Salutone

by Susan Korgen

This is my plan for a full-stack software application of my own concept, design, and coding. It is not-for-profit.

Concept

A multiplayer online game teaches group therapy patients how to help each other, in between weekly sessions.

Overview

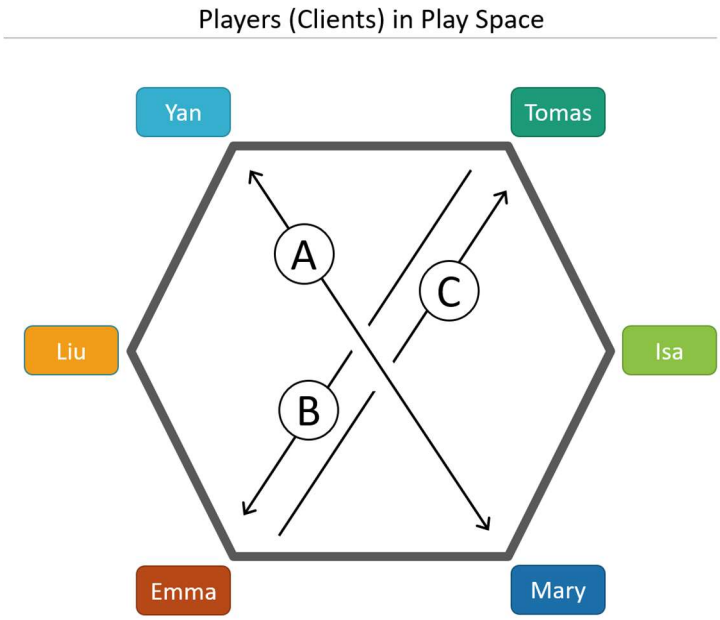
Salutone is an application for health care management and delivery. It is a multiplayer game in which groups of behavioral and emotional health clients learn and apply interpersonal skills, under clinical supervision, with the goal of qualifying to provide mutual support for self-care during the hours between weekly group sessions.

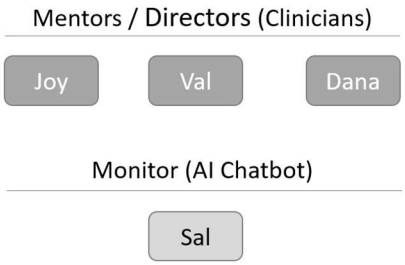
Salutone simulates online healthcare sessions, care coordination, event notification, and cohort management of patients who conduct remote group therapy sessions by blogging. It first simulates, then later demonstrates integration with open-source AI libraries to assess and alert participants regarding emotional tone.

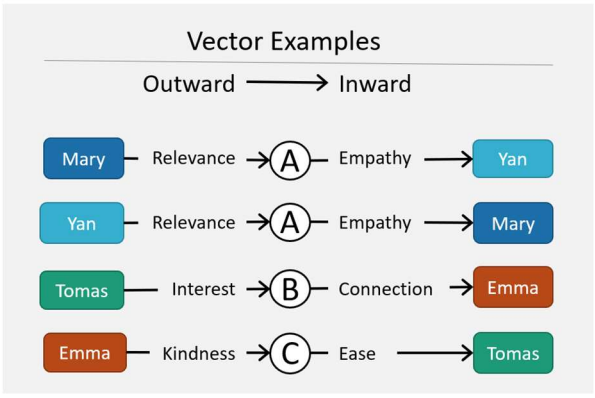
Clients in a group may be unable to regulate expressions of outgoing tone or recognize reactions to incoming tone productively. Neutral prompts from the AI within the multiplayer game permits the clinician in that environment to retain focus on the deeper private needs of each client in a group, without expending energy deciding when or whether to speak if one client needs a reminder, when this may disrupt the group. In time, a group may earn sufficient skill to be trusted to use the application in off hours to mutually support each other in self-care.

In the workplace, Salutone has potential as an interpersonal training ring for bettering group dynamics on a team.

A real Salutone could benefit people. I hope that I (with others) may investigate further on a not-for-profit basis.







Benefits

- Training and reinforcement for positive and constructive group dynamics in any context.
- AI ratings on specific emotional and interpersonal metrics are displayed to Mentors during group play.
- AI may pause the game at moments of tension and prompt players to consider interpersonal tone.
- Group leaders stay focused on training and therapeutic goals, keeping more clinical content in mind.
- Trained and committed players from established groups may support each other in therapeutic goals between weekly supervised sessions, by entering the game and conducting a session with the AI monitor.

Game Rules

- The game assumes that groups of committed players can learn skills to help each other with their goals.
- Players are members of a committed therapy group, with its own rules, led by a board-certified clinician.
- The clinician leading the group judges independently of the game how well the group is progressing.
- Players have seen and have committed to understand and develop skill with the metrics of the game.
- The goal is not to change people, but to improve the positive quality of their interpersonal interactions.
- The game is a no-fault environment. Everyone is learning. Group events are not caused by one person.
- Every event is an opportunity to learn. The metrics themselves may be flawed. The group may discuss.
- The game is a training sandbox, each game new. No source data contributed by players is kept or stored.

Software Example

Salutone begins as a software example in my professional portfolio. I will build the following items over time.

Documents in the portfolio will reflect planning tasks as follows:

- Goals,
- benefits,
- user personas,
- use cases,
- code stack,
- subject matter experts,
- test and acceptance plan,
- wireframes,
- data model, and
- REST API specification.

Based on this plan, software I develop for the portfolio will demonstrate these full-stack application features:

- Python, JavaScript, React, and node.js.
- Healthcare interoperability via FHIR resources, via a REST API.
- A back end for storing administration data and an anonymized AI monitor tone history.
- Individual data provided by patients (images or chat) is destroyed immediately after the session.
- A clinician can study patterns in group tone history, only from sessions the clinician attended.

Demo Outline

The Salutone demo software will simulate the following activity to illustrate concepts:

- The player blog posts will be an image with brief text. Other players will comment, with varying tone.
- Each player has a set of similar images unique to them, so their personas are clear during the demo.
- The AI monitor (at first entirely simulated and scripted) will monitor and report on tone and mood.
- Each patient will have a condition and a care plan for simulated care providers to consider and share.
- A fictional therapeutic model, documented here, determines all metrics for monitoring and display.

Game Personas

The following are personas within the game demo: 1 monitor, 3 mentors, and 6 players.

Monitor

- **Sal** (an AI chatbot which silently collects session tone history, and prompts occasionally regarding tone)

Mentors

- **Joy** (Group Therapist, Group Leader, may delegate privileges to Val and send limited reports to Dana)
- **Val** (Therapist in Training, attends Group regularly as Associate Leader with limited privileges)
- **Dana** (Individual Therapist of a Player, does not attend Group, may receive reports from Joy)

Players

- **Tomas, Isa, Mary, Emma, Liu, Yan** (known to each other and mentors, but only in the therapeutic context)

Cognitive Artifacts

During the game, players display photos or text to the group with an intention to express or reflect on their mood, thoughts, and feelings. Players, mentors, and the monitor comment and exchange chat about these artifacts.

For demo purposes, each of the 6 fictional players has a stock of 4 photos in the code repository to contribute. Each set of 4 photos has a unique theme (books, animals, etc.) to make it easier for demo observers to distinguish players. The demo also assigns fictional diagnoses, moods, issues, thoughts, and feelings per player.

The diagnosis is shown to mentors. The other information, a player may self-reveal. All chat text is seen by all.

Demo photo sets are in a separate document. Clinician review of photos will suggest diagnoses and other details.

Interpersonal Model

The game models the flow of interpersonal acts as Outward and Inward vectors relative to a player in the game.

- Outward/Inward – is the person sending flow out (speaking), or is the person receiving flow (listening)?
- External/Internal – is the flow observable, as by a mentor or peer, or is it the private thought of a person?
- Expression/Experience – does a gesture proceed out from the person, or is another acting on the person?

The earlier diagram showed interpersonal vectors between players at one moment. The vector flow there is:

- (A) Mary expresses thoughts relevant to Yan, who experiences empathy. Yan returns same to Mary.
- (B) Tomas expresses interest to Emma, who experiences connectedness.
- (C) Emma expresses kindness to Tomas, who experiences ease.

Measuring Results

The game measures the strength of signal along interpersonal vectors during the game. It stores these numeric values to model the interactions between players and measure their progress in their therapeutic goals. Importantly, the specific cognitive artifacts and chat exchanged by players remains private and is never stored.

The next sections describe details of the vectors and other metrics in the game. Topics describe how these values are displayed to players and mentors during game play to enable discussion and reflection by the group. Implicit, but not detailed here, is the inclusion of an AI chatbot to monitor and manage a safe tone of game discussion.

Displaying Results

Number values for metrics are important to collect, but they are not shown as numbers in the game. Game play should drive mentor and player focus to qualitative understanding of interpersonal interactions. For this reason, mentors and players must not visually parse number values, or +/- signs, during the game. Graphics may show arrows for direction of flow, and bars, extending from a neutral center to opposite maxima, for signal strength.

Cause, Motion, Effect, Value

The model asserts that interpersonal acts (vectors) between persons A and B follow this sequence:

1. Cause – Inward, Person A
2. Motion – Outward, Person A
3. Effect – Outward, Person A – Inward, Person B
4. Value – Inward, Person B and others

Cognitive Vectors (Causes)

Player cognition is measured along both the Outward and the Inward directions of these vectors, independently. That is, the game model defines 2 poles on each of 3 vectors. All 6 scores are measured, and coexist in the model:

- Flexibility/Range – Flexibility of Thinking/Range of Feeling
- Tone/Mood – Tone of Expression/Mood of Interpretation
- Focus/Receptivity – Focus, Acuity, On Topic/Receptivity to New Ideas

Numbers for 6 Causes represent the signal strength toward that pole. Range is 100 (fully present) to 0 (absent).

There is more about cognitive focus (Cause) in the relational topic about relevance and interest (Effects).

Game Moves (Motions)

The group training purpose is interconnection within the group. For this reason, although individual players make game moves, the poles for assessing game moves are different from other vectors. Game moves are measured by the poles Connection/Division (relative to the group), rather than Outward/Inward (relative to the player). Motion assessment says: Does this game move increase connection within the group, or cause division within the group?

The 2 poles for Connection/Division are seen as canceling each other out, so they collapse into 1 score per vector.

- Engagement/Indifference
- Alliance/Hostility
- Enlivening/Deadening
- Encouragement/Sabotage
- Advocacy/Dismissal
- Growth/Damage

Mentors assess game moves along these vectors based on their clinical assessments of group interactions.
A goal of the game is that trained, qualified players in a committed group may also develop this skill and privilege.

Numbers for 6 Motions range from 50 (fully connective) to 0 (neutral, or no effect) to -50 (fully divisive).

Relational Vectors (Effects)

As with cognition, relational effects are measured along both Outward and Inward directions, independently. That is, the game model defines 2 poles on each of 3 vectors. All 6 scores are measured, and coexist in the model:

- Kindness/Ease
- Relevance/Empathy
- Interest/Connection

Players may be in a group because they need training to stay focused on topics relevant to others and leave topics centered on themselves in a timely way. This reflects a key skill of attentiveness to other players' concerns. In vector terms, if a player has low focus on others, expressing relational relevance and interest may be difficult.

The model asserts that relational skill can be increased, through training, even if there are cognitive barriers.

Numbers for 6 Effects represent the signal strength toward that pole. Range is 100 (fully present) to 0 (absent).

Value Judgements (Values)

These keywords represent desirable Inward values that players wish to achieve as the result of ongoing training with the group. Players may discuss the extent to which they are achieving these values during game interactions.

The only way to discover what a player has achieved as to values, is for the player to reveal that information. Doing so is an important but optional event in the game. Players may always retain private Inward thoughts.

These are 18 sample keywords for demo purposes. A real group would define its own Inward value keywords.

- Power – Strength – Safety
- Efficacy – Skill – Willingness
- Confidence – Comfort – Autonomy
- Choice – Creating – Persistence
- Resilience – Commitment – Freedom
- Respect – Joy – Satisfaction

Negative labeling is not encouraged in the game. No list of undesirable values is provided for the demo.

Numbers for 18 Values range from 100 (fully present) to 0 (absent).

Therapeutic Model

The model supports the activities of licensed clinical therapists during group sessions, by giving patients a structured way to repeat and confirm therapeutic lessons in off hours when these messages may be most needed.

This model asserts that life experiences that bring the most disruption, challenge, and harm to a patient are certain to occur in the middle of a long stretch of time while the patient has no access to their own therapist: that is, while not in a therapy session. Friends and family must set boundaries and may be unequal to responding well.

This model asserts that patients in a trained, committed group could fill this coverage gap for each other more effectively than anyone else, in ways that support the healing techniques from sessions. This should reinforce core therapeutic messages in a timely way. The result should be more rapid, effective, lasting, and positive outcomes.

Mentor Role

Mentors guide the group and individual players to build competency in the following skills:

- Emotional intelligence
- Interpersonal effectiveness
- Constructive group dynamics
- Goal and priority setting

Within a session, mentors draw on their own clinical experience to decide their own actions and interventions.

Within the game, these mentor actions are expected:

- **Understand** the group as a separate entity, which exists in addition to, and apart from, any individual.
- **Recognize** multiple effects in the game, including these distinctions, more subtle than discussed above:
    - Group → Individual
    - Individual → Group
    - Subgroups within the group
    - Abstention from the game
- **Measure** effects along vectors in the game.
- **Identify** desired shifts in metrics along vectors.
- **Instruct** how to push metrics along vectors in desired directions.
- **Record** progress or regression.
- **Direct** discussions on desired actions to change metrics.

Group Lifecycle

A group may eventually qualify for independent self-help. The mentor/group relationship has this ideal lifecycle:

1. Form group – Traditional group therapy.
2. Supervise group – Traditional group therapy, with the game as one available tool.
3. Train group – Group develops a skill-building focus, practices for step 4, Launch.
4. Launch group – Group tries game for self-help at specific times between formal sessions.
5. Advise group – Group increases game between formal sessions, as needed, with agreed boundaries.
6. Release group – Group may be largely independent, with periodic mentor checkpoints.

The mentor decides when each group can move ahead in this lifecycle. Perhaps no group reaches steps 5 or 6.

The game is intended to be independent of specific diagnosis. Mentors may find it helps some more than others. Mentors may or may not find it is better to form groups of similar diagnoses for more knowledgeable self-help. The model is not expected to interfere with the practices of other self-help techniques, such as 12-step programs.

Monitor Role

The purpose of **Sal**, the AI chatbot, is to ensure emotionally safe discussion during interactions in the game. Sal is a friendly monitor of emotional tone based on its intuitive perceptions of actions by people in the game. It offers gentle text reminders and pause or mute actions. It may suggest or require alternate paths for the conversation.

From a development perspective, Sal is a late-stage feature requiring research. However, it is technically feasible and a cornerstone of the product concept. Unsupervised online sessions can degenerate, and a chatbot can help.

During game play, Sal intuits emotional tone based on the players' cognitive artifacts (images and texts) and organizes this data into the vectors described above: Causes, Motions, and Effects. Values are for players to reveal. Sal receives player reports of Values during the game and records Values without interpreting them.

Sal is not intended to secretly monitor or record. During sessions with a mentor, Sal is optional. A mentor may:

- Require players to accept that Sal will both monitor and record emotional tone during the game.
- Require players to accept that Sal will monitor to support play and discussion but will not record data.
- Leave Sal out of the game. Act as both monitor and mentor. The game is less helpful but more private.
- Leave Sal out of the game. Delegate the monitor role to a colleague who is also present at the session.

The game model assumes that Sal must both monitor and record during self-help. It may be that player self-help is not yet an entirely safe option, but a goal within reach and worth pursuing energetically: like a self-driving car.

Under no conditions does the game record or save the cognitive artifacts or texts contributed by the players.

Content Review