FASTCAT-Edge

FASTCAT-Cloud

Case Studies
Demonstrating Cos4Cloud success stories and best practice examples

Description

This case study is an output from the Cos4Cloud project which demonstrates evidence-based knowledge of project approaches and their impact. It is part of a collection in the Cos4Cloud Toolbox and Evidence Hub and shared as lessons learned and success stories which are part of the legacy of the project. These include a range of stories and experiences collated from activity generated throughout the lifetime of the project i.e. blogs and articles, as well as user-friendly presentations of selected best practices, incorporating video links images etc.

Case study title

Testing FASTCAT-Edge and FASTCAT-Cloud camera trap services in a real scenario: the FELIS project

FELIS and Cos4Cloud representatives, participating in FASTCAT testing activities, Barcelona, Catalonia. © Cos4Cloud

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Case study contributing partners

CREAF · EXCELENCIA SEVERO OCHOA · Science for Change · ecsa | European Citizen Science Association

What is the case study about?

This case study demonstrates the potential of the Cos4Cloud services FASTCAT-Edge and FASTCAT-Cloud to improve the camera trap community users' experience.

FASTCAT - Edge

FASTCAT-Edge is a do-it-yourself (DIY) smart camera trap to record only videos and pictures of wildlife activity because it automatically filters out most unwanted pictures and video streams, keeping images of animals. This saves time as you don't have to delete empty recordings or photos. More information on the Cos4Cloud website.

FASTCAT-Cloud

FASTCAT-Cloud is an open website service that automatically filters out most unwanted pictures and video streams, keeping images of animals. This saves the camera trap community time as empty recordings or photos can be removed automatically. FASTCAT-Cloud also integrates machine learning technology (a subset of AI – Artificial Intelligence) to automatically identify species. More information on the Cos4Cloud website.

These two services have been developed by DynAikon in the Cos4Cloud project framework and will be available on the European Open Science Cloud (EOSC) Marketplace.

This case study is focused on a testing session that Cos4Cloud organised with the 'FELIS' group, a camera trap community in Catalonia. 'FELIS' is a project coordinated by the Catalan Institute of Natural History that uses camera traps to monitor Catalan mammals, focusing on the wildcat (*Felis silvestris*). Most of the members of the project are volunteers.

CHALLENGE: WHAT DID THIS SEEK TO DO / SOLVE?

FELIS and Cos4Cloud representatives, Cos4Cloud workshop, natural park Sant Llorenç del Munt i l'Obac, Barcelona, Catalonia. © Cos4Cloud

The FELIS group wants to increase the number of camera traps to capture images on a broader area in Catalonia. However, the cameras they currently use are expensive, and, therefore, are very difficult to fund. FASTCAT-Edge can help to address this challenge because it is a more cost-effective DIY camera trap. Moreover, FASTCAT-Edge works with artificial intelligence and, therefore, it is also able to detect small animals that are sometimes missed with standard commercial camera traps because they need a minimum heat threshold to be triggered. In addition to this, FASTCAT-Edge is better at detecting fast animals than most camera traps because there is almost no delay from motion being detected to the image being taken.

The FASTCAT-Cloud web service could help the community to avoid manually processing all the images their camera traps record. Often, thousands of images need to be processed, many of them being empty images, and checking them is very time-consuming. In addition, the FELIS group is identifying the animals present in the records manually, and FASTCAT-Cloud could help them to automatically identify some species with the help of its trained AI.

To present and test the prototype of these two services, Cos4Cloud organised an activity on the 17th of September 2022. The workshop was held in the natural park Sant Llorenç del Munt i l'Obac (Barcelona, Catalonia).

The activity was divided into two practical exercises:

1. Following guidelines to test FASTCAT-Cloud with some Catalan mammals' images

2. Building and using a FASTCAT-Edge camera trap indoors and outdoors.

The main objective was that the participants got familiar with these two prototypes and gave feedback to improve them.

The activity was organised by ICM-CSIC with the collaboration of Science for Change and CREAF.

AUDIENCE REACH AND METHODS OF ENGAGEMENT

A total of 20 participants took part in the activity. To engage the FELIS group, the Cos4Cloud team conducted a series of interviews with the group coordinators to:

• Learn more about their uncovered needs when using camera traps (such as the high cost of each camera trap or the fact that empty images were often recorded), and

• Discuss with them how FASTCAT-Edge and FASTCAT-Cloud could help to tackle some of these challenges.

The DynAikon team was also involved in these discussions to solve technical questions. To adapt the activity to the FELIS group objectives, DynAikon team also trained an artificial intelligence demonstrator for FASTCAT-Cloud to recognize Spanish mammals species.

Main messages to engage participants:

• Get to know this innovative technology by doing practical exercises.

• Collaborate in improving these services with their feedback and that, in this way, if they use them in the future, it would be more adapted to their needs.

• Bring home a pack with the materials needed to create their own FASTCAT-Edge camera trap (one pack per participant).

Pre-event actions:

For participants to understand the services and purpose of the activity, the Cos4Cloud team sent them information about the services previous to the event, including infographics to explain the services.

Post-event actions:

The Cos4Cloud team sent the participants an acknowledgement email with the links to access the services and a forum was opened in RICAP (an initiative that links people involved in participatory science or citizen science, in the Ibero-American region) to continue discussions and solving queries about the services. (See: https://forum.cientopolis.org/t/testeig-de-serveis-fastcat/406)

🤲 BENEFITS AND OR OUTCOMES

All the participants answered a questionnaire to assess FASTCAT-Edge and FASTCAT-Cloud. Therefore, the main outcome of the activity was to gather the participants' feedback from a real camera trap community to help DynAikon improve these services. The questionnaire included questions related to the utility, usability, reliability and to get to know if they thought that these services were potentially useful or addressed some of their needs, etc. Some of the results of the questions are reflected in the table below.

FASTCAT-Cloud quantitative analysis examples	
Assessed aspect/question	**Results from the questionnaire**
User experience & service usability	50% of the participants stated that the service was very easy to use (5 in a scale of 5) 50% of the participants stated that the service was easy to use (4 in a scale of 5)
Utility of the service	75% of the participants found the service useful (4 in a scale of 5) 25% of the participants found the service very useful (5 in a scale of 5)
Adaptability and flexibility to address their needs	25% of the participants found the service more or less flexible (3 in a scale of 5) 50% of the participants found the service flexible (4 in a scale of 5) 25% of the participants found the service very flexible (5 in a scale of 5)

FASTCAT-Cloud quantitative analysis examples	
Assessed aspect/question	**Results from the questionnaire**
Rate the general service performance	25% of the participants probably will not use the FASTCAT-Cloud service in the future, although it is improved (2 in a scale of 5) 50% of the participants will likely use the FASTCAT-Cloud service in the future, if it is improved (4 in a scale of 5) 25% of the participants will very likely use the FASTCAT-Cloud service in the future, if it is improved (5 in a scale of 5)

FASTCAT-Edge quantitative analysis examples	
Assessed aspect/question	**Results from the questionnaire**
User experience: do you think that the setup is easy to build?	25% marked 'yes' 50% marked 'no' 25% marked 'I do not know'
Do you think FASTCAT-Edge is suitable for use in a biodiversity study?	75% marked 'yes' 25% marked 'no'
Adaptability and flexibility to address their needs	25% of the participants found the service not flexible (2 in a scale of 5) 25% of the participants found the service more or less flexible (3 in a scale of 5) 50% of the participants found the service very flexible (5 in a scale of 5)
Rate the general service performance	50% of the participants maybe use the FASTCAT-Edge service in the future (3 in a scale of 5) 50% of the participants will potentially use the FASTCAT-Edge service in the future (4 in a scale of 5)

IMPACT

The main impact of the activity was the opportunity to get FASTCAT-Cloud and FASTCAT-Edge tested directly with the end-users and take into accounts their needs to keep improving these two services.

This activity has also contributed to the 'Co-design as a service: Methodological guide', which results from the experience and lessons learned in co-designing thirteen technological services. This guide has been led by Science for Change as a result of the co-design process implemented with ICM-CSIC, CREAF and ECSA.

Testing Cos4Cloud services in real scenarios is the last step of the co-design and testing methodology in Cos4Cloud.

This Cos4Cloud case study demonstrates an example of a Cos4Cloud testing activity in a real scenario, implemented by the Cos4Cloud project. FASTCAT-Cloud and FASTCAT-Edge are services developed by DynAikon.

Additional resources: About the Cos4Cloud Toolbox and Evidence Hub