CloudButton

Conclusions

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BIG DATA VALUE
PUBLIC-PRIVATE PARTNERSHIP

http://cloudbutton.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 825184.

CloudButton

January 2019 - June 2022
4,277,507.50€

- CloudButton is a successful project that produced global impact and accomplished its goals.
- We demonstrated KPIs in the three use cases
- We produced 4 key products (open source projects)
- Sustainability is ensured in 4 new EU projects and two novel startups

EMBL

Atos

fundaciónMATRIX 10 años

The James Hutton Institute

IBM

UNIVERSITAT ROVIRA i VIRGILI

Imperial College London

Red Hat

Institut Mines-Télécom

Impact

CloudButton

Four key Contributions (Innovation Radar)

- **Lithops** Serverless Data Analytics Platform
- EMBL's **Metaspace** Cloud Platform for Metabolomics
- RedHat's **Infinispan** In-Memory Data Grid
- **FaasM** WebAssembly Runtime for Serverless Applications

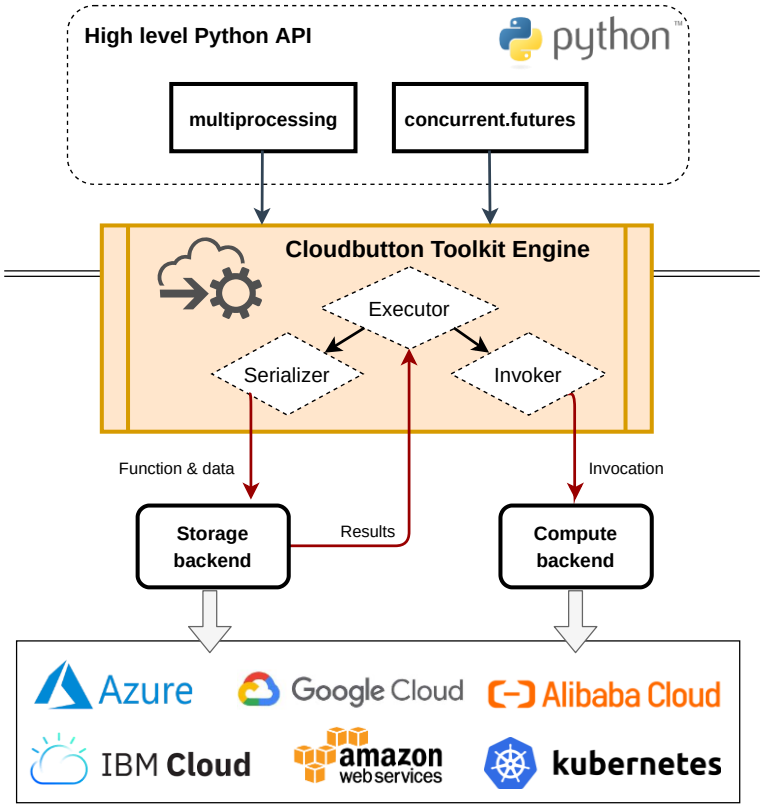
Demonstrated KPIs in the different use cases

- **Simplicity/Productivity** in all use cases but METASPACE as flasgship result
- Performance/Elasticity: parallelization of I/O and compute enabled huge speedups (46x)
- Better **performance** compared to commercial batch cloud solutions and HPC
- Validated in operational environment with hundreds of real users

Dissemination

- High Scientific Impact (Top conferences and journals in Computer Science and BioInformatics)
- **Global Industrial Impact** (IBM Watson, Microsoft, Huawei, ATOS, SAP)
- Societal Impact (PyCon developer conference, Mass media publications, European Researchers night)
- More impact and results expected in the next months

LITHOPS



Lithops is the major technical achievement of the CloudButton project. It is a **Multi-Cloud Serverless Data Analytic Platform** that is used in production at EMBL (Metaspace.eu), IBM, Hutton Institute, and Cyber ISCIII (DATOMA CLOUD)

Big Data pipelines in the **three use cases** (Genomics, Metabolomics, Geospatial) have **demonstrated all KPIs using Lithops** (IBM Cloud, AWS)

All partners have **integrated** their contributions with Lithops (Infinispan, FaasM)

Apache 2.0 license precludes any **IPR** future conflicts between partners

Exploitation and next steps

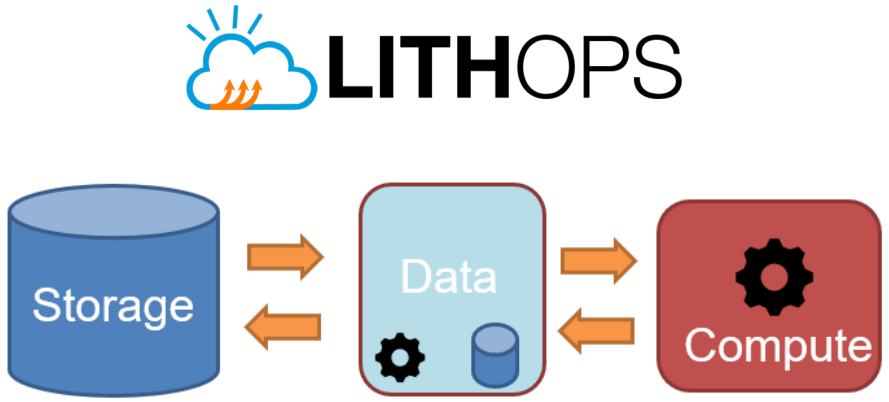
Top conferences and journals. Industrial impact. Societal impact.

EMBL's SpaceM startup is incubation during 2022/23. Metaspace.eu is using Lithops in production in IBM Cloud with hundreds of users and large metabolomics datasets.

Cyber ISCIII & URV's startup DATOMA Cloud received different funds to build a startup in 2023. All Cloud developments are based on Lithops.

IBM is using Lithops in production with several clients, and it continues development and contributions to the repository. Josep Sampé (previously URV) now hired by IBM.

Lithops appears as infrastructure technology in at least 6 **Horizon Europe** projects (NearData, Extract, CloudSkin, CloudStars, Metacell, Metadrug). Four of them starting on January 2023.



RedHat is maintaining **Infinispan** (**RedHat Data Grid**). A potential collaboration with IBM to deploy Metaspace/Lithops using OpenShift on premise locations like Astra Zeneca.

Exploitation and next steps

EXTRACT project focused on **Extreme Geospatial** data

NEARDATA project focused on **Extreme OMICs** data

CLOUDSKIN focused on **Edge Computing**

CLOUDSTARS is a MSCA **Staff Exchange** network with three IBM sites (Watson, Zurich, Israel) and two EU companies (SAP, NearBy Computing)
METACELL

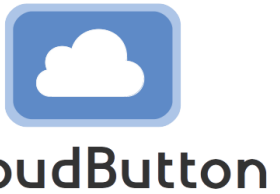
DATOMA Cloud is a **biotech OMICs** startup that benefits from Lithops

ERC CoG grant **METACELL** (that already led to the startup SpaceM)

ERC Proof of Concept METADRUG (2022-2023) for SpaceM commercialization

SpaceM is a **Metabolomics** startup that uses METASPACE

LITHOPS



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