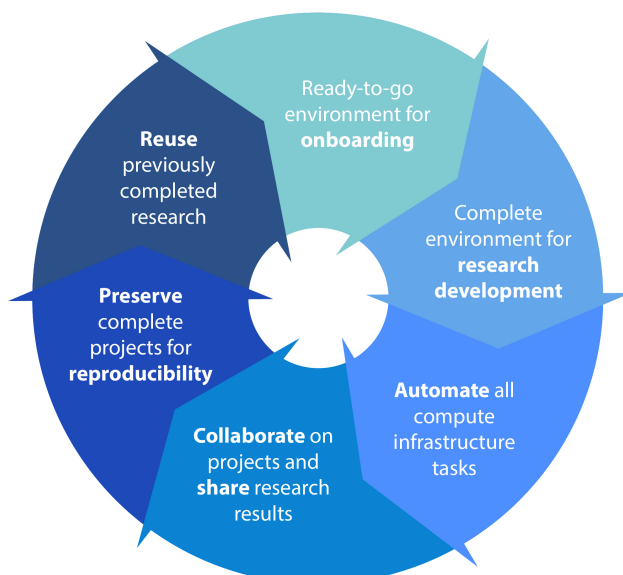# Transform Your Research With Guaranteed Reproducibility

Boost computational research productivity and enable seamless collaboration

Computational researchers can waste precious time performing or waiting on infrastructure and environment setup, configuration, data management, and other operational tasks. Results are often hard to reproduce, reuse, and share, and computational costs are high. The Code Ocean platform solves the problem of computational research productivity, and data loss. Our integrated cloud-based platform transforms your research process to achieve higher quality and streamlined operations. It enables bioinformaticians and computational biologists to capture the exact version of code, data, and computing environment that generated every result. Using the Code Ocean platform, researchers create projects that are organized, accessible, and interoperable, making it easy to reuse and build upon previous work. The platform also automates all compute infrastructure tasks, so projects start faster and you access exactly the needed computing resources, at optimized cost.

Accelerate the Computational Research Lifecycle

Reuse previously completed research

Ready-to-go environment for **onboarding**

Complete environment for **research development**

Automate all compute infrastructure tasks

Preserve complete projects for **reproducibility**

**Collaborate** on projects and **share** research results

Platform Capabilities

- **Fast setup and onboarding** of researchers

- **Support for RStudio, Jupyter** and many more tools

- **Scalable computing** with easy access to exactly the capacity you need – CPUs/GPUs, memory and storage on any cloud instance type

- **Smart cost management** using automated resource allocation and cost transparency

- **Sharing and collaboration** as easy as sharing a link and granting permission

- **Easy access for bench scientists** to execute and visualize results through a graphical user interface

- **Reproducibility & Data provenance -** data, code, computing environment, and results are always linked, captured, and stored collectively

- **Simple, GUI-based creation** of Dockerfiles and Docker images

- **FAIR principles-based repository** with searchable built-in asset management

- **Virtual private cloud** keeps projects secure behind your own firewall, giving you complete control over data governance

## Compute capsules preserve your projects in their entirety

At the heart of the Code Ocean platform lies the compute capsule. It contains project environment, code, data, and results in a snapshot that can be persisted, versioned, and executed—ensuring you can reproduce the project back to any point in time. Store all your capsules in a searchable and shareable repository that supports internal or external collaboration. You can find and select a capsule from the repository and launch it at any time within the platform, and you can also export these capsules and use them outside the Code Ocean platform with open source tools such as Docker.

Compute Capsule
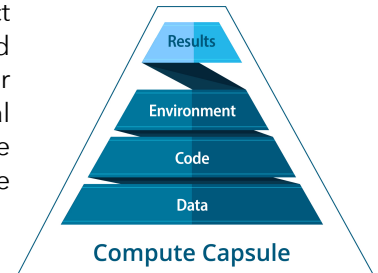
Workbench interface handles all your computational tasks

The Code Ocean platform offers an intuitive workbench that supports all the processes throughout the research lifecycle. Use the development tools you love (e.g. RStudio, Jupyter, Git) from within the collaborative workbench interface. Then, the workbench takes care of tedious operations such as:

- Selecting, launching, switching, and terminating
- compute machines
- Installing and integrating various development tools
- Saving consistent project snapshots in our cloud
- based repository
- Keeping things organized and easy to find, reuse, and share
- Cloning previous research projects
- Moving back in time to reproduce the project at an earlier phase.
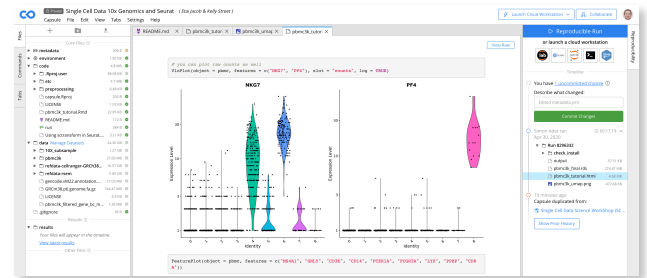
In addition, the workbench incorporates a simple user interface that lets you generate your own Docker files and Docker images (So you don't need to code them yourself or ask IT to do it for you.)

The platform automates your compute infrastructure operations

The platform works behind the scenes to allocate and deallocate compute and storage resources and optimize their use. It supports all open source machine languages and popular data science integrated development environments (IDEs) in a project and packages them all into a Docker container.

The platform keeps all tools current with the latest security updates. You can execute projects using cloud computing resources such as Amazon Web Services (AWS) Elastic Compute Cloud (EC2), Simple Storage Service (S3), and Elastic File System (EFS). The platform allocates each project with the needed CPU cores, GPUs, and RAM. You can keep all code components in your organization's private Git repository.

Improve your computational research quality and productivity

- Reduce wasted researcher time
- Accelerate time to research results
- Optimize compute and other costs

- Guarantee reproducibility
- Ease and streamline collaboration
- Eliminate researcher frustration

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