

e-testing with Cancer Research UK



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e-testing have been the sole testing partner of Cancer Research UK (CRUK) since April 2013. We provide test consultants at several levels on a semi-permanent basis for business as usual and project related activities. This amounts to a large number of projects on a range of technology platforms to support the fundraising and operations of the charity. Most of the work is based on an agile methodology and is carried out by embedding e-testing staff into Scrum teams and working on specific projects, both remotely from our test lab in Borehamwood, and on site at CRUK's offices in Islington. The framework agreement in place allows CRUK project managers to call on a flexible, adaptable testing service, from a partner who understands their business and technology stack. e-testing have assigned a dedicated account manager to CRUK, who works from their offices one day per week, in order to attend a weekly account review meeting and keep in touch with projects and staff.

Some of the projects we have worked on with CRUK, including the testing activities involved are listed in this guide. We have deployed the full range of our services to CRUK, including test management and strategic review, functional and non-functional testing at all levels, automated testing, integration, end to end and acceptance testing. We have also implemented testing tools and provided software testing related training.



**CANCER
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- Web Platforms
- Mobile Devices
- Cloud-based platforms
- Internet
- Regression testing
- System testing
- Unit testing
- Automated testing
- Cucumber
- Selenium
- Manual testing
- Exploratory testing
- TDD
- Feature-level testing
- Component-level testing
- On-device automated testing

Drupal Programme

Our staff were embedded in Drupal scrums in support of CRUK internal and 3rd party developers, delivering functional testing services in an Agile Scrum environment, collaborating on each sprint to assure the quality of software deliverables in each scrum, at the unit, system and regression test phases. This included the use of Behavioural Driven Development (BDD) methods by which requirements were documented, code was developed and tests automated, using Behat and Robot Framework (Selenium based test automation tool). A backlog was maintained for automated test cases to match functionality delivered to the overall Drupal CMS programme, keeping pace with development for automated regression testing on demand and on release. This programme supports the main CRUK sites, plus campaigns including Dryathlon, Stand up to Cancer, Virgin London Marathon, among others.

Outcomes are ongoing and include:

- Successful releases
- A test automation framework for use by all Drupal teams, backed up with a Wiki and on site expertise.
- Automated regression packs, including cross browser and multi device capability, using Continuous Integration with Jenkins.
- Effective collaboration with external developers, allowing CRUK to have confidence in delivered code.

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- Web Platforms
- Mobile Devices
- Social media platforms
- Cloud-based platforms
- Internet
- Integration testing
- Regression testing
- Acceptance testing
- System testing
- Performance testing
- Load testing
- Soak testing
- Automated testing
- Manual testing
- Exploratory testing
- Risk-based testing
- Web Service testing
- REST/SOAP-based web services
- Defect analysis & management
- Robust Systems



Race for Life

e-testing managed the overall test programme for the 2013 release of the Race for Life programme, which included a comprehensive update to the web front-end, in addition to a new internally developed call centre management system - the largest and most significant bespoke development ever carried out by the charity. An e-testing Test Manager was deployed, responsible for developing an overall High Level test plan for the programme, to define each test phase, standards, scope and responsibilities, as well as a high level estimate for each of the relevant test phases. A Risk Based Approach was taken, with test phases corresponding to the nature of the part Agile and part V Model Methodologies being employed. A number of e-testing consultants were deployed at several points during the programme, which included system testing (both Waterfall and Agile), integration testing, end to end testing, mobile device compatibility testing, performance testing, user acceptance testing and security testing.

Performance testing was performed on the integrated application, using SOASTA CloudTest, injecting load against the data centre via the AWS cloud. The tests included normal, peak load and soak tests, simulating access via a range of device types and identified several significant issues stemming from concurrency and increasing load, with both application code and infrastructure, which needed to be resolved before launch.

As a part of this programme, a test automation framework was designed and delivered, using HP Unified Functional Testing, to incorporate the automated testing overnight of all key business scenarios and race entry types / merchandise purchases. These tests were integrated into Jenkins in order to allow the automated running of the test pack whenever a change was made. The results of these tests provided a significantly increased level of confidence that no regression issues had been introduced whenever a change had been made, as well as highlighting problems for investigation, where they had. The automated test pack was run against a range of browsers, to establish a level of compatibility checks, each time a change was made.

Once the previously mentioned phases of testing had been completed, a UAT phase was managed by e-testing, where tests and data were specified by business area and the execution / results managed centrally. Test management throughout the programme included defect analysis and management, including reporting to stakeholders, 3rd parties and SME's in different areas of the business, at all levels. A part of this programme was to carry out mobile device compatibility testing. A subset of tests were executed against a matrix of devices to eliminate problems on certain devices.

The outcome of this programme of testing, lasting around 9 months and involving 10 different consultants at different stages, was that the 2014 campaign launched successfully, to major fanfare and promotion, with an anticipated spike in registrations once the season commenced in January 2014.

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- Web Service testing
- On Device Automated testing
- Defect analysis & management

Race for Life App (iOS and Android)

e-testing consultants acted as a quality gate between a leading digital agency and CRUK in order to carry out mobile app tests on an app to promote and assist with the Race for Life campaign. The apps were designed to provide registered users with encouragement and race information on their race, while integrating with 3rd party fundraising portals to raise funds. e-testing reviewed and checked the agency's testing plans while the apps were under development, requesting clarifications and process improvements / evidence of testing where needed. Once release candidates were available, full functional tests were performed against each app, using a mixture of scripted and exploratory tests. There were significant issues raised with the apps, especially around links with 3rd parties, Social Media (Facebook and Twitter) and the bespoke CMS delivered, to integrate with CRUK's corporate systems for race and participant information. The apps were primarily manually tested, with automated regression later being put in place via the Appium tool. Multiple releases were needed, e-testing consultants performed testing remotely from our lab in Hertfordshire, collaborating with the development team and CRUK via cloud based tools, including Jira. Testing was carried out over a mixture of network conditions, including 2G, Edge, 3G and Wi-Fi.

Performance testing of the backend was also carried out, using SOASTA CloudTest, which identified issues with concurrency, particularly how many users could be supported. Infrastructure and database changes were made and the tests repeated to verify the improvements had been successful.



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Stand up to Cancer (SUTC)

SUTC is an annual televised event on Channel 4, which attracts significant fundraising volumes via an online donation form. e-testing consultants initially carried out manual functional testing, using an Agile methodology, alongside the 3rd party developers. Once the solution was completed and functionally proven, a performance test was then necessary. Due to the high numbers involved and the criticality of the form, a series of tests were recommended and run: peak load test (1 hr, 1000 users), soak test with spikes (3hr simulation, 1000 users, reducing wait times), Failover test to check system resilience (1 hr, 1000 users). Initial tests were carried out using SOASTA CloudTest. Several bottlenecks and configuration issues were identified in the initial tests which had to be remedied by CRUK's development partner before tests were re-run. Once the initial tests had been executed using CloudTest, an open source performance testing framework was then implemented using JMeter, injecting load via cloud based provider Flood.io over AWS.

The outcome of this project was a significantly more resilient product, which coped with transaction numbers greater than anticipated on the night, driven by the live show on Channel 4. Failover to a batch mode solution was not necessary and all transactions were successfully captured on the night, without an interruption of service to people donating.



CONTACT

For more information, please contact us via:

info@etesting.com | 020 8905 2761

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