Coding Innovation Automation Service

Coding Innovation Automation Service (CIAS), which sits under the Central Analysis Directorate, automate data processes to save time, reduce errors and improve quality. The service assists in transitioning from manual to code-based workflows, building capability through training and technical support, and providing expertise in Cloud R.

**Our team objectives:**

1. To support teams towards full or partial automation of data processes
   1. Save resources and time needed to run a process
   2. Reduce likelihood of error and increase trust in quality of outputs
2. To build capability within teams
   1. Ensure sustainability of solutions provided and ensure teams own, develop and maintain them
   2. Create development opportunities for analysts
3. To help with technical support in Cloud R
   1. Ensuring continuously availability of Cloud R services
   2. Providing timely resolution of technical issues, or coding errors and raising wider server or infrastructure issues to the Data Engineering team

# Types of service we offer:

Code development and reproducibility

* Reproducible Analytical Pipelines (RAP)
* Code review and quality assurance (QA)
* Transferring code to Github and developing robust workflows

Automation and efficiency

* Moving from manual Excel processes to code-based solutions
* Producing tables and chart against accessibility standards
* HTML reports for publications
* Developing dashboards

Cloud support

* Cloud R servers
* Signposting to other coding platforms (e.g. BigQuery or Python)

Training and collaboration

* Training in R, Github, Dashboards, BigQuery\* & Python\*
* Developing new R packages
* 1-2-1 support

**Assumptions when contacting the CIAS team**

* **Awareness of the existing resources**: CRAN channel, CRAN Wiki, CRANLanD, and Strategic Reproducible Analysis Coding
* **Accessing the relevant coding platforms**
  + **Cloud R:** Contacting a “R Superuser” via the CRAN Onboarding Channel
  + **Git and Github:** Contacting your IT Focal Point
  + **PowerBI:** Contacting your IT Focal Point

**Things other teams can do for you:**

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| **Team** | **What they offer** |
| Francesca Bryden (DIPAD)​ | * Automated reading of big data​ * Storage of data in the Cloud​ * Transfer of pipelines to GCP​ * Data pipeline and engineering solutions​ * BigQuery and GCP training |
| Luke Vincent and Anthony Bryan (SRF) – mainly targeted at SRF products​ | * Automated reading of big data​ * Storage of data in the Cloud​ * Transfer of pipelines to GCP​ * Data pipeline and engineering solutions​ * Web development​ |
| Statistics Dissemination team (part of StatsAID) – Mohan Dell and Shawn Weekes | * Publishing your stats on gov.uk​ * Making your content accessible​ * Dissemination best practice​ * Correction/Revisions​ * Social media dissemination​ |
| Rachel Avbulimen - CRAN representatives | * Onboarding new users to the relevant Cloud R servers (“R Superusers”) * Organising the Coffee and Coding sessions * Assisting with the training courses |

**How to engage with the CIAS team**

You should assess whether you require technical or community support.

**If you require project-based support:**

**Project-based support** is when an individual needs guidance on applying their coding skills to real-world tasks, whether they are automating a workflow, analysing data or developing a tool for their team. While CIAS can offer advice on best practices and troubleshooting, responsibility for project delivery remains with the individual or their team. The level of support required will depend on the scope and complexity of the project.

Types of project-based support:

* **Quick advice chats** – If you need help with a specific coding challenge or a small technical issue, you can request a short discussion to explore potential solutions and best practices. These sessions are ideal for troubleshooting errors, optimizing code, or deciding on the best approach for a task.
* **Smaller-scale projects** – For tasks that require more than a quick chat but are still relatively contained (e.g., creating a simple automation, refining a script, or structuring a dataset for analysis), limited hands-on support may be provided. This could include guidance on structuring the code, reviewing work, or offering feedback on implementation.
* **Larger-scale projects** – If your project involves substantial development, integration with other systems, or ongoing coding support, a more structured approach will be needed. This could include working with multiple stakeholders, ensuring coding best practices are followed, and aligning the solution with organizational requirements. For larger-scale projects, a Project Initiation Document (PID) will be required. This document will outline the project’s objectives, scope, expected outcomes, and responsibilities, ensuring clarity and alignment before any support is provided.

**If you require training support:**

**Training support** is when an individual seeks opportunities to develop their coding skills, whether they are starting their coding journey to mastering their existing skills. CIAS organise all coding courses, but courses such as BigQuery, and PowerBI are delivered by experts outside the team:

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| **Topic** | **Courses currently on offer** | **Courses being developed** | **Who teaches it?** |
| **R Programming** | * Introduction to R * Tidy Data in R * Intermediate R – ggplot2 * Introduction to R Shiny * BigQuery to R | * Introduction to R for Managers * Reporting using R Markdown * Defensive R | CIAS and CRAN representatives |
| **Git and Github** | * Introduction to Git and Github * Intermediate Github * Github Technical Lead | None | CIAS |
| **BigQuery and Google Cloud Platform** | * Introduction to SQL in BigQuery * Introduction to Looker Studio * BigQuery for SQL Users | * Introduction to Google Cloud Storage | Data Engineering and CRAN representatives |
| **PowerBI** | Introduction to PowerBI | None | XX |
| **Python Programming** | None | Emergency Python to R | Data Science |

All training offered are available to book on CRANLanD, ….. The website also provides

**1-2-1 support**

**If you require technical support:**

Technical support is when issues that require specialised expertise beyond what the community can provide, an individual should seek assistance from CIAS.

They are two ways to seek support from CIAS:

1. R Support Tool

An automated self-service tool which outputs solutions for common Cloud R or coding-related issues.

1. Ticketing System

A ticketing system where an individual provides the necessary information about their issue, including a reproducible example. See section on Type of Requests.

Case examples:

* *“I’m getting and error when trying to deploy my app to gcp-rs-connect.”*
* *“My code is slow; I need help making it more efficient.”*
* *“I am getting a LINUX error when installing this package.”*

**If they require community support**:

**Community support** is where an individual seek help from fellow community members when they have questions about a tool, function or package that others may be familiar with.

If the individual believes their issue is relevant to the wider community or has already been discussed, they can browse MS Teams channels using keywords to find existing solutions.

If no solution is found, they can post a new question in the relevant channel on CRAN. While these channels aren't actively monitored by the CIAS team, the large user base increases the likelihood of receiving a timely response from other community members.

If their request is not fulfilled by the community, then they can escalate the issue and [submit a ticket] to the CIAS team.

Case examples:

* *“I’m want to create a map using leaflet, how would I go about doing that?”*
* *“I’m getting an error installing X package, has anyone had this error before?”*
* *“I’m getting an error when trying to save a plot on R Studio as an SVG image.”*

Types of request

If an individual has opted for the technical support via the Ticketing System, they need to ensure they are submitting the correct type of request

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| **Type of request** | **Case example** | **Description** | **Resolution approach** |
| **Guidance request** | “I need support to do something.” | When an individual users require assistance or clarification on how to use a feature, function, or tool within Cloud R. These requests typically stem from a lack of familiarity or understanding of how to perform specific tasks, configure settings, or access certain features. The system is functioning as expected, but the user needs support in navigating or utilising it efficiently. | * Provide detailed explanations, tutorials, or training. * Offer references to user documentation or help resources. * Conduct one-on-one walkthroughs if necessary. * Ensure the user understands how to replicate the steps or tasks on their own moving forward. |
| **Incident report** | “Something is broken!” | When an individual encounters an issue where something is not functioning correctly in Cloud R. This includes bugs, errors, or system malfunctions that prevent the user from completing their work as intended. These requests typically involve identifying and diagnosing the problem, applying fixes, and sometimes escalating the issue to other teams if needed. | * Investigate and diagnose the root cause of the issue. * Apply quick fixes if available. * Escalate the issue to a higher-level technical team if necessary. * Ensure the issue is resolved and document the solution for future reference. |

Out of scope

Some requests may be out of the scope and cannot be handled by the CIAS team.

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| **Type of request** | **Case example** | **Description** |
| **Server incidents** | “I need support to do something.” | When an issue encountered by an individual also affects all the other users of that server. The CIAS team will do some explanatory work to establish the nature of the issue and identify as a server incident. They will then pass on the ticket to the Data Engineering team, if appropriate. |
| **Onboarding requests** | “I need a Cloud R account?” | A new starter should request a Cloud R account via the CRAN Onboarding R channel. |

Issue Priority Levels for Technical Support

Once a ticket is submitted, the CIAS team will prioritise different types of issues based on the complexity of the issue and the impact of the issue.

**Complexity scale**

This scale measures how technically difficult or resource-intensive the issue is to resolve, based on the complexity of the solution or troubleshooting required.

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| **Complexity level** | **Description** |
| **Simple** | Issues that are straightforward, low-effort, and can be resolved with minimal troubleshooting. These problems typically involve basic configuration changes, user errors, or minor bugs that have known solutions. No significant technical knowledge or resources are needed, and resolution is usually quick.  Examples: typos in code, issues requiring restarting R session, or signposting to a known fix in the CRAN Wiki |
| **Moderate** | Issues that require a deeper investigation and involve several system components. These problems may require diagnostic tests, collaboration with other teams, or coordination across systems. Some technical expertise is needed.  Examples: new packages that won’t install, log in issues, renv problems |
| **Complex** | Issues that are highly technical, involving in-depth analysis, multiple systems, or underlying infrastructure. These problems require significant resources, advanced technical skills, and may involve multiple teams to resolve. The resolution may involve creating custom fixes, redesigning parts of the system, or troubleshooting rare errors.  Examples: underlying Linux issues, intermittent faults, connectivity issues |

**Impact scale**

This scale measures the effect the issue has on users and business operations, assessing how widespread and damaging the problem is.

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| **Impact level** | **Description** |
| **Minor** | Issues that have a limited effect on users or operations, often affecting a unique user or a non-essential function. The system remains operational, and there is no significant disruption to the overall workflow or business processes. These issues are more of a nuisance and can be resolved in a non-urgent manner. |
| **Moderate** | Issues that have a noticeable impact on the business or department but do not halt core operations. These problems may cause delays or reduce productivity for a group of users or an entire department, but the system is still functioning. Swift resolution is important, but it is not an emergency. |
| **Severe** | Issues that have a significant, high-impact effect on critical operations, potentially bringing business processes to a halt. These problems result in major service disruptions, widespread outages, or security risks that need immediate attention. Failure to resolve quickly could result in failure to publish an output, loss of data, compliance breaches, or reputational damage. Typically, these type of issues affect multiple servers, and the issue cannot be resolved by moving the user to a new server. |

**Response Time**

The expected response timings are based on issue priority.

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|  | | Impact | | |
| **Minor** | **Moderate** | **Severe** |
| Complexity | **Simple** | 5 days | 2 days | 8 hours |
| **Moderate** | 1.5 month | 10 days | 5 days |
| **Complex** | 3 months | 1 month | 10 days |

Please note, issues can be escalated if the impact or complexity levels have been heightened. Tickets can either be escalated by the user or CIAS team via email.