# Proposal for Flexible Telepresence Robot Assembly

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## 1 Background

Up to June 29th, there are over 9,962,193 confirmed cases and 498,723 deaths of COVID-19 globally. Close interaction between people has been acknowledged as a major way for the virus to spread. However, there are billions of high-risk people exposed to the virus in hospitals, communities and public areas like airports during work. To lower their risk of being infected during work, it's estimated over 1000 dollars are used to buy a protection suit and mask for each nurse every day. In addition, since quarantine policy requires people to stay home, their normal life and work are seriously affected. In this situation, we want to develop a robot to do high-risk workers' job in specific scenarios so that they're safer and the cost for protection is lower. The robot also aims at maintaining ordinary people's life and work remotely as much as possible.

## 2 Solution

Our robot is called FLEXTRA, standing for Flexible Telepresence Robot Assembly. The user can use any electronic device connected to the Internet like cell phone to operate the robot from a distance, even in another continent. The robot is equipped with a tablet with camera to provide bilateral video and audio communication. It enables the person near the robot to communicate with the controller just like they're face to face. In addition, the camera can provide remote video navigation for the controller like he is personally at scene.

The mobile system and various attachments make the robot flexible and multifunctional. The robot can be attached with a thermometer and a medicine dispenser to do simple jobs in a hospital. Nurses can control the robot to read patients' vital signs as well as deliver pills or food to patients from without going into the wards. When deployed at the old people's home, doctors can make diagnosis and physical examination check remotely through the robot. This is quite useful because it's difficult for the elderly to receive necessary medical service during pandemic. In other scenarios, the robot can be attached with a UV light to disinfect a room or spray gases. The robot can also station at public area like crowded communities or airports to monitor people's temperature, and help control the crowd.

## 3 Competitors

Our main competitors are similar telepresence robot and normal tablet. In Europe, telepresence robots have already been used for elderly healthcare, such as a robot called Giraffe. However, Giraffe's cost is more than 5000 dollars while FLEXTRA is lower than 600 dollars. In addition, FLEXTRA support multiple attachments, enabling it to work in various scenarios. When it comes to a tablet, the robot can move around and do more jobs for people rather than making video call. In essence, the robot is more cost-effective and more capable than competitors.

## 4 Business

The robot's cost is lower than 600 dollars because its main structure is 3D printed or cheap acrylic board. Since it's controlled by human, it doesn't need a lot of accurate sensors, which make the robot cheaper. In China, there are more than 2,700,000 high-risk job where the robot can perform well during pandemic, such nurses, guards at crowded area, etc. Therefore, just in China, the market scale for FLEXTRA is over 10.8 RMB. However, compared to the high cost for protection suit, the robot can even save over 24.3 RMB for these jobs.

The key for the business is to keep in close touch with customers, so that our powerful engineering team can develop more attachments and keep making improvements according to feedbacks and new requirements. The partnership with organizations like hospitals or government is very important. The robot will first provide free trial there and do relatively simple jobs. If the robot performs well and earns positive feedbacks , it will do more complicated jobs and charge through rental or sell. We're going the set the price at 1000 dollars for one robot, and rental fee at 150 dollars per month so it can cover the cost and make profit within 4 months.

## 5 Conclusion

The value proposition of the robot is to make people safer, save money and time by working as a substitute in dangerous area. The remote control system make it cost-effective and keep interaction between robot and human, while the attachments make it flexible and multifunctional. After pandemic, the robot can still be used for remote but quite real interaction for people hard to meet face to face.