AWS Breaking Barriers Hackathon Brief – Cancer Research UK

Cancer Research UK exists to beat cancer. For the past 120 years, we've been making discoveries that save lives. But we have so much more to do as cancer remains one of the world's greatest health challenges. We want to bring about a world where everybody can lead longer, better lives, free from the fear of cancer.

A world where:

- Some types of cancer are effectively eliminated
- Many more are prevented from developing in the first place
- People who do develop cancer are diagnosed at the earliest possible stage so they can be successfully treated
- Treatments are more effective, kinder and more targeted, so people can lead better, more fulfilling lives
- Everyone shares in this progress equally, regardless of who they are, where they're from or what type of cancer they have

To meet this challenge, Cancer Research UK are undertaking the Engage Transformation Programme which is the largest and most complex data and digital transformation in the sector. The programme will change the way the organisation collects and manages data so that the organisation can shift to becoming more audience centric.

The programme aims to enable Cancer Research UK to deliver more personalised experiences that are better tailored to their needs and interests. If we improve the experiences people have when they use use Cancer Research UK's information or support our work, there is a stronger likelihood those individuals will continue to support the organisation for years to come. This will mean Cancer Research UK can increase its impact, whether that's through how we support people going through cancer, committing more money to research or through its political influencing.

The Challenge

Cancer Research UK is undergoing the sector's largest data and digital transformation to become truly audience-centric. But transformation takes time—and cancer doesn't wait.

How can AI deliver personalised, accessible cancer information and supporter experiences today, while accelerating the benefits of the Engage Transformation Programme?

Background

Cancer Research UK's Transformation Programme aims to revolutionise how the charity collects and manages data, enabling:

- Personalised experiences tailored to individual needs and interests
- Increased engagement across information services, campaigning, volunteering, donations, and fundraising
- Greater impact in supporting people through cancer, funding research, and political influence

The charity is aiming towards a game-changing, unified cancer care platform integrated with supporter experiences. The platform might proactively anticipate patient and caregiver needs based on diagnosis and treatment stage and integrate other support services, such as Nurse Helpline and Cancer Chat, in one place. The platform could present a personalised, logged-in experience across events, fundraising, donations, volunteering, campaigning, shop and cancer information resources and could leverage existing supporter data to deliver intelligent recommendations, such as event signup leading to merchandise suggestions and forum content. This would transform fragmented, anonymous interactions into a connected, anticipatory support ecosystem that maximises engagement throughout the entire cancer care journey.

The opportunity: While full transformation may be 1-2 years away, AI can bridge the gap—delivering immediate value while informing and accelerating the longer-term vision.

Hackathon Focus Areas

Participants can tackle one or more of these challenge streams:

1. Intelligent Information Access

People facing cancer need the right information at the right time, but everyone's journey is different. How can AI:

- Deliver relevant, personalised cancer information based on diagnosis, treatment stage or personal circumstances whilst ensuring appropriate consent is in place to process actual or inferred special category personal data
- Make complex medical information accessible across different health literacy levels
- Provide multilingual support or alternative formats for diverse audiences
- Surface the most relevant resources from CRUK's vast information library

2. Supporter Journey Acceleration

Every supporter has unique motivations and capacity to engage. How can AI:

- Inspires supporters to take meaningful action and identify the best next action for each supporter (donate, volunteer, fundraise, campaign).
- Personalse communication without waiting for complete data integration
- Predict supporter preferences and lifetime value to prioritise engagement
- Create tailored volunteer or fundraising opportunities based on skills, location, and interests

3. Transformation Acceleration Tools

The transformation programme itself could benefit from AI. How can AI:

- Generate insights from existing fragmented data sources to inform transformation priorities
- Create synthetic or anonymised datasets to test personalisation strategies safely or
- Automate data quality improvement or entity resolution across legacy systems
- Prototype the "end state" experience to validate transformation assumptions
- Demonstrates how personalisation can transform fragmented experiences into connected journeys.

4. Conversational Support

Personal, empathetic interaction matters when someone is navigating cancer. How can AI:

- Guide people in their worst time of distress to valuable information or support they need
- Helps information seekers quickly find relevant cancer information in a clear, empathetic way.
- Provide 24/7 conversational support for cancer information queries
- Triage questions to appropriate human experts or resources
- Offer emotional support while signposting to counseling services
- Answer supporter questions about how to help CRUK's mission

Deliverables

Teams can present:

1. A working prototype or detailed demo (even if using sample data)
2. A brief on the problem solved, approach taken, and impact potential
3. An implementation roadmap showing quick wins and longer-term integration with the transformation programme
4. Consideration of ethical implications, especially around sensitive health data

What Success Looks Like

The winning solutions will demonstrate how AI can deliver **immediate value** to people affected by cancer and CRUK supporters, while **generating insights and capabilities** that accelerate the transformation journey. We're looking for ideas that are both pragmatic enough to deploy soon and visionary enough to shape the future of how cancer charities serve their communities.

Because cancer affects 1 in 2 people, we can't afford to wait for transformation to be complete. Let's use AI to make a difference today.

Appendix: Impact

From Wikipedia: *Note that whilst these are drugs we are directly responsible for, there will be countless other foundational research publications we have funded (e.g. characterising the shape of a protein or identifying potential targets/mechanisms) that are not in this list!*
Drugs developed by CRUK's scientists include:

- Cisplatin and carboplatin, cytotoxic chemotherapy drugs discovered at the Institute of Cancer Research in London.
- Abiraterone, a prostate cancer drug discovered at the Institute of Cancer Research in London.
- Temozolomide, which has an effect on glioblastoma, discovered by CRUK scientists at the University of Aston.
- Rucaparib, a PARP inhibitor drug discovered by CRUK scientists including Ruth Plummer at the Northern Institute for Cancer Research .
- Tamoxifen, a hormone therapy used to treat breast cancer and lower the risk of recurrence.[33]

Several of the organisation's scientists have won major prizes, including:

- Tomas Lindahl: one of three recipients of the 2015 Nobel Prize in Chemistry, for mechanistic studies of DNA repair,[34][35] joined the organisation as a researcher in

1981, and from 1986 was the first Director of their Clare Hall research institute in Hertfordshire, since 2015 part of the Francis Crick Institute.

- Paul Nurse and Tim Hunt: recipients of the 2001 Nobel Prize in Physiology or Medicine, for work started at the London Research Institute.[36]
- Renato Dulbecco: recipient of the 1975 Nobel Prize in Physiology or Medicine, while deputy director of what was then the Imperial Cancer Research Fund.[37]