SnapStax

Presented by Rage Against Machine Learning
Sponsored by nFocus
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Special Thanks

We want to thank our sponsor nFocus Solutions for their support throughout this project. Special thank you to Emily Lin, Senior Director of Communication Strategy, who was generous with her time, and went out of her way to connect us to SMEs, nFocus clients, and nonprofit staff members.

Special thanks to Tyler Fox & Jared Bauer, our Capstone advisors who provided continuous feedback and helped the team through a timely pivot.

We'd like to thank Barbara, Sandra & Tori, nFocus clients from Bethany Hope, for giving us their time & valuable feedback.

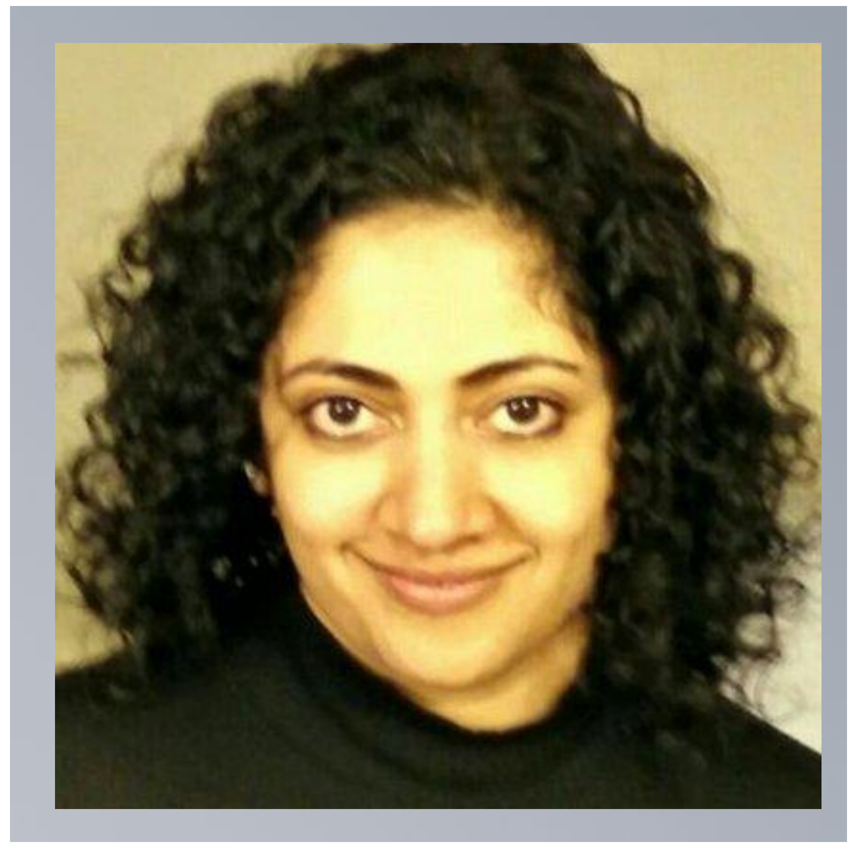
Meet our team

Kathryn Brookshier

UX Research & Information Architecture

I am a B2B & B2C UX researcher who incorporates quantitative and qualitative methods to drive product decisions that positively impact users. I have been fortunate to be involved in product launches spanning mobile and desktop applications.

Nitya Nambisan



UX Research & Product Strategy

I am a design researcher and product strategist with cross-category experience working on UX research, and design projects. I have led generative and evaluative research across consumer and enterprise businesses for a variety of products and services.

Tucker Standlee

UX/UI Designer

With a background studying media arts, I have a deep understanding of the principles of design and how to create dynamic and engaging pieces. In addition, I have exceptional people skills and a powerful sense of empathy which is very valuable when conducting research with users.

Tyson Zevenbergen

UX Engineer & Product Development

I have work in industrial automation. I believe user experience research and design are the most effective tools engineers can use to ensure future technology aids society in becoming more efficient and harmonious.

Executive summary

nFocus solutions is a software development company which specializes in creating data collection software for nonprofit organizations. The frontline workers and volunteers at these organizations are highly dedicated and motivated to bring positive change through their client interactions on a day-to-day basis.

Through the course of our research, we learned that one of the biggest challenges faced by nonprofit staff members is the amount of time & resources that goes into data collection and entry. During and after the intake process, case managers spend time with the new clients, gathering a wide range of information including basic demographic data and intake interview responses. The onus of transferring all this data into the case files lies entirely on the nonprofit staff member. For our project we sought to answer an important question:

"How might we take away the burden of extensive data collection from nonprofit staff so they can be more present with their clients?"

The team conducted extensive research to better understand the nonprofit space, including literature review, expert interviews, & user interviews with nonprofit staff members. Based on this work the team created Responsibility Hats & Process Diagram to map the key stakeholders, the inputs, & outcomes. We generated numerous ideas, and tested 4 shortlisted concept areas with participants. Based on participant feedback & areas of improvement, we developed our final idea: SnapStax, a tool that eases the process of non-digital data capture, allowing nonprofits to be more present & connected with their clients.

Process overview

Research

The team conducted extensive research, including literature reviews, expert interviews & nonprofit staff user interviews to gain an understanding of the needs & challenges of stakeholders within the nonprofit ecosystem. The team created a Process Diagram & Responsibility hats, in order to identify the areas of opportunity for future ideation

Ideate

The team identified 6 areas of opportunity in the Process diagram. Based on feedback from our sponsor, the team focused on two areas of opportunity:

- Case file creation
- Goals

The team brainstormed many ideas and created design sketches.

Evaluate

Four shortlisted ideas were converted to storyboards and shared with participants for concept feedback.

Six participants provided feedback & discussed strengths & improvements for each concept.

Solution

Based on concept testing feedback, the team further iterated on the winning idea to create the final concept. The team created additional documentation (video, design recommendations, technical requirements, & final deliverable) which was shared with our sponsor. The team will be presenting findings in-person to the President of nFocus in April.

Research


INPUTS
SERVICES
OUTCOMES
Non profit execs
finance, mission
FRONTLINE WORKERS
Apply + screening
Orientation
Funders
foundations
individuals
Clients
primary + secondary
Apply
screen
Yes
Waitlist
No
?
case file
GOALS
secondary
FLW eval
SERVICES
- cadence
- what
- data collection
- meetings w/ secondary
- communication
CLEANING / SORTING DATA
Quant data
- # served
- demographics
- demand for services
Qual data
- lives changed
$ applications
REPORTS
- ask
- thank
- report
- repeat
[ASK]
[THANK]
[REPORT]
[REPEAT]

Research overview

Throughout the course of Capstone our team conducted multi-method research to more deeply understand the nonprofit world, including key challenges & pain points experienced by nonprofit staff members

Literature review

Focused on four key areas:
1) Nonprofit funding; 2) Achieving outcomes; 3) Impact evaluation; 4) Organizational psychology

Expert interviews

Conducted to better understand the nonprofit space, challenges, & pain points of nonprofit staff members

Stakeholder interviews

Conducted to better understand the challenges & pain points of our stakeholders.

User interviews

Conducted user interviews to understand workflows, roles, responsibilities, and challenges faced by nonprofit staff members

Competitive analysis

Conducted an analysis of the existing solutions in the market, including distinctive features & functionality

Concept value testing

Conducted concept value testing to get early customer feedback on the shortlisted ideas developed into storyboards

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Literature review

Nonprofits are mission-driven organizations. Yet in order to run, they require funds to hire employees, pay for goods, and deliver services in order to better their communities. To better understand the nonprofit space, we focused the literature review on four key areas:

Nonprofit funding

Nonprofits are under increasing financial pressure due to rising costs, more competitive grants & the threat of for-profit companies entering the social sector. Funding is seen as a ‘necessary evil’, with many nonprofits dealing with the “deficit of leadership and managerial skill”. Even if a group of people care deeply about the mission, alignment and execution are crucial to attain desired goals.

Achieving outcomes

Existing youth development research suggests that family and community partnership and involvement is a key part of achieving positive outcomes. The educator and volunteer’s ability to engage students academically identify early red flag warnings, improves the likelihood of students attending school & succeeding academically.

Impact evaluation

For mission-driven nonprofits, measuring impact is far more difficult given the ambiguity of performance criteria. It is often called the ‘Holy Grail’, much sought after, but never found. Research highlights that a lot of thought needs to go behind identifying the right measure of success, ensuring that the measurement system does not hold any bias, while addressing progress towards the mission.

Organizational psychology

Research suggests that meaningfulness, safety and availability are the three critical dimensions of psychological conditions identified to encourage individuals’ engagement in their work. Emotional exhaustion is another area that leads to diminished personal accomplishment. This aligns with feedback from SMEs who note that a lack of accomplishment is a key reason frontline workers often leave nonprofits.

Competitive analysis

Our assessment of products fulfilling needs of nonprofit organization identified four companies with key functions identified below

CitySpan

- Online discussion forums
- Grant and contract management
- Cost
- Support all web browsers

Comet

- Responses keyed to specific recipients
- Ability to integrate health and human services data
- Supports all web browsers

Efforts to Outcomes (ETO)

-Functions as a data aggregator

- Their business model appeals to larger organizations with an understanding of their operational needs

cloud4good

-Built as add-on to Salesforce

-Functions as a Salesforce solution provider (i.e. services and pricing are subject to change at discretion of Salesforce)

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SME interviews: impact evaluation

Nonprofit perspective: what to measure & why

Sonia

Director of Measurement, Evaluation and Learning at a Bay Area Nonprofit

Sonia assists nonprofits who use data software such as nFocus's to collect data, mine through it all and analyze it in order for Sonia to identify potential trends and red flags that inform educated suggestions that Sonia presents to the nonprofits in order to make improvements to their programs and program results.

Insights provided

How do nonprofits evaluate impact?

The end-to-end evaluation process consists of identifying metrics, setting up survey tools, gathering data, analysis and generating reports for share-out. The process is time-consuming, difficult to scale, operations heavy and requires varied skill-sets, such as stats and number crunching to operationalizing systems. Many nonprofits do not have the luxury of having a full time staff member to focus on this process.

How do nonprofit staff differ from the leadership team?

Nonprofit staff are interested in formative evaluation to improve the programs on an ongoing basis. If they see a need, they prefer to address it sooner, rather than later.
Leadership team members focus on outcome evaluation and the key drivers behind them, which necessitates clean and full data collection.

SME interviews: impact evaluation

Foundation & donor perspective: advancing a mission

Amy

Program Officer at a Seattle Area foundation

The foundation is a data-driven organization that focuses on where their philanthropic dollars can have the most impact. The grants they give are intended to be short term and catalytic in nature. Typically, these grants are meant to scale the impact of organizations which have already demonstrated success with their programs and have influence amongst key stakeholders.

Insights Provided

How do organizations secure funding?
Organizations must articulate the problem, how they are uniquely positioned to solve it and what the grant money will do in order to receive funds. During evaluation of grant proposals, there is necessarily a focus on quantitative data as well as sharing key relationships the organization has that will facilitate impact.

How is impact evaluated?
Qualitative data: Storytelling is heavily relied upon to communicate how the nonprofit makes a difference in the lives of individuals around the world. It is used as the hook that leads quickly to the quantitative data.
Quantitative data: This can include number of people served, behavioral changes, growing social media engagement, implementation of programs that address needs of specific populations and policy change based on the work of the nonprofits.

User interviews: key insights

Nonprofit staff: audience insights

The staff at nonprofits wear many hats & juggle a wide range of roles and responsibilities

As a result, the frontline worker audience profile is more distributed. We found that many staff members may be gathering data in various forms, regardless of title. The smaller the nonprofit, the more “hats” each member wears.

Data collection & entry is taxing for nonprofit staff members

Staff members have to often modify their data collection process, including note taking on pieces of paper, or relying on their memory after a client meeting. This can be taxing for the time-strapped worker since they need to spend additional admin time transferring notes to spreadsheets and/or internal system.

Screening Applicants / Intake | **Providing Services** | **Program Health** | **Analyzing Impact**

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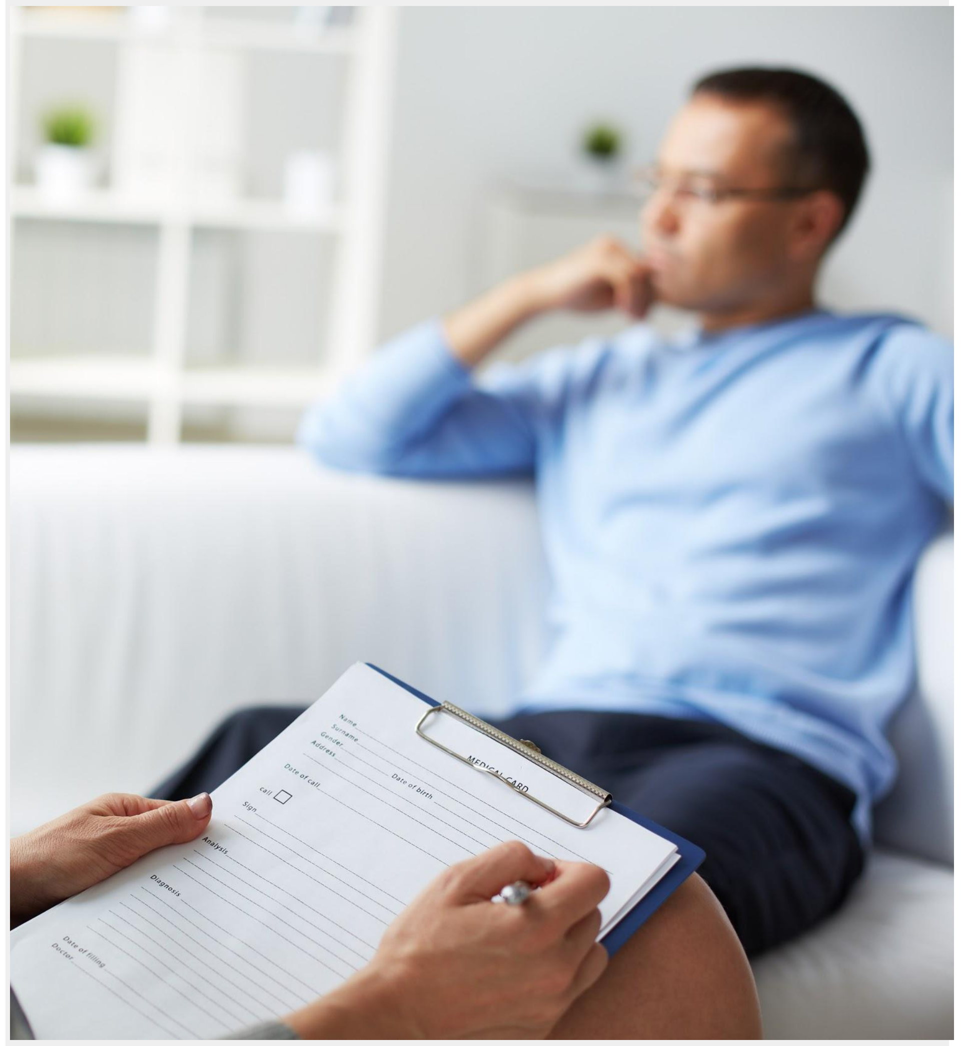
User interviews: key insights



Client needs and engagement context

Use of digital devices for note-taking depends on the client context

Nonprofits deal with a variety of clients, ranging from children with special needs, vulnerable populations, the elderly & homeless. In many situations, these clients are unable to handle digital devices, such as:

- Distraction of children with autism
- Women who have experienced domestic abuse

Situations such as these force nonprofit staff workers to modify their data collection method in order to support their clients.

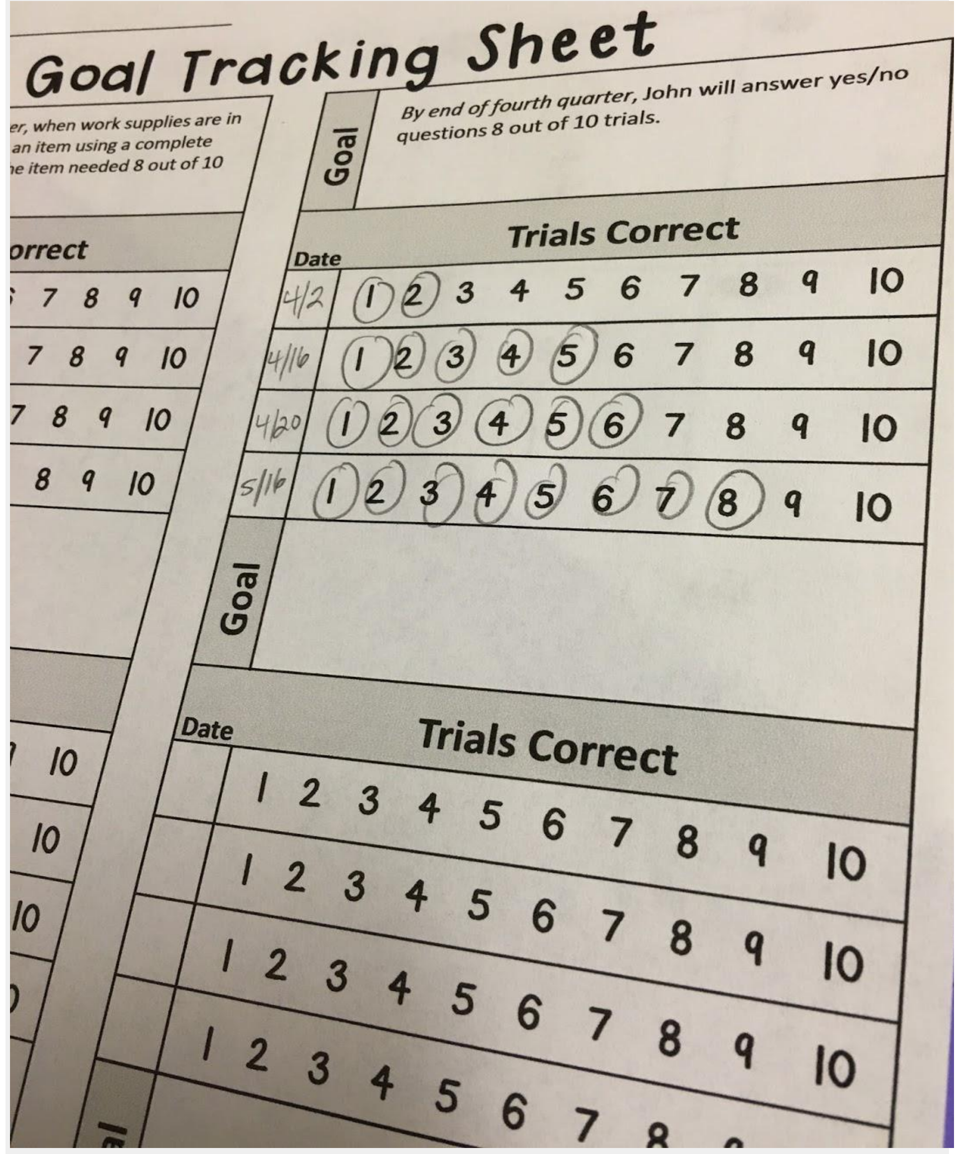
Field engagement not conducive to use of digital devices

When caseworkers are in the field, it's hard to carry around digital devices since they need to be nimble and on the go.

"At times those [data collection] tasks are better without a computer, when dealing with clients who have gone through domestic violence. You want the interviewer to be responding to things."

\- Nonprofit Program Director

User interviews: key insights



Data collection and input

Disparate & inconsistent data collection methods

Depending on the type of engagement & client context, the data collection method ranges from paper based surveys to sign-in sheets to digital case notes. This leads to challenges during data analysis & report generation.

Data entry is very batched

Data collection is often done during the client engagement, or within a day. Depending on the client context, data collection is often done on paper. Nonprofit staff members often wait until there is a collection of documents to transfer this data into an internal system.

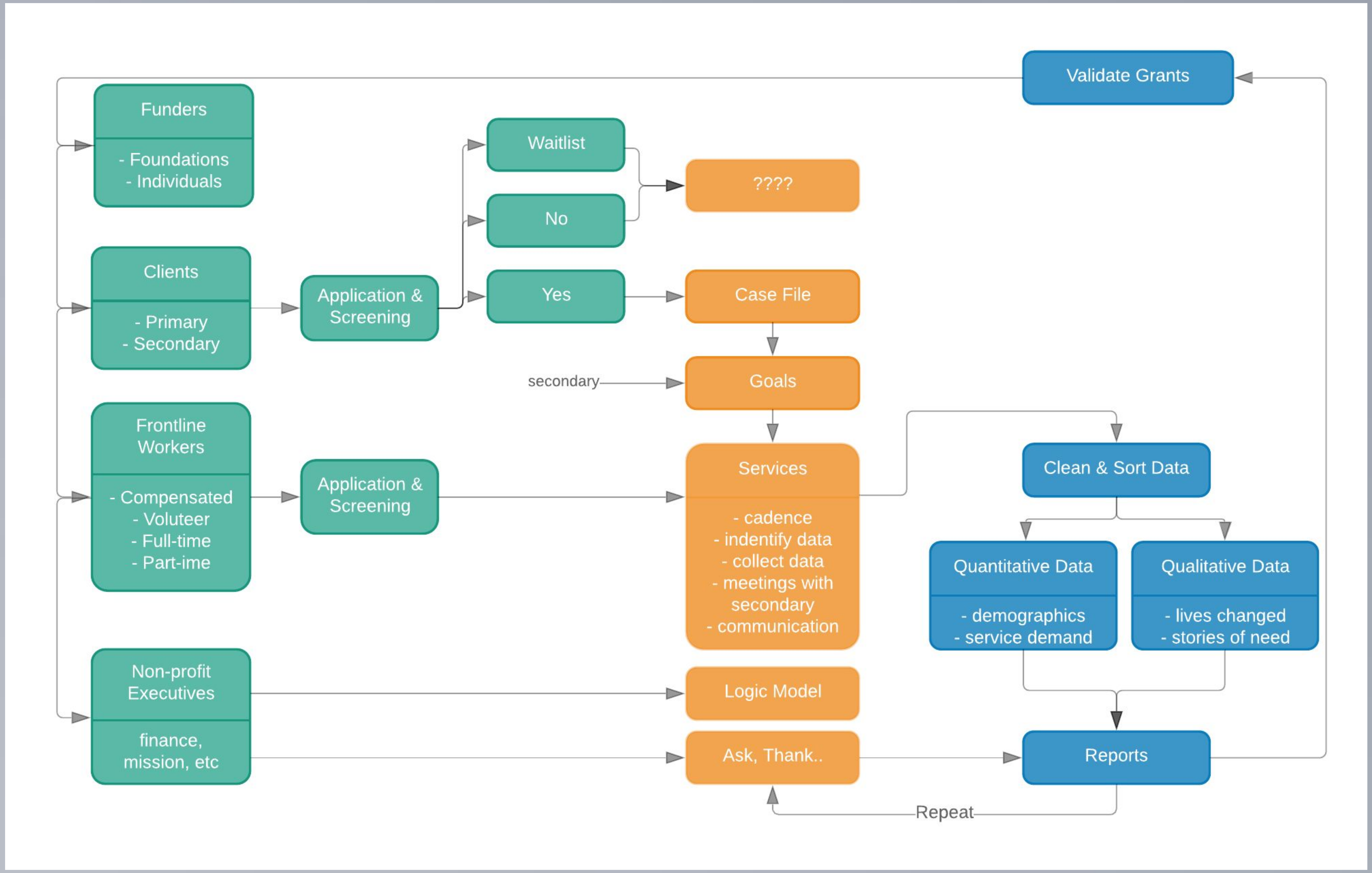
Data quality confidence can be low

Given the inconsistent data collection & storage methods, the data is often incomplete or conflicting. This reduces the overall confidence in data quality, prompting nonprofit staff members to double check the data with peers & other caseworkers to remember necessary details. Additionally, the data about client situations can change and can therefore be hard to accurately report on.

"Often times you are working on paper instead of digital systems; can't afford computers for all our staff."

- Nonprofit Director of Development

Process diagram



Based on insights from the SME & nonprofit staff user interviews, the team developed a process diagram to identify the key stakeholders, flow of information, & outcomes.

Research question

During our first portion of the project, we heard that nonprofit workers are not able to concretely see the impact of their work. We therefore started out with the question:

"How might we help frontline workers convey their impact at nonprofits?"

We later found that a broader issue is that nonprofits don't have enough resources to provide to their clients. We therefore reframed our research question to take this into account by asking:

"How might we take away the burden of extensive data collection from nonprofit staff so they can be more present with their clients?"

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Ideate


Step 1: take light notes
one page
Doc:
Client:
Step 2: scan + auto upload
Step 3: case note created
paper removes need for electronics

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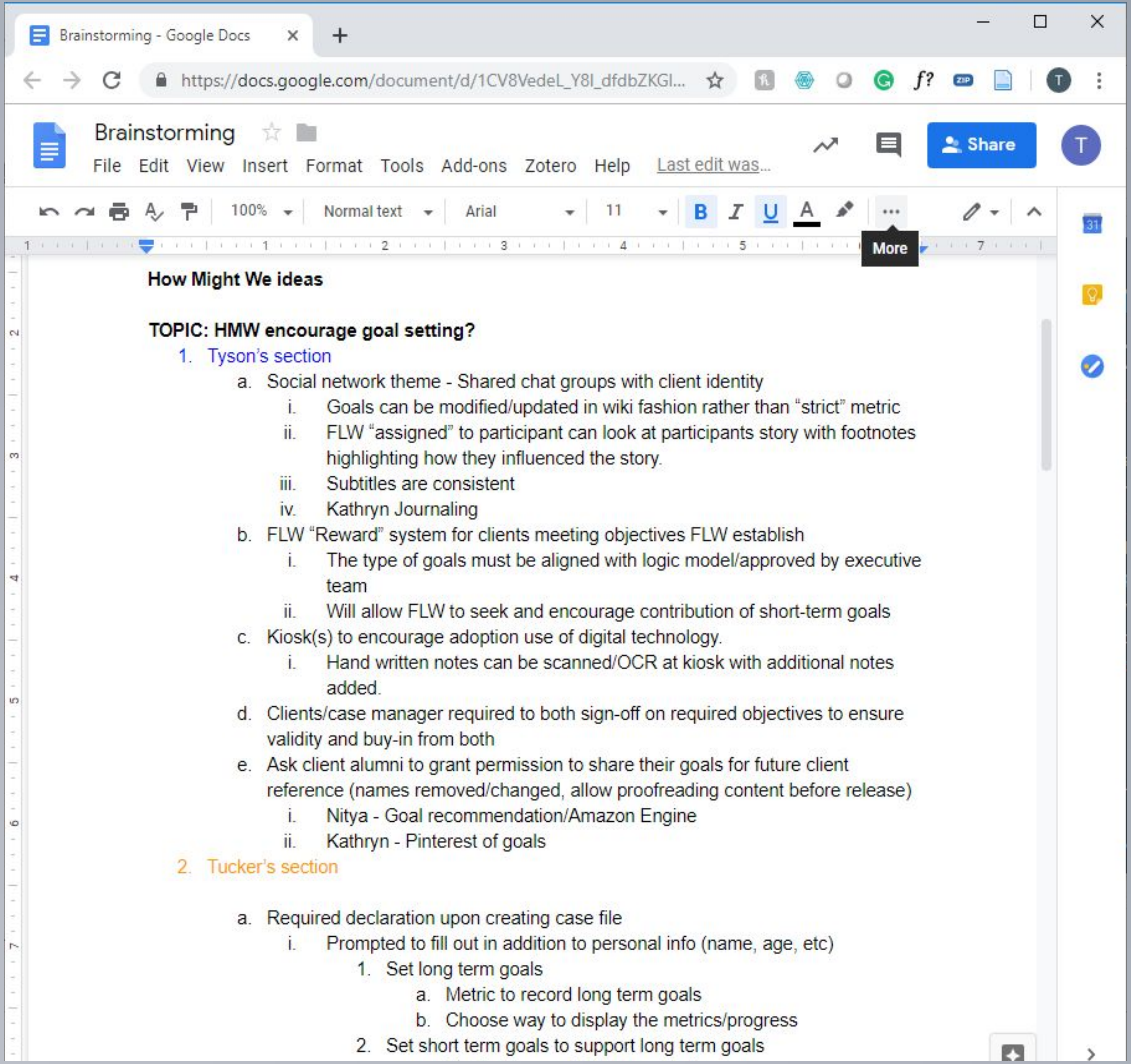


How Might We ideas

TOPIC: HMW encourage goal setting?

1. Tyson's section
   a. Social network theme - Shared chat groups with client identity
      i. Goals can be modified/updated in wiki fashion rather than "strict" metric
      ii. FLW "assigned" to participant can look at participants story with footnotes highlighting how they influenced the story.
      iii. Subtitles are consistent
      iv. Kathryn Journaling
   b. FLW "Reward" system for clients meeting objectives FLW establish
      i. The type of goals must be aligned with logic model/approved by executive team
      ii. Will allow FLW to seek and encourage contribution of short-term goals
   c. Kiosk(s) to encourage adoption use of digital technology.
      i. Hand written notes can be scanned/OCR at kiosk with additional notes added.
   d. Clients/case manager required to both sign-off on required objectives to ensure validity and buy-in from both
   e. Ask client alumni to grant permission to share their goals for future client reference (names removed/changed, allow proofreading content before release)
      i. Nitya - Goal recommendation/Amazon Engine
      ii. Kathryn - Pinterest of goals
2. Tucker's section

   a. Required declaration upon creating case file
      i. Prompted to fill out in addition to personal info (name, age, etc)
         1. Set long term goals
            a. Metric to record long term goals
            b. Choose way to display the metrics/progress
         2. Set short term goals to support long term goals

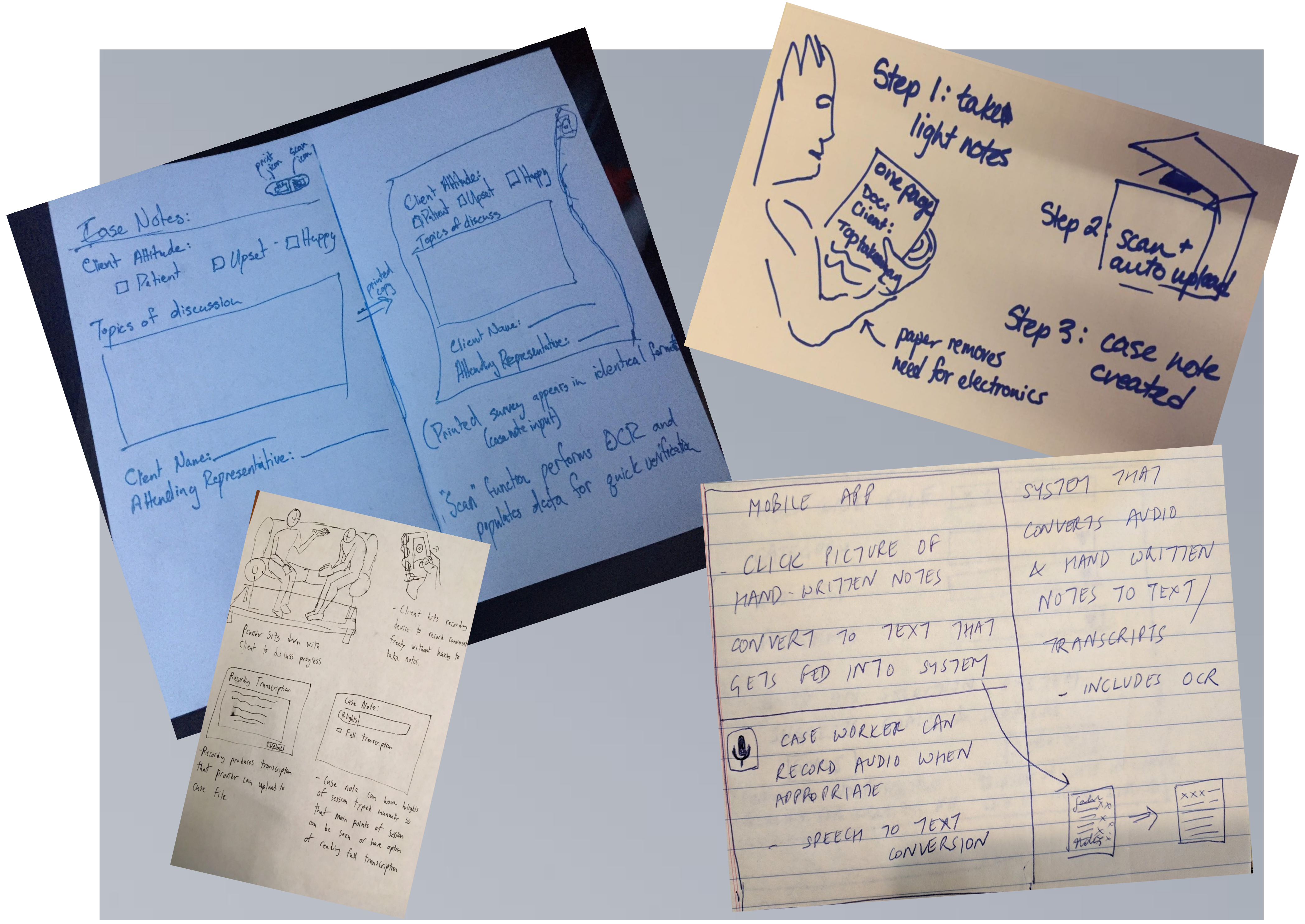
Brainstorming & evaluation

The understanding of frontline workers' challenges related to the work at nonprofit organizations was used in a brainstorming session to determine how might we format a solution to our research question. The team generated ideas to answer the question *"How might we take away the burden of extensive data collection from the FLW so they can be more present with their clients?"*

Four themes were identified in these ideas:

- Sharing of past goals
- Living document
- Distinguish services vs graduation goals format
- Easing the process of data collection

Sketches



Sample of sketches created

Building off of the potential solutions that we all brainstormed, each team member created low-fidelity sketches to illustrate the shortlisted themes that were selected from our ideated list.

From these sketches, the team identified overlaps and more similar themes that were appearing and once again shortlisted the ideas to create four concept scenarios that we selected to flesh out and test with users.

Evaluate

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Concept evaluation process

Once we had four shortlisted concepts, we shared them with our research participants to understand the perceived value of each idea within a nonprofit staff member’s workflow. Our process for evaluating the scenarios was to individually show the participants the images of the concepts and explain the intended synopsis for each idea. After presenting each scenario we asked participants to give their feedback in a qualitative fashion, asking them to share whatever stood out to them, both positively or negatively. After presenting all four concepts, we had participants rank the concepts, then asked for the reasoning behind their rankings.

To ensure a sufficient number of research participants in the project timeframe we broadened our recruitment for the concept evaluation testing beyond that of exclusively nonprofit staff and instead selected a variety of participants who worked in roles that involved collecting and uploading qualitative data from clients. We were able to test with a total of six participants whose official titles were that of Development Specialist, Programs Administrator, Academic Counselor, Psychiatric Nurse Practitioner / User Researcher, Community Life Coordinator and Sleep Medicine / Psychiatry Physician.

Five of the six sessions were conducted virtually over video chat with the concepts being presented remotely with the sixth session being conducted in person with printouts of the concepts shown and shared.

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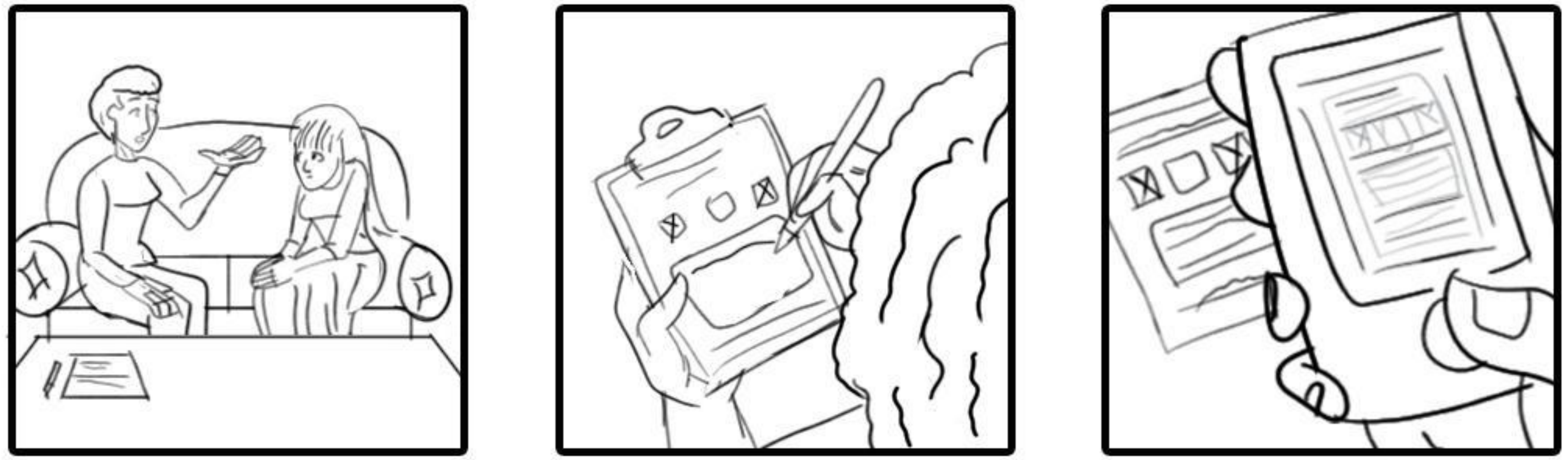
Concept evaluation feedback



Integrating analog case notes

A standardized case form is printed so the staff member can take notes during client interaction. Afterwards, the staff member takes a photo of the notes and uploads them online where the handwritten notes are recognized and transformed into structured data, so the data can populate into the nFocus database for the appropriate client. This concept expedites case note data entry and validation to allow staff more time to focus on client interactions.

Participant reaction

Pros

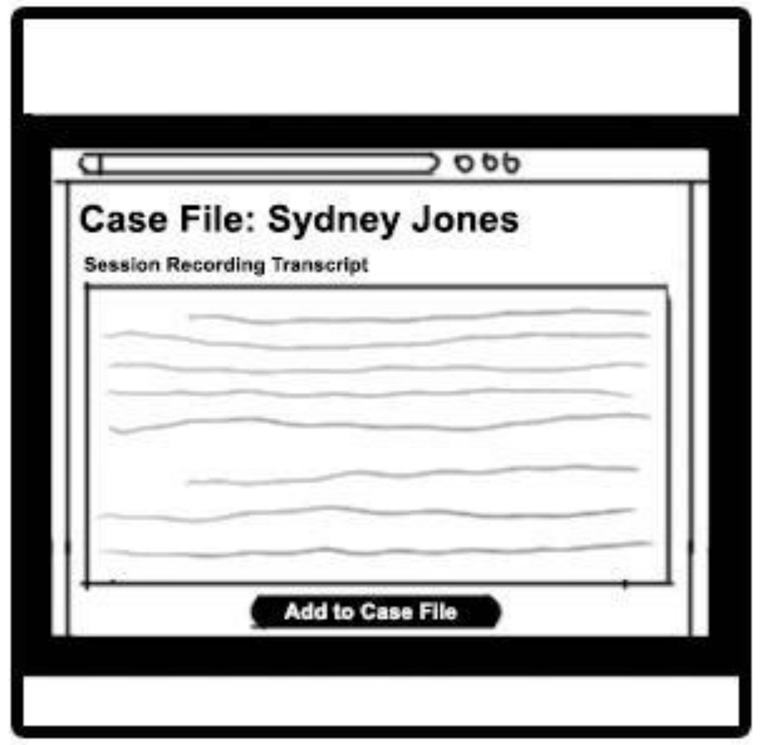
- Participants appreciated the simplicity of the solution and its efficiency
- Would be beneficial in instances where a staff member is out in the field and does not have access to technology or is unable to connect online

Cons

- Some participants perceived writing the notes and uploading as redundant
- The use of paper was concerning for some participants as they felt that had the potential to be scattered and lead to disorganization

"Being able to take a picture and say 'I'm done' for case managers would be really nice, because their job isn't data collection, their job is talking with the clients and helping them figure stuff out."

Concept evaluation feedback



Audio recording

Solution records interaction with client via a mobile device and uploads an auto-generated transcript with the recording to the client's case file. This solution enables staff to focus on the client interactions without distraction of taking detailed notes.

Participant reaction

Pros

- Appreciated efficiency of solution to capture all information in a session
- Some participants valued that this would be useful in instances where clients and staff needed clarification of dialogues that occurred previously

Cons

- Greatest concern was over privacy and level of comfort with clients
- Some participants felt that the intended efficiency would actually be lost due to the need to take time to check the transcript for accuracy

"If we were working on attitude [problem with a resident], you could hear the change in their voice... or if they're having a more complicated or sensitive issue that you don't want to have them talk through again, but you want the details of, that would be really nice to have an audio file."

Concept evaluation feedback

Sharing of previous goals

An onboarding process for new clients that includes letting them watch video from program alumni stating the value of setting goals, allowing for the introduction of emotive language from program alumni that grew from the same situation as the new client.

Participant reaction

Pros

- Participants valued that this method would allow clients to see that their situations can be improved for the better as proven by previous clients
- Some stated this would help expedite the process of creating treatment plans

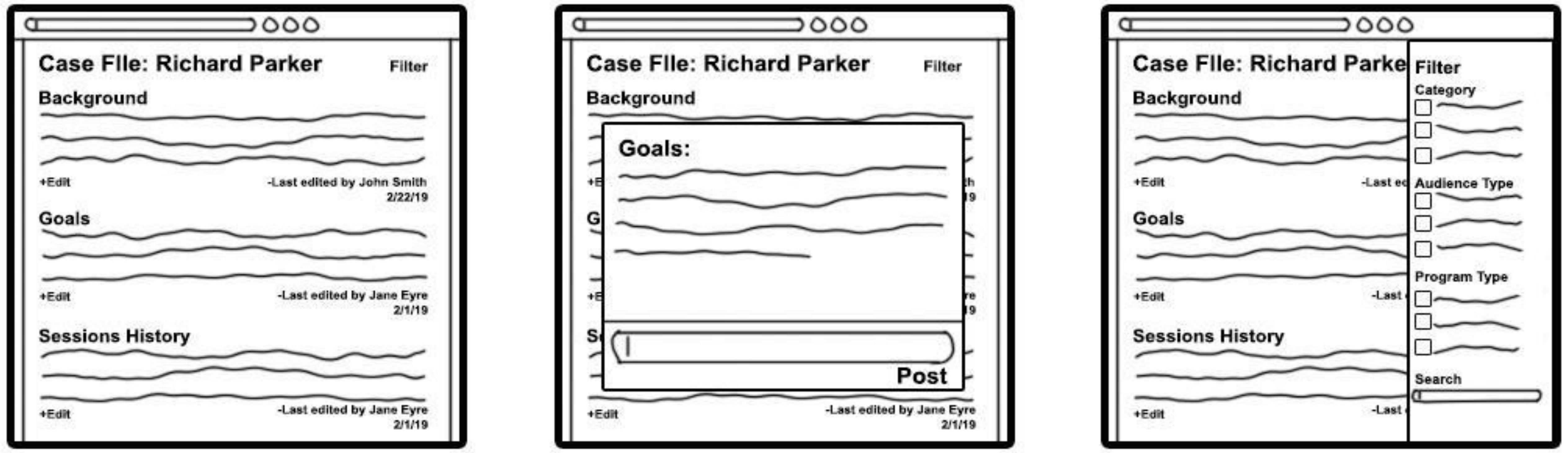
Cons

- Concern was that new clients may feel pressured to have the same goals as alumni instead of realizing their own personal goals unique to their journey
- Privacy issues as some clients may not wish to share their sensitive stories

"That's really happy... showing residents that it's possible to put work towards your goals, do it successfully, and that other people who have been in your situation have [successfully accomplished]. That's encouraging."

Concept evaluation feedback

Living document



Living document

This concept enables nonprofit staff to build a wiki of the client's story that can be edited at anytime by staff members with access to file. Staff are thus able to see progress and development in the clients by reading the history of interactions.

Participant reaction

Pros

- Participants appreciated the centralization of this solution and the ability to access and view all information in one location by all departments
- The "free form" nature of the solution and the ease that notes could be added

Cons

- Concern about the ability to extract and present quantitative data
- This tool would only be useful if the filter section was very powerful and without filtering options, finding specific information would be difficult

"I think that's really useful... [we use a] single file for each meeting... The case manager and the chaplain... use case notes and daily staff notes from our chaplain and personal experience with residents so if there is a problem they can see where it started."

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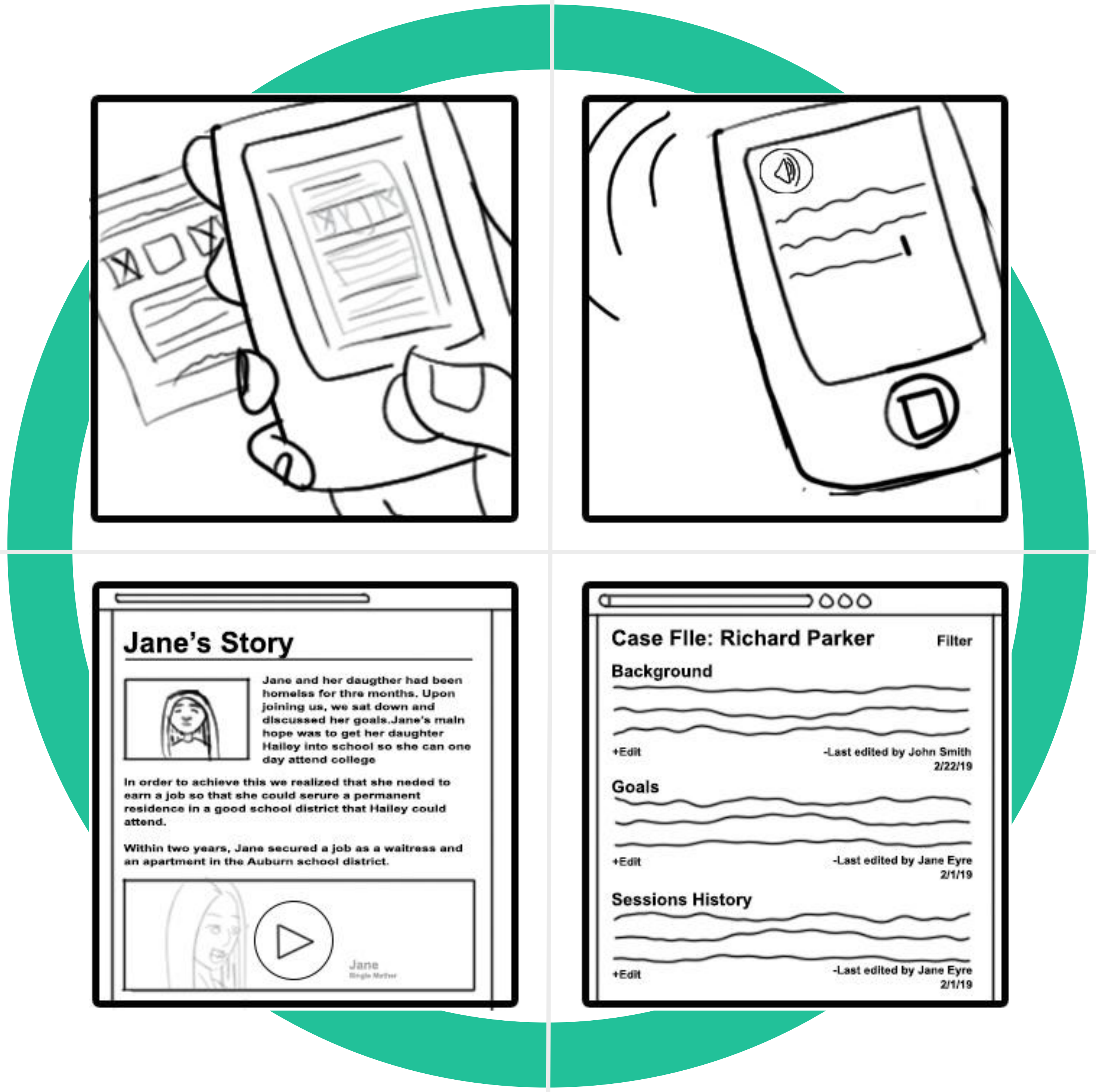
Concept evaluation results

Analog case notes

The removal of technology was both a pro and a con as it would allow nonprofit staff to be more engaged with clients but could also lead to some redundancy in the upload process.

Sharing of past goals

Has the potential to give new clients guidance but also has the threat of pressuring clients towards certain goals instead of allowing them to discover their own personal desires unique to their individual journey.



Audio recording

Very efficient in capturing all of the information that occurs during a session, but a great deal of concerns around privacy and the level of comfort for clients.

Living document

The centralization of data and ability for multiple departments to edit the document is greatly appreciated but a powerful filter function is an absolute must for this option to be viable.

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Design solution: SnapStax

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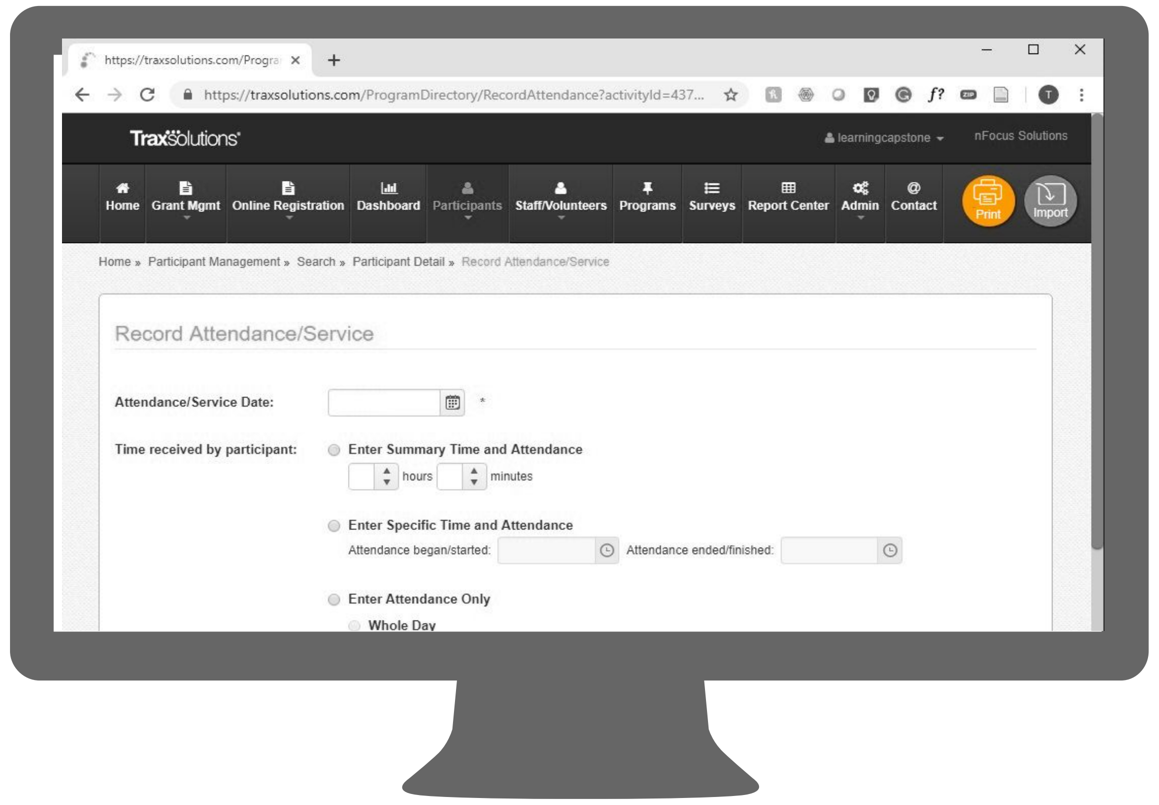
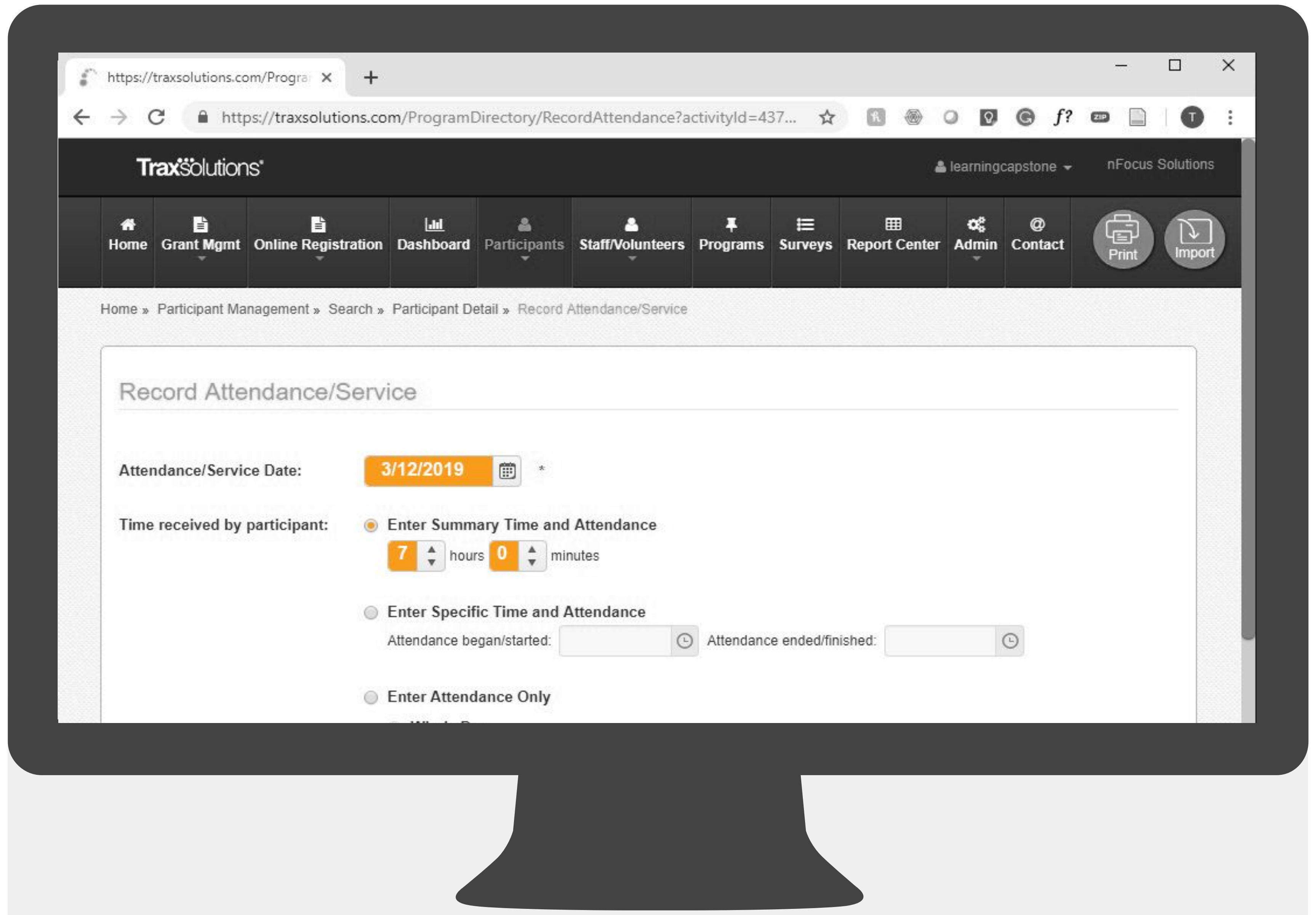
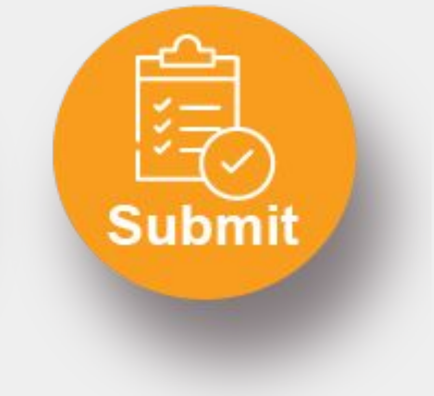
SnapStax solution



Print forms

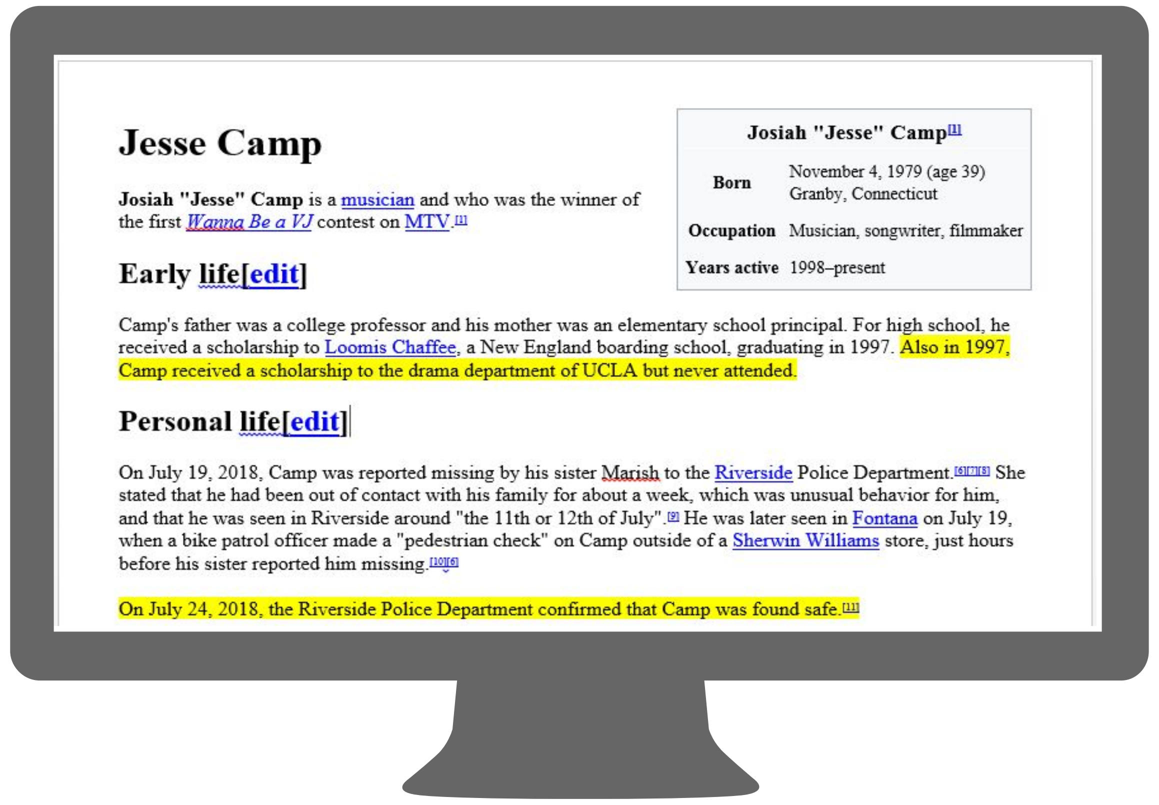
- The forms used to currently enter data into nFocus' TraxSolutions.
- Printed forms will have identical layout and appearance that replicates digital form.





Parse & verify image data

- The burden of processing data should be minimized by drawing users focus to the area of data to be validated.
- Layout and appearance will be designed to ensure easy visual verification when holding paper form and viewing web page data.



Living document view

- Case worker data will append to data in a single webpage for each client.
- Case workers will be able to select specific data based on who submitted data, when it was submitted or based on data topic.

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Design requirements

✓ Must work with technology nonprofit staff are comfortable with

A significant portion of nonprofit staff are not tech savvy, having strengths in other areas. Information-dense digital tools can therefore have a considerable barrier to entry, which can lead to staff opting out of these tools. The solution must use common devices that make use of clear, familiar steps for users.

✓ Remove the need for duplicative data collection

Often, nonprofit paperwork (such as client intake forms or case notes) contain written or marked quantitative data that are eventually transcribed into a digital format. The solution needs to remove the duplication of this effort.

✓ Connect securely to the database

When information is collected locally, in email, or other non-secure formats such as shared documents, the risk of data ending up in the wrong hands increases. The solution must securely transfer the data into the system.

✓ Turn unstructured data into structured data

Data must be in a consistent, structured format in order to be quickly pulled and analyzed. The solution must transform unstructured data into structured data (both quantitative and qualitative).

✓ Respect HIPPA privacy policy

Client privacy is of the utmost importance. Clients should not be expected to give up their rights to Personally Identifiable Information (P.I.I.) in order to receive services. The solution must have explicit, protective permissions for client data.

SnapStax overview

✓ Designed for smartphones

According to Pew, 77% of Americans had smartphones in 2018 - and that number continues to rise. Smartphones and, by extension, apps, are a key device that can enable nonprofit staff to have confidence when collecting data.

✓ Snap a photo and go

With a click of a button, nonprofit staff can take a picture and upload it without having to re-enter data that is already written down.

✓ Uploads securely to the nonprofit database

Add programmatic modifications that include secure access tokens, server-side encryption and require HTTPS-only transport.

✓ OCR automatically parses handwritten notes into structured data

Optical Character Recognition, a solved problem with plug-and-play solutions available, transforms the data in a structured format instantly.

✓ Tight permissions ensure that client data is protected

Data is available to the staff member and others with explicit permission levels specific to their role..

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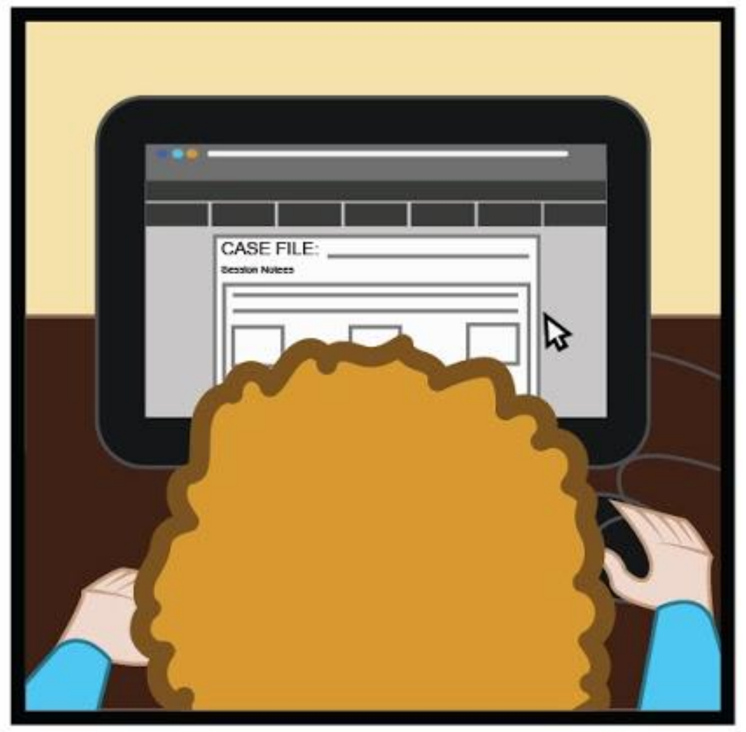
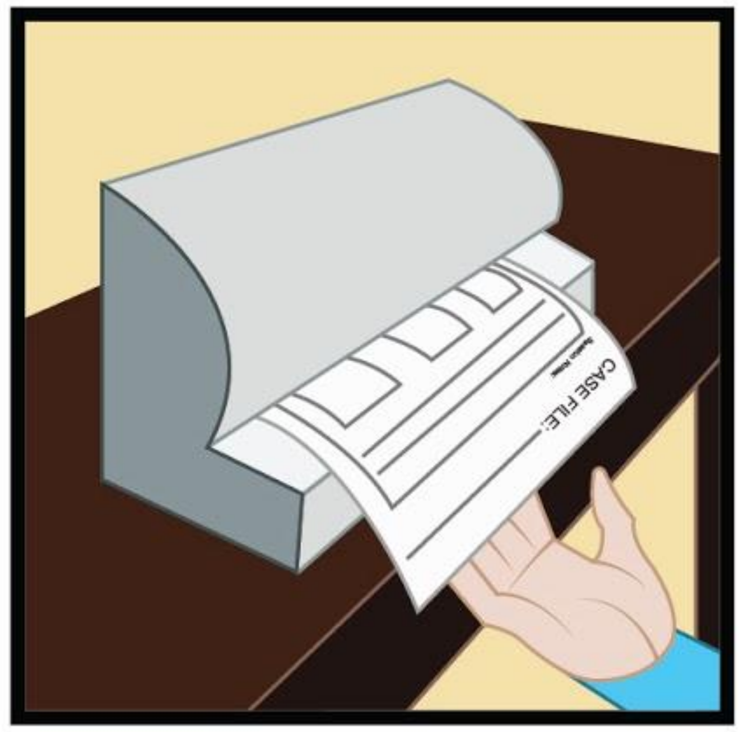
Storyboard



Staff member creates the standardized note-taking form that asks for key information to note during client sessions.

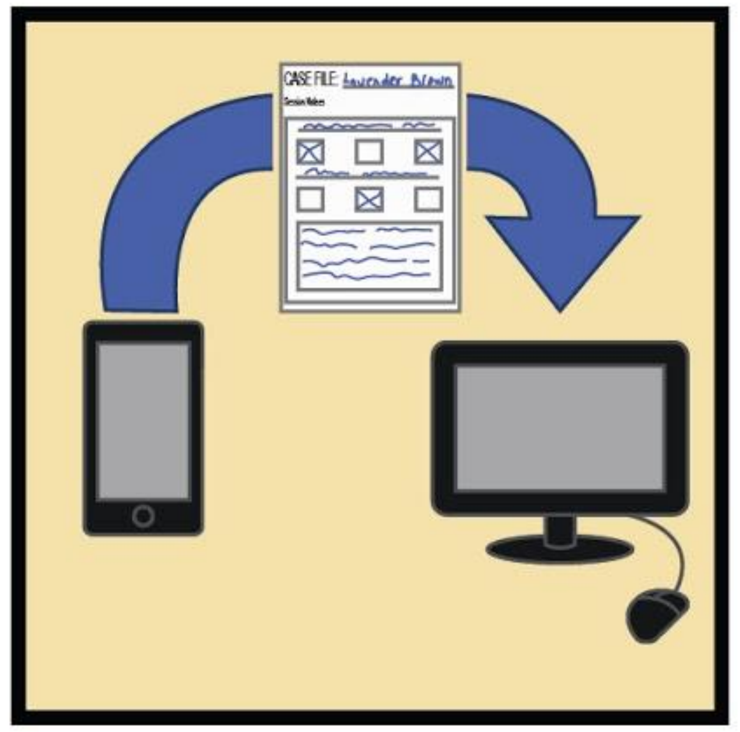


The standardized form is then printed out for staff member to collect notes with during client sessions.

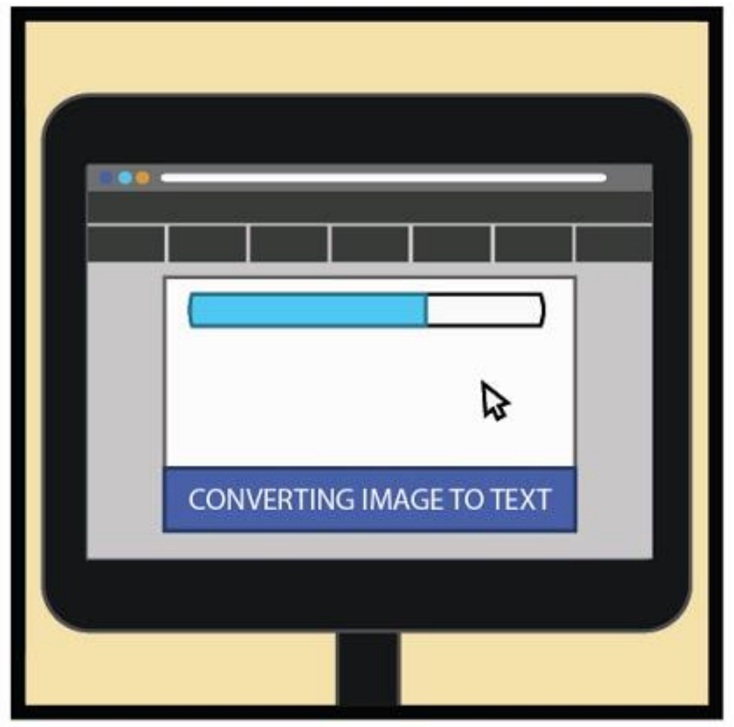
Staff member meets with client and is able to freely converse and engage with the client to discuss the matters of importance.

The note-taking form is easily filled out during the session as important information occurs.

Staff member easily snaps a photo of the completed form with a mobile device.



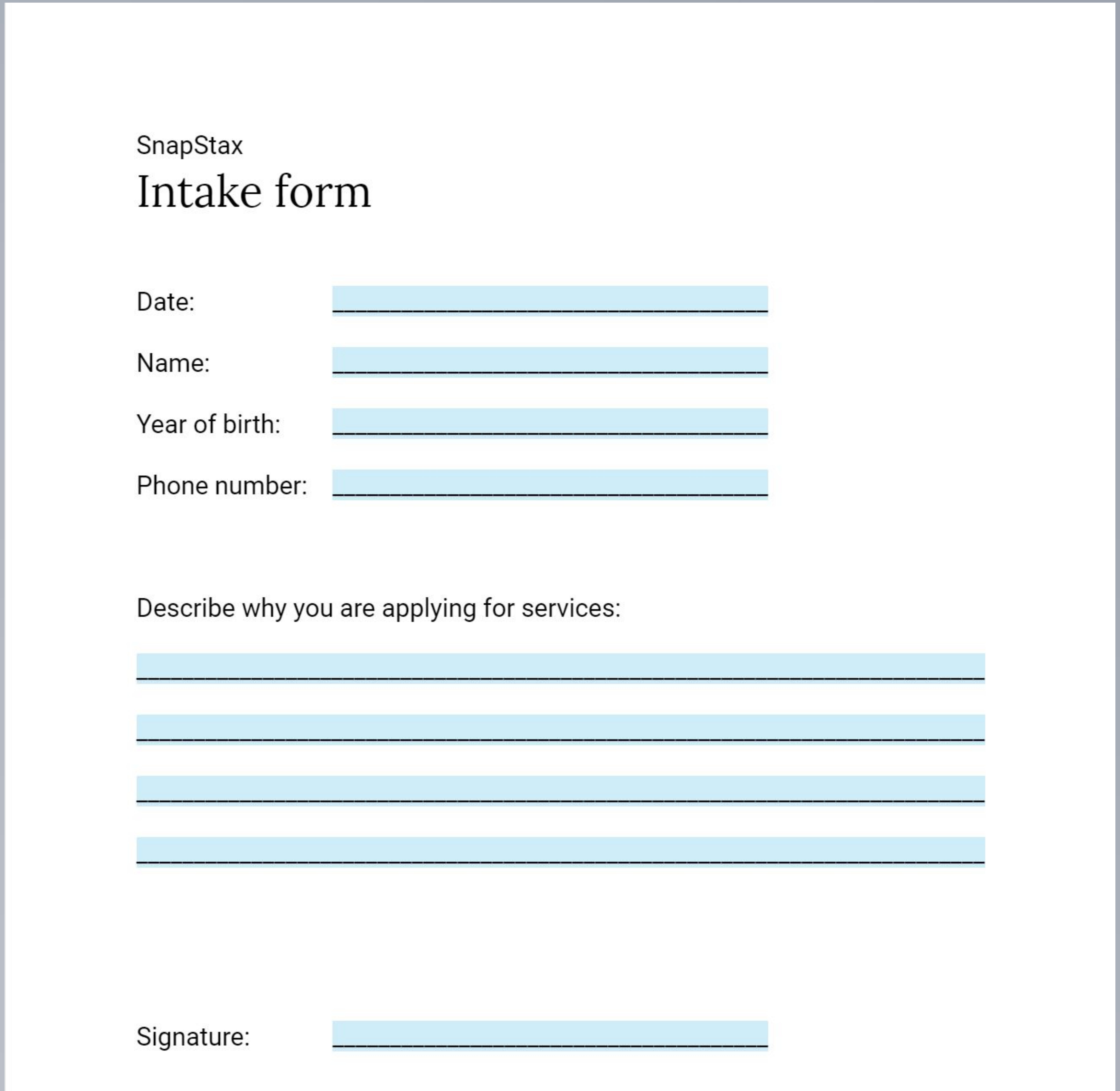
The photo is then transfered from the mobile device to one of the nonprofit's computers.



The image is then uploaded to the image conversion tool that analyzes the photo of the completed form.

The markings and writing from the form are recognized by the conversion tool and converted to data.

The information and data from the analyzed form is then added to the living document of the client for easy access for the rest of the nonprofit to view.


SnapStax

Intake form

Date: ____________________

Name: ____________________

Year of birth: ____________________

Phone number: ____________________

Describe why you are applying for services:

____

____

____

____

Signature: ____________________

Form types

Intake forms were a commonly cited paper document that new clients fill out in order to receive services. This form, with a secure photo upload to the system, removes the duplicative work that nonprofit staff must do when re-entering information that the client has already written.

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SnapStax

Budget class feedback form

Name: ________________________________

Date: ________________________________

How likely are you to recommend this class to another client? *(Circle one.)*

Very unlikely   Unlikely   Neutral   Likely   Very likely

Since the class, have you set up a budget? *(Circle one.)*

Yes, I have set up a budget

Yes, I have started to make a budget

No, but I would like to

No, I have no plans to make a budget

Feedback form

Nonprofits often offer classes to serve many clients at a time. Class attendance is a good quantitative indicator to include for nonprofit updates. It’s even more valuable when paired with feedback about the impact it had on the clients, so as to improve future versions of the class and determine changes effected.

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Case notes form

During our research, we found that there was little overlap between data gathered for the purposes of reporting impact (typically quantitative), and the data collected to improve the lives of clients (typically qualitative).

This form allows for qualitative notes that can help nonprofit staff improve the services they offer to clients.

SnapStax

Case notes

Name: ________________________________

Client: ________________________________

Date: ________________________________

Is this client making progress toward goals? *(Circle one.)*

Strongly disagree   Disagree   Neutral   Agree   Strongly agree

Notes:

____

____

____

____

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Future work

End-to-end low fidelity prototyping

Our solution anticipates a cross-platform solution between paper data collection, mobile upload, and a computer. To truly design for the many states of this solution, we need to create a seamless low-fidelity prototype across all platforms to find the subtle interactions not considered in our evaluation.

Usability testing

A core tenant of human-centered design is the ability to produce products that will bring value to a user’s life in a simple and easy way. Usability testing would iron out issues and inconsistencies within the designs, especially in a cross-platform setting.

Defining data access permissions within HIPPA specifications

Data access and control is at the heart of SnapStax. Nonprofits deal with varying levels of personally identifying information, and it is of utmost important that the information is protected for client privacy. The team should consult a professional legal expertise in the subject and align the design decisions accordingly.

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Reflections

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Contributions to the HCD field

As the workforce evolves, less focus on role and more focus on responsibilities (“persona hats”)

The persona hats are a contemporary twist on the existing concepts of the persona and the expression “wearing many hats”. The team had concerns about the ability to create personas without robust data; we also found that titles had very little to do with the responsibilities that nonprofit staff juggled on a day-to-day basis. The combination thereof is a unique take that we’d like to bring forward to industry.

Embracing cross platform solutions

Cross-platform products are increasingly necessary given the wide variety of devices today. Our proposed solution, SnapStax, combines non-digital (paper forms), mobile, and desktop in a single, unified information database.

Privacy concerns related to data

Data privacy is a hot topic. Our research uncovered that, despite the development of secure, well-intentioned products that facilitate data collection, an uncanny amount of data collected at nonprofits is stored unsecurely. Examples include data in email attachments, shared documents, and local files on personal devices. Our solution seeks to close that security gap with secure upload in a centralized source.

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Implications, limitation, dangers, and opportunities

Photos

As our solution centers around the act of taking and storing photos, there is the potential for infringement of PII policies. A staff member who captures a photo of case notes about a client would naturally contain sensitive information about the client and if the photos remain unchecked, there is the risk of the client's information remaining on the mobile device long after the respective staff member has moved on. Therefore, great care and attention must be given to the sensitivity of privacy of the photos to ensure the sensitive information is safe from unauthorized parties.

Access to smartphones

Our proposed solution has the use of smartphones as a critical step in its workflow. There is therefore the potential risk of our solution acting as a barrier to nonprofit staff who are not tech savvy. Some of our participants expressed their belief that some of their coworkers would not be comfortable using a mobile phone to take a picture of the case notes and would prefer using a standard scanning machine. Measures would therefore be required to accomodate for these preferences and allow for the use of scanning machines for those who are either more comfortable using them over smartphones or those who may not have access to the mobile devices.

May force nonprofits to stick with paper longer than needed

The use of printed note taking forms has the potential of leading to cluttered collections of paper that may be unideal for nonprofit staff. As many of our participants expressed the desire to move away from paper in favor of digital options, it is imperative that our solution stress that storing the completed forms is unnecessary as the photographing and uploading of the completed forms allows the data to be stored and accessed digitally. Our solution should highlight that once the completed form has had its picture snapped and uploaded, the form is no longer needed and the recycling of the form is not only harmless but encouraged.

Data science for qualitative data and impact

Many participants expressed their feeling that the qualitative data that they encounter in their work is overlooked and undervalued in favor of the more easily displayed quantitative data. They felt that this was a mistake and that the qualitative data that they encounter with their clients is just as important as the quantitative data, if not more so in certain instances. Our research has the potential of serving as a platform for conducting a thorough study on the relationship between qualitative data and impact to see how the qualitative information may be best captured and displayed to show its impact.

Personal growth

Scoping the project is critical given the timeframe

The team realized it was important to define the project focus & scope sooner than later, even with Capstone planning. While our initial focus was all nonprofits, we realized that we needed to narrow our focus to nonprofits that focused on young adults & youth education. This scoping helped with participant recruitments & outreach efforts to engage nFocus clients.

The unique challenges of the nonprofit world make it challenging to understand broader themes

The adage 'every enterprise is a unique snowflake' rings true in the context of nonprofits, since the organizational, client challenges, & constraints are unique to each nonprofit. This made it challenging to synthesize broader themes, since generalizations often meant we missed out on the unique perspectives of each nonprofit.

When in a rut, reflect on current knowledge

It is inevitable for projects to approach stagnation. Throughout the coursework, the team found it helpful to identify areas that needed more research by summarizing and reflecting on those areas of which we had a thorough understanding.

Understand the intended user

One of the major obstacles that we encountered over the project was realizing the misalignment between our sponsor and ourselves over the definition and understanding of the term "frontline worker". A key lesson from this project was realizing the critical importance of clearly defining the intended user from the beginning. Establishing clarity of this important information gives focus and direction for the rest of your project and spares a team from running in circles trying to recruit a user whose profile you do not fully understand.

Figure out where to flex on recruitment criteria

Participant recruitment with no budget can pose many challenges. We built two pipelines to address this: the first, to cast a wide net for any and all nonprofit staff on social media; the second, to keep the core competences of the role (collecting qualitative data, while needing to show quantitative impact) while being flexible on sector in what participants worked. This helped us gather relevant data to shape our project.

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