

5G Enabled Pharmaceuticals Manufacturing – Teleoperations/Sensing/Imaging

University of Glasgow (Communication, Sensing and Imaging)

Automation is revolutionising laboratories with its ability to perform a large volume of repetitive tasks to high standards, automation has been heralded as a way to alleviate the modern-day pressures on scientists. With increasing digitisation within the industry, innovators have combined the concept of automation with other enabling technologies such as teleoperation and connected sensors to allow specialists to work remotely from anywhere in the world, sharing high quality images and data in real-time. By the introduction of 5G, pharmaceutical manufacturing can now operate parts of their production line remotely while still ensuring that the conditions of the clean room, lab and storage areas are monitored and maintained. The result of this combination of technologies is a fully connected “smart lab and clean room”

Celldata Labs* has over 30 facilities worldwide and specialise in manufacturing blood typing agents. Within each facility it has on average 2 clean rooms and 2 testing labs. Due to the nature of their work they have strict protocols in place and have to adhere to regular audits. Celldata Labs want to look at how to reduce cross contamination, product recalls and system failures, through centralised monitoring of their facilities. They also want to utilise their workforce and look at new ways to share specialists between each facility.



Worldwide
Specialists



Over 30
Facilities



Manufacturing
Blood Agents

Discover your 5G potential,
connect now:

www.scotland5gcentre.org

1 Centralised Monitoring

Task Create a secure digital solution where the organisation can centrally monitor in real-time the air quality and environment along with movement in and out of all 30 facilities clean rooms, cold storage and labs.

Action Multiple wireless air quality, motion capture and door sensors can be installed and operated over a secure private 5G network, centrally monitoring conditions and environment in real-time.

Why 5G? To do this across all 30 facilities, 5G is needed, as traditional WIFI or IoT networks can not handle the amounts of high density and capacity of data coming from the sensors.

Results 5G allows the organisation to centrally monitor the environment in each of their facilities, providing them the vital analysis needed when investigating product recalls, failed batches and cross contamination. Real-time analysis allows organisations to put the necessary procedures/equipment/ training in to reduce future risks/costs. It also provided a secure network to deliver high capacity sensitive data, safe from cyber attacks.

Real-time Analysis
Across Facilities



Centrally
Monitored



Reduction in Cross
Contamination



2 Shared Specialists

Task Create a digital solution where the organisation can utilise their workforce, sharing specialist/resources across all 30 facilities. Enabling staff to work remotely around the world, creating a dynamic and mobile workforce without the need of travel.

Action Multipurpose robot arms can be implemented and introduced throughout the production line, allowing remote staff to carry out tasks in real-time through the use of teleoperation. The robot arms can also be fixed on an unmanned ground vehicle (UGV) providing free mobility throughout the facilities. Other technology that can be used is mixed reality where remote specialists can assist on site staff with specialist task/actions.

Why 5G? 5G has the capacity to operate in real-time without delay allowing remote specialist to securely use teleoperation (Robotic arm/UGV) and mixed reality to carry out tasks. It also has the ability to transfer high rec imaging and data needed to carry out tasks and conduct analysis like testing of blood agents.

Results 5G allows the organisation to utilise their workforce across all 30 facilities, creating a more connected, dynamic and diverse environment. It eliminates the need to travel, lowers carbon emissions, reduces delays on activities/tasks and decreases costs.

Faster Specialist
Response Time



Dynamic/Mobile
Workforce



*Please note this is a concept-based example.