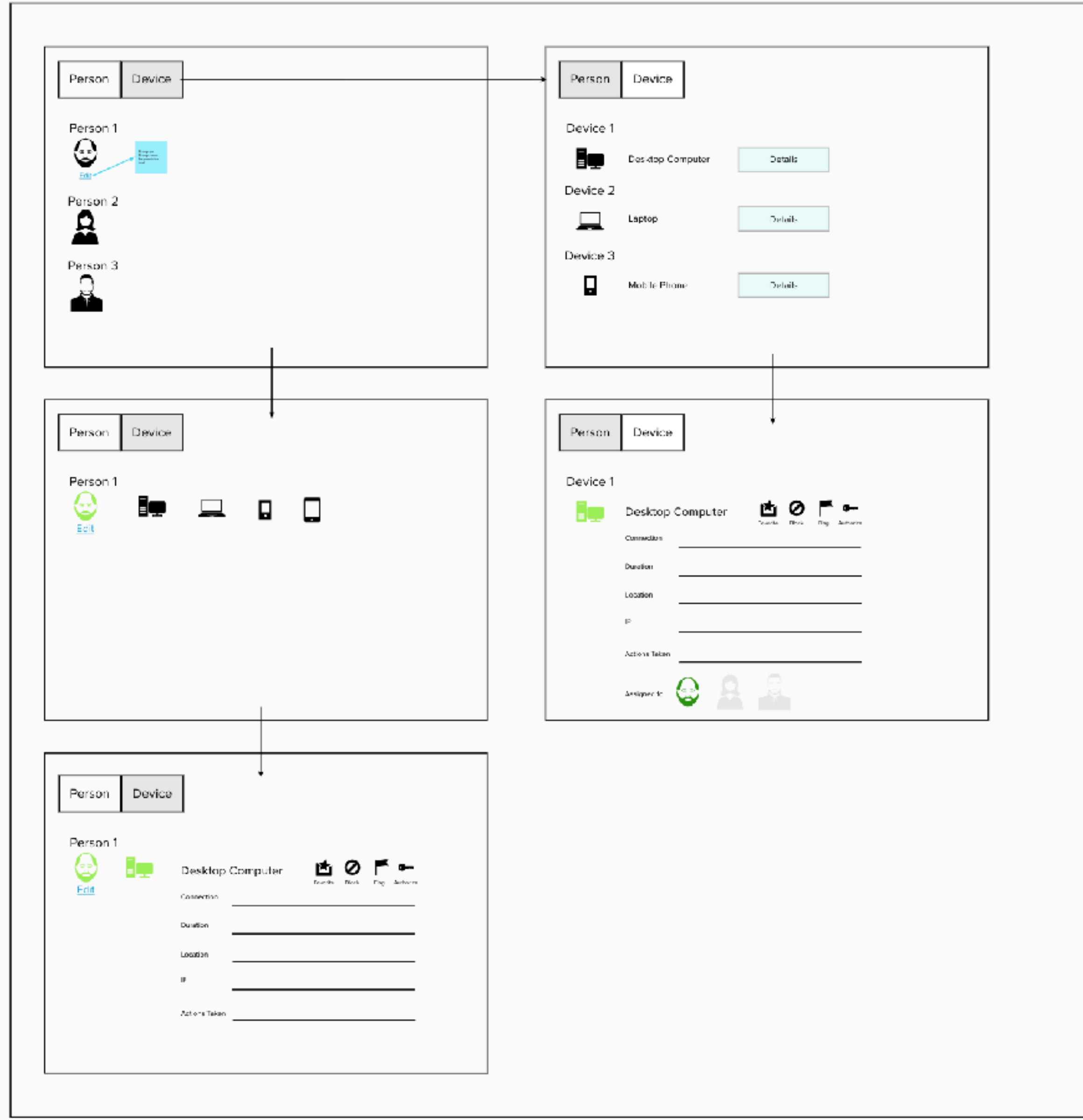
What do other companies do?

Device Ecosystem Exploration



Device Ecosystem Option #1

OPTION 1



Device Ecosystem Option #2





























OPTION 2

Person a device is assigned to is the individual logging in






















This UI mockup shows four device cards arranged in a 2x2 grid. The top-left card is for 'Windows Desktop WJF-392' assigned to 'This Individual'. The top-right card is for 'Macbook Pro' assigned to 'That Individual'. The bottom-left card is for 'Android Pixel 3' assigned to 'The Other Individual'. The bottom-right card is for 'Windows Desktop PRB7A302' assigned to 'Unknown'. Each card has a 'More Info' section with 'Location' and 'Connection' buttons, and a bottom row of four action buttons: 'Favorite', 'Block', 'Flag', and 'Authorize'. The 'Windows Desktop WJF-392' and 'Macbook Pro' cards have a green checkmark icon in the top right. The 'Android Pixel 3' card has a green checkmark icon. The 'Windows Desktop PRB7A302' card has a red warning triangle icon. The entire grid is enclosed in a green border.

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Device Ecosystem Option #2A

 Windows Desktop WJF-392 	 Windows Desktop PRB7A302 		
Assigned to:  This Individual	Location Austin TX, USA	Assigned to:  Unknown	Location Austin TX, USA
Connected 7/21/22 12:37 PM EST	Duration 3:47	Connected 7/21/22 12:02 PM EST	Duration :28
Action Taken Stock purchased at \$1000. More Info >		Action Taken Stock purchased at \$1000. More Info >	
 Favorite		 Favorite	
 Block		 Block	
 Flag		 Flag	
 Authorize		 Authorize	
 Windows Desktop WJF-392 	 Windows Desktop WJF-392 		
Assigned to:  Another Individual	Location Austin TX, USA	Assigned to:  That Individual	Location Austin TX, USA
Connection 7/5/22 12:37 PM EST	Duration 2:12	Connection 7/16/22 12:37 PM EST	Duration 1:42
Action Taken Stock purchased at \$1000. More Info >		Action Taken Stock purchased at \$1000. More Info >	
 Favorite		 Favorite	
 Block		 Block	
 Flag		 Flag	
 Authorize		 Authorize	


Device Ecosystem Option #2B

Connected	Duration	Location	Assigned to:	Action Taken
 Windows Desktop WJF-392 				   
7/21/22 12:37 PM EST	3:47	Austin TX, USA	 This Individual	Stock traded. More Info >
 Windows Desktop PRB7A302 				   
7/21/22 12:02 PM EST	:28	Brisbane, AU	 Unknown	Stock purchased at \$1000. More Info >
 Windows Desktop PRB7A302 				   
7/05/22 1:25 PM EST	1:41	Austin, TX USA	 Another Individual	Stock purchased at \$1000. More Info >

Device Ecosystem Option #3

 **Devices (5 total)**

Manage and review your connected devices


 John's Laptop ^


<input checked="" type="checkbox"/> This MacBook Pro 13" Connected Operating System iOS 15.2.1	Location San Francisco, CA, USA	Last Login (Day/Time) Wed Feb 9, 2022 10:12 PM PT	Authorization Type Full Access ▾	Grant Access Select Device ▾ Done
Disable Device Not Me	Device Type Primary		Preferred Device <input type="checkbox"/>	Status ● Online


Activity ▾


Location: San Francisco, CA, USA	Wed Feb 9, 2022	10:12 PM PT
Location: San Francisco, CA, USA	Wed Feb 9, 2022	10:12 PM PT
Location: San Francisco, CA, USA	Wed Feb 9, 2022	10:12 PM PT

Show More

 John's Phone 1 v

 John's Phone 2 v

 Jill's Laptop v

 Jill's iPad v



Device Ecosystem Option #2A


1. A way to say this device can serve to approve new devices


  Brian's Windows Laptop






   

Connected	Duration	Location	Assigned to:	Action Taken
7/21/22 12:37 PM EST	3:47	Austin TX, USA	 This Individual	Stock traded... More Info >

  Brian's Windows Laptop

 Approve New

Connected	Duration	Location	Assigned to:
7/21/22 12:37 PM EST	3:47	Austin TX, USA	 This Individual

-  Amy's Laptop
-  Todd's Desktop
-  Jenny's Laptop
-  Andre's Macbook
-  Hank's iPhone

THANK YOU

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