

# QueueMeet

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The future of communication.



PROJECT CHALLENGE

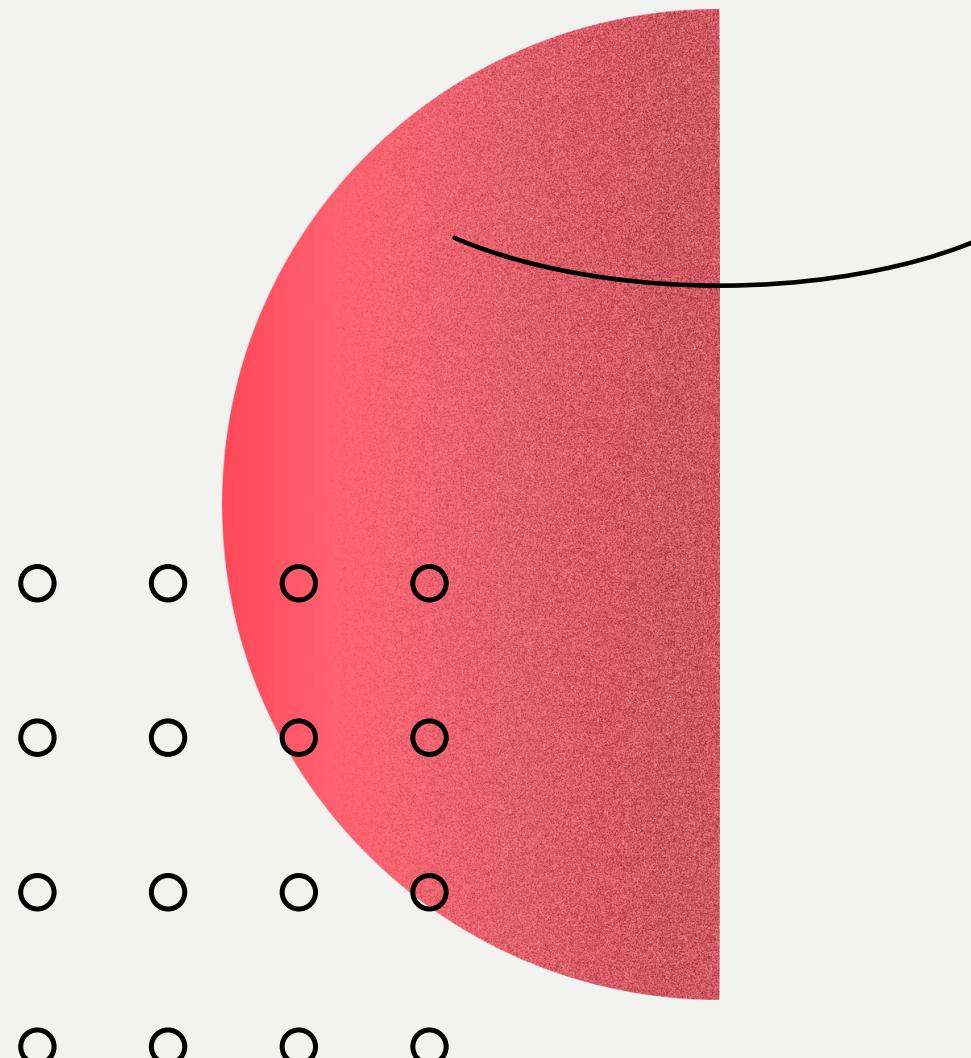
# Quantum Key Distribution Challenge

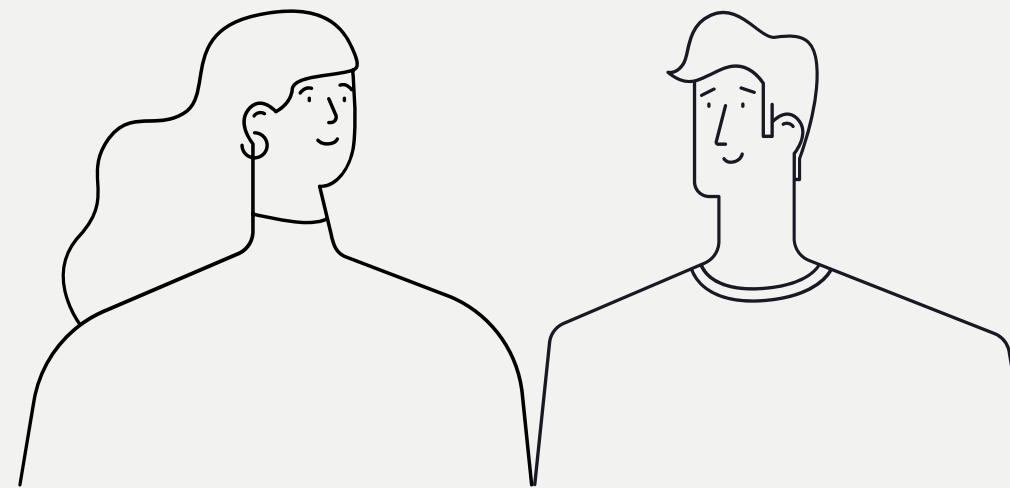




PROJECT IDEA

# Virtual Conferencing solution over Quantum-secured Channel





# Our motivation

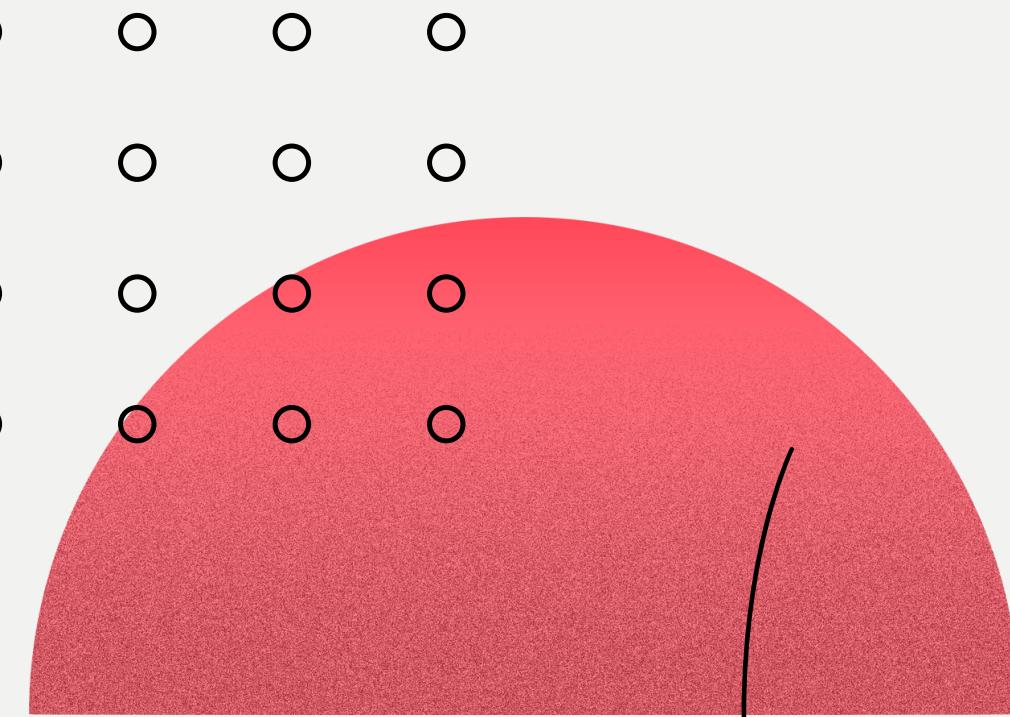
We are living in the age of video calls.

Still, many people don't want to turn on their camera due to the data privacy.

The screenshot shows a Zoom video conference interface. At the top, it says "Recording...". On the left, there's a grid of participant thumbnails. On the right, a list of 44 participants is shown with their names and status (muted or unmuted). The participants listed include:

Participant	Status
az amsom zoom8 (Host, me)	Muted
At AU2110049_harsh thakrar	Muted
Jk Jayalakshmi krishnan	Muted
RP Rushvi Parikh	Muted
AJ AU2110205_Kaashvi Jain	Muted
SS Shubhang Shajwani	Muted
AH AU2110458 Harshal Hapaliya	Muted
KG Kush Golecha	Muted
NS Nancy Sanjaybhai Kakadiya	Muted
AM AU2110182 Meet Pandya	Muted
AP AU2110080 Prapti Dhol	Muted
AC Aaditya Chandak	Muted
A( Aanchal (AU2110193)	Muted
10	Muted

At the bottom, there are various control buttons: Mute, Start Video, Security, Participants (44), Chat, Share Screen, Polling, Pause/Stop Recording, Breakout Rooms, Reactions, End, Invite, Mute All, and More.



# Our motivation

## **Wait, what if we use QKD in video calls?**

It would provide a much more secure and reliable platform to send sensitive data such as **medical images or any confidential data** during video calls. It would prevent leaking of sensitive data to third parties.

## **When more than two are in the call,**

it becomes difficult to figure out the best possible and optimal way to set up quantum channels between them. Thinking similar to Travelling Salesman Problem which is an optimization problem, we have solved this problem using **Variational Quantum Eigensolver** to find the optimal way of setting up quantum channels.

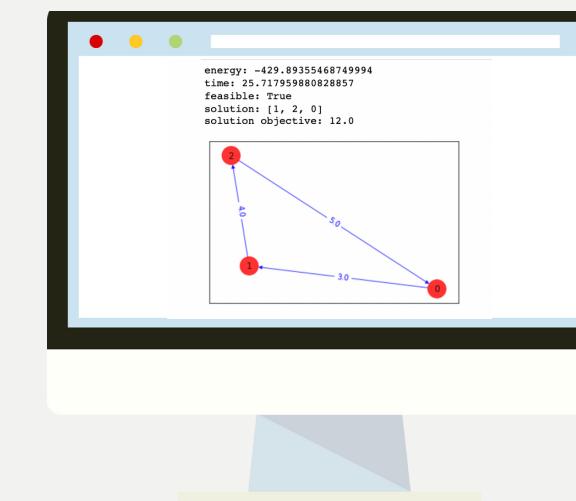
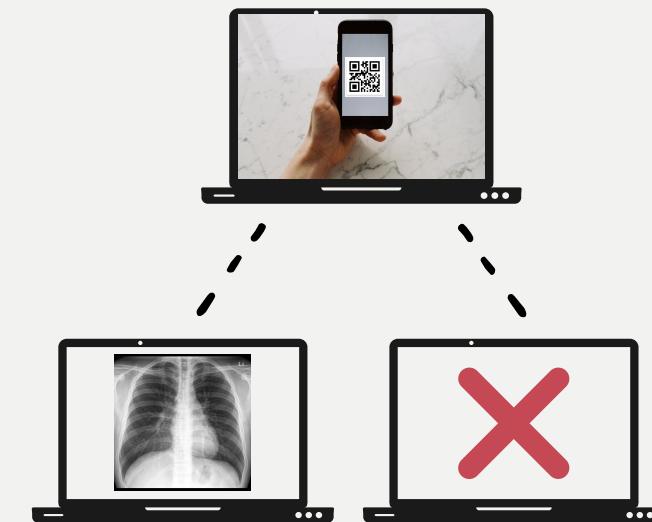
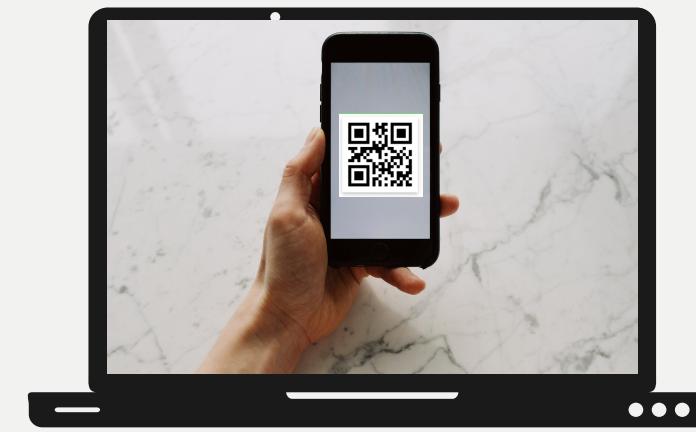




## INTRODUCTION

# Key Goals

A conference call prototype with QR code recognition, QKD for more than two, and VQE optimization.



01

## Image Recognition

Recognize QR codes containing target file name in the host server during a video call.

02

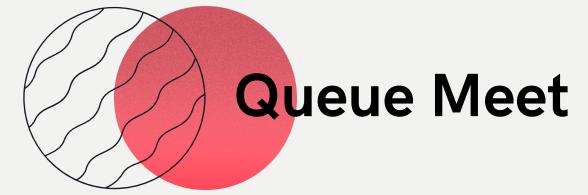
## QKD for data privacy

Allow only the target participant can get the data and the others can't, by using QKD.

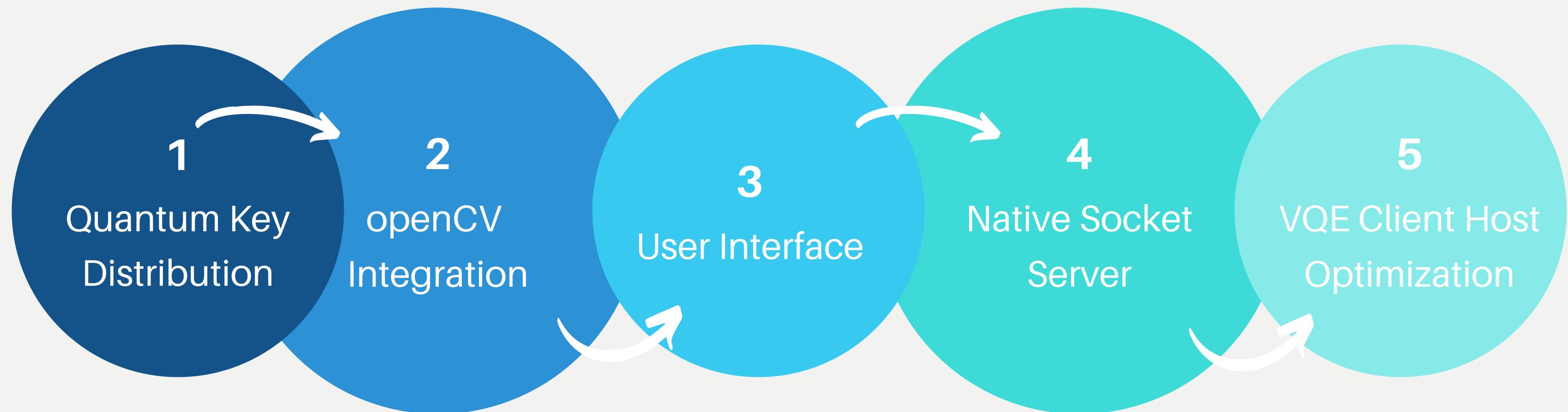
03

## VQE Optimazation

Finding the most optimal path to set up quantum channels.



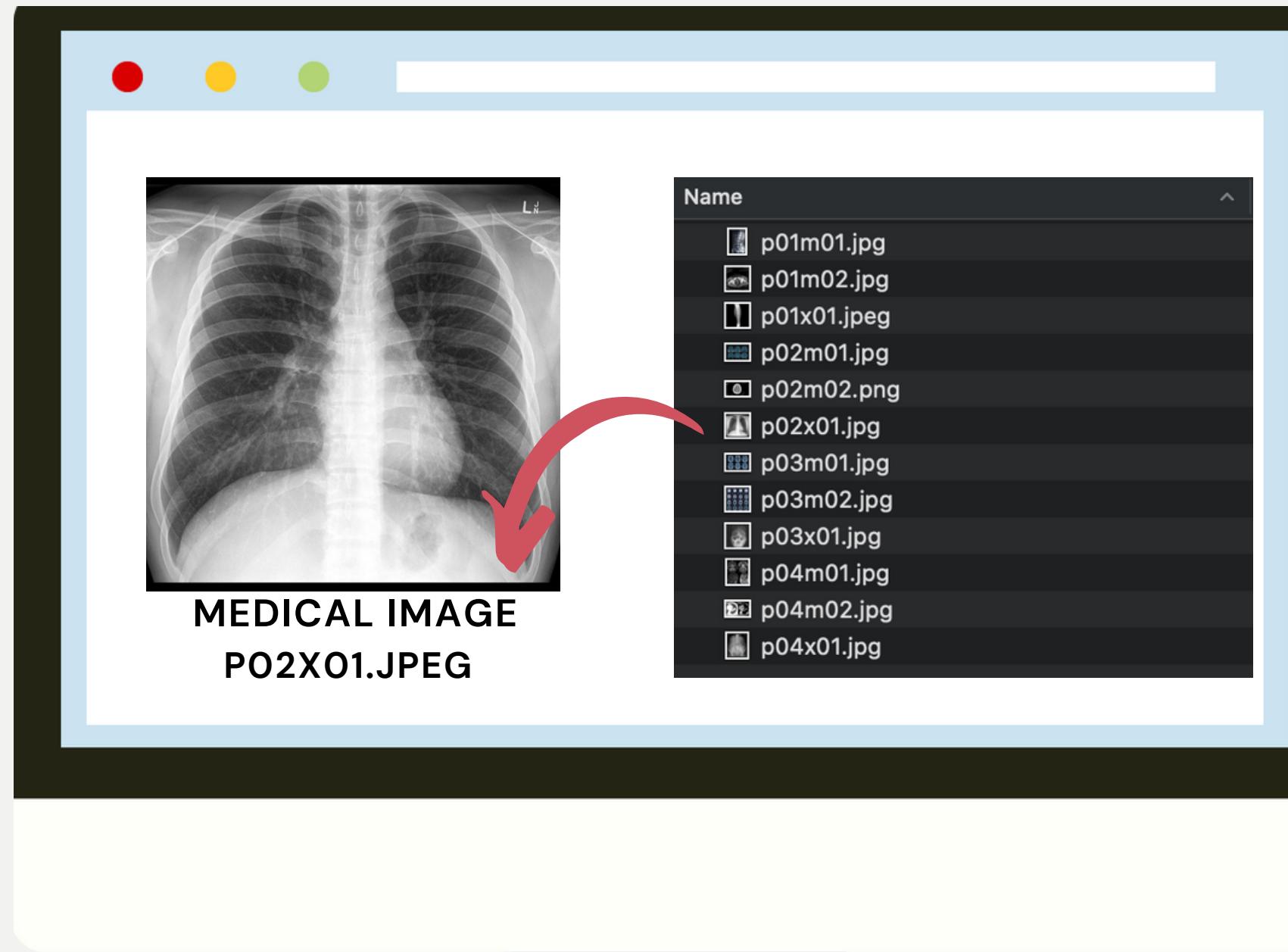
# Development Process



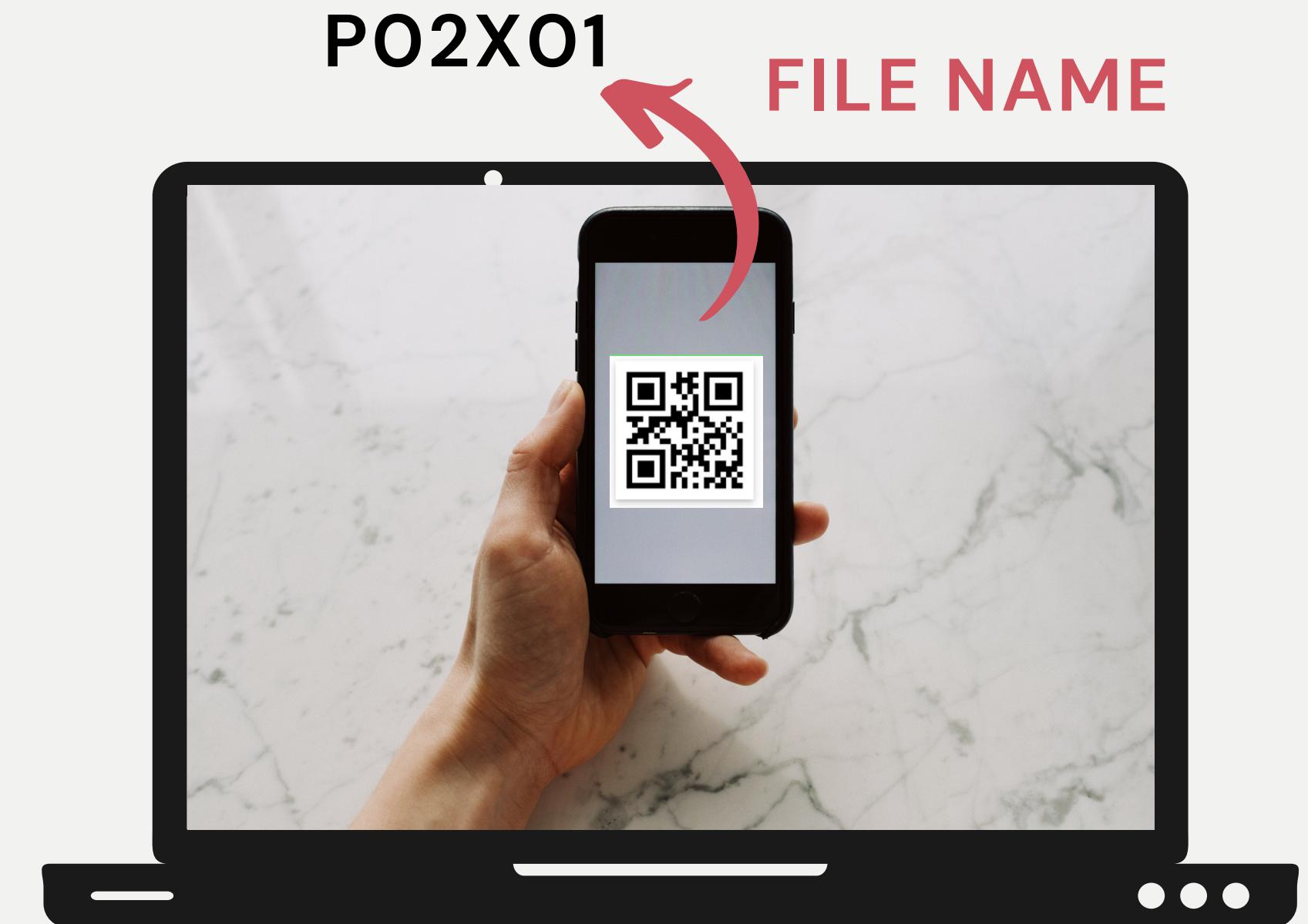


MAIN FEATURE 01

# QR recognition



SERVER

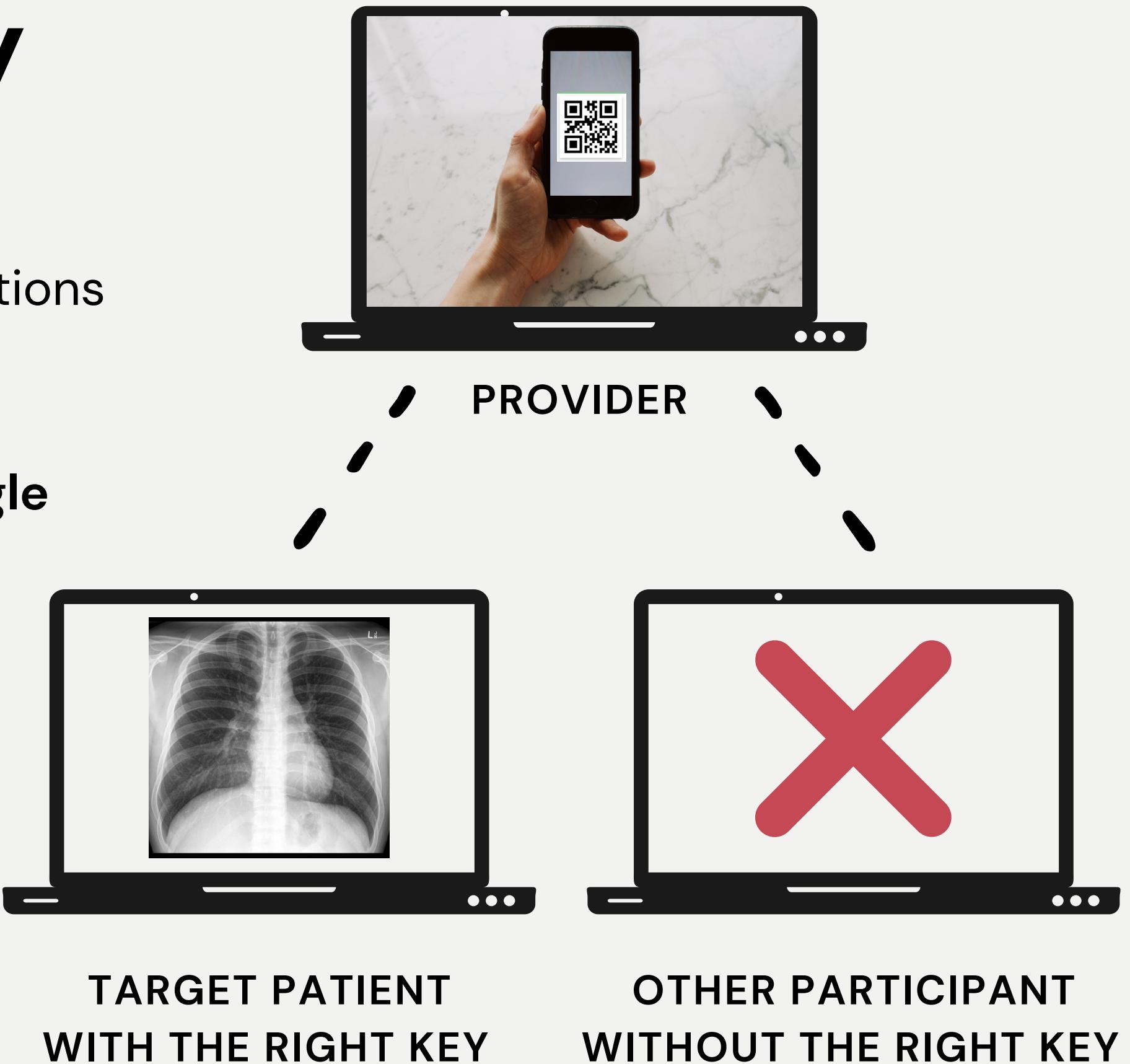


CONFERENCE CALL SCREEN  
- DATA PROVIDER(HOST)

## MAIN FEATURE 02

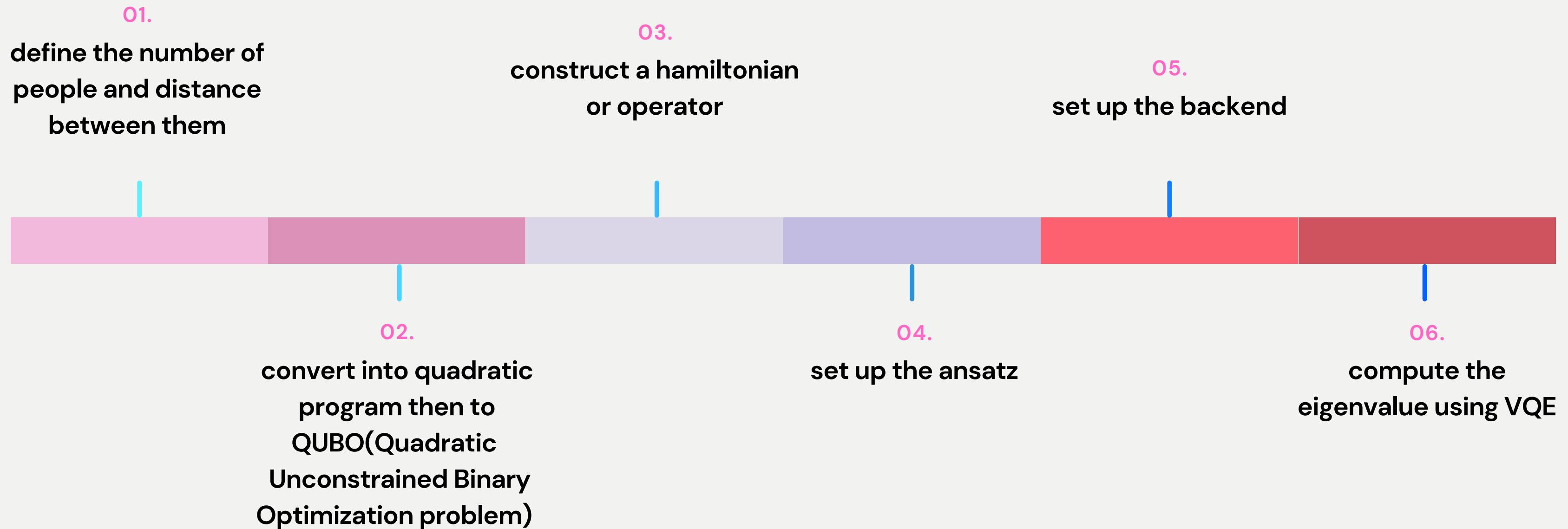
# QKD for data privacy

- QKD was used to establish secure connections between conference callers.
- The **BB84** technique was used.
- The current QKD can be run using any **single qubit backend**.
- The patient and provider can be sure that their key was not intercepted.
- Keeps healthcare data sensitive.



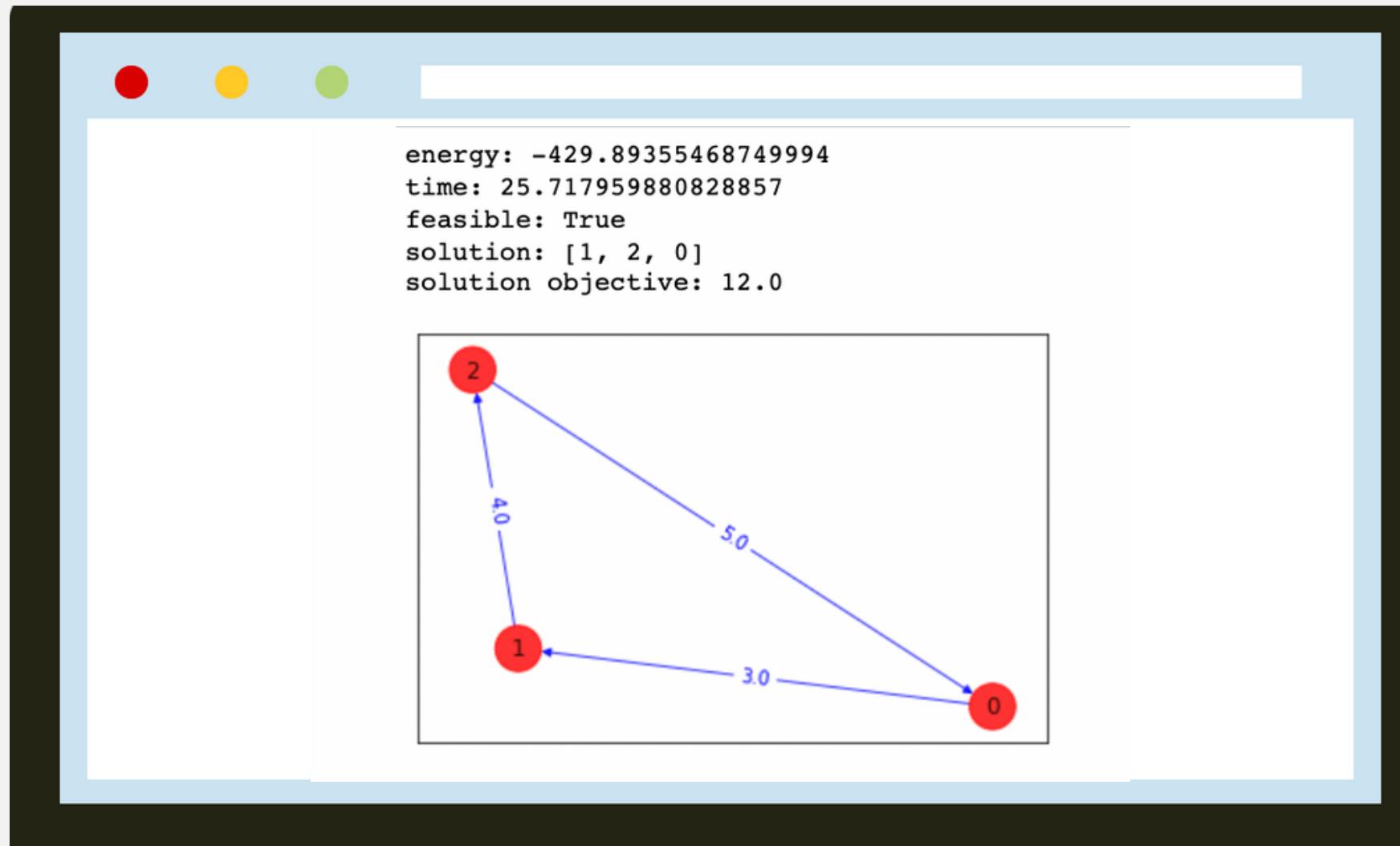
## MAIN FEATURE 03

# VARIATIONAL QUANTUM EIGENSOLVER

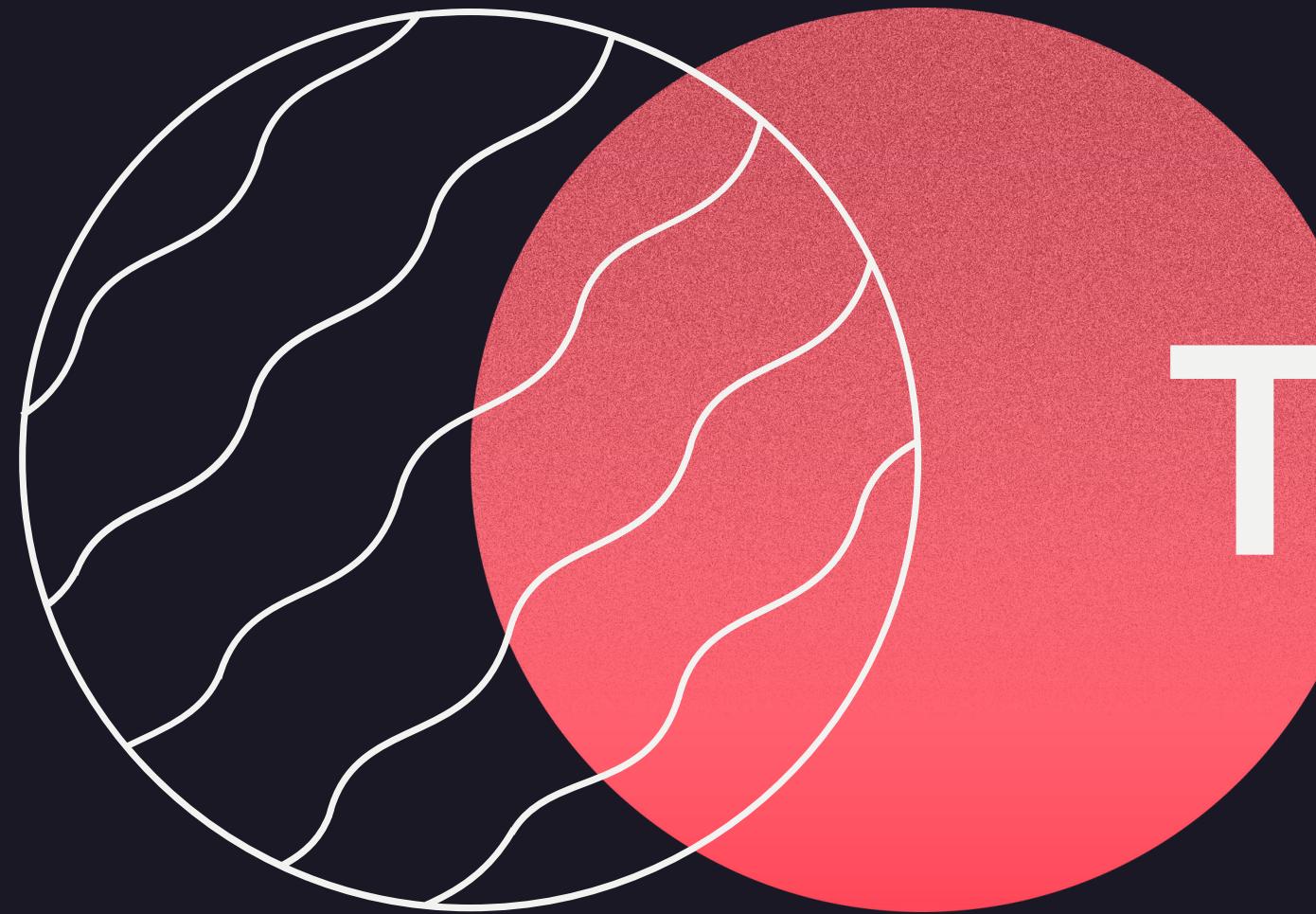


MAIN FEATURE 03

# VARIATIONAL QUANTUM EIGENSOLVER



Using VQE to find  
optimal path between  
various people to set  
up quantum channels



Thank You