

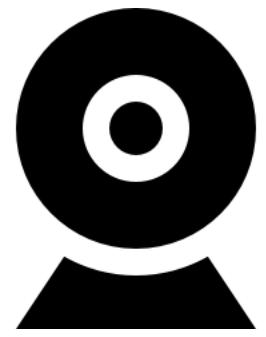
GroupChat.ch

Hi-Fi Prototype and Optimizations

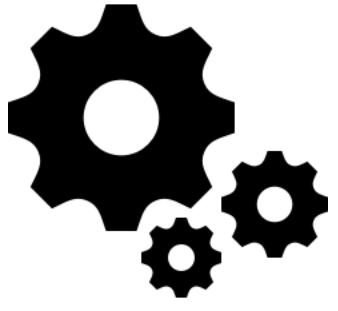
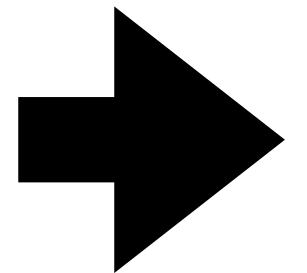


Group 6 – Filip Jaksic, Jannis Widmer, Heinrich Grattenthaler & Fabian Landwehr – 16.12.2020

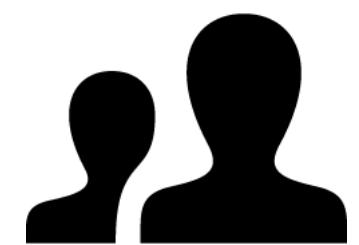
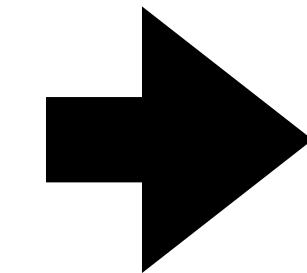
We enable great group chats with an always-on chat platform



Always-on-
portal



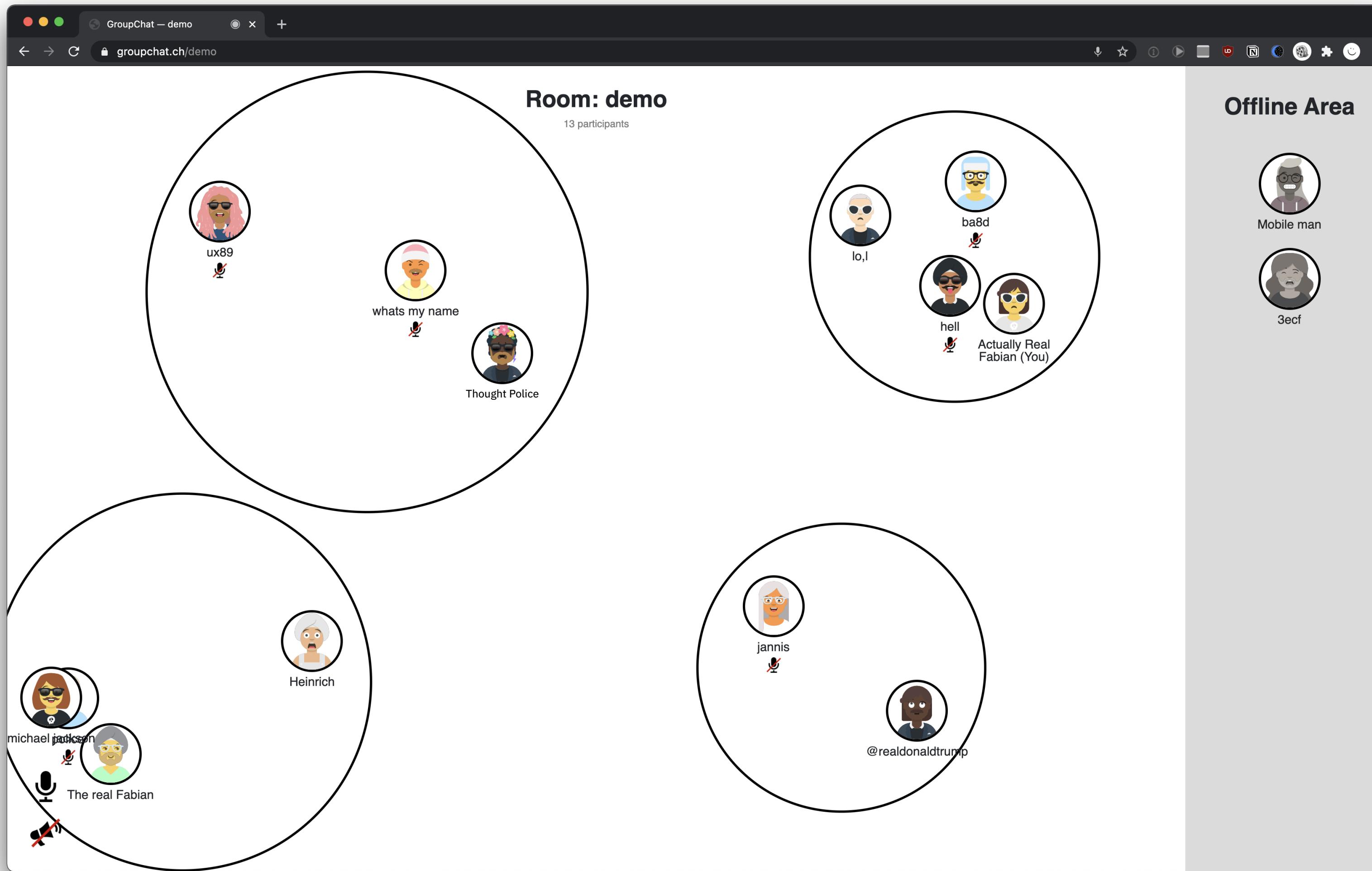
Design thinking
process



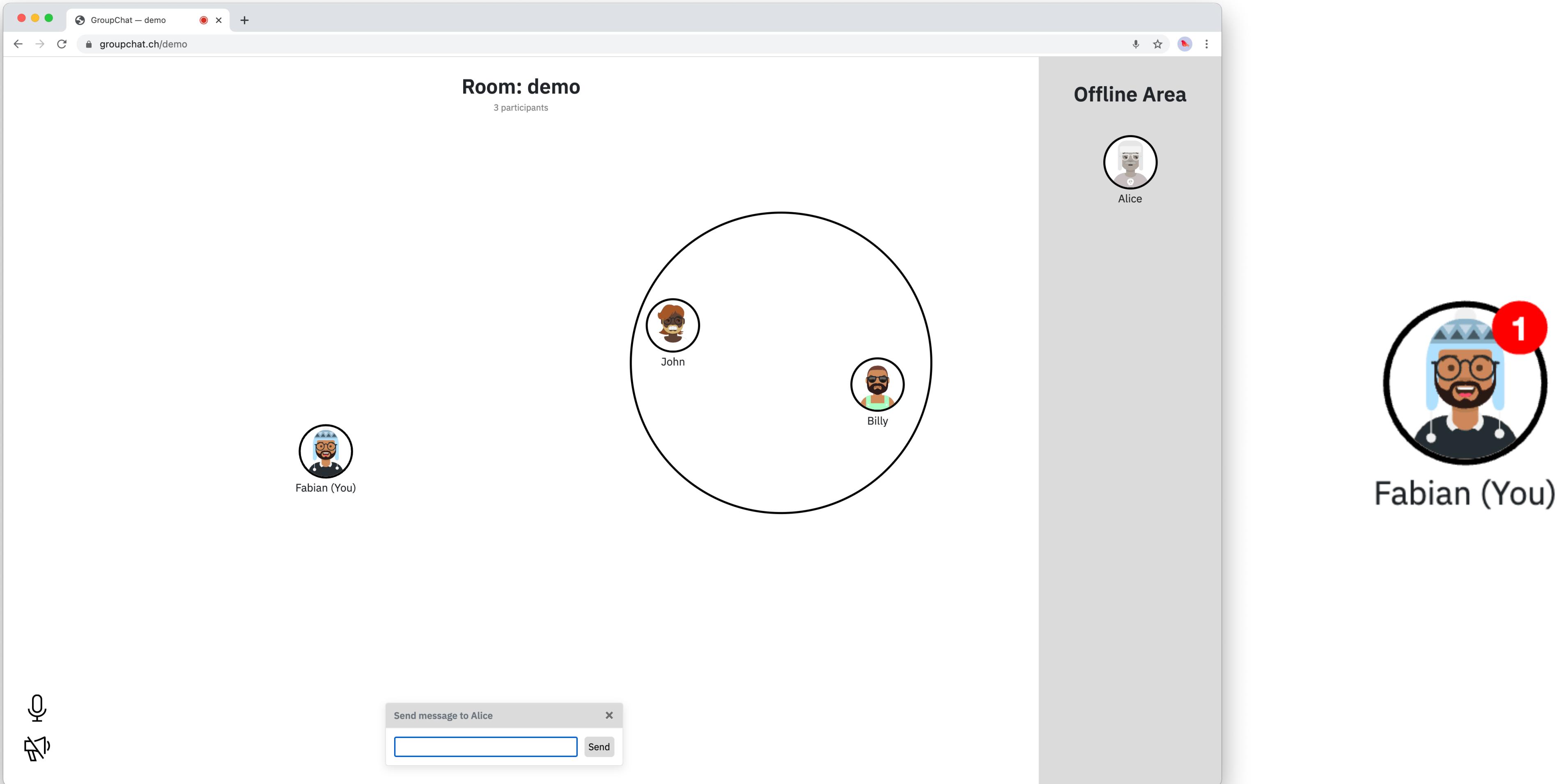
Online group
chat

One room allows multiple groups

Easily switch groups with drag and drop



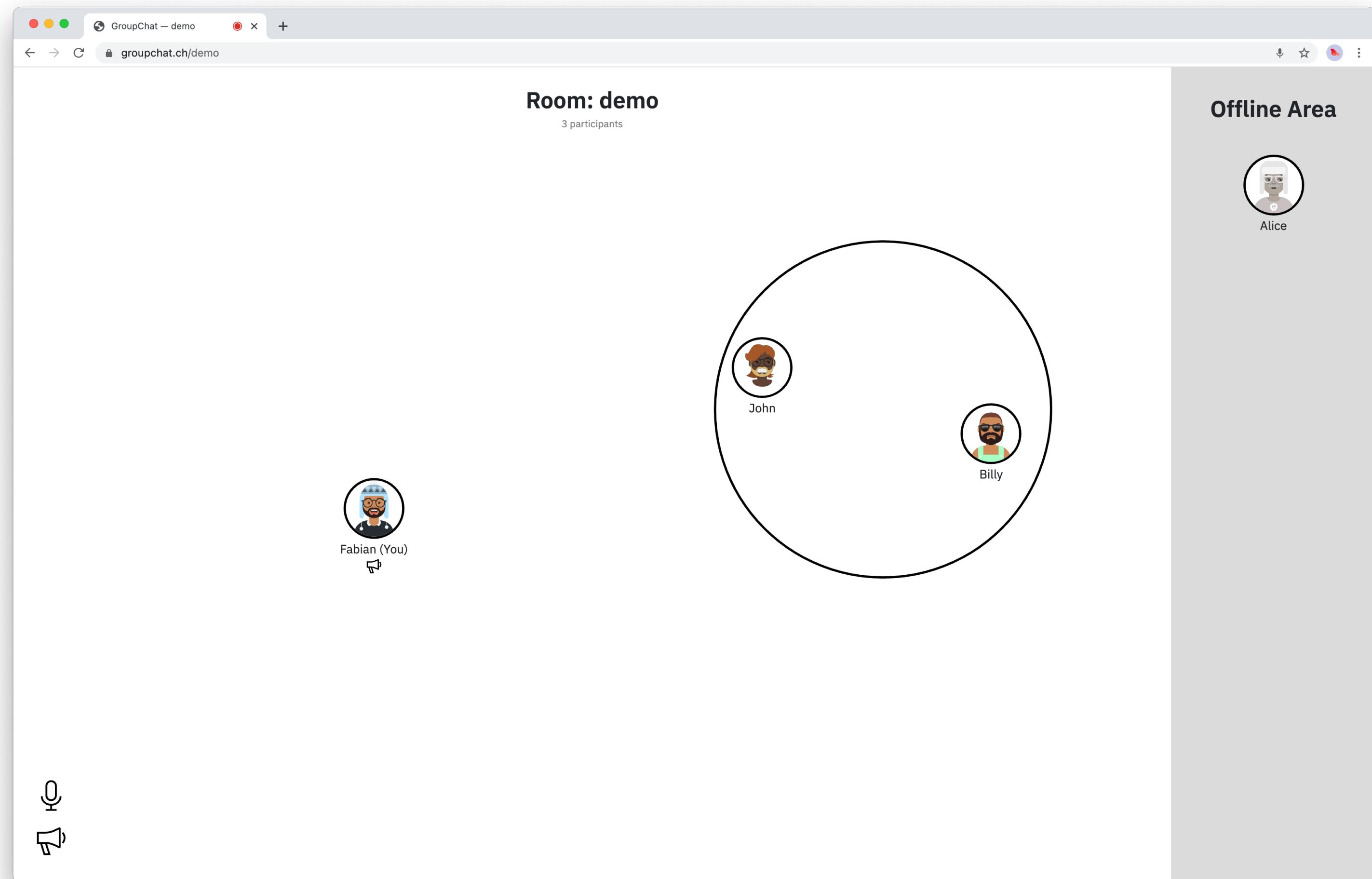
Send and receive messages to interact with offline users



Be a public speaker and everyone will hear you

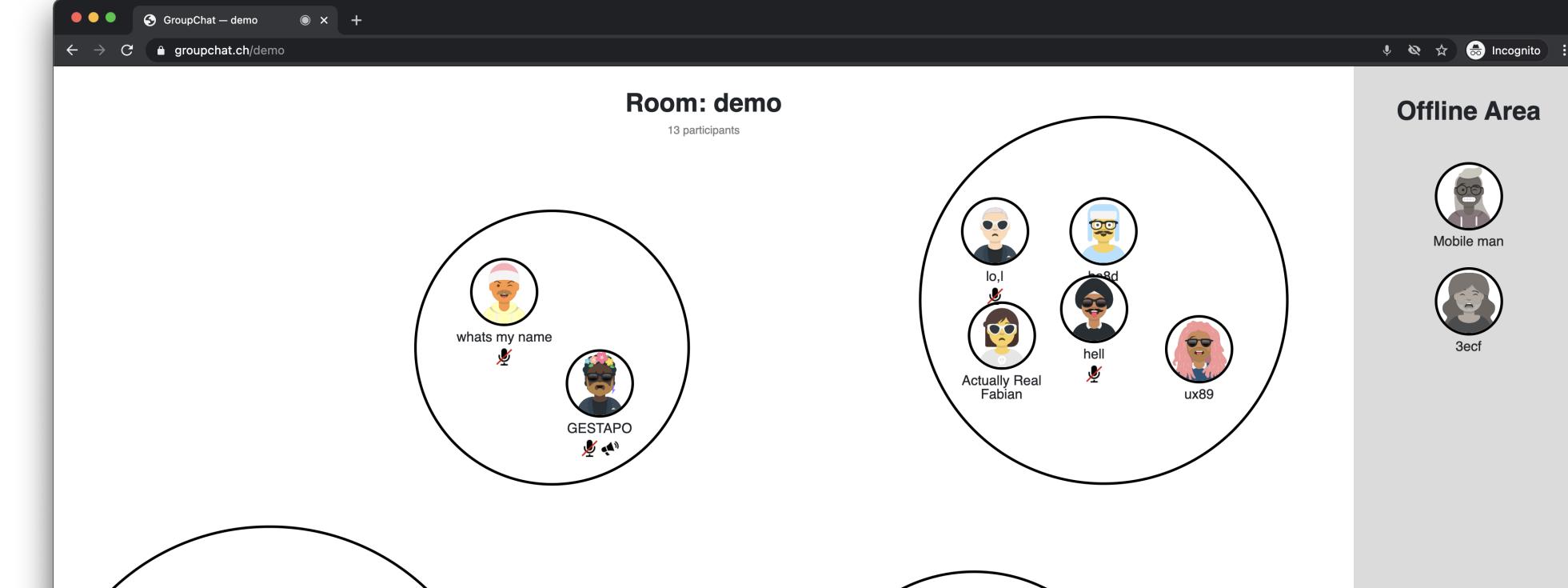
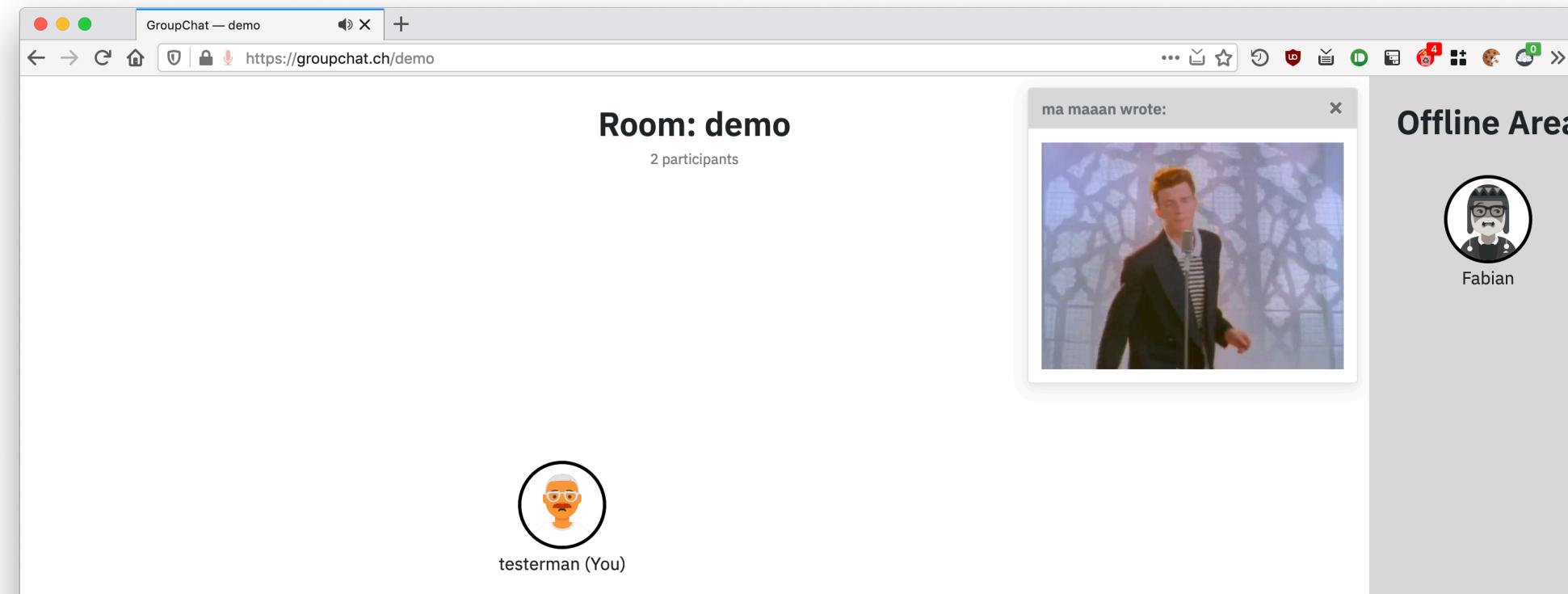
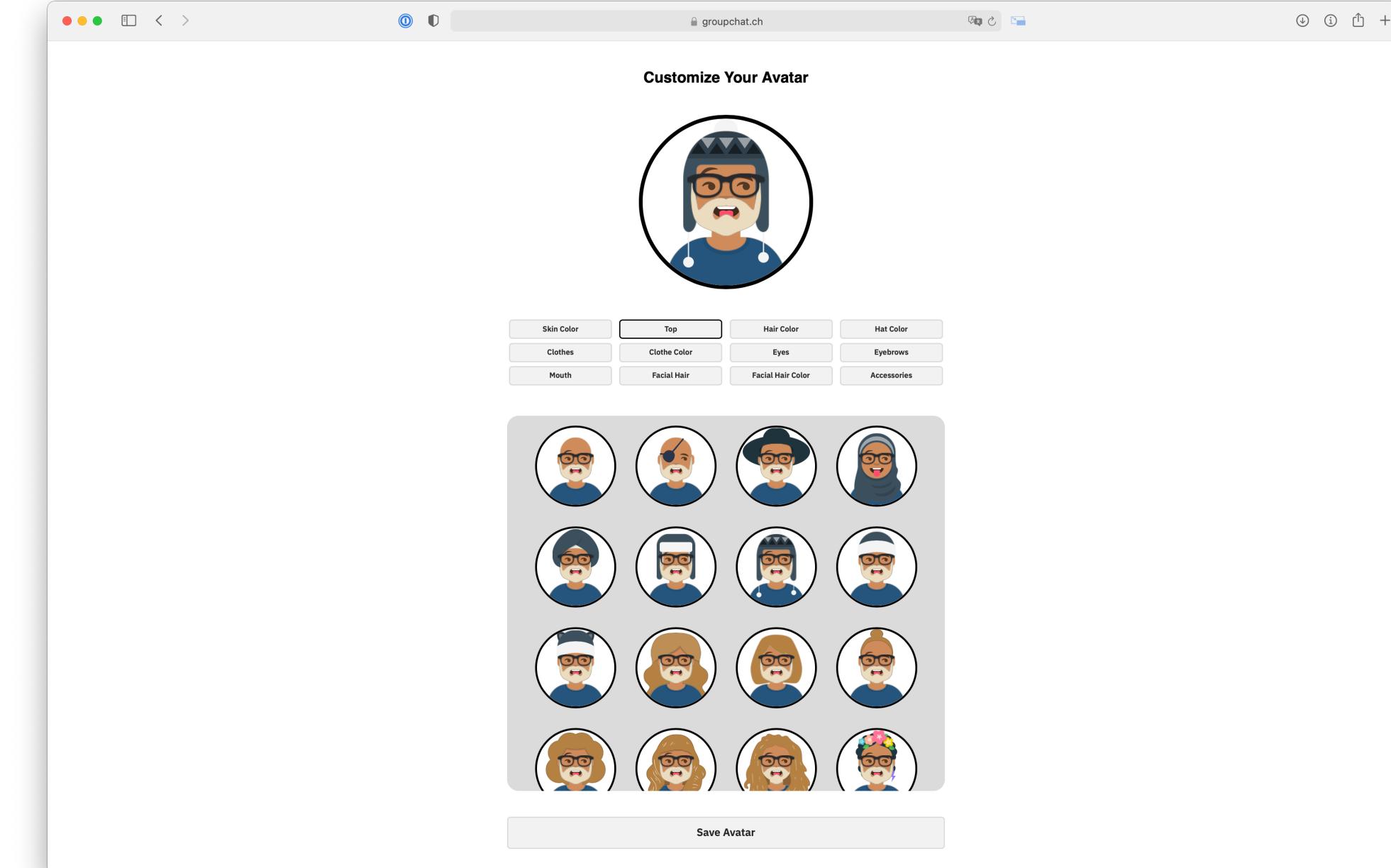
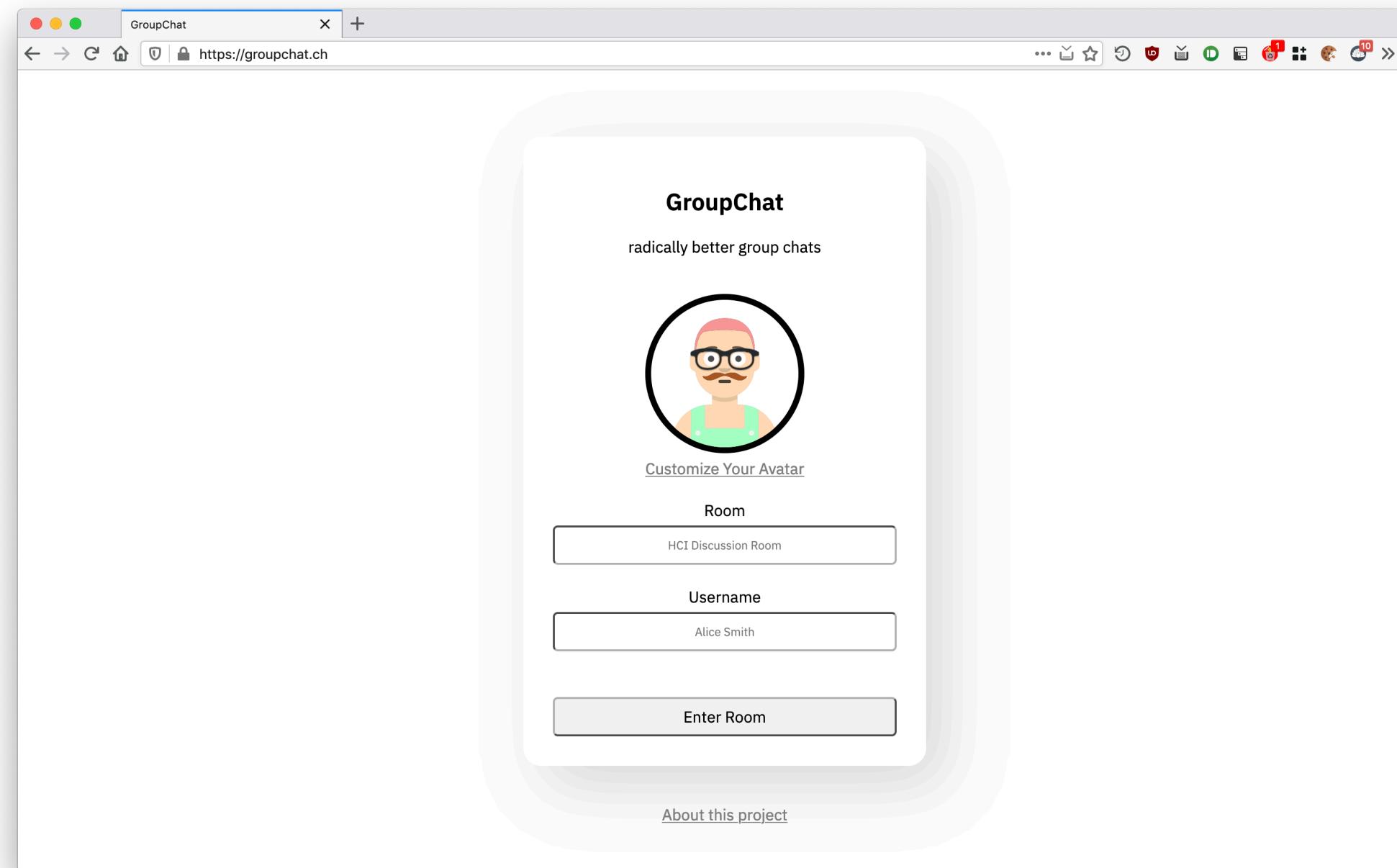


Speak Up



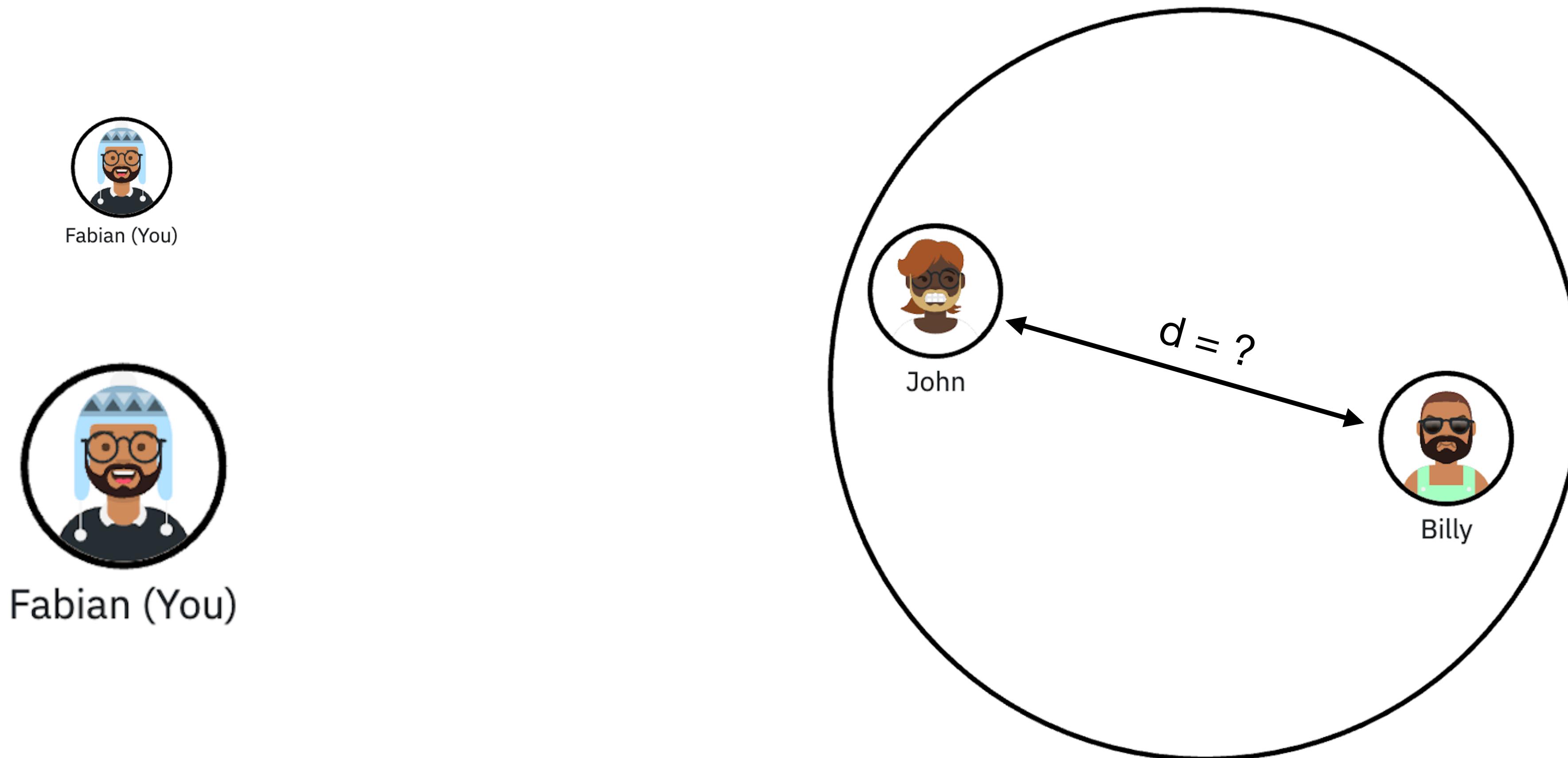
Many more features

Avatar customization, infinite number of rooms, advanced messaging...



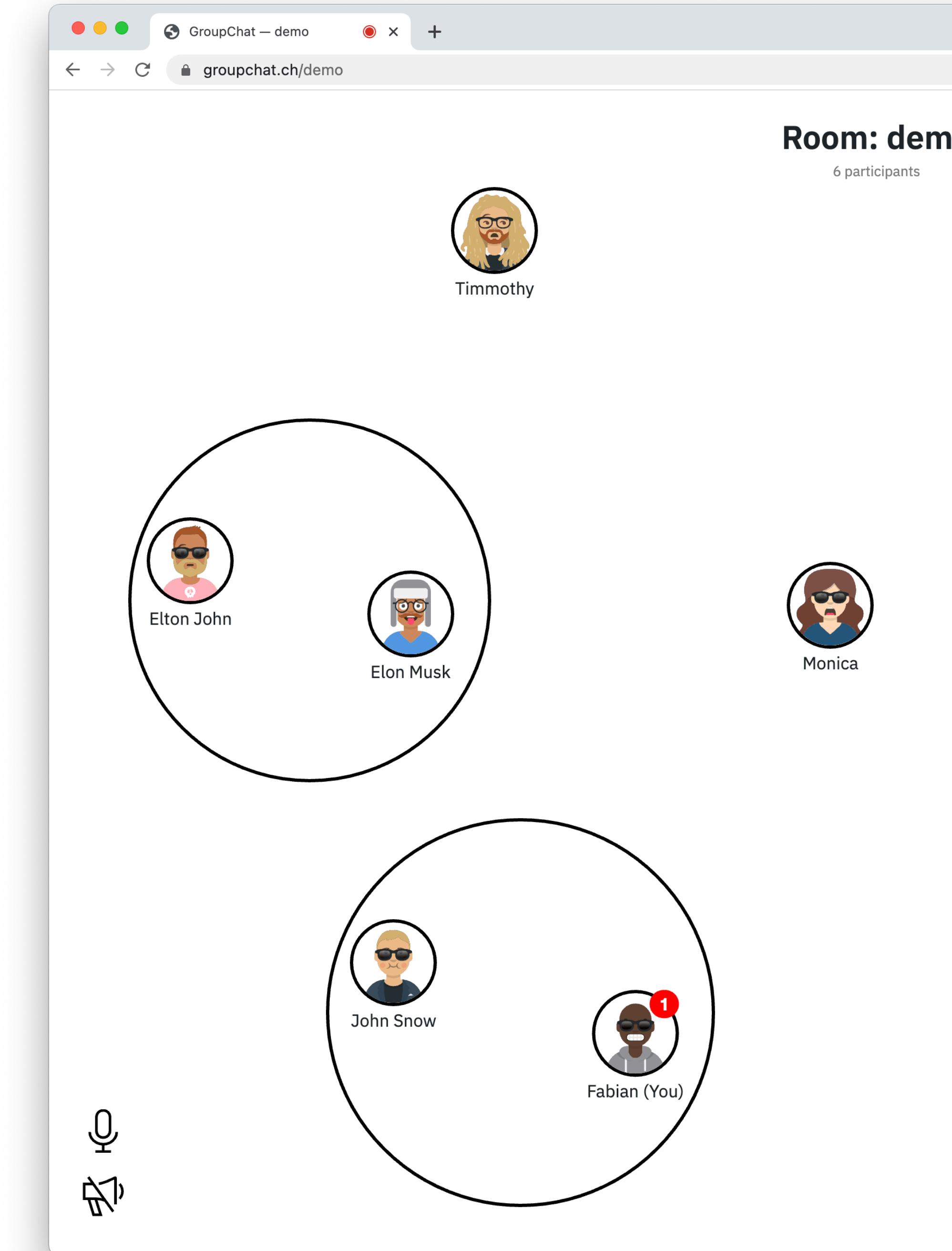
We automated the avatar and bubble size

How big should the avatar be? At which distance do we form a group?



A meaningful optimization

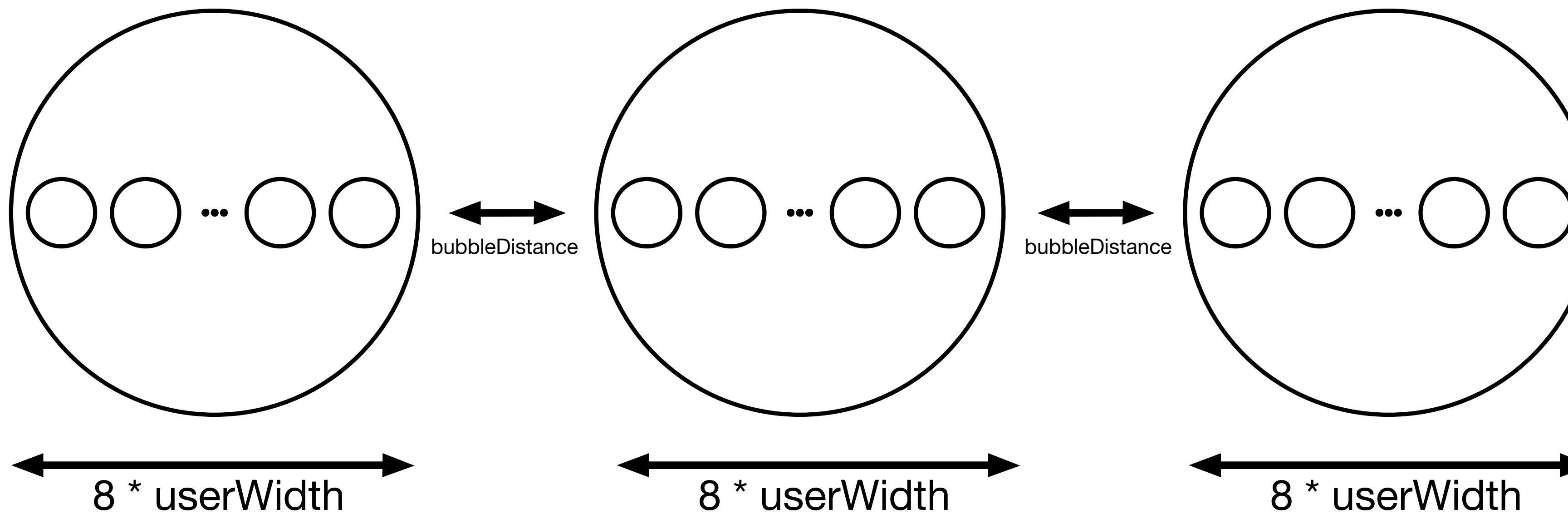
- We chose a meaningful optimization
- Avatars and bubbles are the core functionality
- Avatar size influences bubble size so we combine the two



The design space

$$5 \leq \text{userWidth} \leq 100$$

$$\text{userWidth} \leq \text{bubbleDistance} \leq 100$$



The objective function

increasing number of bubbles, decreasing dragging time

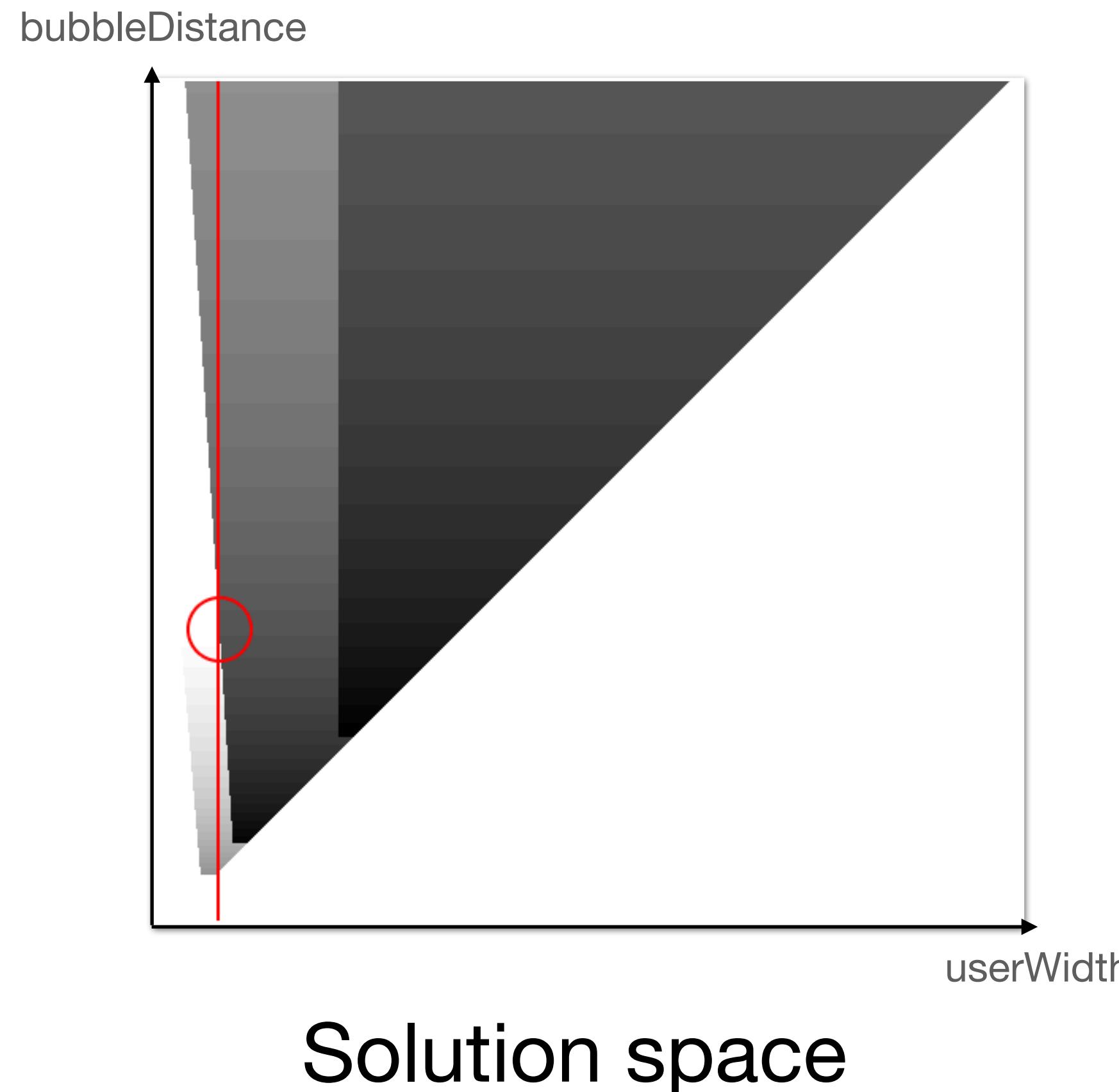
maximize $nGroups - c * MT_{join}$

$$nGroups = \left\lfloor \frac{100 + bubbleDistance}{8 * userWidth + bubbleDistance} \right\rfloor^2$$

$$MT_{join} = 0.1 + 0.3 \log_2 \left(\frac{2 \cdot 57.5}{bubbleDistance} + 1 \right)$$

Random Search and a genetic algorithm

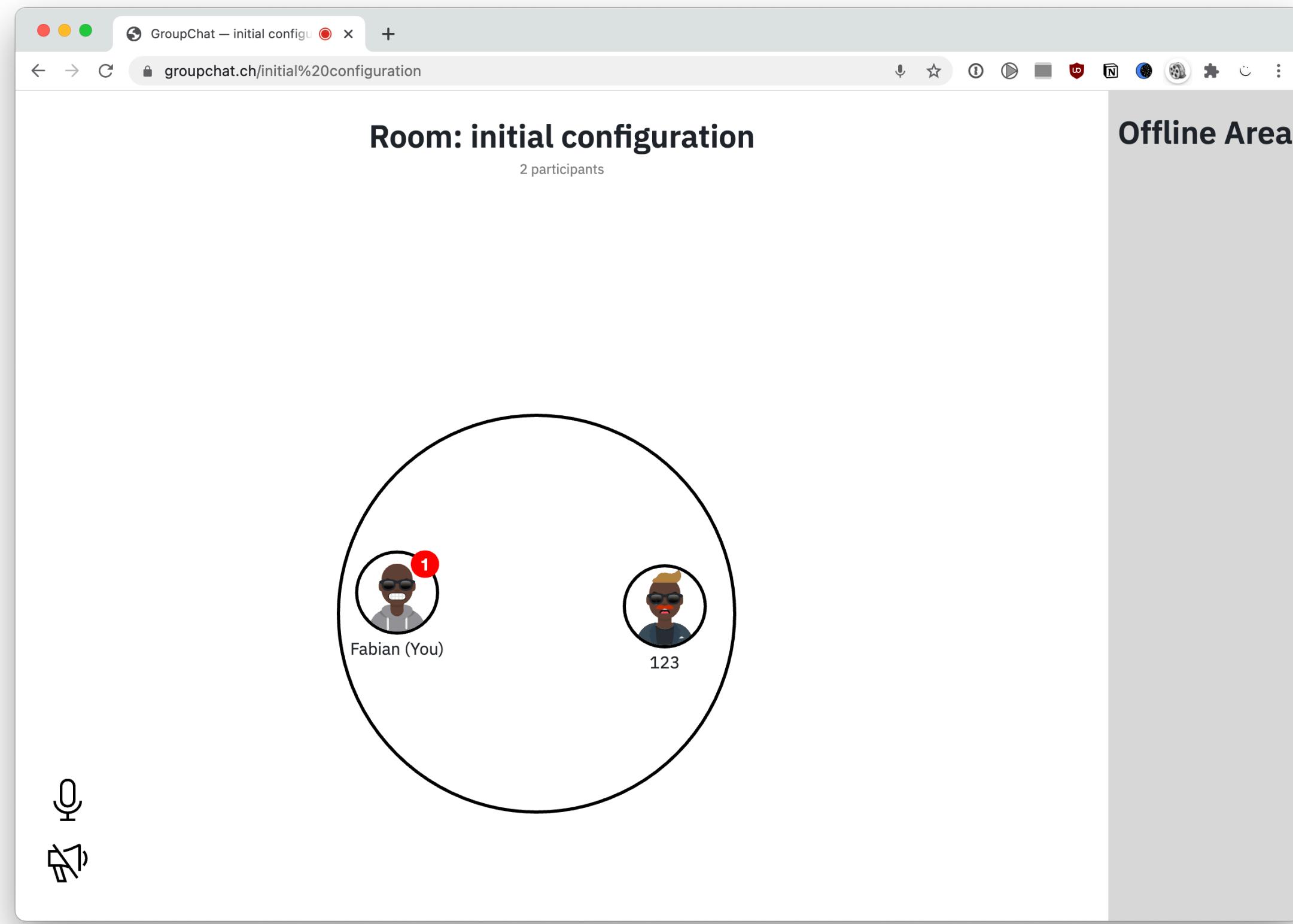
How we solved the optimization problem



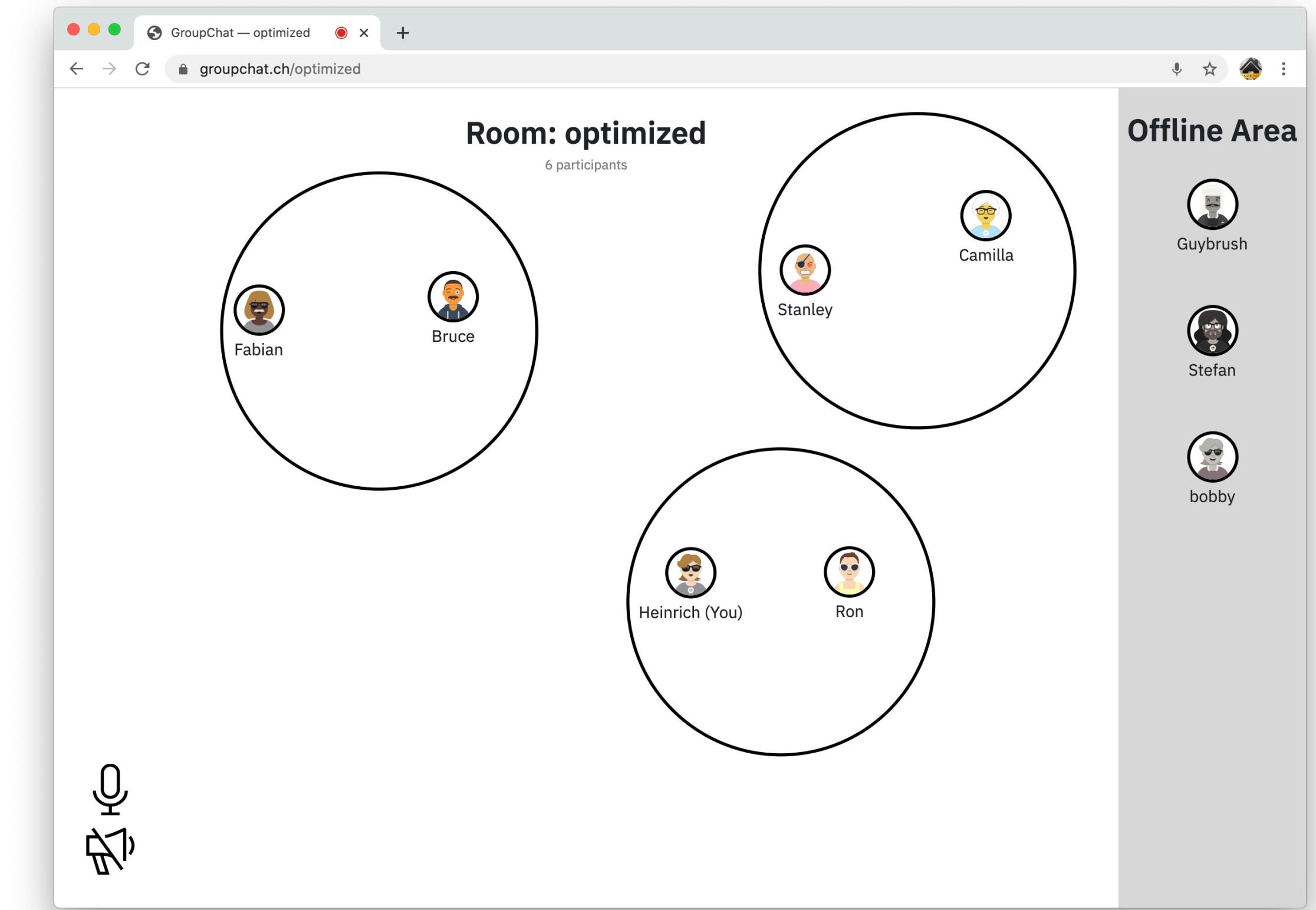
- Red line shows `userWidth` constraint
- Red circle shows optimal solution
- Lighter = better
- We tried grid search and a genetic algorithm

Very similar to initial configuration

Smaller avatar, slightly smaller bubble size



Old



New

Why is it so similar?

Conclusion

- Humans have an “implicit” cost function
 - Make avatars so big that we can see them *properly*
 - Make avatars so small that *enough* can fit onto the screen
 - Choose bubble size such that it *feels right*
- Making this implicit cost function concrete seems like the hardest part
- Interesting to see that our intuition was so close to the “optimum”

GroupChat.ch

Hi-Fi Prototype and Optimizations



Group 6 – Filip Jaksic, Jannis Widmer, Heinrich Grattenthaler & Fabian Landwehr – 16.12.2020