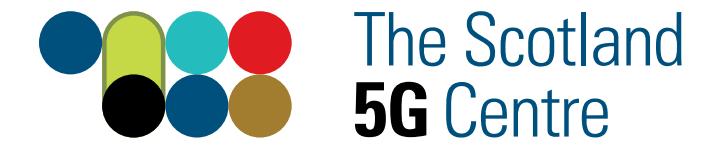


# 5G Enabled Remote Specialists – Teleoperations

University of Glasgow (Communication, Sensing and Imaging), CGI



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Reducing inequalities in our communities is a priority and it is important that everyone can have access to the right dental care in order to maintain good oral health. However, for specialist care, most people are required to go to centralised areas, which can present a number of challenges, as many might not have the means to travel due to financial, geographic, personal or physical constraints. Teleoperation has the ability to allow patients to get the remote specialist care they require by using 5G enabled robotics. Here is an example on how this emerging 5G technology from the University of Glasgow (UoG) can be applied to oral healthcare.

## 1 Situation

Dillion\* had an severe accident and broke her jaw and may require long-term specialist care and treatment from the Orthodontist. The nearest Orthodontist is located 34 miles away and takes up to 1 hour to travel. Due to Dillion's age and because of the accident, she has mobility issues and has great difficulty in travelling long distances. The local dentist does not have the specialist knowledge to do the relevant inspections to determine the care and treatment needed therefore there are limited options available to Dillion.



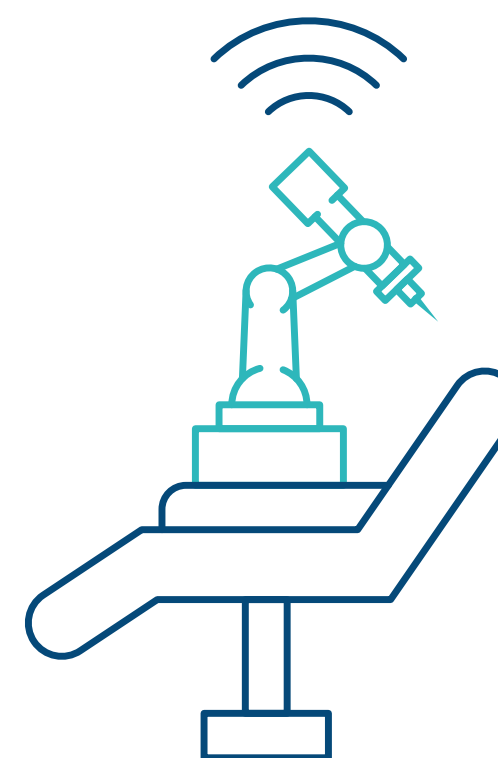
## 2 Task

Create a digital solution that has the capacity and speed for a remote specialist to conduct a real-time inspection of the patients mouth within a safe and secure environment.



## 3 Action

The UoG along with their partners have created a bi-directional teleoperation of a robotic arm. A touch-haptic device controls the robotic arm as it moves forward while the forces "felt" by the robot are fed back to the user as it reverses. Haptic feedback closes the control loop for accurate manipulation during pressure sensitive tasks in professions like dentistry and a video link over 5G is used to provide synchronised visual feedback. The robotic arm also has the capabilities to detect movement from patients and will move in sync with them.



## 4 Results

Teleoperation of a robotic arm over 5G allows specialists to perform real-time inspections remotely with the assistance of a localised dentistry nurse. By localising specialist care, this will improve access to dental services and reduce burden of care by decreasing travel. This will also utilise dentist's time and reduce carbon emissions.



## 5 Why 5G?

5G can provide a private network that is secure, reliable and minimises any congestion from other network users. It has the latency target to minimise delays while operating remotely and can provide high quality real-time images of the patients mouth.



Discover your 5G potential, connect now:

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\*Please note this is a concept-based example.