

SPROUT

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Vision

Sprout will enable musician and songwriters to capture, develop and share musical inspiration anywhere, anytime.

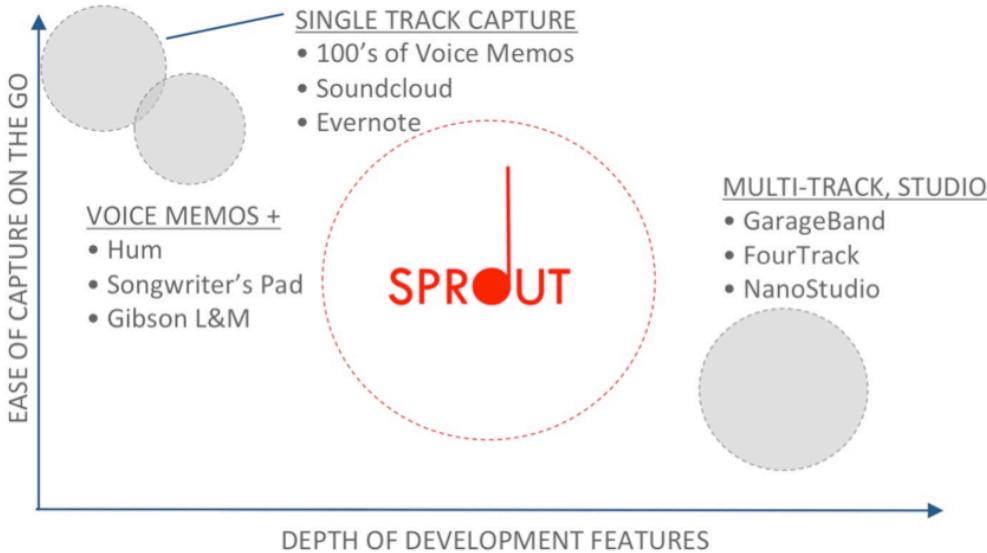
For a modern, on-the-go musician who risks losing song ideas in life's rapid pace, our product is a new mobile application that provides a quick, sophisticated means to capture and grow song ideas, or "seeds". Unlike current solutions which are either overly-simplistic audio capture tools or overly-advanced audio production programs, we offer a focused solution designed to help musicians collaboratively make the transition from ideation to pre-demo production using a powerful instrument they already have: their voice.

Motivation

Our goal is to break the traditional constraints that limit the development of new music. A famous story about the legendary Tom Waits describes a classic quandary for songwriters:

...he was driving down the eight lane freeway in LA when suddenly a melody came into his head. Because he was driving he had no pen or paper, no recorder, no way of capturing this tiny, beautiful bit of music that had magically appeared. His frustration and disappointment at his inability to capture the music brought to the fore the kind of artistic insecurities we all go through from time to time. But then, all of a sudden, he looked up at the sky and said 'Excuse me. Can you not see that I'm driving? If you're serious about wanting to exist then I spend eight hours a day in the studio. You're welcome to come and visit me when I'm sitting at my piano. Otherwise, leave me alone and go bother Leonard Cohen'.

Inspiration is not limited to the studio. Sprout will enable musicians to capture ideas, develop them, and share and collaborate from anywhere, as long as they have their smartphone. Sprout will occupy a gap in the existing market of songwriting tools, shown below:



At the low end of tools available for smartphones, songwriters will find low-feature options, like a built-in voice recorder. While easy to use on the go, apps like this can only capture the most basic representation of a song idea, and the songwriter cannot continue to develop their idea, other than re-recording, or allow seamless collaboration with songwriting partners. Continued progress is delayed until they are in the same physical location as their bandmates. They may be able to share an audio file electronically, but these low-feature apps do not encourage a collaborative process between songwriting partners.

At the high end of the songwriter's toolkit are feature-rich software packages aimed at professional (or aspiring professional) musicians, such as GarageBand. These tools work best in a home or studio setting, and are not optimized for on-the-go usage. Rather, they are positioned as a pared-down version of a professional studio, rich with advanced tools and features.

Finally, Sprout offers a new feature that will enable it to take over the underexplored middle ground between low-end and high-end tools: the ability to use voice recording not just to capture the basic idea, but to develop tracks (or the building blocks) of a song. Sprout will allow users to manipulate and perfect different components of their songs, such as the vocal melody, the bass line, the tempo, etc. By using their most flexible and portable instrument (their voice), they will be able to express their vision and start refining it, just as they would if they were at home with their piano or guitar.

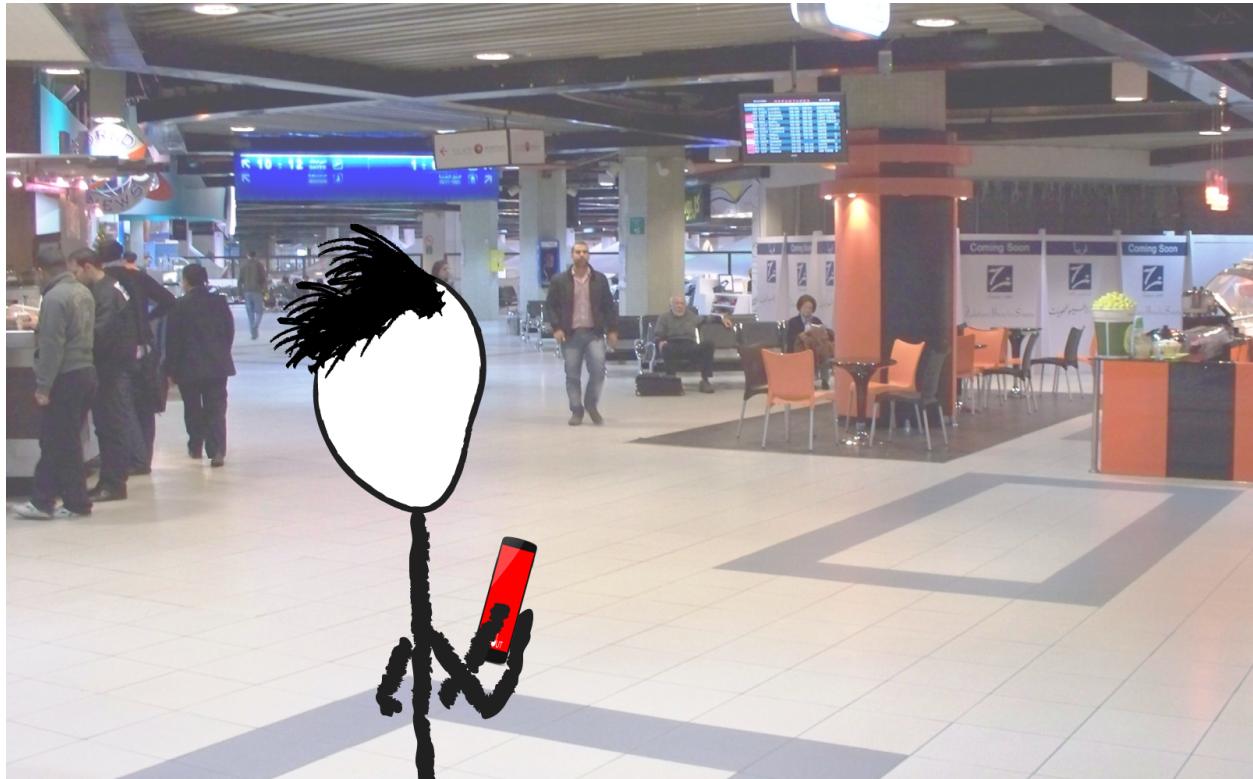
Use Cases

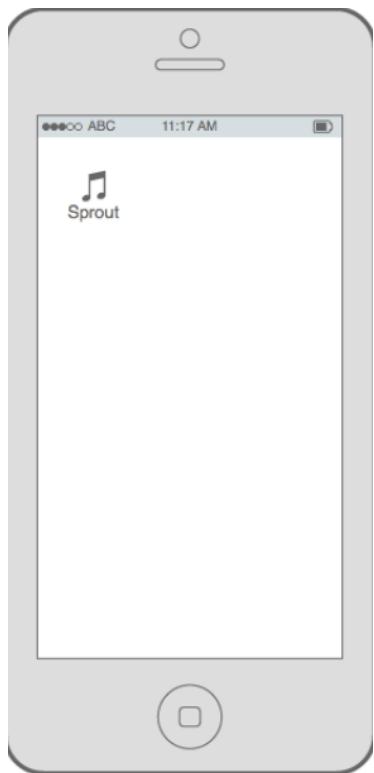
Key Terms

Seed: The beginnings of a song or song part. <ul style="list-style-type: none">• Think guitar riff or drum beat	Stem: Similar/like seeds sequenced in time <ul style="list-style-type: none">• Bass line of whole song, all vocals etc
Root: The foundations of a song. <ul style="list-style-type: none">• Tempo, time signature, key, etc	Sprout = Roots + Seeds + Stems <ul style="list-style-type: none">• A nascent song, yet developed

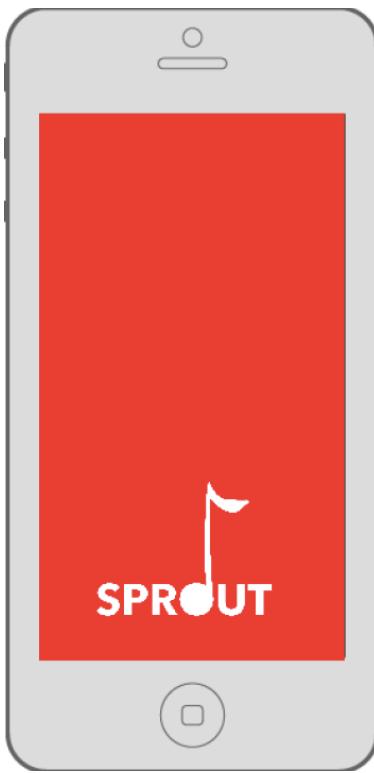
Use Case: Steve and Jim

Steve, 24, plays guitar in a few bands and writes his own songs for a new project he's launched with his close friend, Jim. Steve is walking through SeaTac airport, making his way to his gate for a flight that leaves in an hour. As he walks, he hears a few bars of a song from a nearby TV, which provides a spark of musical inspiration. Seizing the moment, he pulls out his smartphone and launches Sprout:

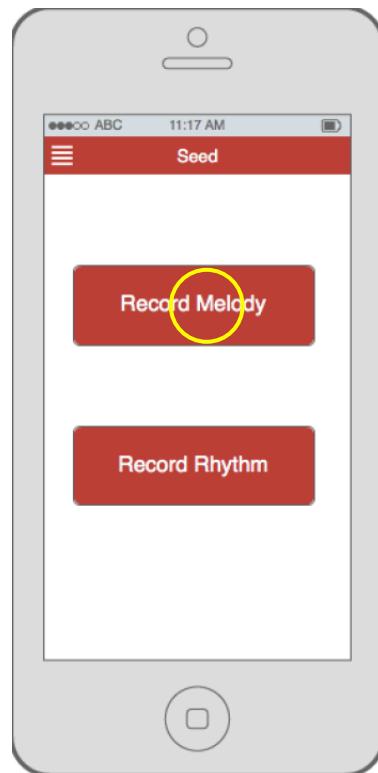




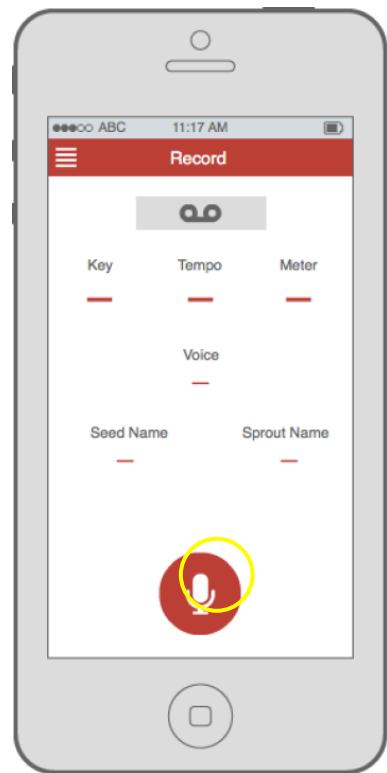
Home Screen



Launch Screen

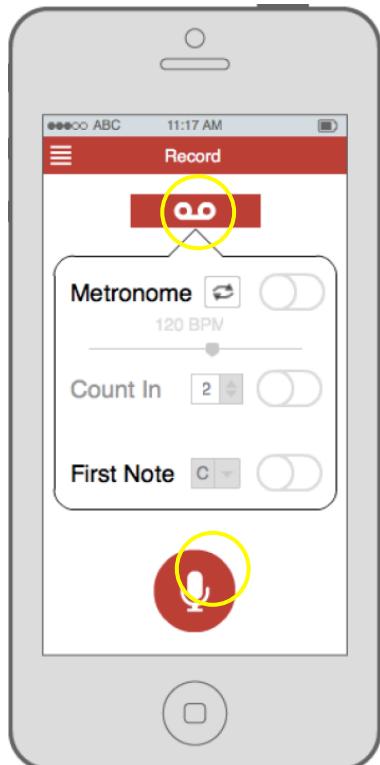


Landing Page: Recording Type



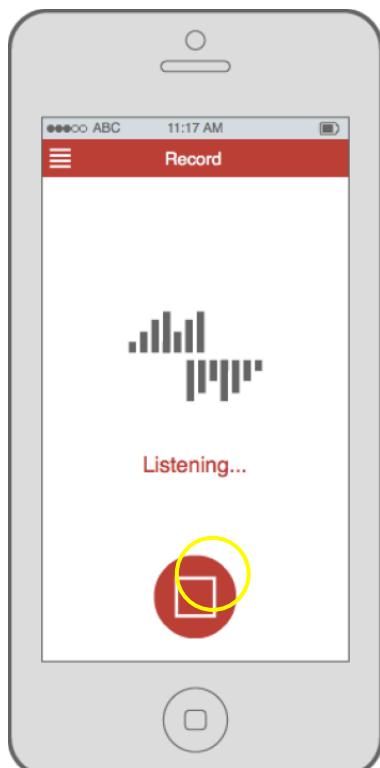
The recording interface

Steve decides to begin by recording a bass melody and hits the Record Melody button, bringing him to the recording interface:



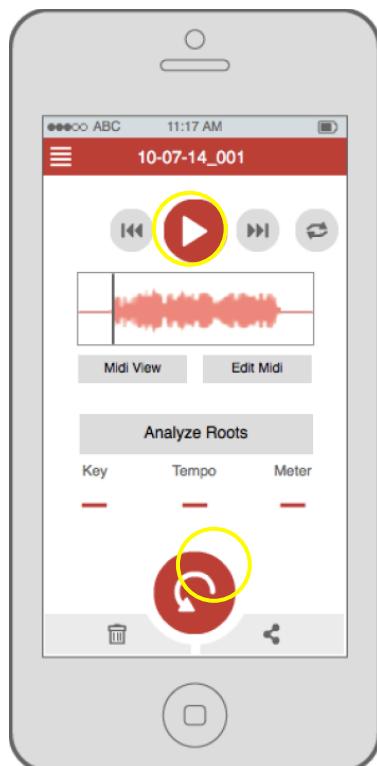
Recording Settings

Steve is able to make (optional) adjustments to the recording settings, then hits the microphone button to begin recording.

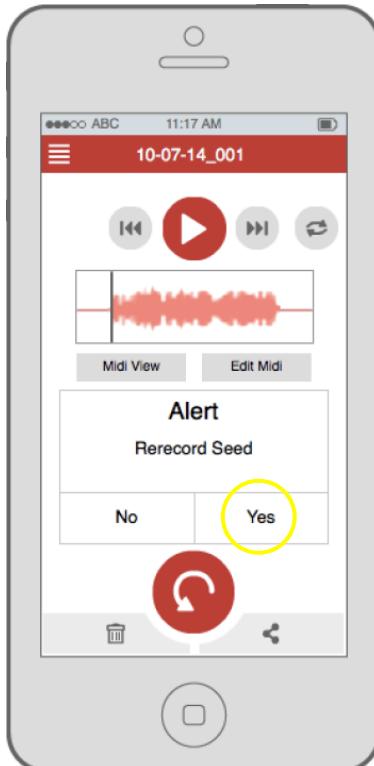


Active Recording Screen

After settling in at his gate, Steve is eager to resume exploring this new musical idea.

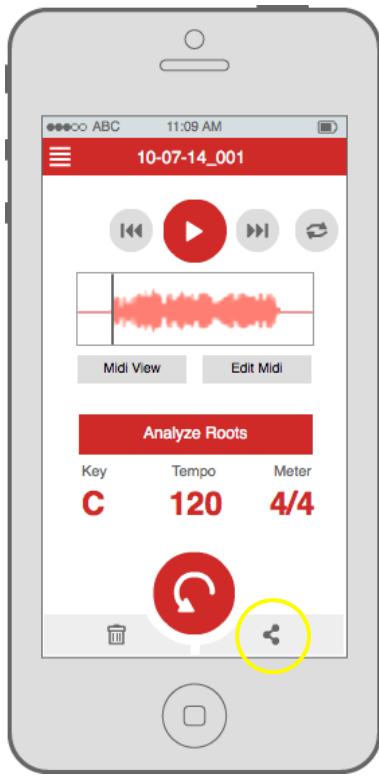


Seed Playback Screen

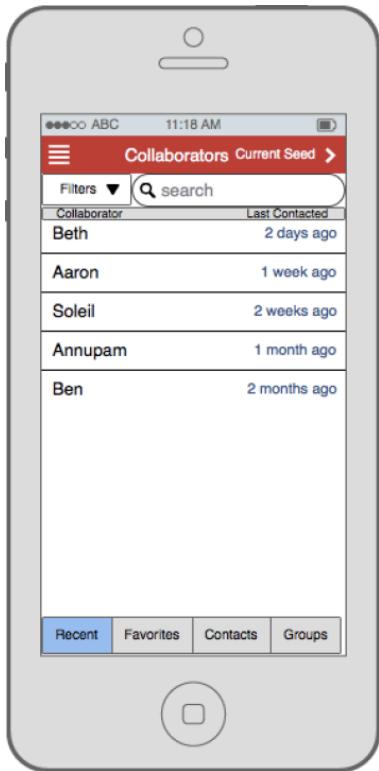


Rerecording Alert

He plays back the audio and after listening, decides to re-record his idea using the large record button at the bottom of the screen. The app has Steve confirm that he wants to re-record the existing seed.

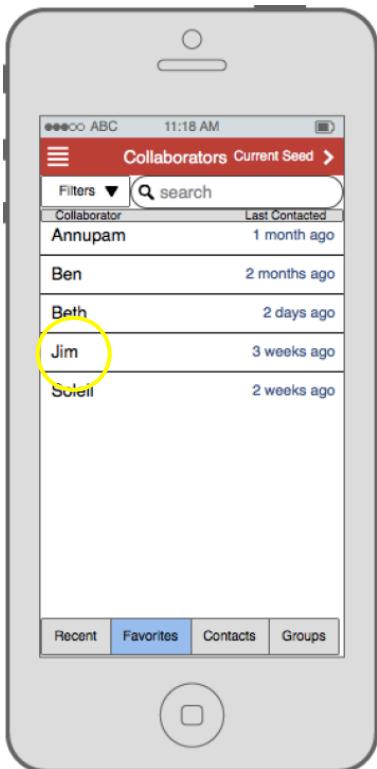


Share Seed

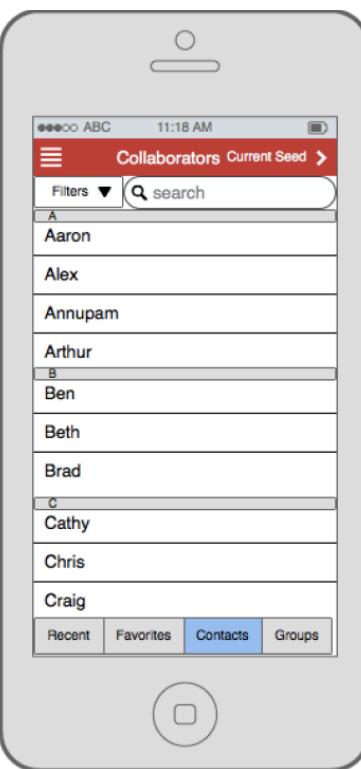


Collaborators

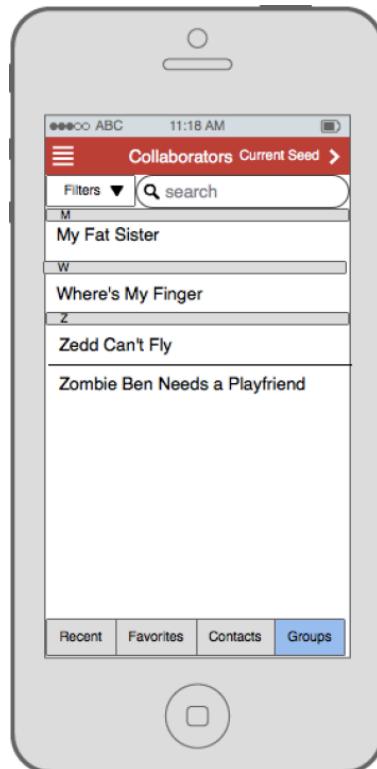
After finishing his new recording, Steve decides to share it with his collaborator Jim, and uses the share icon in the lower right to share the file.



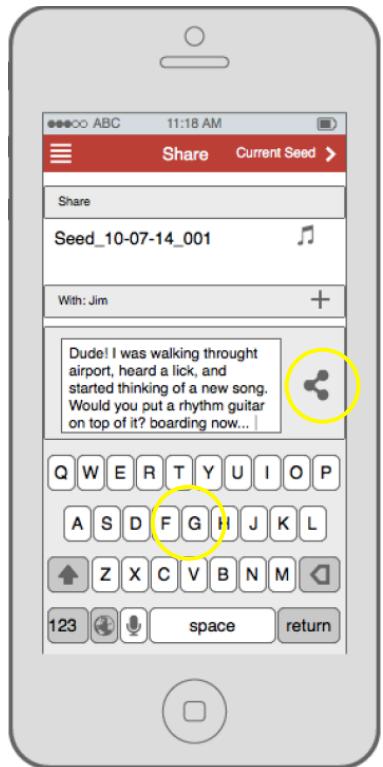
Favorites



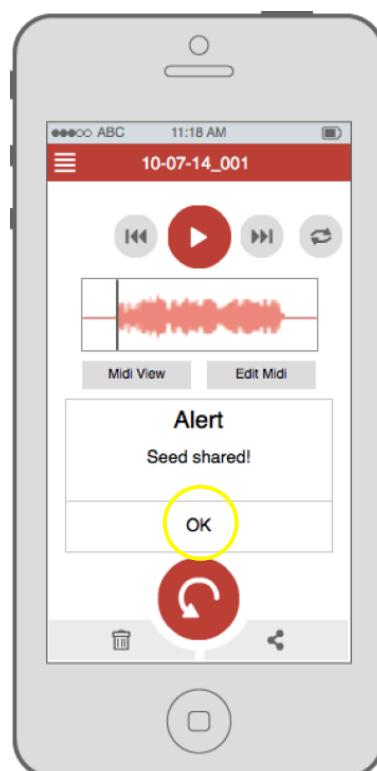
Contacts



Groups



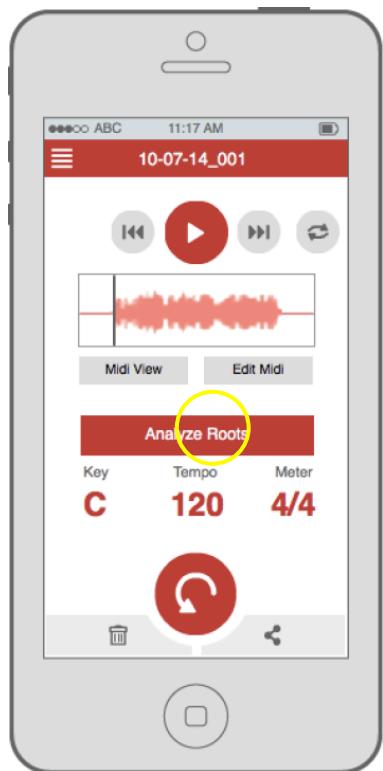
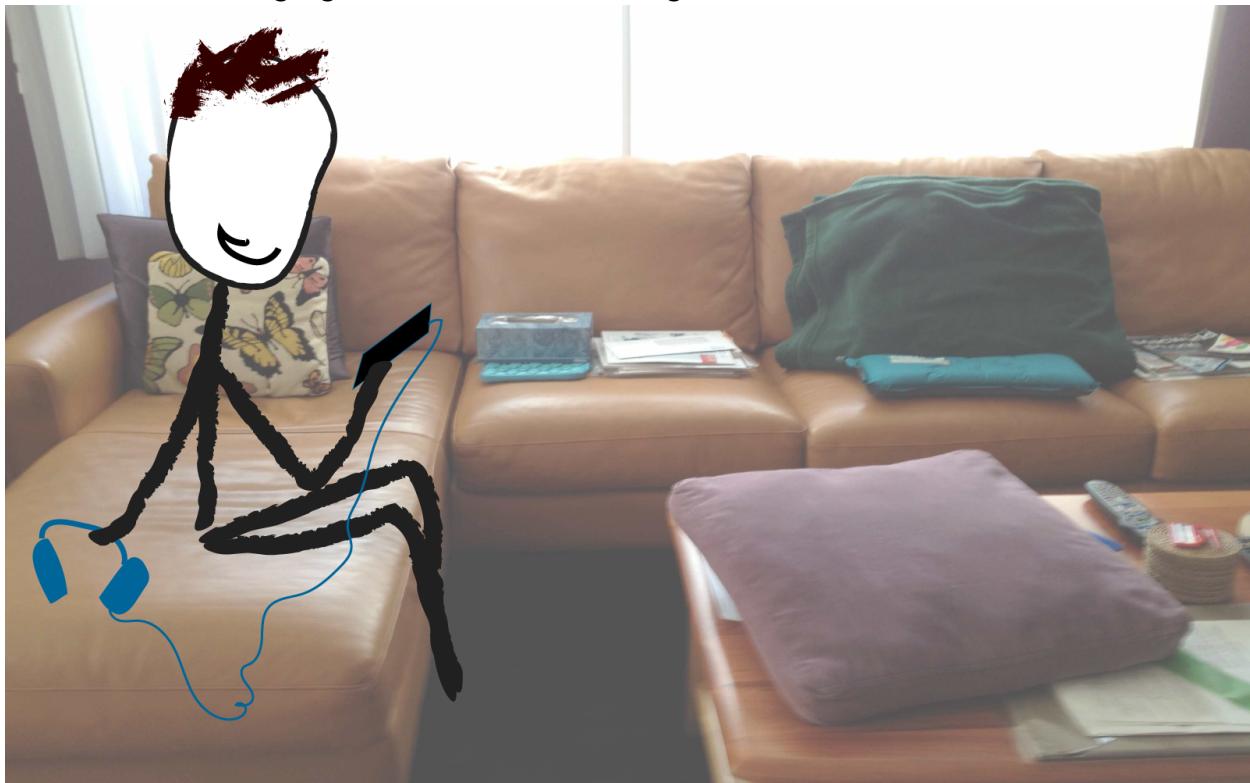
Writing message to Collaborator



Sharing Confirmation

He locates and selects Jim, under the Favorites menu, and is given a chance to add a note. He then asks Jim to have a listen and provide a rhythm guitar idea that he can listen to after he lands.

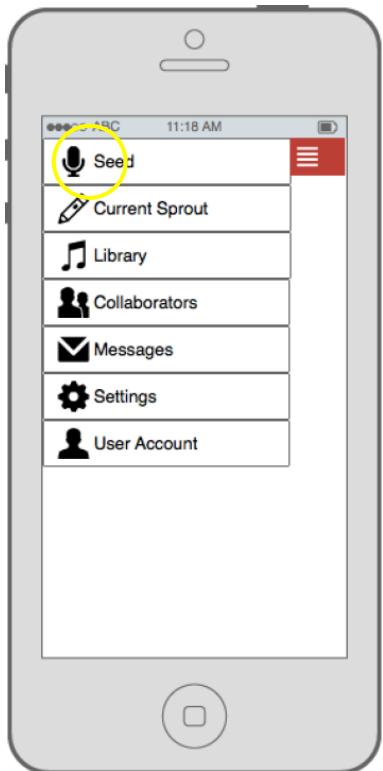
Jim, who was lounging on his couch, was delighted to receive this note from Steve.



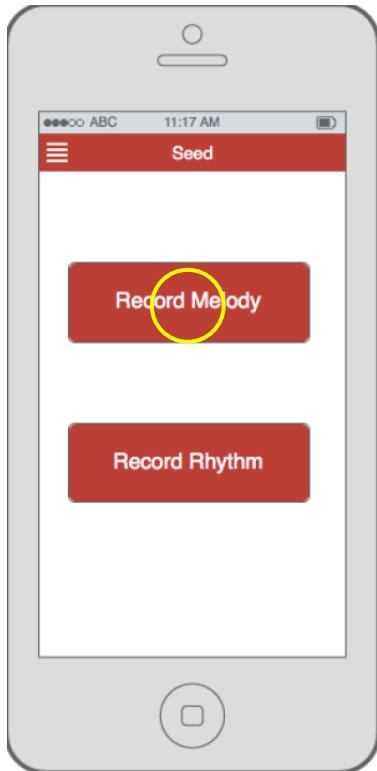
Root Analysis

While Jim gets his guitar to record, Steve boards his flight and uses his time in the air to continue experimenting with his song idea. First he uses the Analyze Roots option to review the key, tempo, and meter, which the app has interpreted based on his audio input.

He is pleased with the interpretation and decides to further develop this sprout by overdubbing a piano melody. But he'll need to listen back to the bassline he had created, so they'll be synchronized. Sprout handles this by associating two seeds together into a "Sprout"

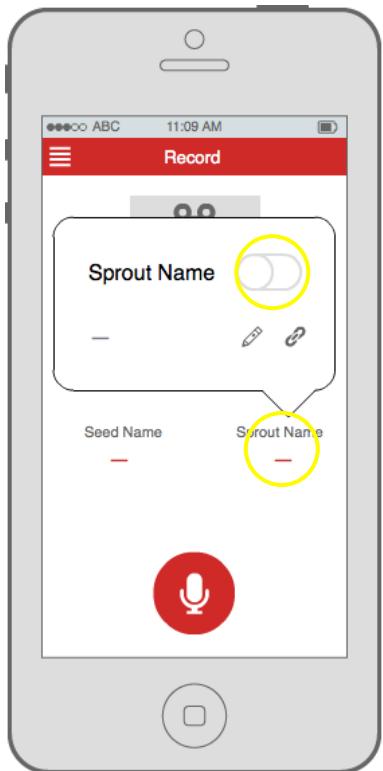


Menu

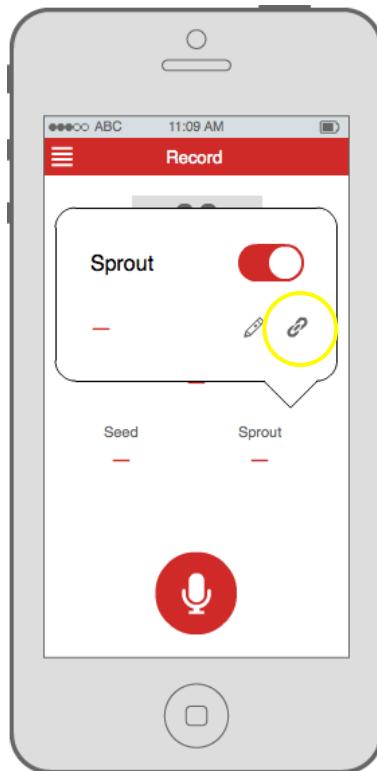


Recording Type

First Steve accesses the menu to record a new seed, chooses to "record melody" but on the record screen, sets up the sprout before recording the melody.



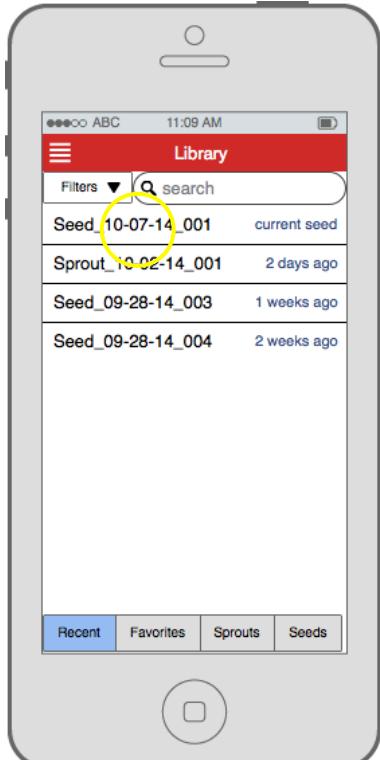
Sprout Creation



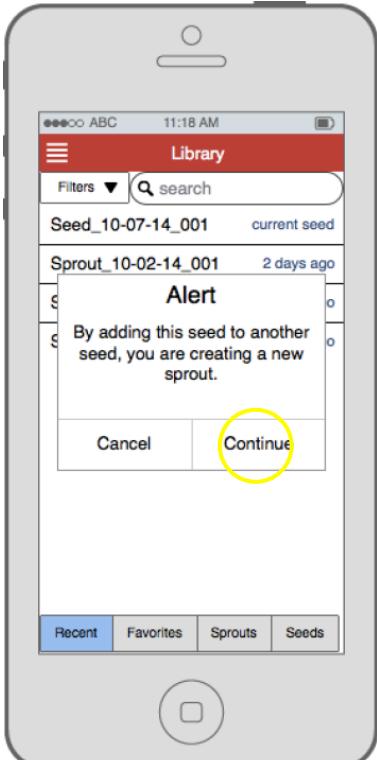
Link to Seed

Here, he creates the sprout by first toggling on the sprout button associated with this seed and then by clicking on the link button, so he can associate this new seed to the bassline he had just created and shared with Jim.

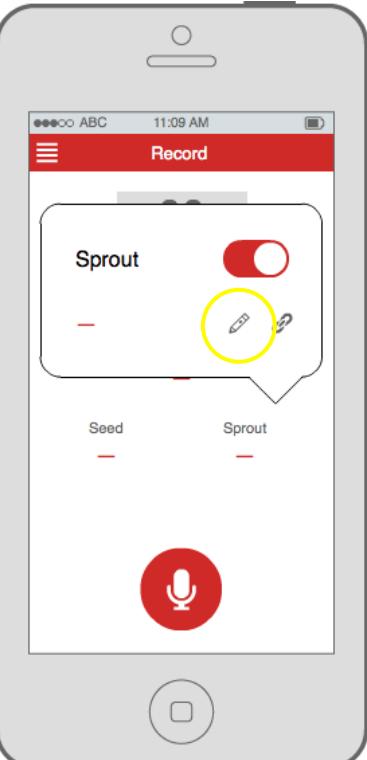
Steve selects the seed he had just recorded and confirms his intention. He then names the sprout New Jam by clicking on the pencil/edit button.



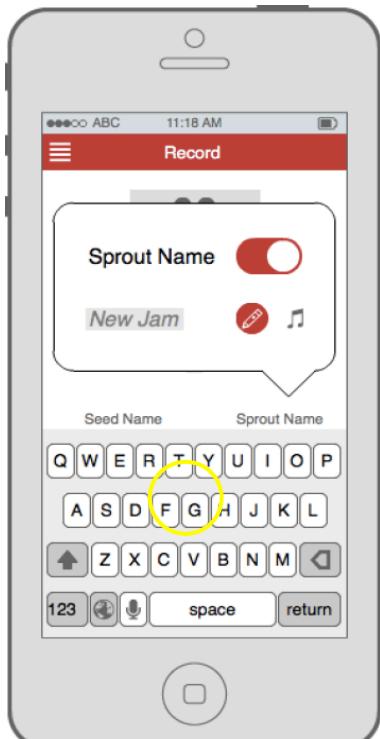
Link Selection via Seed Library



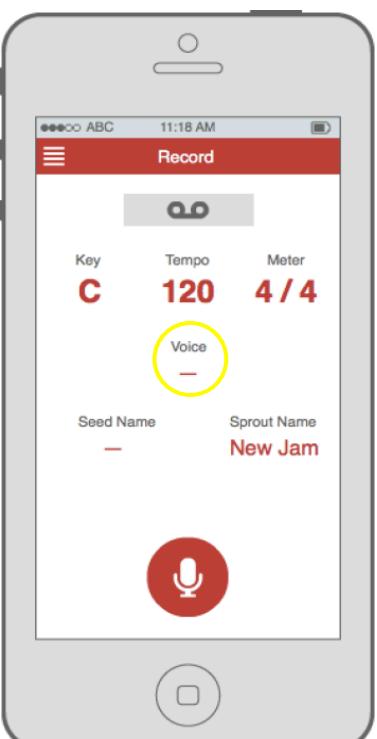
Confirmation



Edit Sprout Name



Sprout Name Edit



Edit Voice

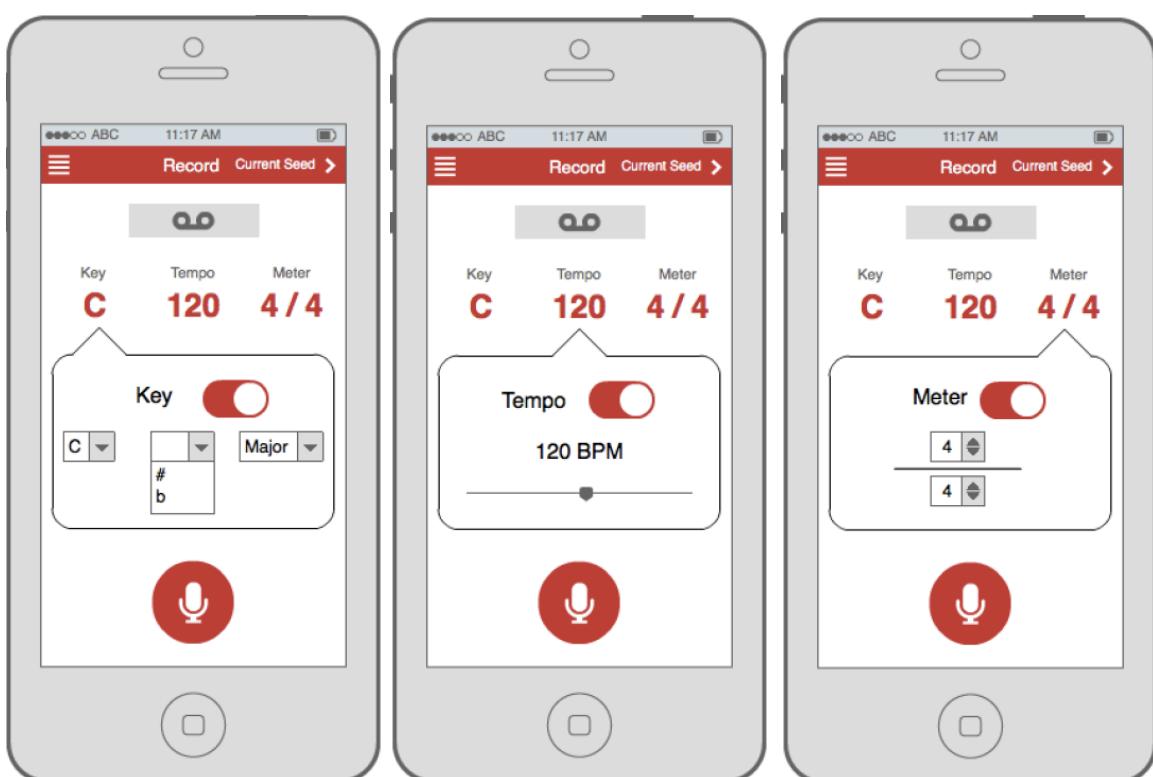
Here, Steve has named this sprout "New Jam" and will then specify the voice, or instrument, of the next seed to be recorded.



Voice Selection

Voice Selection

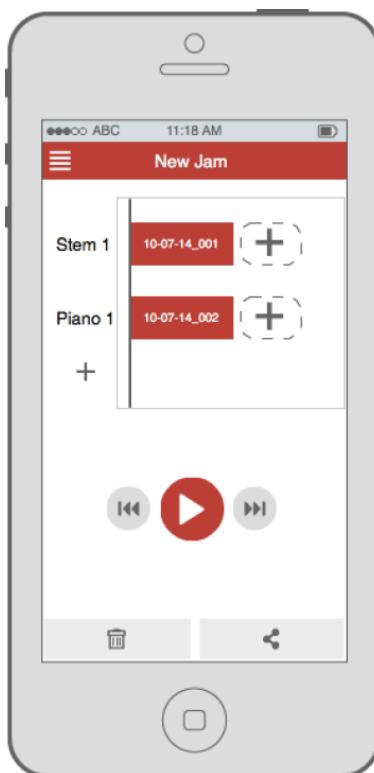
Steve pre-defines that the instrument added to New Jam will be a piano.



Onboard, Steve discretely records a piano melody while listening back to the bass.



Recording Interface



Sprout View

After adding his piano track, he can use the Sprout view to look at his work so far, which includes a bassline melody (Stem 1), and a piano track (Piano 1).

After all this progress, Steve puts his phone away to prepare for landing. When he lands, he'll check in with Jim, and they'll meet up to keep working in person, their collaboration already well underway thanks to Sprout.



Detailed Design & Features Description

Technical Design

Data	UI	Computation
<i>What data will the application track, and where is it stored?</i>	<i>Where does the user interact with the system?</i>	<i>Where does the transformation between data happen?</i>
User Information	Native app	Native app
Song components: Seeds, stems, roots, sprouts. The application will allow users to create a database of recordings known as seeds. These seeds can then be combined into stems (pieces of a song sequenced in time,	Native app	The app will need to translate voice recordings into digital musical data (MIDI) in order to allow editing. Some audio inputs will have to be transformed from the voice recording into a musical instrument (for

<p>such as verses and a chorus). The application will also store roots (tempo, time signature, key). Roots and stems will be combined to create a sprout, a recording that could become a complete song.</p> <p>For any recording, the app will need to track: the name, the time stamp, and the type of recording (seed, stem, root, or sprout). The app will also need to store the notation or editable representation of the recording by creating the musical instrument digital interface (MIDI) view based on audio inputs. Finally, the app must store the instrument represented (voice, guitar, piano, drums, etc) in order to give the appropriate audio representation to the user, as well as storing the user-identified name for the recording as a component within a sprout (eg: "piano 1", "bass line").</p> <p>For seeds and roots, the app must also store the associated sprout relationship, as well as the relationship between seeds.</p>		<p>example, turning a voice input into the sound of a piano). This requires the app to analyze frequency (pitch) of audio recordings and produce an output (MIDI file) that resembles the inputs. MIDI data can be transformed to various instruments, so a library of select MIDI instruments, or sound packs, would be stored locally to be used by user-generated MIDI files.</p>
Contacts: users will be able to identify collaborators and favorite collaborators from	Native app	Native app

their phone's contact list. The user can also combine contacts into groups.		The app will need to maintain a list of contacts after the user identifies them as collaborators within the interface, as well as store group affiliations for each contact.
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Features/Information Architecture

Feature	Detail	Dependencies	Priority
Record melody	User will be able to use the Record Melody button to create an audio file with their voice	Will require built in recording feature on users' phones.	1
Record rhythm	User will be able to use the Record Rhythm button to create an audio file with their voice.		1
Tempo editor	Allows the user to adjust the song's beats per minute (bpm).		1
Time Signature editor	Allows time signature adjustment.		1
Metronome	Produces regularly spaced audible ticks, based on the bpm specified by the user, to provide a consistent tempo as the user works.		1
Key editor	Allows the user to change the key of their seed, stem, or sprout.		1
Reference note	Plays a note selected by the user in order to provide a pitch reference, setting the pitch for singing.		1
Sharing	Allows the user to share a stem, sprout, or seed with a contact.		1
Organization	Allows the user to maintain a library of seeds, stems, and sprouts. Users will be able to scroll through saved files, as well as filter and search. Each item will display		1

	the file name, as well as the last edited date. Additionally, at the bottom of the library interface will be buttons allowing the user to quickly access recent files, favorites, as well as all sprouts or all seeds.		
MIDI editor	Allows the user to edit the MIDI version of their audio file.		1
Cloud Storage	Allows users to store and access files from the cloud.	Requires back end storage services.	1
Export as MP3	Allows users to export files into mp3 format for sharing, archiving, and non-native playback.		1
MIDI instrument selection	Allows users to change the instrument which will read the user-generated MIDI file.		1
Translate audio to MIDI	Transcribes audio input from the user into MIDI format		1
Voice/note calibration	Allows the app to adapt to users' imperfect singing pitch by autocorrecting to the intended notes.		2
Export music notation	Translates a file into musical notation and allows export for sharing.		3
Version control	Allows users to work on their own version of files while maintaining a relationship to the original file and allowing access to prior versions. This would also allow multiple users to work on the same file without over-riding each other's changes.		2

Product Roadmap

Minimum Viable Product Features

- Record melody: Users can record a melody by singing into the smartphone's microphone. Sprout will store the audio file.
- Record rhythm: Users can record a rhythm by singing into the smartphone's microphone. Sprout will store the audio file.
- Translate audio to MIDI: Sprout can transcribe audio files from the user into MIDI format
- Tempo editor: The users will be able to update the number of beats per minute to either increase or decrease the tempo.
- Save and export as mp3: Will allow users to save the song as an mp3 file, as well as export and share the file.
- MIDI editor: This allows the user to edit the MIDI version of their audio file.

Version 1 Features

All the features listed above, as well as:

- Metronome: The user will be able to produce regular ticks, which is determined by number of beats per minute (specified by the user) to provide a consistent tempo.
- Key editor: The users can change the key of their stem, sprout, or seed.
- Reference note: Plays a note selected by the user in order to provide a pitch reference, guiding the pitch for singing.
- Sharing: The user will be able to share a stem, sprout, or seed with a contact.
- Cloud storage: Users will be able to store and access files from the cloud.
- Time signature editor: This feature will allow the users to adjust the time signatures.
- Organization: This allows the user to maintain a library of seeds, stems, and sprouts. Users will be able to scroll through saved files, as well as filter and search. Each item will display the file name, as well as the last edited date. Additionally, at the bottom of the library interface will be buttons allowing the user to quickly access recent files, favorites, as well as all sprouts or all seeds.

Versions 2 or Later

- Calibration of voice/note: This feature allows the app to adapt to users' imperfect singing pitch by autocorrecting to the intended notes, and will improve its accuracy over time as the app learns where the user is most error-prone.

- Version control: This allows users to work on their own version of files while maintaining a relationship to the original file, and allowing access to prior versions. This would also allow multiple users to work on the same file without overriding each other's changes.
- MIDI instrument selection: This feature allows the users to change the instrument represented in MIDI format.
- Translate the voice audio to MIDI: This feature enables the transformation of audio input from the user into MIDI format.
- Help Button: This feature will allow a user to access a library of useful tips and faq's.

Long Term Plans

- Export music notation: This allows the users to translate a file into musical notation, and allow export for sharing.

Roadmap/Timing

After assembling the project team (initially composed of three founders, one to two developers, and a designer), the minimum viable product will be built and launched. The team will begin by defining the project scope using the feature plans herein, then specify a development timeline and KPI's.

After the MVP is launched, user experience feedback will be compiled in order to improve the design and validate the concept, and the team will start on the Version 1 features outlined herein, assuming results from the MVP phase suggest moving forward. As Version 1 is built, the UW computer science student pool could be a valuable resource for affordable testing, feedback, and freelance development work.

Key Milestones and Roll Out Plan

Internal demo - In the internal demo, use cases of potential customers will be built and tested. We will perform early testing (using UW students as a resource) and plan product adjustments based on their early-stage feedback.

Beta launch - During the beta phase we will continue to refine the customer experience for Sprout users. The UW LinkedIn, Facebook groups, as well as MBA Alumni network, can be utilized to build our user base. Once substantial issues are resolved, we will prepare for the full launch by submitting Sprout to the iPhone and Android app stores and wait for approval.

Full launch - Preparation for the full launch will require a website, PR campaign, celebrity sponsorship and a social media presence to build awareness, and full technical readiness (ensuring no downtime for early adopters).

Metrics for success

Our primary metric for success will be:

User adoption - How many times has the app been downloaded, and how is this number trending over time?

User engagement - Once installed, does the app become a critical tool for songwriters, and how deeply are they utilizing the app's capabilities? Specifically, we can measure:

Number of sprouts per user: this indicates that the user interacts with the app repeatedly, rather than on a one-time experimental basis.

Features usage: which capabilities are used most frequently? If users are primarily creating basic recordings, we will need to examine our design in order to encourage users to experiment with the product's unique offerings (such as the built-in MIDI editor and voice-to-instrument translation). Engagement with these advanced features is critical to Sprout's success relative to other music offerings in the market place.

Number of Shares per user: this indicates how Sprout is enabling collaboration.

International plans

We do not have any immediate plans to launch in non-English speaking countries. However, we would consider launching in other countries with western-style musical cultures. Proven success in the US is a prerequisite for considering international expansion.

Project costs

We anticipate a team led by three founders (two musicians and one founder with an engineering background), who will not take a salary during Sprout's early stages. In addition to the founders, we will hire a designer (approximately \$80,000 salary), two developers (approximately \$100,000 salaries), and a marketing manager (\$90,000 salary). Other expenses include IT infrastructure support, office space, and administrative support. Overall, estimated costs for the first year will likely reach or exceed \$500,000.

Operational Needs

For Sprout to be fully functional, support is needed from many areas, including:

Development Team

- Application Development: In order to develop the Sprout app on smartphones, a talented pool of developers/engineers is needed.
- Testing: After the Sprout app is completely developed, it needs to be tested thoroughly. A team of testers would be required to do the end-to-end testing for the app.
- Web Development: A dedicated website should be created for Sprout, and should be designed for both mobile and desktop viewing. The website will be valuable for building user awareness (for example, if somebody is searching for a music app on Google, then he/she would be redirected to the mobile website of Sprout, where the Sprout app can be downloaded).

Design Team

- UX Design: The UX Design team would work to increase the user control and freedom, to make Sprout more aesthetically appealing and easy to use. Good user experience will decrease support costs in later phases and drive user engagement and adoption.
- Graphic Design: A graphic design team will work on how to improve the 'look and feel' of the Sprout app, and ensure Sprout is visually appealing.

Marketing Team

- Market Research: Surveys, in depth interviews, and focus groups will allow the team to tailor Sprout's features to the most prevalent use cases. This market research may be done in house, or may be outsourced.
- Marketing/Promotion: After the Sprout app is fully functional, marketing efforts will build product awareness. We plan to hire someone to handle the overall

marketing strategy, and expect social media to make critical contributions by allowing us to reach networks of musicians.

Other

- Finance/Operations: As with any business, we will also need to manage finance and operations, which will require software and infrastructure.

Addressing Caveats and Risks

Strategic Risks

- **Adoption failure:** We may be unable to acquire the user base necessary to support the continued development of this app.
- **Technological Complexity:** We hope to create a product that has a significant amount of back-end processing dedicated to automating and assisting the capturing and editing process as much as possible. As such, we would require some intense algorithms that might take some time to develop; these algorithms would hopefully be self-learning, which would also require a significant user base in order to make them intelligent.
- **Niche appeal:** Sprout requires the user to understand the building blocks of a song; and will be most useful to musicians with songwriting experience. Among songwriters, not all will be interested in a mobile app; as songwriting is an idiosyncratic process. While Sprout cannot expect broad-based appeal, if well designed, it could gain a dedicated following of users.
- **Existing competitors in market:** Current offerings in the market such as GarageBand and SoundCloud provide services for songwriters. If Sprout cannot clearly demonstrate its point of differentiation, potential users may just assume that Sprout is just another take on existing songwriting tools, and refrain from trying the product. Sprout will need to market itself with an emphasis on features that do not exist in other offerings.

Feature Risks

- **Background noise:** While recording a song, background disturbances could hinder the process of song recording, and impact the user experience when listening to their recordings.

- **Version Control:** If the same song is saved under different names, users may experience frustration and confusion when they are searching for the most current version. Sharing will complicate version control further, as multiple users may contribute to a single Sprout that ultimately goes through numerous iterations.
- **File Organization:** User-friendly organization is critical, because Sprout will encourage the development and storage of numerous song ideas. Users will need to understand, at a glance, which files they're viewing, as well as the differences between multiple files related to a single song idea. This creates a design challenge that is critical to resolve for optimal user experience.

Group Members

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