# ATMOS *sphere*

*ATMOS Sphere: fun, atmospheric, easy to use, open source chat and hang out platform*

## Introduction

The unexpected sweep of the COVID-19 pandemic has driven an invisible barrier between friends, families and loved ones as widely dreaded curfews, quarantines and other social distancing procedures are slowly integrated into our daily lives. Subsequently, social gatherings have become a rare luxury, and as social beings, humanity's need for basic human interaction grows exponentially as people spend increasing amounts of time in isolation and loneliness. A need which if suppressed, may lead to a steady decline in mental health.

## Problem Statement

Based on an article regarding suicide risk and prevention during the pandemic , suicide rates during the covid 19 pandemic are expected to rise due to a decline in mental health cause by fear, self-isolation, and physical distancing , leading to mental illnesses such as depression, anxiety, and post-traumatic stress disorder(PTSD).

An application for social interactions in a virtual platform may prove imperative in improving mental health for its users in not just during the COVID 19 pandemic, but during regular times as well by providing users with an option to connect and interact with other humans, preventing more people from being deprived of their social needs by a virtual form of human interaction.

## Project Description

Project Atmos' main directive is to provide it's users with a comfortable, virtual space to socialize with friends or other Atmos users. This will be delivered in the form of musical, themed channels called 'Spheres', each with customizable animated backgrounds and music playlist.

A sphere represents a dedicated venue for a group of Atmos users to socialize in, either via the integrated text chat, voice chat, or video chat channel in a similar manner to widely used video chatting applications such as discord or zoom. Each sphere features a customizable animated background, which can be selected from the default backgrounds, which is a wide plethora of suggested high-definition backgrounds (e.g., A livestream of Niagara Falls, fishy aquariums, fireplace, snowy mountains, mystical forest, coffee shop, etc.), and additional backgrounds added regularly by the dev team. Backgrounds can also be custom made with the user's video of choice (provided either by file upload, or a link to a video such as a YouTube link) using the in-application video editor, offering basic video editing functions and certain video customization features such as adding different ambient filters or borders, allowing the user to produce a looping animated background to suit their desires.

A sphere can be interconnected with a series of different spheres, allowing spheres of simmilar / relevant themes to exist in close proximity to each other. Relevant or nearby spheres can appear in as recommedations when in a user sphere, and are availanle to be visited easily in a graph-node style navigation.

If a user does not wish to go through the process of customizing a sphere and only wishes to quickly create a session, a "Quick Start" feature will enable a user to generate a randomized sphere with relevant music genres and themes, needing the user to only input a music genre of their choice.

In terms of music, full Spotify integration and syncing will also be available in the Atmos applications, allowing users to select a playlist of their choice from the Spotify platform which already hosts a multitude of music tracks of varying genres. However, additional audio effects and filters may be applied in the Sphere audio settings, adding certain effects such as dampening, echoing, muffling or even integration with other audio effects (e.g., adding a raining ambient soundtrack to sad music can create a melancholic atmosphere).

Furthermore, instead of operating as individual sessions for private groups, a life cycle of a Sphere can be extended as dedicated spheres can be maintained indefinitely for public joining and use, similar to live stream music channels on YouTube. Dedicated spheres operate similarly to services such as radio stations, and are public for all users to join. Owners/Administrators of a dedicated Sphere may offer a range of content in addition to music streaming, such as news broadcasting (e.g., the CBC news sphere would be available to the public to join and view live news being reported), podcasts, or live performances and concerts, providing the application a secondary function similar to that of a social media platform.

## Biggest Risks

### Risk 1: Copyright Strikes

One of the primary features of Atmos is that it is supposed to be a location to chill and play music. An obvious risk that will arise with this is that if users can choose what songs they would like in their sphere, they might choose copyrighted music and backgrounds. This isn't necessarily bad since spheres aren't monetized, but corporations will still want money for letting people listen to their music or use their content as backgrounds. There will need to be ads added

somewhere for when copyrighted songs/backgrounds play to appease to the big corporations. This might be harder to handle for when video chat is implemented since that will add more legality issues when people start streaming movies.

### Risk 2: Explicit Content

Since this is the internet, people will use whatever site or application they can find to be degenerates. As a result, there will be spheres created for content not suitable of children (or for anyone in some cases). Atmos will need clear rules in the terms and conditions stating that either the site cannot be used for this 18+ content or if explicit content is allowed, then there will need to be rules on what is acceptable and the restrictions required to ensure users under the age of 18 do not see this explicit content. Regardless of which of the 2 rules are chosen, extreme explicit content like real life blood, gore, and death, as well as illegal pornography like child porn will be banned and handled with harsher consequences.

### Risk 3: Distribution of Illegal Content

Connecting with the past 2 risks listen above, other illegal content can cause risks to Atmos. This includes:

- Distribution of pirated games, movies, and other medias or the use of pirated media on any sphere.
- Distribution of content that is illegal according to Canadian and International Laws or the use of this content on any sphere.
- Distribution of illegal hacking software such as trojans, malware, or other viruses that are cybercrimes.

### Risk 4: Distributed Denial of Service (DDoS) Attacks

There might be a possibility that someone might want to take down the Atmos servers by causing DDoS attacks. This can be devastating and will need to be handled as soon as possible when it happens since it will cause enough network trafficking that it'd be impossible for users to use Atmos.

## Study Design

As per the hypothesis, the idea is that the music, calm background and a platform for socializing will positively affect a user's mental health. To test whether such activities in fact have a discernible impact on mental health, we shall conduct a study involving 70 participants.

The 70 participants will be split in 7 groups of 10 participants each. The groups will have each be subjected to a different form of activity, and its impact will be evaluated based on the users' evolution of mood through and at the end of the activity.

At the beginning of the study, all participants will be given a questionnaire in order to determine their mental state, and each given a *happiness level* based on their results.

The 7 groups will have the following activities they will be a part of:

- **Group A:** View only the animated background.
- **Group B:** Listen only the *chill beats* or curated playlist.
- **Group C:** Participate only in the chat along with other users in the group.
- **Group D:** Listen to music, as well as view the animated background.
- **Group E:** View only the animated background, as well as participate in the chat.
- **Group F:** Listen to the music, and participate in the chat.
- **Group G:** Listen to the music, participate in the chat as well as view the animated background.

| | **Animated Background** | **Chill Beats** | **Live Chat** |
|---|---|---|---|
| Group 1 | X | | |
| Group 2 | | X | |
| Group 3 | | | X |
| Group 4 | X | X | |
| Group 5 | | X | X |
| Group 6 | X | | X |
| Group 7 | X | X | X |

After the designated acitivity of 30 minute, the moods or *happiness levels* of the 70 participants will be evaluated. If our hypothesis is correct, there should be a statistically significant enhancement of the participants' moods after the activity, with the highest effect in group G.