C-SCALE

Copernicus - eoSC AnaLytics Engine

Federated Earth System Simulation and Data Processing Platform (FedEarthData)

Enabling Copernicus Big Data Analytics through EOSC

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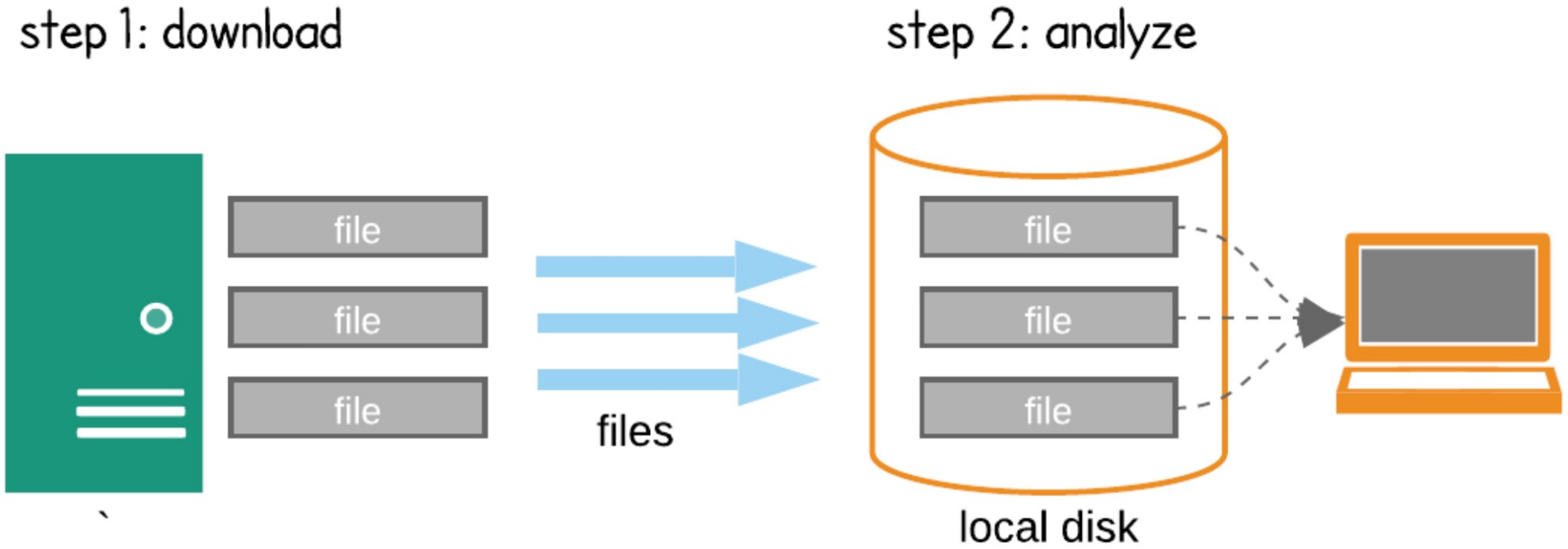
Copernicus Programme

Has established itself globally as the **predominant global spatial data provider**.

Aims to contribute significantly to the vision of a digital copy of our Earth, i.e. a **digital twin of the earth**, supporting current EC goals within the **Europe 2020 strategy**, the **Green Deal** and its related **Destination Earth** initiative.

Bring data to compute

How we analysed data in the past



This is fine when you're working with O(MB) data.

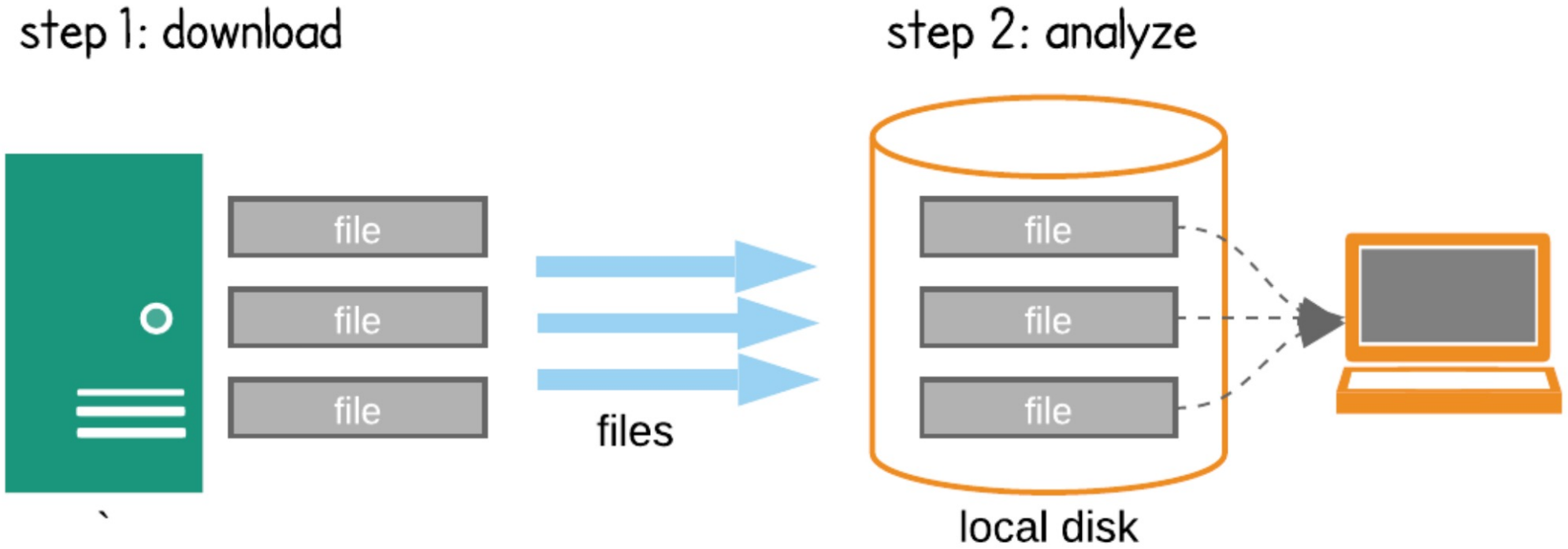
Data becoming increasingly high resolution

Sentinel-2A: 10m resolution

Planet Labs SkySat (0.8m resolution)

Bring data to compute

How we analysed data in the past



This is fine when you're working with O(MB) data.
But becomes increasingly difficult / impossible as we move to O(GB), O(TB) and O(PB)

A paradigm shift: Bring compute to data

Bring your analysis / model / processing to the compute.
Use a platform!

C-SCALE objectives

- C-SCALE plans to deliver
  - A **federated compute and data infrastructure** offering Copernicus/EO data
  - A **seamless user experience** where the complexity of Copernicus data, compute and storage resource provisioning and orchestration is hidden from the end-user
  - Access to **optimized** low level **data** and higher-level **analysis ready data**
  - **On-demand solutions** to generate analysis ready data where these are not readily available
- The **research communities**, through use cases, will **co-design** and help create a federated infrastructure that delivers data and **platform services that are useful for the community**

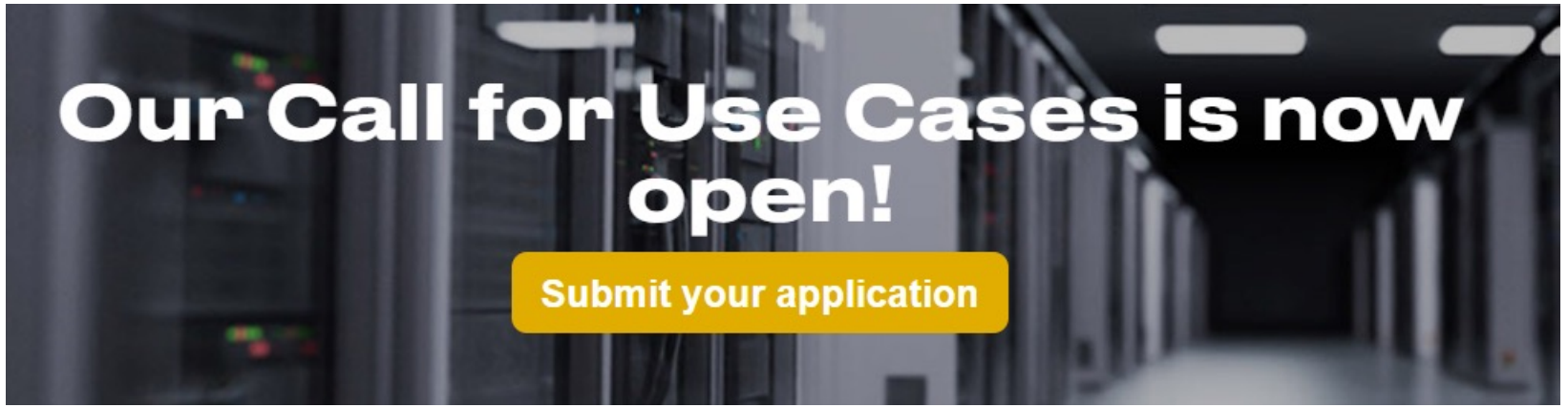
FedEarthData

The FedEarthData Platform

- A distributed infrastructure of data and compute providers to support the execution of Earth System Simulation and Data Processing workflows at scale
- Flexible computing capacity
  - Cloud IaaS
  - HTC & HPC
  - PaaS Orchestration
  - Notebooks
  - openEO
- With access to a large collection of EO (Copernicus) datasets
- FedEarthData is operational – supporting 11 use cases
  see e.g. https://c-scale.eu/case-studies/

Get involved in the co-design!

Submit a use case



https://c-scale.eu/call-for-use-cases/

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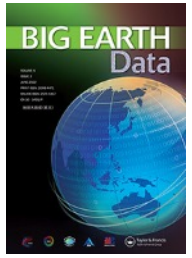
Thank you for your attention.

Read our technical note! https://doi.org/10.1080/20964471.2022.2094953



An open compute and data federation as an alternative to monolithic infrastructures for big Earth data analytics

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