The Future of Cancer and Collective Intelligence in the Post-Covid World project was jointly conceived by the Innovation School at Glasgow School of Art and the Institute of Cancer Sciences at the University of Glasgow.

Graduating year Product Design students from the Innovation School were presented with a challenge-based project to produce a vision of the future based on current trends that relate to the Future of Cancer and Collective Intelligence in the Post-Covid World.

If collective intelligence holds the potential to truly connect people to people, and people to data, across diverse communities, linking peoples’ lived experiences locally and globally, what kinds of new health and care services might emerge to improve cancer control across the continuum from prevention, detection, treatment and survivorship, and what types of new roles might emerge for citizens, patients and community groups to collaboratively drive these forward with health professionals?

In order to address this challenge, the GSA Innovation School’s final year Product Design students and faculty formed a dynamic community of practice with cancer practitioners and researchers from the Institute of Cancer Sciences at The University of Glasgow and beyond to envisage a 2030 cancer blueprint as a series of future world exhibits, and create the designed products, services and experiences for the people who might live and work within this ecosystem.

This project asks the students to embark on a speculative design exploration into future experiences of working and living with cancer ten years from now, where advances in collective intelligence have evolved to the extent that new forms and ecosystems of medical practice, cancer care and experiences of living with, through and beyond cancer transform how we interact with each other, with health professionals and the communities around us.

The second stage saw students explore their individual response to their assigned Future World that had been created in the first stage. Each student developed their own research by iteratively creating a design outcome that was appropriate to the Future cancer World. This culminated in each student producing designed products, services or systems and a communication of the future experiences created.

Included below is a description of each students’ work. The data folders for stage two of the project are named for the individual students who conducted the work and organised by the Future World cluster that they worked within.

FUTURE WORKING WORLD CLUSTER: EDUCATION

Aidan O’Friel: Vita

In 2030, our world has shifted greatly from what we know and see today. With the introduction of a Well-Being Economy, communities are centralised around caring for each other, and from this, Citizen Roles have been introduced to help keep the communities healthy. Vita is a system designed to help allocate which citizens are suitable for which roles, analysing personality traits, key competencies and cancer experience to determine the right role for each citizen. Vita comprises of a physical shape, essentially a ‘Future CV’, this is enhanced by the advancements in Collective and Artificial Intelligence, where the system can learn and improve itself and by doing so can then determine individuals and teams who would be best suited to learn from each other, creating an ever-evolving system of knowledge exchange and medical development, both physically as well as holistically.

Taylor Moffat-Kyle: A Journey: becoming a Citizen Rep

Everyone has a different story to tell. We all start in a different place, and live different moments. The Job of a Citizen Representative is to be a figure of trust for society, to ensure they are receiving the best care you possibly can. Though the end point is much the same, the process of becoming a CR has a lot of potential to be quite unique, and as you prove yourself within your selected citizen care role, badge components will be awarded to you. Choose the merits that you feel best represent who you are as a citizen and display your badge with honour. The combination will create a digital signature you can use to access your personal, local or national journey throughout the Wellbeing Economy Alliance.

Ruka Kameda: 2030 Citizen Support Library

Citizen Support is a group of people who have been a close witness of the cancer treatment or have experienced the process themselves. They are supporting the ongoing cancer patients in an empathetic way through consultations. This AI library Metis is to help them establish their role as Citizen Support. Since they have experienced cancer treatment on occasions, it could be tough for them to balance their well-being. As they go into this AR and AI-based library, they will find a book with a title of what they are looking to find out in the library. Then as they open the book it will unlock the door that they can virtually learn through experiencing the past consultations. This gives them a capacity to understand the abstract knowledge that could not be done through a verbal or written description.

Stella Stewart: Lagom

Lagom is a personal means for cancer patients to log and track their emotional journey with cancer. The daily input of different emotional elements allows patients as well as their practitioners to view or analyse their response to treatment and lifestyle. Counters representing factors such as understanding of process, mental well-being, lifestyle up-keep, etc. These are matched with their medical intervention timeline to create links between implementation of physical elements and their impact on a patient's mental state. This is to allow for tailored changes to be made for an individual as well as improving the entire system for other current or future patients. Primarily this is aimed to educate professionals on the non-physical impact felt by patients during their cancer experience.

FUTURE WORKING WORLD CLUSTER: PREVENTION & DETECTION

Andrew Smith: Solace

With the mass reduction and defunding of the NHS citizens in 2030 will no longer have the luxury of accessible GP appointments and easy to access healthcare information. This, alongside the increased involvement of commercial organisations in the healthcare sector means that uncertainty and misinformation is a growing issue. Solace uses Artificial Intelligence to relieve stress with fast, reliable, succinct answers to concerns over how trustworthy or accurate medical information is. Solace aims to challenge perceptions of healthcare information by tailoring responses to queries or concerns via users’ self-direction in order to reach people on a deeper, more personal level. Solace collates the concerns and queries of the community at-large through its users in order to inform care professionals of the need for action, such as the organising of screenings or workshops at a local level bringing people together through shared experience using Collective Intelligence

Eilidh Young: Future Stories

The creation of Future Stories is a service that is dependent on neighbourhood interactions with a community-focused mindset. The community aspect is built through people sharing their own stories of mental health and cancer. The system is built up of people who have gone through treatment themselves and can therefore give honest, sensitive support. Those who are in the system who are going through cancer will receive support every step of the way. The aim of Future Stories is to help people who are going through their cancer and have been affected by mental health immediate

support. Commonly, if a patient is in need of support for a mental health issue they could be waiting months to be referred for help and treatment. When a patient makes the decision to ask for help, they are in need of immediate support, many do not realise that help is unreachable. Future Stories. will put patients in touch with relatable people who have been affected by cancer personally, whether it has been a family member or themselves. Therefore, this will ultimately help people in the system to be built back up emotionally. It will encourage others to speak up and participate, eventually instilling the mindset of helping others. The system will open up a conversation to vulnerable people, those who are dealing with cancer and who have developed a mental health issue because if the disease. According to the NHS, 1 in 2 people will develop some form of cancer during their lifetime, in the UK. Therefore, encouraging community conversations is vital to future attitudes towards cancer. Cancer is undoubtedly a hard-subject matter. The system will try to change people’s perspective and encourage those to open up and share their journey and be supported along the way. Future Stories will have a physical presence in the form of real people who have gone through similar journeys as well as a digital presence to offer more flexible support. Information will be gathered by collective community intelligence and resources/ accounts donated by people.

Sophie Young: The Family Support Network

Inequality surrounds many aspects of cancer development. Over 30,000 cancer cases in the UK each year are attributable to socioeconomic factors, obesity being a major factor. Around 23,000 cancers in the UK each year are caused by obesity, and children from poorer areas are twice as likely to be obese than children in more affluent areas. This project looks at the future of cancer prevention through supporting young families to make healthy choices for their children. I’ve designed a network, within which healthcare services and community agencies work together with the food industry to develop a more proactive and inclusive family support network. There is currently no connection between maternity care within hospitals and maternity/postnatal services within communities. This project explores the opportunities and benefits of a more connected family care system through collective intelligence.

Ugne Cerniauskaite: Influential Scoop

DESIGN: A system in which the NHS uses the power of social media influencers for cancer prevention messaging in 2030.

TARGET AUDIENCE: Targeting young people in their 20s and 30s through social media platform aiming to make cancer prevention accessible, free of charge, easily adaptable. For the first time in our history, prevention is equally available for people of different economic and social status, education, sex, and living area.

SYSTEM: The ‘NHS Trust Mark’ and ‘Prevention Messaging Team’ supervised by the NHS collaborating with a variety of creative social media influencers would reach the end user through their values providing them with a delightful experience and at the same time spreading the message about cancer prevention.

REASON: The reason behind this design is the moral conflict between irresponsible influencers’ purposely or accidentally spreading misinformation concerning heath and our society that is falling out of a habit of double-checking the facts and the damage this combination brings.

FUTURE WORKING WORLD CLUSTER: CARE & TREATMENT

Arwen Borris: Stress Less

My research showed the years preceding 2030 will have an escalating issue of staff burnout due to stress from increasing pressures in the job and a rise in the number of patients. I have designed a new future working role to address this. “Stress less” is an external team that would oversee staff stress levels in the department and organise substitutions accordingly. A Substitutions Coordinator has been implemented into the oncology ward to monitor staff stress levels and take action before burnout occurs. The coordinator cares for the mental health of the staff whilst they care for the patients. Staff will be supplied with a smart vest to go under their uniform, it will monitor their heart rate, energy, temperature, location when on the ward and their stress levels. It reports this collected data back to the Substitutions Coordinator where they can assess situations and supply support. This collective openness and mental health focus will improve the care and treatment they produce and prevent staff burnout.

Ibrahim Afzal: Sim Care

In 2030, technology will become embedded within the physical world, making the disappearance between the physical and the digital. Simcare is a tool for oncologists in 2030 to develop a treatment plan that is best suited for the patient. Using collective intelligence, the tool generates a comprehensive visual system of the patient's cancer and its treatment. Using a variety of artefacts, representing care and treatment, the oncologists are able to collaborate with other specialists to understand which care and treatment would be best suited for the individual. The cancer is represented visually by size, shape and colour which projects a full visual idea of patients' cancer. The size of the shape represents the size of the cancer, and the colours represent the emotional aspect of living with cancer. This will allow staff and the patient to collaborate and define the best suited care plan for the patient, allowing the possibility to match the care aspect of cancer with the treatment aspect of cancer.

Sian Mackay: Teabreak

Teabreak exists within the future world of cancer care and treatment where communication is key, to not only protect the patients but support the staff. In light of Covid, remote working is having a detrimental impact on staff mental health, with workers feeling isolated and digitally fatigued. After extensive user research into staff feeling burnt out I identified the opportunity to allow staff to reciprocate casual conversations remotely beyond scheduled meetings. Teabreak is a tangible communication device, allowing you to chat with any cancer worker almost instantly on your break. Exploring the intimacy of immediacy, not only does it allow staff to chat with their colleagues remotely, there is also the opportunity to chat with new people globally, thus making new connections. Each staff member has a unique 3-part code which is arranged on to the smart tea tray in order to be contacted. This prompts the app which connects you with a colleague for a chat.

Mingyi Lu: Xavier

As the entire world is facing the pandemic together, we urgently need the vaccine for Covid-19. It could be a great opportunity for the world to use Collective Intelligence to combine resources together and work in the most efficient way. But the reality is that nations are having a race with each other to claim the crown of being the first. The political feature does not only exist in the Covid case, it also applies to the current clinical trial model. It is a top-down process that kills innovation and generates a conservative attitude. My project supports the democratic progression in the clinical trial by creating a patient/data and focuses on speculating exercise treatment. Emphasizing the patient's leading role in the trial.

FUTURE LIVING WORLD CLUSTER: COMMUNICATING CANCER

Axelle Julien: MÍNYMA

Mínyma is a future experience based on a collective intelligence database, permitting to create a new emotional language with senses, adapted to cancerology service. It is a new non-spoken language. Mínyma is an experience of emotional sharing through poems, touch and smell. The service is creating a new vision of patient, not only as medical data but also as emotional data. That permits to explore emotional environment of people close to death. Over time it will improve and allow a fluent interaction with people in terminal phase through touch, which is one of the last senses you keep before to pass away. My story is based on a distance family relationship between Alice, my main character, and her grandson Camille. During all the development of my project, I really wanted to develop a distance communication by moving away from screens.

Calum Ferguson: Above the Weather

My design is an immersive sensory experience created by people living with cancer to express and communicate their emotions and condition through the materialisation of these feelings into environmental factors that mimic natural weather conditions within a biosphere. In a Post-Covid world ten years from now there will be a far greater number of people living with cancer and living more normal lives with it, there will be less stigma surrounding the disease and there will be much greater appreciation of the benefits of the natural world on our wellbeing. The environments created by the previous 23 participants are experienced on entering the biosphere before the current participant can input their own changes onto the physical conditions. The data from each location is centrally collected as weather data (wind, precipitation, temperature, visibility…) which can then be viewed via an online live stream.

Maria Marinescu-Duca: Living Language

Living Language affords better communication between medical professionals and those affected by cancer in treatment pathways, clinical research settings and personal life. It is a democratic platform where users can create and vote on visual symbols that describe cancer symptoms. Voting is done in an electoral system as each global region holds a percentage of influence based on users and population, preserving a universal perspective. Then, selected symbols are catered towards wide audiences, regardless of knowledge level or spoken language. Living Language creates an intuitive method to describe the condition, available to most. Being an international dialect, it has the opportunity to become used across all fields of medical practice- capturing data in its purest state, without the need for translation.

Zichun Wang: A Virtual Community: Felt Sense World

The FELT SENSE WORLD is a virtual community. It communicates users’ feelings, thoughts and memories by creating metaphorical landscapes. It gives users the opportunity to explore their inner world in a both reflective and productive way. The community has established a new system of immersion and expression for people living with cancer. It enhances their pride of participating, brings hope and fun to their perhaps limited life. It also builds up a bridge for the families and friends to communicate with their loved ones living with cancer. Furthermore, it provides opportunities to the public to contribute as well.

FUTURE LIVING WORLD CLUSTER: PERSONAL WELLBEING

Holly Thompson: Silent Communication of Physical and Mental Health

The Collective Communication Toolkit, creates better communication of both physical and mental health, in a future world scenario where healthcare is largely completed at home. It is designed for a cancer patient, living at home alone, in a small flat, undergoing treatment for their illness. The toolkit creates a collective intelligence between the user and both their family, and medical staff, to combat the isolation and anxiety faced by them. The objects within the toolkit cover 4 main vital signs, both medical and emotional: temperature, respiration, heart rate and anxiety levels. These devices allow for daily communication of the tacit knowledg

through the use of a paired object in a loved one's home, which communicates how the patient is feeling through light. They also communicate the patient’s daily treatment progress, by providing data on their vital signs.

Lucas Cheskin: Falling Forward

Throughout peoples Cancer journey there is a point where time stands still. There thoughts drift to boredom, stress, anxiety, pain and not feeling the emotions of everyday activities. During a time where many at risk people are having to shield at home. It is very hard to feel like there is a purpose to your days, after doing a lot of the same things to keep you distracted. Falling forward gives you motivation and a boost to show that you are making progress, you just don’t know it. The device picks up your movement, voice and sounds that suggest your being active in your home. It could be reading, watching TV, doing work on your computer. No matter what, you’re still moving forward. The glow of the device grows throughout the day to show progress, giving other people a chance to observe how you’re doing and give you a hand if needed.

Mateusz Boruc: H-ID

My project is about a service/program that uses CI to eradicate cancer and other diseases in the long run. My idea is called H-ID (Health Identity), a system that collects medical, real-time data - by application of implants and wearable technologies. That data is used as a) an individual’s tool to monitor their health - the user is equipped with information, so they can reflect on their behaviours/activities and improve their lifestyle b) an individual’s tool of getting better and faster treatment - the system links the users data directly to the specific medical specialist; b) the data is forwarded to researchers and other organisations, so they can use the ‘donated data’ to develop long-term solutions, such as: medicines, discover specific risk-factors, etc.

Zuzanna Konieczna: Mental Support After Treatment

After treatment ends cancer patients often describe that they felt “like they have fallen off a cliff”. This project is trying to address that issue and help people after cancer treatment connect with people with cancer knowledge such as: cancer survivors, carers, or doctors. Additionally, they can add their family and friends to create their own empathy network so that their close-ones can be notified whenever they are in need of support.

FUTURE LIVING WORLD CLUSTER: BEYOND CANCER

Cameron Hogg: Home Healthcare: a Revised Dinaci System

Private healthcare brand Dinaci introduces a series of tools aimed at monitoring health in the home.

These tools act as a collective intelligence, working together to gain an understanding of the user’s health status through an interpretation of biological and behavioural trends. In the context of ‘beyond cancer’ this health status is an image of risk of readmission - informing the individual’s cancer care. On a wider scale, the application of big data affords great advancements amongst global medical and cancer communities.

Haili Wu: Future Remote-Care of ‘Non-tech’ Elderly

In 2030, remote healthcare becomes the primary solution for post-cancer living. Kiki is a platform that affords the remote healthcare experience for survivors who cannot keep up with technology. As a result of CI and AI work closely together, Kiki incorporates the local information, user’s data and preference with cancer experts’ suggestion globally; and recommends a lifestyle that can keep the users healthy. The data from users can also benefit medical education, clinical cancer treatment and cancer research. Kiki joins the user’s life as a companion, interact and motivate the user through friendly suggestions and the health diary that create memories. User can receive adequate care

without stressed by technology and continuously reminded about cancer. However, users have the freedom not to follow any guidance.

Megan Maxwell: Re-mission - Animal Park

My outcome relates to part 1 of the future world, sustaining normality, and the initial research lens into the educational loop, and peers as the best model. During the individual aspect of Future Experiences Part 2, I developed an interactive educational experience that engages children with cancer. My user, a child, returning to school no longer has to experience the feeling of not fitting in and exclusion. Switch it up - Animal Park is a concept game aimed to enable conversations and education around cancer in younger children. The advances of collective intelligence in 2030 allow us to bridge the gap between healthcare and education through research and development. The game portrays the child’s imagination with AR bringing their character to life. Throughout the game children will collect points whilst exploring a series of questions and challenges for clues to find their character. Each game, question and discussion card relate to symptoms, emotions and treatments of cancer. It then monitors and adapts the child’s experience using feedback loops on the game application. The outcome aims to expand social circles, educate and encourage involvement with the concept of cancer, through fun games, exploring with AR, trading and discussion. The success of the products will be if the children engage in conversations thus de-stigmatising and removing the fear of cancer. Learning, sharing and discussing.