

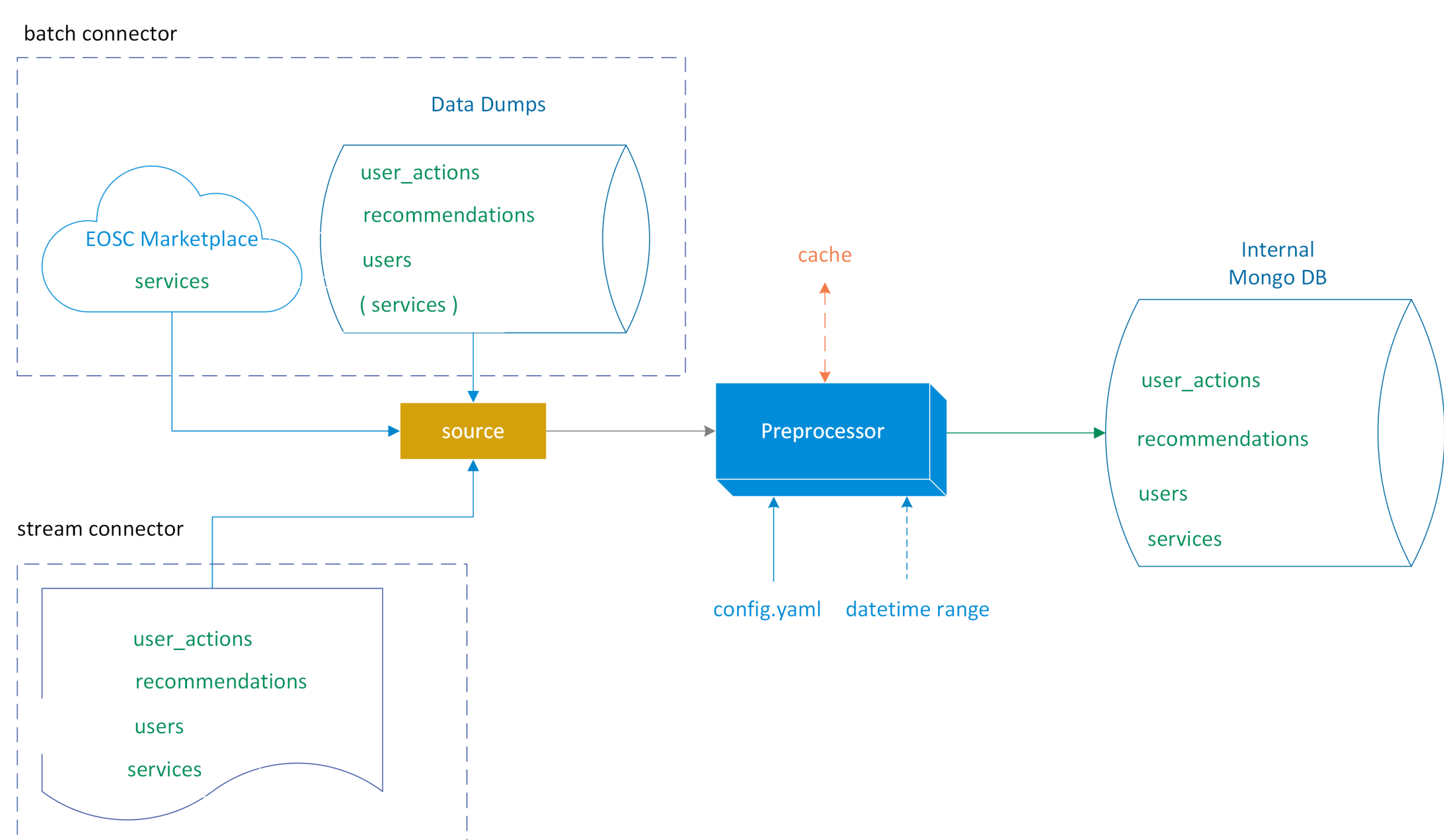
# Recommender Metrics Framework: Measuring the Success of a Recommendation System

Kostas Kagkelidis, Nikolaos Triantafyllis, Themis Zamani, Kostas Koumantaros  
 {kaggis, ntriantafyl, themis, kkoum}@admin.grnet.gr  
 National Infrastructures for Research and Technology (GRNET)

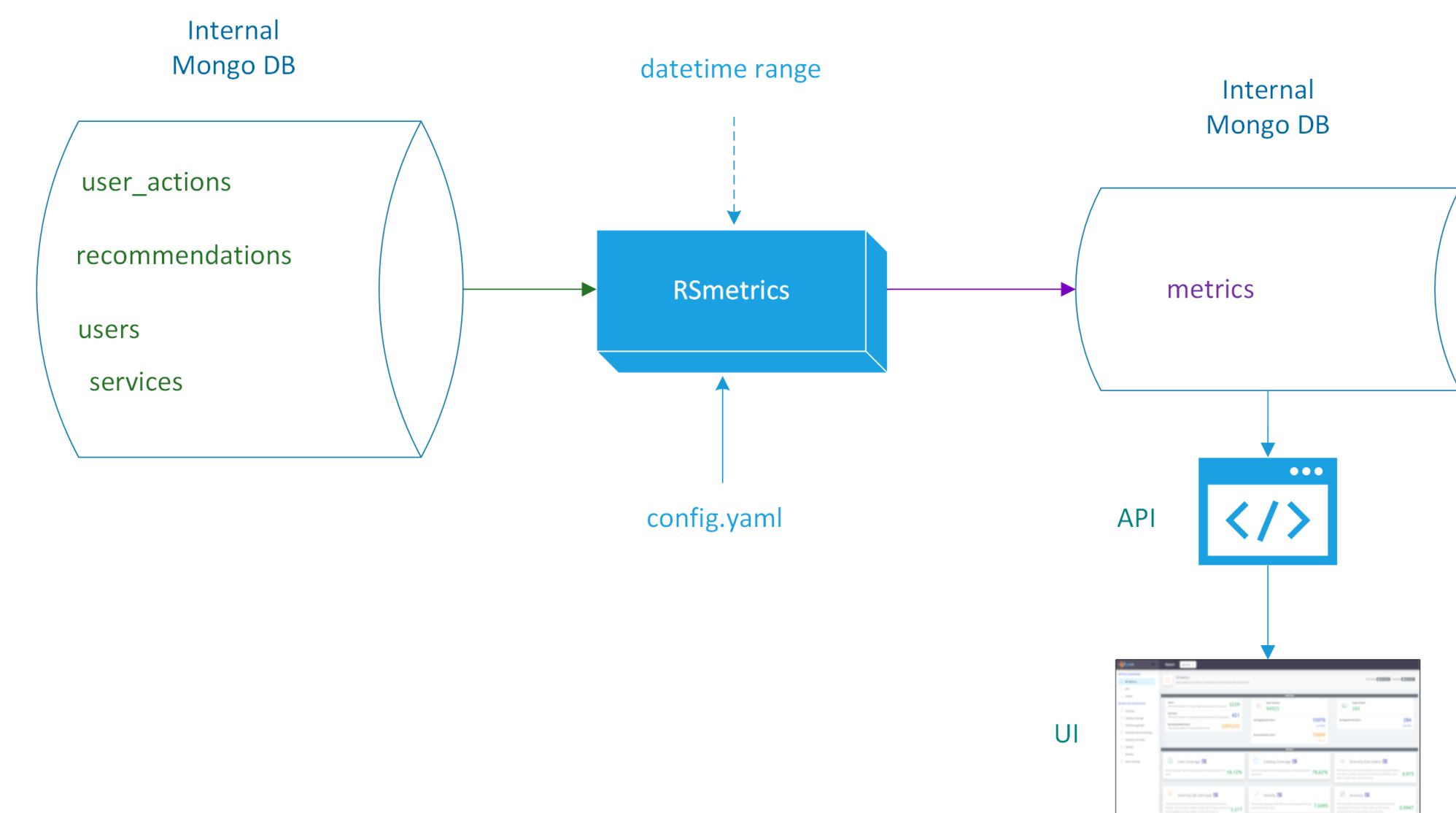
## Recommender Metrics Framework

The Recommender System (RS) is a novel component of the EOSC Marketplace/Search Service meant to improve user experience. It provides EOSC users with recommendations concerning resources that could be of their interest, based on a multi-focal perspective of the users. Measuring the success of such system is crucial to get valuable insights in many aspects that affect user experience. In this approach, an independent metrics framework as a service is being introduced to support the evaluation and adaptation of recommendation mechanisms. The use of additional diagnostic metrics and visualizations offers deeper and sometimes surprising insights into a model's performance. The **evaluation is quantitatively** being performed by processing information such as **resources, user actions, ratings, and recommendations** in order to measure the impact of the AI-enhanced services and user satisfaction as well as to incorporate this feedback and improve the services provided, via a user-friendly API and dashboard UI.

## Components Functionality



**Preprocessor** performs several tasks: (i) data retrieval through a connector module that claims and transforms data from various sources, (ii) service-associated knowledge correlations, (iii) dummy or dissociated data removal, (iv) tagging of various associations in the data, i.e. registered or anonymous -related users and services, (v) generation of statistics information.



**RSmetrics** is responsible for (i) processing the data, (ii) computing the designated evaluation metrics, and (iii) producing the necessary information in a homogenized manner.

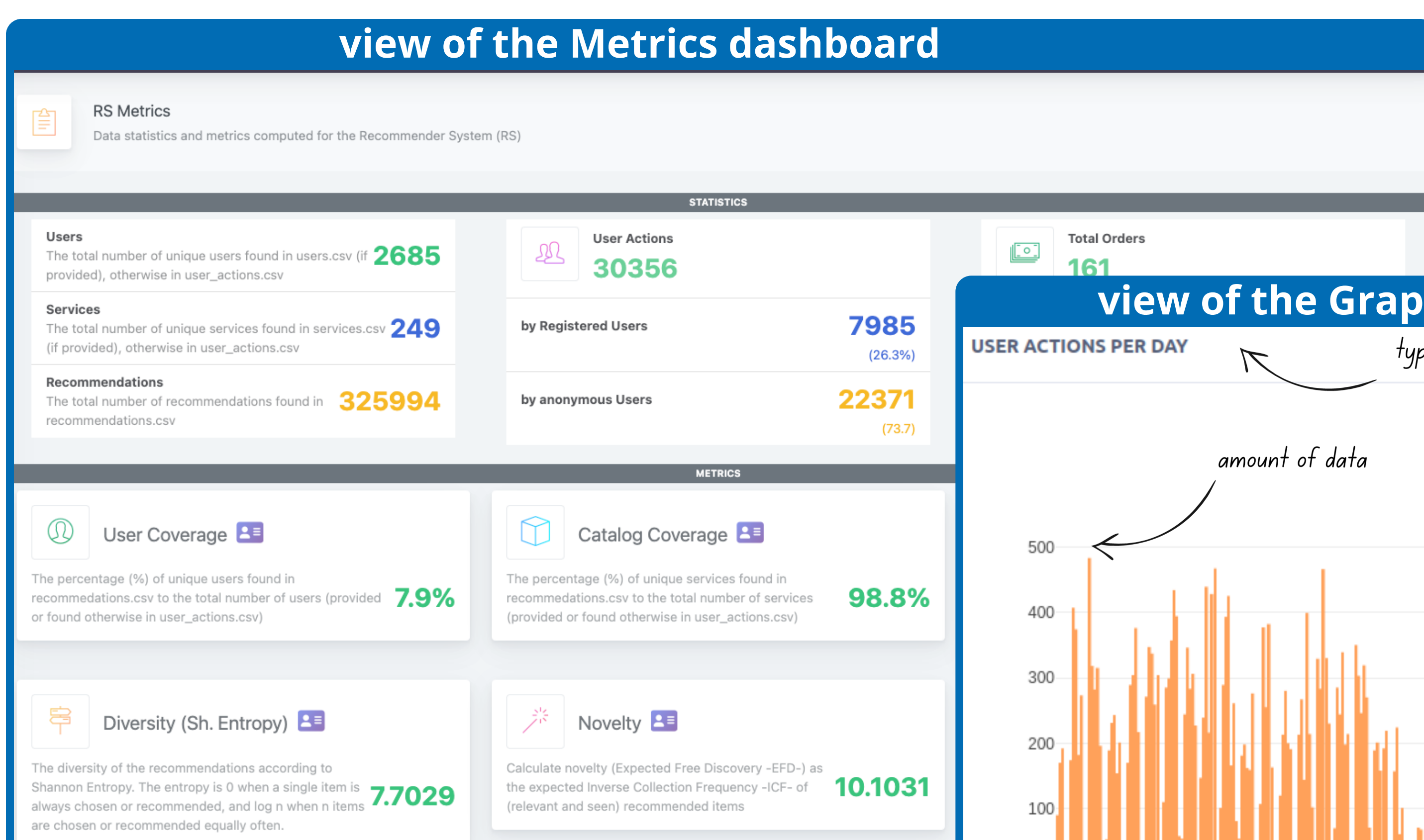
## Dashboard UI

A web service presenting reports through a rich **UI/dashboard** and a **rest API**. Complete documentation of how metrics perform the necessary calculations, and what is the expected range of the output values is also exhibited. **KPIs** indicate measurable values that demonstrate how effectively a company is achieving key business objectives.

<https://rseval.eosc.grnet.gr>

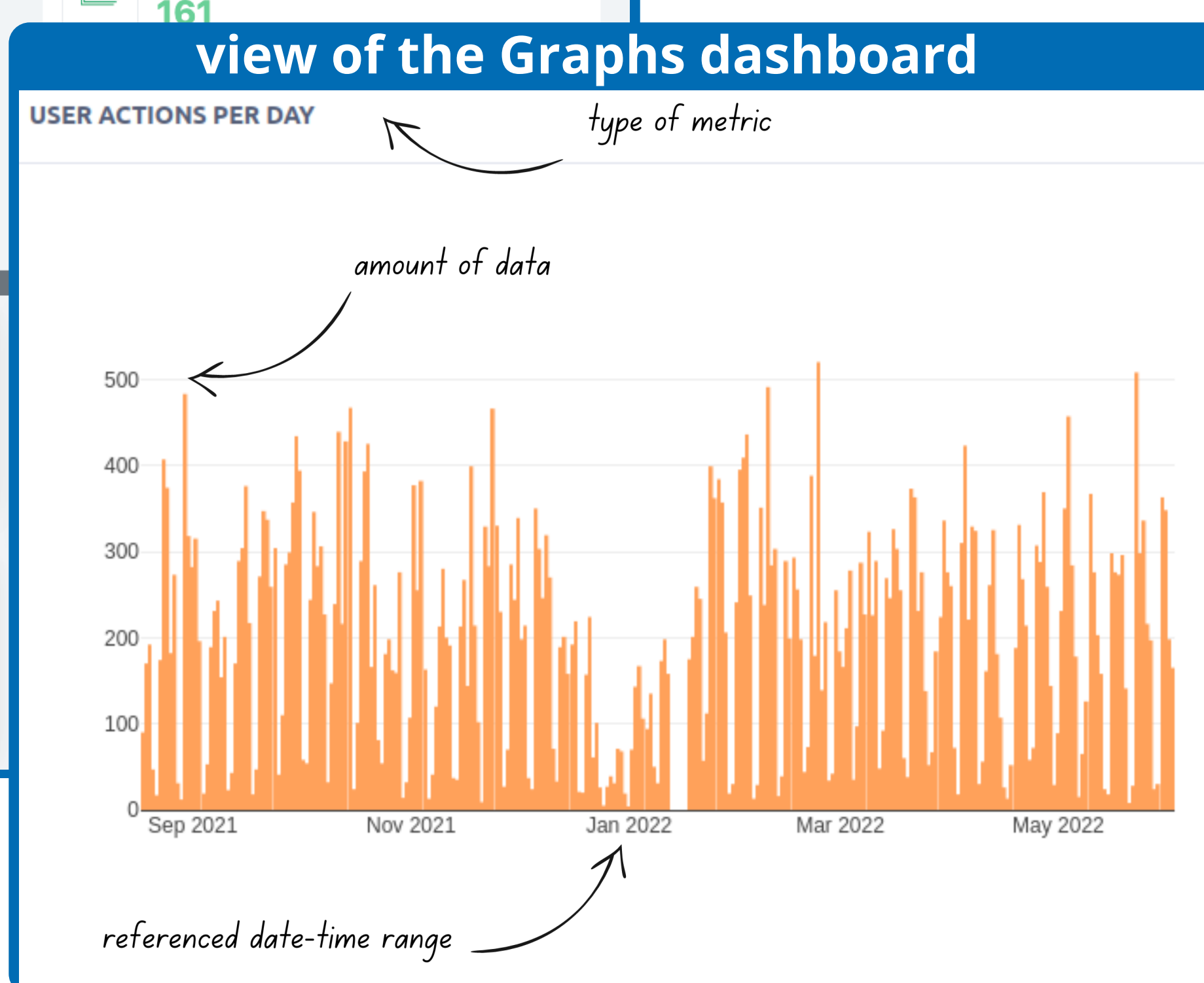
It serves the below **KPIs** metrics:

- Click-Through Rate
- Hit Rate
- Top 5 recommended Services
- Top 5 ordered Services
- Top 5 categories for recommendations
- Top 5 categories for orders
- Top 5 domains for orders
- Top 5 domains for recommendations



It delivers the below **Metrics**:

- Accuracy
- Catalog Coverage
- Diversity Gini Index
- Diversity Shannon Entropy
- Novelty
- User Coverage



It exposes **Graphic Visualizations** of the following statistics:

- User Actions per day
- Recommended Items per day
- User Actions per month
- Recommended Items per month

