

SinaSprite Overview

SinaSprite is designed as a tool to engage patients and generate data that can then be shared with AF4Q Alliances clinicians, and community health organizations. This feedback loop can help identify best-in-class providers, geographic regions of high patient education, and improve patient self-efficacy. Targeted to women ages 25-50 with high stress levels, anxiety, or depression, players in SinaSprite help Socks the Fox, a digital guide/pet, become a Zen Master. Players accomplish this by telling Socks their stresses and Socks either “puts them away” or “lets them go.” Evidence-based treatment methods are embedded into the gameplay so players learn healthy habits while simultaneously achieving the desired behavior change. Players categorize their daily concerns and entrust Socks to “hold” their concerns while also engaging in other activities, or mini-games, with the pet, such as fishing. Socks and the player have a symbiotic relationship in which they help each other achieve goals. By allowing Socks to help with their anxiety, the player helps Socks reach its goal (becoming a Zen Master). Throughout this process, the player builds a strong emotional bond with the pet/guide. Through the gameplay, a first-of-kind holistic activity log, or patient registry, is created with important contextual gameplay metrics (e.g. time of day or location) that, in combination with the player-reported data (specific stressors, symptom ratings) can help assess the underlying issues related to the player’s concerns. This information can be shared with clinicians and caregivers to help understand the player’s underlying challenges and triggers associated with managing stress.

How to play

This section provides a brief orientation to the app and compressed instructions on how to play the game. A comprehensive functional spec is available upon request that details the current and future gameplay elements. Notes: 1. SinaSprite is designed as a mobile app and has been submitted as a web player version per the RWJF Challenge requirements. 2. An unlocked version has been submitted so the app’s whole scope can be experienced and evaluated. Thus certain time-based gameplay elements are turned off. You can click to fast-forward through the animations. A locked version is available upon request. 3) Make sure your computer is unmuted.

Figure 1: SinaSprite Overview



The screenshot shows the SinaSprite game interface. At the top, it says "Unity Web Player | SinaSprite (Unlocked)". The main menu is displayed on a stone tablet with the following options: "Relax with Socks", "Fish With Socks", "Weekly Check-in", "Visit the Shrine", and "Meditate with Socks". A fox character named Socks is sitting in the bottom right corner. A yellow "YOUR CONNECTION" icon is visible on the tablet. The background features a tree and purple flowers.

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Relax with Socks is the core activity of the game. Player can enter a maximum of 3 stressors.

The “Weekly Check-in” activity normally unlocks after 7 days of play. Player can reply anytime once the activity has been unlocked.

Fish with Socks unlocks daily after player “Relaxes with Socks.”

Socks will earn will earn a 1/2 tail each time the player completes this activity, which marks progress towards becoming a Zen Master.

As described in Phase 1, this is a mini-game that allows a player to relax and bond with Socks.

Five randomized questions are chosen from a set of 15 that are of interest to a clinician.

Visit the Shrine is where the player can see Sock’s progress and their own. Socks needs 9 tails to become a Zen Master.

This is where AF4Q questions on provider quality metrics or medication adherence can be incorporated.

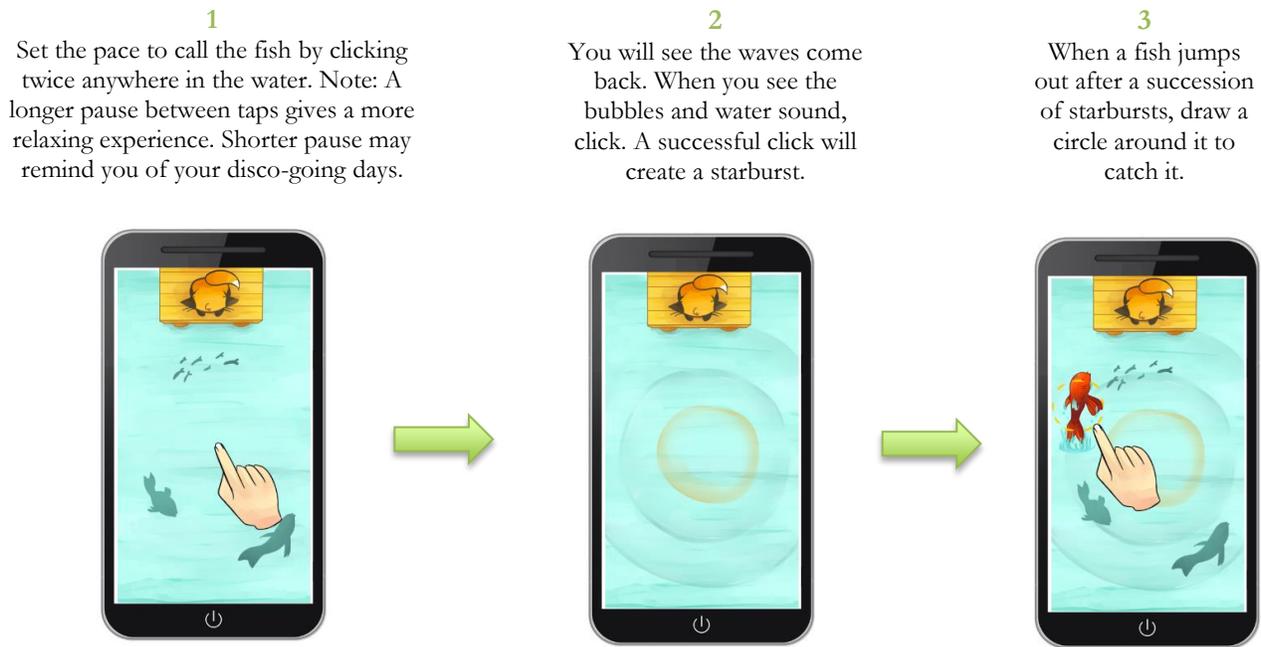
Out-of-scope of Phase 1. Example of future mini-games.

Make sure this text appears to ensure you are seeing the full screen.

Fish with Socks is a mini-game where the player taps a pond to simulate the rhythms of fishing. Fishing is idealized as the epitome of relaxing activities and this game is designed to explore that form of ‘engaged relaxation’ in a fun way. Since the player is tapping out a

specific rhythm, they have to be patient enough to catch a fish, but vigilant enough to not lose their own rhythm and let the fish get away. Depending on how fast or slow player tap the pond, different fish and objects will be summoned to the surface. To catch a fish just keep the rhythm steady until a fish jumps out of the water. Once it jumps out of the water, quickly draw a circle around the fish and it is caught!

Figure 2: Fish With Socks instructions (Note: Images were from mobile experience so mouse click replaces touch gesture.)



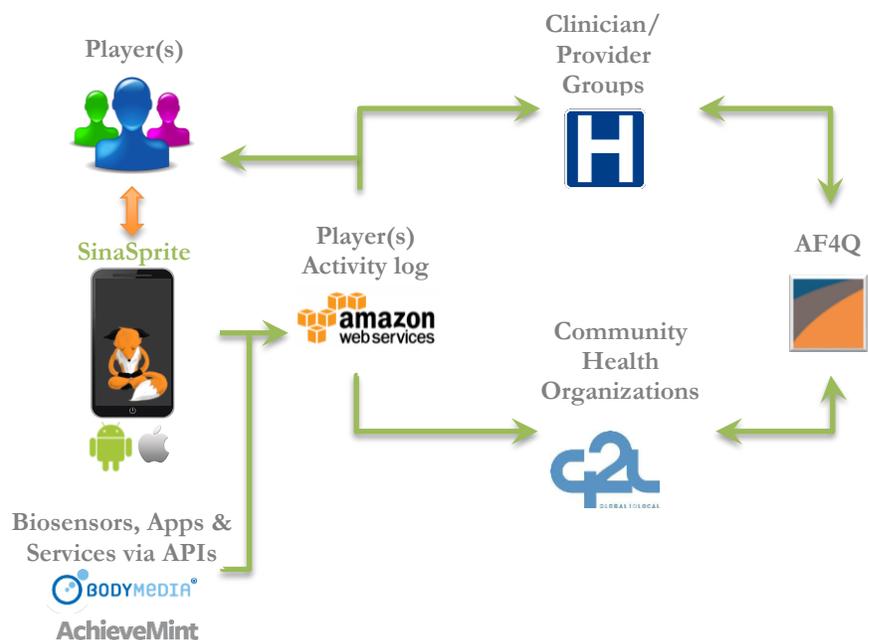
Known issues:

- There is an issue specific to the Mac version of the Unity web player where the backspace key does not function correctly. When testing the Android app, this was not an issue. As the web player build was created specifically for the challenge, this will not be a problem when the game is deployed on its intended platform to broader audiences.
- In the Rate sections - Paws rating maybe be difficult to select. This is also a web player specific issue.
- Rate screen has “Yes” as the preselected answer when entering a new stress. Future builds will not have either option selected.
- Fishing game buttons and text are coded to be proportional to the screen. They will appear stretched out in the web player.
- Fish count includes catching a boot. This is a web player specific issue that will not be a problem with the mobile app.

Technical Overview

Figure 3 provides an overview of the technical architecture. The game was developed using Unity, an industry standard cross-platform game development engine. When players interact with the game, their data is uploaded to an Amazon Web Services (AWS) backend, where it is stored as a player activity log. AWS was selected due its ease of scalability and robust data storage security. Additional technical details are available upon request. The collected data is written to a de-identified individual player log. Data can be aggregated real-time at a group level. Players can review their own log and aggregate data can be shared AF4Q Alliances, clinicians, and community health organizations.

Figure 3. Technical Overview



While initially out-of-scope for Phase 1, a system architecture was designed to integrate both the BodyMedia and the AchieveMint APIs. The data structure was implemented and API's calls were partially executed. Next steps will be to automate the API calls. The BodyMedia AP allows the capture of biometrics, including GSR. This could be a potential research platform to help researchers understand how GSR can be used in-field to monitor stress real-time. Through the AchieveMint API, players can earn cash rewards when playing SinaSprite.

Data Generation

SinaSprite could also be a first-of-kind mechanism to get individual-level activity data, as well as symptom monitoring, something that is not currently available to providers. As discussed in the Phase 1 submission, SinaSprite can create player activity logs and reports that can be available by AF4QAlliances, community health organizations, clinicians, and the player. John Gallagher, of AF4Q's Puget Sound Health Alliance, confirmed this game could be used to provide additional information surrounding metrics of depression treatment. Enhanced understanding of the reasons that patients may not adhere to antidepressant prescriptions from their providers may provide important, actionable feedback to provider groups. This data has the potential to improve medication compliance rates and bolster depression outcomes within the region, an important metric of provider quality. In our user feedback trial, several testers requested reports they could review themselves or share with their clinicians. Because the data is collected at an individual level and is stored in a scalable fashion, provider and population-level data can be aggregated real-time.

Player Feedback

Seven players within the target audience were asked to use the first version for two weeks. To test ease-of-use, players were NOT given any instructions on how to use the app or the frequency to use during the test period. The test version did not include: 1) The opening trailer that sets context for the game. 2) Instructive text above animations. 3) Background in the animations. 4) Animation after Describe screen. 5) Audio in the fishing game. 6) Boot display during the fishing game. 7) The shrine. Even though SinaSprite was in a rudimentary state, feedback from the users confirmed that the character and game design resonated with the players, particularly those who were in therapy or familiar with stress management techniques, they perceived the app as effective in helping them manage their stress, and with more developed progression loops they would remain engaged with the game. This feedback also confirms the team's Phase 1 hypothesis that the experience would resonate with the intended audience. Furthermore, anecdotal evidence suggests the game, with minor modifications, could also appeal to other audiences, including men and children. The average session lasted 5-10 minutes and usage ranged from 1-4 times/week. Demographic of sample profiles was:

- Number of participants: 7
- Age: 18-50
- Gender: Women
- Number of children: 0 to 3
- Locations: Puget Sound Area in WA and Southern Illinois.
- Many were familiar with stress/anxiety management approaches.
- Occupations: counselor, physician, student, communications manager

The test was designed to get feedback on 3 questions (Note: Detailed player demographics and feedback is available upon request):

1. Do the players emotionally connect with Socks?

Players overwhelming emotionally connected with the character. Select feedback includes:

- "Socks is really cute. He doesn't lose cuteness. I want to check in with him."
- "I think he's cute. I think he's very likable. I guess I have an affinity for little foxes that are really cute (like stuffed animals). It was just very aesthetically pleasing, easy on the eyes."
- "I like the way Socks looks with that beautiful, fluffy tail. He's just cute, like when he's doing the breathing. It makes you want to breathe too."
- "It was easy to use, I like the avatar, it's like Club Penguin."

2. Do the players find the game effective?

The app was most effective for those who were particularly those who were in therapy or familiar with stress management techniques. Other players who were less familiar with these stress management techniques wanted in-game tutorials or explanations that provided step-by-step explanations of the approaches and goals of the game. This response was expected given these features were not slated for Phase 1 development. Selected feedback includes:

- "WOOHOO! I am going to use and so is my 13-year old daughter who has mild anxiety over her first physical condition....You are going to change the world."
- "I thought about Socks the Fox a lot. I imagined putting my anxieties away in chests. I imagined attaching them to balloons and waving goodbye to them. I also would picture sitting on the pier with Socks throwing rocks into the water and watching the concentric circles. (I'm the one who doesn't want to catch the fish - I just like the circles in the water.) I even doodled pictures of Socks. It is a powerful app. The images and the exercises are spot on."
- "This has really become part of my thoughts – I picture Socks through the day."
- "I actually found myself using it when I knew that I should be, and I wouldn't have otherwise." Knowing she had the tool available helped her use it."(This user is familiar with the relaxation techniques used in the game.)

- “It started out as just a game, but the more I played, it the more I realized it was a therapeutic tool. More of a little therapeutic sherpa.” (This user is clinically trained.)
- “It reinforces the tools that the counselor has given me.”
- “I liked that is had a demonstration of how often I should be breathing. I definitely like the pacing.”

3. Do the players want to use the app/play the game over time?

Players overall were engaged during the brief test period but they indicated that engagement would have been higher if the app, which was provided in the web player version only, was available on a mobile device. They also expressed a concern of losing interest in the game because of a lack of activities and progression loops. This response was expected given that fully-developed progression loops (see Core 5: Growth of Pet, below) was not slated for Phase 1 development. Select feedback includes:

- “The app doesn’t apply labels to anything, it’s not judgmental. It doesn’t come out and say ‘hey, you’re stressed.’ I love that the app doesn’t go around saying “you need this app because you are stressed.” It’s fun and cute and makes you want to come back.”
- “It’s not a good feeling to use an app because something that is wrong with you. This doesn’t make me feel like I have a mental health problem. It’s inviting and appealing. The app isn’t focused on anxiety- it gives me something to do- it’s a game.”

Phase 1 Development

The mentor feedback greatly helped us prepare Litesprite’s final submission. The guidance:

- 1) Broadened the team’s understanding of the data generation possibilities, current availability and uses of data, and, therefore, how SinaSprite can provide useful and new types of data.
 - 2) Validated our philosophy, execution methods, and goals.
 - 3) Gave the team gained a more detailed understanding the different interests within the different organizations of RJWF, particularly the AF4Q initiative.
 - 4) Helped the team focus their development efforts.
- So notable progress since Phase 1 includes:

Table 1. Original delivery schedule.

Core	Delivery Date	Status
Core 1: Stress Management	Phase 2	Complete
Core 2: Regular Questions for Player (Weekly Questions)	Phase 2	Complete
Core 3: Mini-games	Phase 2	Complete
Core 4: Connecting with Friends	Future	On-track
Core 5: Growth of Pet	Phase 2	Complete
Biosensor and reward platform API integration	Future	Architecture designed. Calls partially executed. Data structure implemented.

1. Team growth from 7 to 20 volunteers, including interns, in 12 weeks with team members in Mumbai, Berlin, Orlando, and Seattle! These were mainly through referral or self-solicitation.
2. Creation of our first-ever functional Android app with all Phase 2 deliverables (see Table 1) that was used to obtain Player Feedback, including AWS connectivity, within 6 weeks! The developers, testers, and interns were all learning the tools while building the first prototype. This build was used to obtain Player Feedback (see Player Feedback).
3. Connected AWS to Unity Web Player build. For the challenge, the app was converted from an Android app to the Unity Web player. This was especially challenging because it required the team to write a significant amount of customized code when there was minimally available documentation.
4. While initially out-of-scope for Phase 1, a system architecture was designed to integrate both the BodyMedia and the AchieveMint APIs. The data structure was implemented and API’s calls were partially executed. Next steps will be to automate the API calls. The BodyMedia AP allows the capture of biometrics, including GSR. This could be a potential research platform to help researchers understand how GSR can be used in-field to monitor stress real-time. Through the AchieveMint API, players can earn cash rewards when playing SinaSprite.
5. Completed first round of player feedback. Validated game and character design and potential effectiveness (see Player Feedback).
6. Social media strategy implemented via Twitter and in 8 weeks we gained 300+ followers who include influential clinicians, managed care professionals, investors, reporters that cover healthcare, and even a few celebrities. Select followers include:

@Litespritegames Follower	#Followers
AF4Q	2K
Ted Coine, Forbes Top 10 Influencer	232K
Daniel Goddard, Young and the Restless soap star interested in curbing bullying amongst kids	163K
Kaiser Permanente Center for Total Health	2K
Laura Dunn, Kaiser Permanente PR	10K
John Nosta, Forbes healthcare tech writer	11.K
Hiten Shah, advisor and investor	93K
GetFitIntoShape, fitness group	35K

@Litespritegames Follower	#Followers
• Lori Lite of Stress Free Kids	20K
• Dr. Steven Eisenberg, oncologist	13K
• Paul Sonnier, Founder Digital Health LinkedIn group	9K
• Jenni Hogan, Forbes Journalist & Emmy winning anchor	60.5K
• Liz Neporent, Health & Medical Reporter, ABC News National	20.9K

7. Selection as a [Reactor beta class participant](#): Washington Interactive Network's interactive media accelerator.

8. Selection as a [Quarterfinalist](#): Seattle Venture Partner's [Fast Pitch Seattle Competition](#) whose sponsors include Microsoft and Starbucks, and is attended by leading area investors. There were ~97 applications and 40 quarterfinalists were selected.
9. Formation of Advisory Board that includes: 1) Ed Fries, co-founder Xbox. 2) David Hazel, Managing Director Center for Web & Data Science, University of Washington. 3) Ted Tanase, CEO Total Living Choices.
10. Completed first draft of provisional IP.
11. A range of other press articles and speaking events including:
 - APM: Marketplace – national radio news program: [Breaking through the Competitive Mobile App Space](#).
 - Profile in Medgadget's story [Behavioral Health a Big Focus at Games For Health Conference](#).
 - Geekwire: [Litesprite is helping people overcome medical issues with video games](#).
 - A profile by the Kauffman Foundation on their upcoming story on female entrepreneurs.
 - A profile in an article around Games and Diseases in the Sept. issue of Casual Connect, the Casual Games Association industry publication.
 - A panelist in the 2013 Games for Health Conference.
 - A panelist at the [The Future of Healthcare Discussion](#) sponsored by TiE Seattle.
 - Selection as one of nine [Women 2.0: Seattle Female Founders to Watch](#).

Conclusion

We entered the RWJF Games to Generate Data Challenge because it was a compelling opportunity to make a difference in improving health outcomes and it:

- Gave us a chance to partner with RWJF.
- Validated the innovativeness of our approach.
- Accelerated the development and deployment of our solution.
- Allowed us to increase the awareness and encouraged broader participation in the Games for Health field.
- Provided an opportunity to meet like-minded people.

Because of the support from RWJF, Litesprite, despite being quite early-stage, in 10 weeks, the team has created an end-to-end feedback loop that generates and stores data and can be implemented at scale. We are positioned to accelerate the development and deployment of SinaSprite. The firm has tremendous and inspiring success so far with a group of dedicated volunteers who are excited about the project and the direction it is taking. Through this challenge, this 20-person volunteer team is convinced that SinaSprite has great potential to help people. Initially many team members had signed-on to work up to the challenge. They have now expressed an interest to continue to work on SinaSprite in a greater capacity.

Through this journey, I have re-affirmed by commitment to furthering the use of games in healthcare. Shortly after the Phase 1 finalist announcement, I was told that in order to keep my position at Premera Blue Cross, I had to discontinue my efforts with Litesprite. Because I believe the potential impact that Games for Health can have on improving health outcomes, at great personal cost, I left Premera in March 2013 to focus my efforts full-time on Litesprite. While scalable, significant development is required for SinaSprite to be a commercially available platform for chronic condition management.

As RWJF considers the award equivalent to a seed round funding, an on-going collaboration with the Foundation at this critical juncture would greatly accelerate the momentum our young firm has developed and vastly improve the chances of success, and ultimately the broader success of games used in healthcare. It has been a privilege to work with all the Foundation individuals and we sincerely look forward to future collaborations.

Volunteer Team Profile

We were a team of 7 volunteers when the finalists were announced. Mainly through self-solicitation and referrals we have added an additional 13 new volunteers. Bringing the team size to 20! This is a passionate team of industry professionals and highly skilled interns devoting time because they believe in the mission and are also interested in expanding their skill set, such as Unity programming or healthcare knowledge. The team has a broad and diverse set of experiences we bring to bear through their experience at firms such as University of Washington's School of Medicine, Warner Brothers, Xbox, Nike, Microsoft, T-Mobile, Wizards of the Coast, Neurorestorative, Premera Blue Cross, and Hasbro.

Business Team



Swatee
CEO



Lauren
Biz Dev



Susan
Social Media



Michele
Public Relations



Ryan
Legal/IP

Clinical Advisors



Meagan
Clinician



Sam
Clinician

Technical Team



Shawn
Game Dev



Alok
Game Dev



Michael *
Game Dev



Sid *
Database



Mark
Servers

Testing



Alan
User Testing



Mukta
Technical Testing

Creative Team



Chris
Game Design



Solon *
Game Design



Silvia *
Illustration



Wanda
Creative Director



Sean
Animator



Sandra
Data Visualization

* Intern



Litesprite