



jupyter

website redesign



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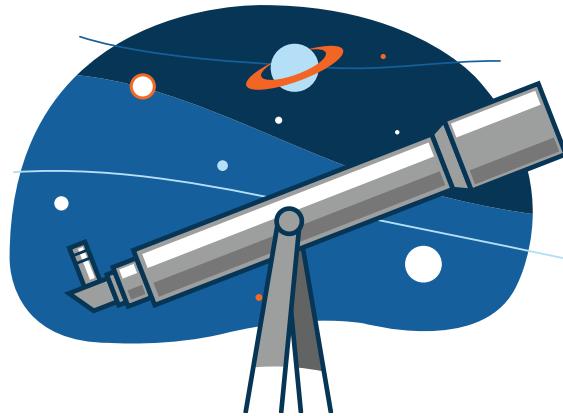
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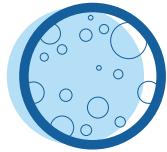
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team iO



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As a team of Human-Computer Interaction professionals, we partnered with Project Jupyter to re-design [Jupyter.org](https://jupyter.org).

our clients



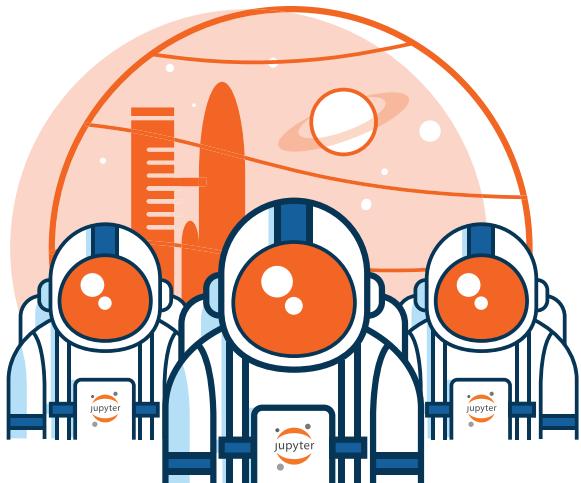
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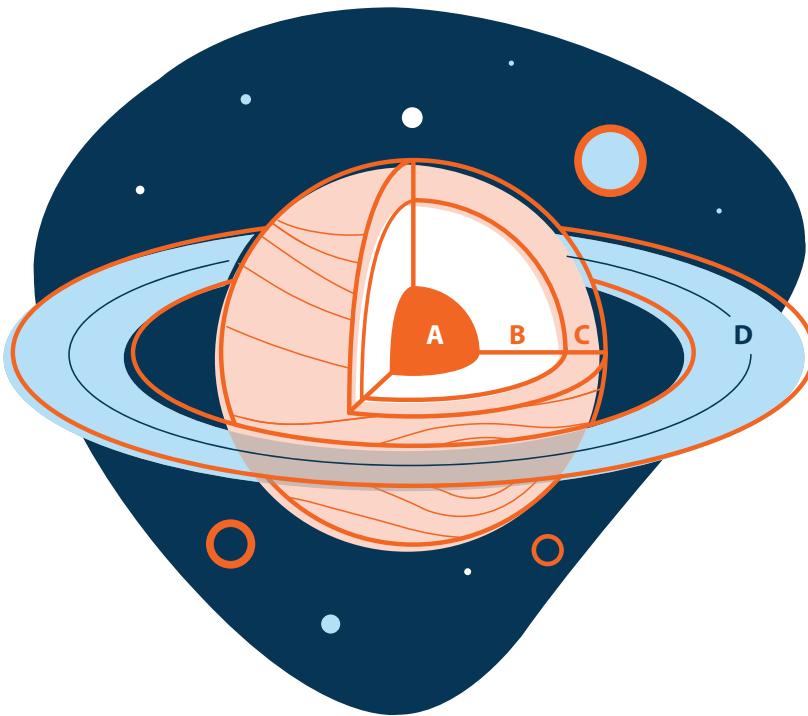


The Community

Project Jupyter is first and foremost an open source community. It was crucial to consult them throughout the process in order to establish their trust and advocacy for the final website design.

Throughout this endeavor, the Jupyter community served as our greatest resource for feedback and support.

project jupyter



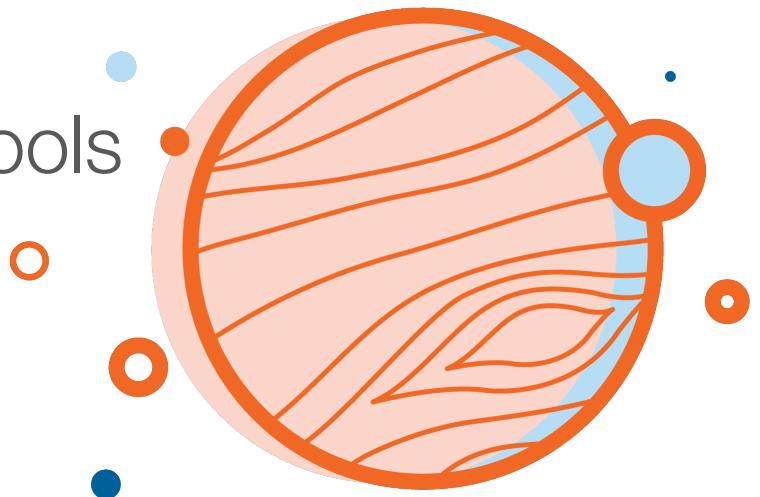
What is Jupyter?

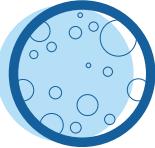
Jupyter software is a suite of free tools designed for interactive and reproducible computing. It consists of three major layers: kernel, middle ware, and application.

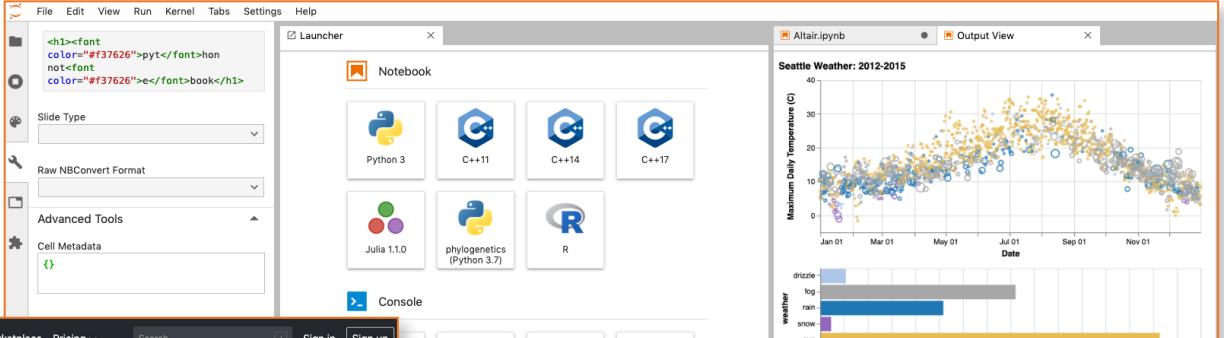
Each layer is interchangeable.

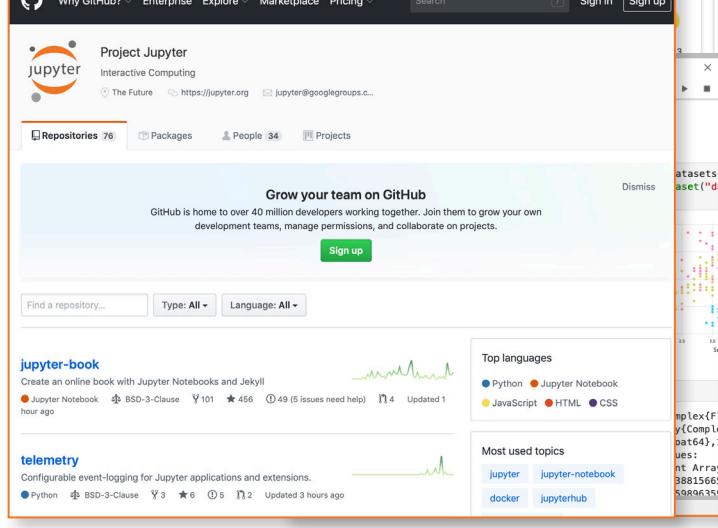
Free, open source tools

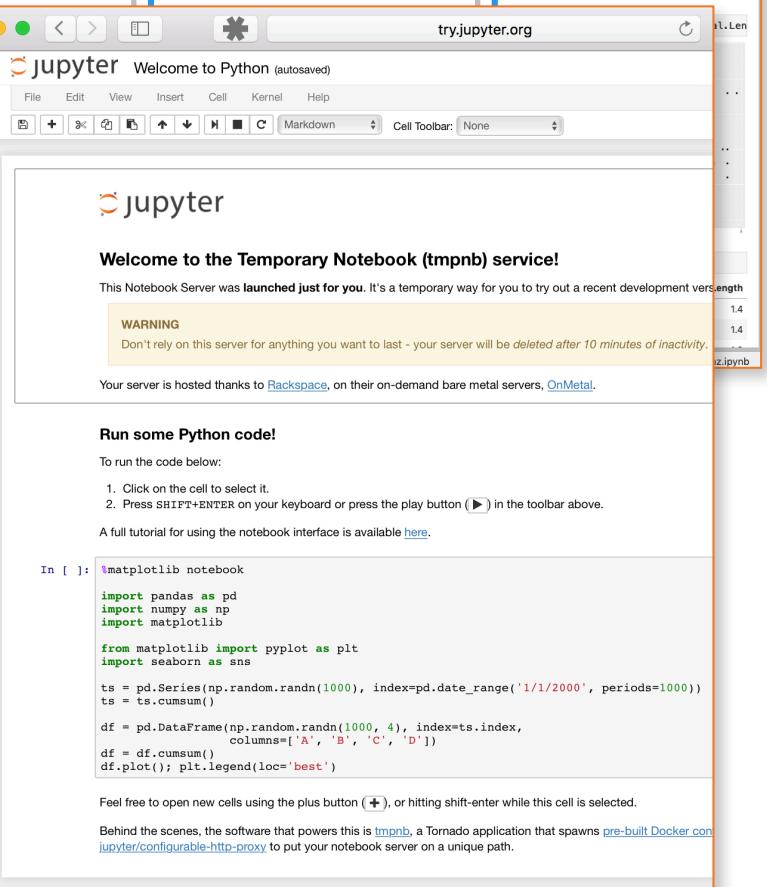
Jupyter technology is the standard for workflows in data science, machine learning, and more.

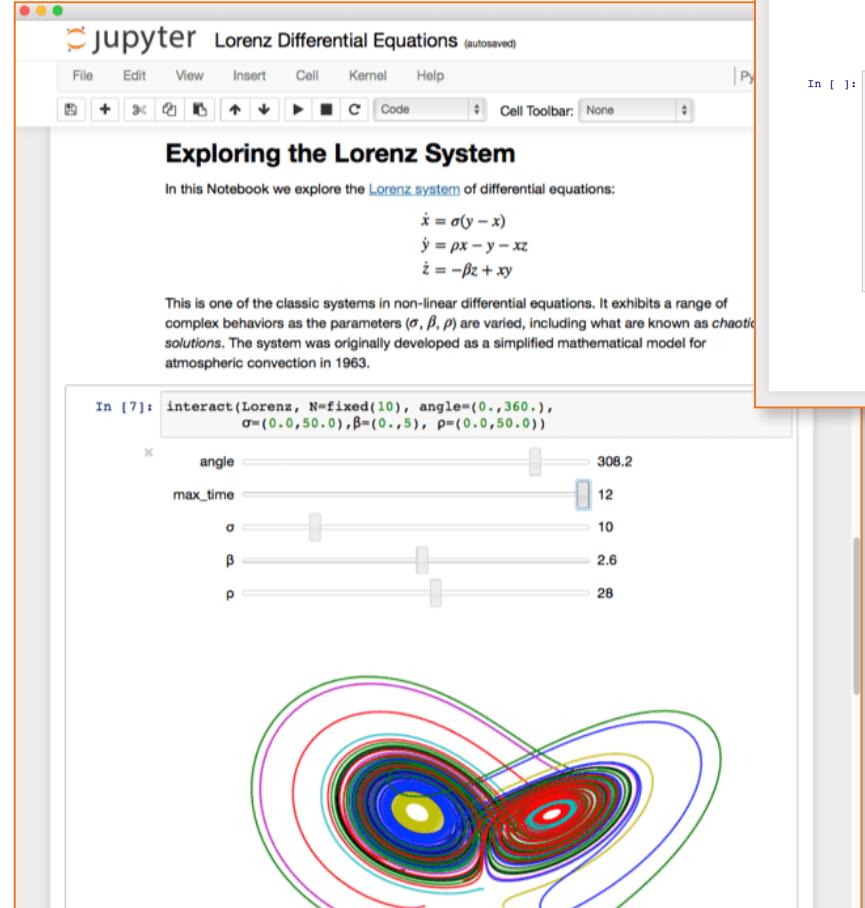








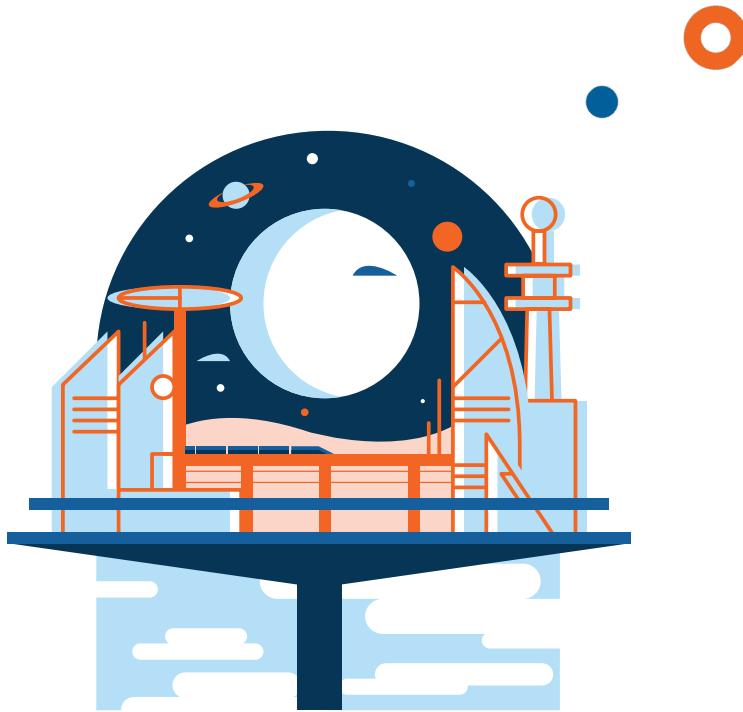






These tools can support interactive computing and data analysis across any programming language. Users around the world have used them for various purposes such as academia, research, industry, and journalism.

the problem



Jupyter.org aims to guide and inform individuals, organizations, contributors, and sponsors about Project Jupyter's core values, technology, and community.

The current website does not effectively communicate this information to these parties. This problem calls for a complete website re-design.

The Jupyter.org website features several main sections:

- JupyterLab 1.0: Jupyter's Next-Generation Notebook Interface**: Describes JupyterLab as a web-based, multi-language development environment for exploring notebooks, code, and data. It highlights its flexibility, configuration, and user interface support for various workflows in data science, scientific computing, and machine learning. It includes links to "Try it in your browser" and "Install JupyterLab".
- The Jupyter Notebook**: Describes the open-source web application for creating and sharing documents containing live code, equations, visualizations, and narrative text. It lists uses such as data cleaning and transformation, numerical simulation, statistical modeling, data visualization, machine learning, and more. It includes links to "Try it in your browser" and "Install the Notebook".
- JupyterHub**: Describes a multi-user version of the notebook designed for companies, classrooms, and research labs. It highlights four key features: Pluggable authentication, Centralized deployment, Container friendly, and Code meets data. It includes a link to "Learn more about JupyterHub".
- Currently in use at**: A grid of logos from various organizations that use Jupyter, including Google, Microsoft, Bloomberg, O'REILLY, ANACONDA, raxspace, Quantopian, NetApp, software carpentry, hhmi janelia Research Campus, CODE NEURO, N-Site LLC, COCALC, BRYN MAWR COLLEGE, CAL POLY SAN LUIS OBISPO, Berkeley, The University of Sheffield, THE GEORGE WASHINGTON UNIVERSITY, CLEMSON UNIVERSITY, MICHIGAN STATE UNIVERSITY, Northwestern University, NASA, NYU, AYASDI, and The Data Incubator.
- Open Standards for Interactive Computing**: Explains that the Jupyter Notebook is based on a set of open standards for interactive computing, including HTML and CSS. It includes links to "Learn more" for Notebook Document Format, Interactive Computing Protocol, and The Kernel.

 **jupyter**

[Install](#) [About Us](#) [Community](#) [Documentation](#) [NBViewer](#) [JupyterHub](#) [Widgets](#) [Blog](#)

About Us

Some information about the Jupyter Project and Community

Project Jupyter is an open source, community-driven software for scientific computing and scientific analysis, free for all to use and released under the liberal MIT license. If you are interested in learning more about our governance approach, please see our [Governance](#). All online and in-person interactions and communication must follow our [Code of Conduct](#). This Code of Conduct sets explicit expectations for project members and participants.

The role of the Jupyter Steering Council is to support the well-being of the project, both technically and professionally, following members (in alphabetical order).



Damian Avila
Anaconda, Inc.
[@damianavila](#) on GitHub

Matthias Boeddeker
UC Merced
[@Cameron](#) on GitHub

Brian Granger
Amazon Web Services
[@bgranger](#) on GitHub

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Ana Rossetti
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Steven Silvester
Morgan Stanley
[@silvester](#) on GitHub

Carol Willing
Galaxy on GitHub

Gábor Csáki
[@gaborcsaki](#) on GitHub

What is JupyterHub?

JupyterHub brings the power of notebooks to groups of users. It gives users access to shared resources without burdening the users with installation and maintenance. Scientists - can get their work done in their own workspaces on shared infrastructure.

JupyterHub runs in the cloud or on your own hardware, and makes it possible for any user in the world. It is customizable and scalable, and suitable for courses, and large-scale infrastructure.

Key features of JupyterHub

Customizable - JupyterHub can be used to serve a variety of environments, and can be used to serve a variety of user interfaces including the notebook.

Flexible - JupyterHub can be configured with authentication in order to be pluggable, supporting a number of authentication protocols (such as OAuth). Scalable - JupyterHub is container-friendly, and can be deployed with Kubernetes, and can run with up to tens of thousands of users.

Portable - JupyterHub is entirely open-source and designed to be run on cloud providers, virtual machines, or even your own laptop hardware.

The foundational JupyterHub code and technology can be found in the [JupyterHub](#) documentation, which contains more information about the internal details.

Deploy a JupyterHub

The Jupyter Community curates two JupyterHub "distributions" for deployment.

Zero to JupyterHub for Kubernetes deploys JupyterHub on Kubernetes efficiently for large numbers of users. Zero to JupyterHub is a Helm Chart for deploying and configuring your JupyterHub on Kubernetes.

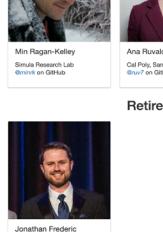
The Littlest JupyterHub, a recent and evolving distribution designed for JupyterHub on a single virtual machine. The Littlest JupyterHub also allows creating a VM on several cloud providers, as well as installing and customizing public URLs.

Join the community

Like all Project Jupyter efforts, JupyterHub is an open-source and community-driven project, and contribute code, time, comments, or appreciation.

The [JupyterHub Gitter Channel](#) is a place where the JupyterHub community can discuss technology, as well as best-practices in deploying and debugging.

Retired Steering Council Member



Jonathan Frederic
Member 2016-2018
[@jfrederic](#) on GitHub

 **Sponsors**
Project Jupyter receives direct funding from the following sources:



fastly

GOOGLE

Microsoft

QUANSIGHT

SCHMIDT FUTURES

 **Institutional Partners**
Institutional Partners are organizations that support the project by employing Jupyter Steering Council members. Current Institutional Partners include:



ANACONDA

BERKELEY UNIVERSITY OF CALIFORNIA MERCED

QUANTSTACK

AWS

NETFLIX

TWO SIGMA

CAL POLY SAN LUIS OBISPO

JP MORGAN CHASE & CO.

JP MORGAN CHASE & CO.

NUMFOCUS

OPEN CODE = BETTER SCIENCE

Support Project Jupyter

Jupyter will always be 100% open source software, free for all to use and released under the liberal terms of the modified BSD license. If you have found Project Jupyter to be useful in your work, research or company, please consider making a donation to the project commensurate with your resources.

All donations will be used strictly to fund the development of Project Jupyter's open source software, documentation and community. Our donations are managed by the NumFOCUS Foundation, which is the legal and fiscal umbrella for the project.

NumFOCUS is a 501(c)3 non-profit foundation; if you are subject to US tax law, your contributions will be tax-deductible.

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OPEN CODE = BETTER SCIENCE

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 **jupyterhub**

A multi-user version of the notebook designed for companies, classrooms and research institutions.

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Interactive Widgets

Jupyter widgets enable interactive data visualization in the Jupyter notebooks.

 **Notebook Widgets**
Notebooks come alive when interactive widgets are used. Users can visualize and control changes in the data. Learning becomes an immersive, plus fun, experience. Researchers can easily see how changing inputs to a model impacts the results.

 **ipyleaflet**
A library for creating simple interactive annotations such as polygons, markers, etc.

 **bqplot**
2-D interactive data visualization

 **py3Dmol**
3-D data visualization

 **ipyvolume**
3-D plotting

 **ipyngview**
3-D interactive molecular visualization

 **k3d-Jupyter**
3-D data visualization

 **beakerx**
tables, plotting, forms

 **jupyter-grmaps**
Data visualization on Google Maps

 **codecooker**
Template widget project

 **ipyParallel**
Template widget project

 **ipyParallel Traits**

 **ipywidgets**
IPython/Jupyter Widgets

 **ipytreemap**
widget-cookiewriter

All Widget Projects...

 **JupyterHub**
Zero to JupyterHub

 **nbgrader**

All JupyterHub Projects...

 **Foundations**
Jupyter Client

Jupyter Core

Jupyter Alabaster Theme

[Home](#) | [Install](#) | [About Us](#) | [Community](#) | [Documentation](#)

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Documentation

A comprehensive list of links to each of the repositories for the Jupyter project.

 **General**
Project-wide Documentation
Contributing to Jupyter

 **User Interfaces**
JupyterLab
Jupyter Notebook
Jupyter Console
Qt Console

 **IPython**
IPython
IPyParallel
Traits

 **Widgets**
IPyWidgets/Jupyter Widgets
widget-cookiewriter
All Widget Projects...

 **JupyterHub**
JupyterHub
Zero to JupyterHub
nbgrader
All JupyterHub Projects...

 **Foundations**
Jupyter Client
Jupyter Core
Jupyter Alabaster Theme

 **Jupyter GitHub**
A place where the community collaborates on the development of Jupyter software.

 **Jupyter Discourse**
A Discourse Forum for a multitude of Jupyter topics.

 **Jupyter General Mailing List**
A Google Group for general discussions of Jupyter's use.

 **Jupyter in Education Mailing List**
A Google Group for general discussions of Jupyter's use in education.

 **Jupyter for Research Facilities**
A Google Group for discussions of Jupyter's use at scientific research facilities (such as X-ray light sources, observatories, supercomputers, etc.).

 **Jupyter Gitter Chatroom**
A real-time chatroom, for general development related discussions.

 **Jupyter on Stack Overflow**
A popular third party site for programmers to ask and answer questions about Jupyter.

 **Jupyter Community Guides**
Information about community, communications and governance.

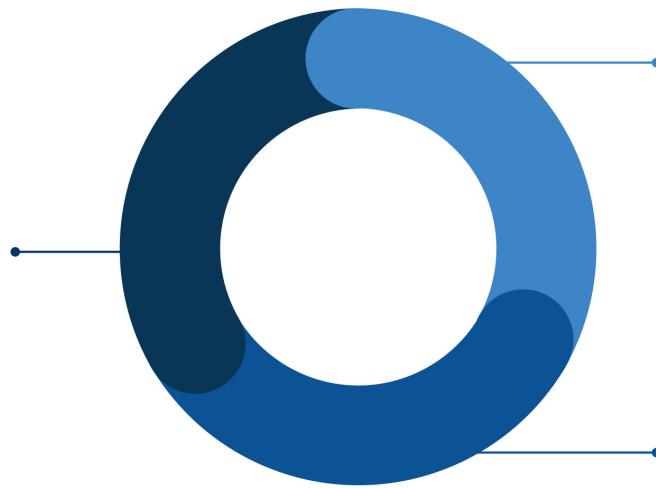
 **Jupyter Contributor Guides**
Contribution guidelines



the process the methodologies

Research

- Heuristic Evaluation
- Competitive Analysis
- User Interviews
- User Survey
- User Testing



Design

- Information Architecture
- Wireframe
- Design Guidelines
- Editorial Guidelines

Build

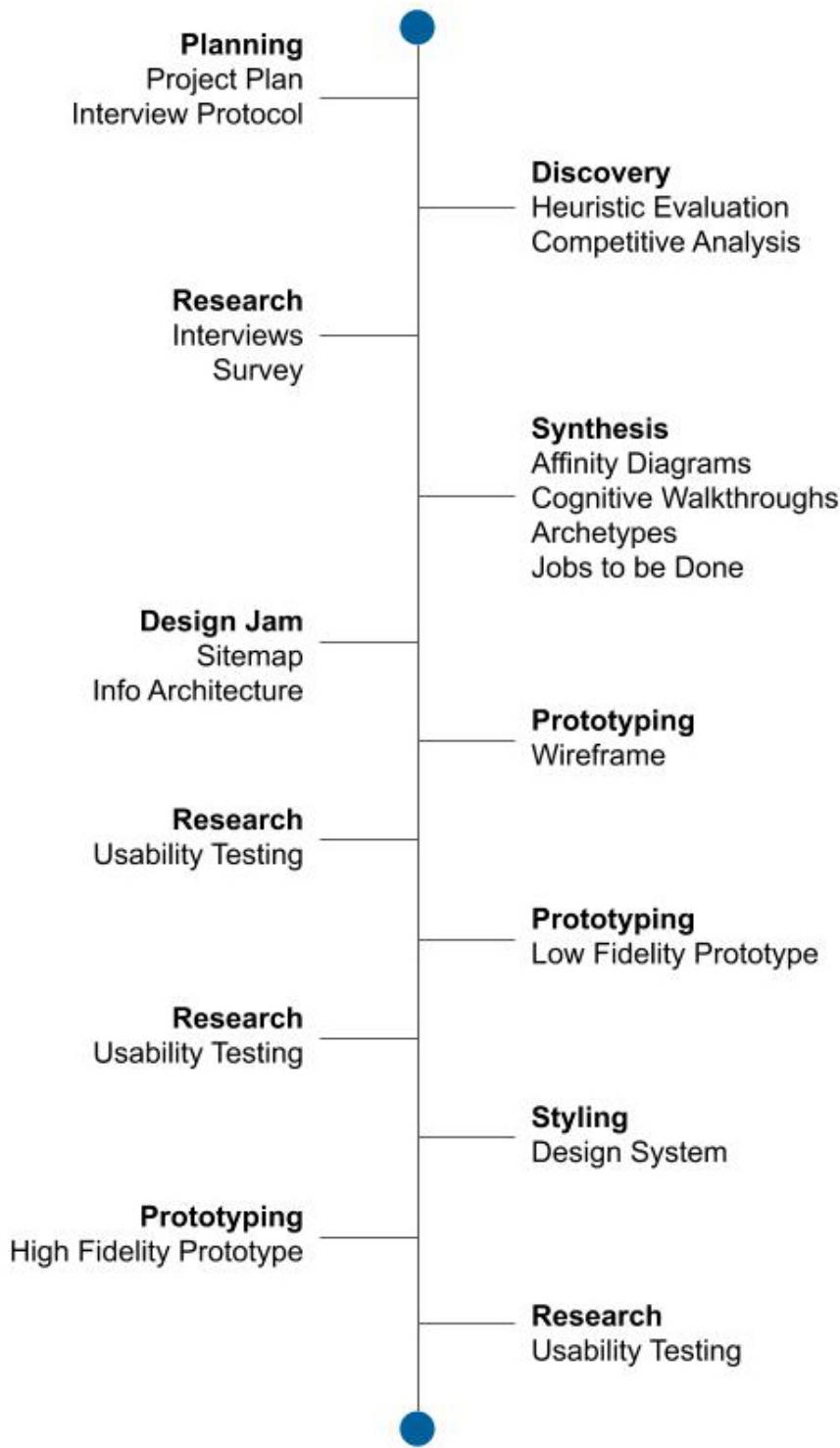
- Low Fidelity Prototype
- High Fidelity Prototype
- Design System

Project Goals

Assuming the role of an UX agency, we set out to evaluate the website, its users, and the overall Jupyter ecosystem. We used an **iterative design** process that continually cycled between research, design, and development methodologies. As we built the community's trust and support, we aimed to design a solution that fostered belonging, inclusion, and a greater sense of community. Our goal was to effectively present Jupyter's technologies and vision for open, reproducible science.

the process project timeline

Over the course of 5 months, we produced a design that met our objectives.



discovery research

heuristic evaluation



An heuristic evaluation weighs a system's User Interface (UI) against a set of standardized usability principles, such as "User control and Freedom" and "Error Prevention." Through this exercise, we evaluated jupyter.org to get a baseline for what needed to be improved and why. It also helped point out key aspects that were particularly successful, as detailed below:

Strengths

- Useful and detailed information
- Content establishes credibility and expertise
- UI is simple, flexible, and easy to use
- User has ample feedback from elements

Weaknesses

- Multiple bugs
- Inconsistencies in design elements
- Calls to action are missing or lack visibility
- Content is extremely text-heavy and dense

The screenshot shows the Jupyter homepage with various annotations:

- Cognitive load**: A red box highlights the main message "Project Jupyter exists to develop open-source software, open-standards, and services for interactive computing across dozens of programming languages." with a note: "Main message is small. It gets lost within all other design elements."
- Content needs better organization and hierarchical differentiation**: A red box highlights the navigation bar with links: "Install", "About Us", "Community", "Documentation", "NBViewer", "JupyterHub", "Widgets", and "Blog". An annotation points to the "Install" link with the text: "Review left to right hierarchy".
- Page layout needs work**: A red box highlights the bottom section of the page, which includes a screenshot of a Jupyter Notebook interface and descriptive text about the Jupyter Notebook.

Given that this is an open source community, the website is not actively maintained by any single person, thus showing many inconsistencies. Jupyter's unambiguous technical merit is restricted by the website's lack of findability.

discovery research competitive analysis

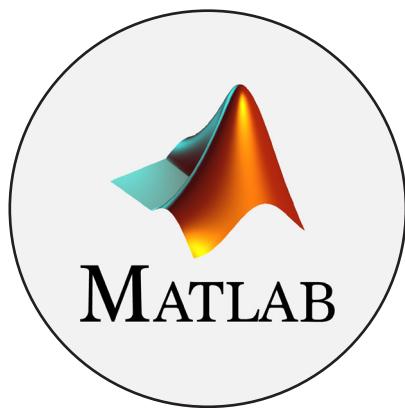


In contrast to Jupyter, their competitors have the advantage of being for-profit and employing vast development teams, so while Jupyter's user base is significantly larger, competitors had much more effective websites. Detailed analysis of these sites brought substantial insight into our own designs and helped us understand what works well in this market's environment.

Direct Competitor



Influencer

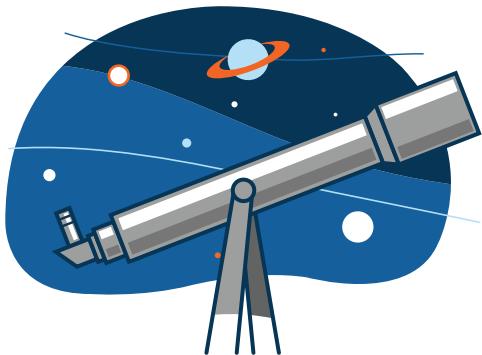


Indirect Competitor

Wolfram *Mathematica*[®]

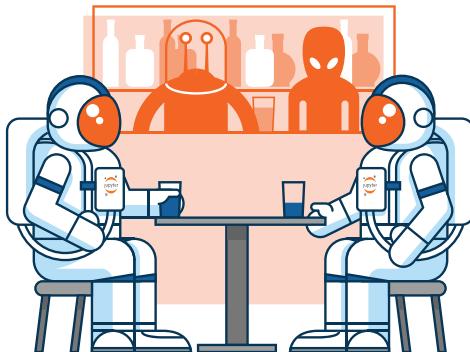


discovery research user interviews



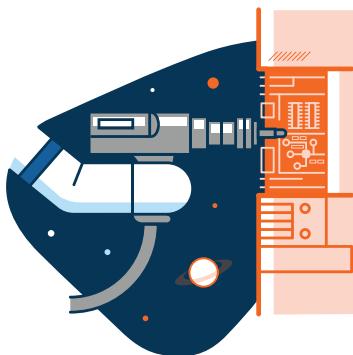
Values

"I hire the website to promote the values of open source software and raise money so those values can be adopted worldwide."



Community

"I hire the website to learn about Jupyter products that are relevant and beneficial to me, how I can start using them, and how to optimize my workflow and troubleshoot problems once I'm up and running."



Technology

"I hire the website to promote collaboration by providing a clear path for new contributors to get started, and encouraging engagement through events, developer meetings, and forums."

discovery research

user surveys

For your most used tool, how often do you use it?

85 responses

A pie chart titled "For your most used tool, how often do you use it?". The chart shows the distribution of usage frequency: Daily (82.4%), Weekly (7.1%), and Occasionally, as needed (0.5%).

Frequency	Percentage
Daily	82.4%
Weekly	7.1%
Occasionally, as needed	0.5%

How important are each of these to you?

A bar chart titled "How important are each of these to you?". It compares three categories: Computation notebooks, Visualization widgets, and Hosting multi-user servers for notebooks. The Y-axis represents the percentage of responses (0 to 80). The X-axis lists the tools. The legend indicates: Most important (blue), Medium important (red), and Least important (orange).

Tool	Most important	Medium important	Least important
Computation notebooks	75	10	0
Visualization widgets	35	35	15
Hosting multi-user servers for notebooks	15	35	35

QUESTIONs RESPONSES 85

Websites for Data Science Tools

We are a team of HCI designers conducting research on popular data science tools and their websites. This is a 5-minute survey to see what professionals like you use and what you think about them. You can follow our project here: <https://github.com/jupyter/jupyter.github.io/issues/331> Thank you for your time!

What is your role at your organization? *

Short answer text

Which of these data science tools have you used? *

- R Studio
- Project Jupyter
- Matlab
- ObservableHQ
- SageMaker
- Azure Notebooks
- Mathematica
- Other...

Which of these data science tools have you used?

85 responses

A horizontal bar chart titled "Which of these data science tools have you used?". The X-axis represents the count of responses (0 to 100). The Y-axis lists the tools. The chart shows that Project Jupyter is the most popular tool, followed by R Studio.

Tool	Responses	Percentage
R Studio	51	60%
Project Jupyter	85	100%
Matlab	41	48.2%
ObservableHQ	9	10.6%
SageMaker	6	7.1%
Azure Notebooks	13	15.3%
Mathematica	18	21.2%
CoCalc	1	1.2%
Splunk	1	1.2%
Stata, SAS, SPSS	1	1.2%
Google databab	1	1.2%
Google Colab	1	1.2%
Colab (Google)	1	1.2%
Scilab	1	1.2%
Google-colaboratory, CoCalc	1	1.2%
Igor Pro, Python, Scipy	1	1.2%
Pytorch, NumPy, Pandas	1	1.2%

For what purpose are you utilizing the tool(s) above?

85 responses

A horizontal bar chart titled "For what purpose are you utilizing the tool(s) above?". The X-axis represents the count of responses (0 to 80). The Y-axis lists the purposes. The chart shows that work is the primary purpose for utilizing tools.

Purpose	Responses	Percentage
School	35	41.2%
Work	78	91.8%
Hobby	40	47.1%
Instruction and teaching (not, for exam...)	1	1.2%
Integrating jupyter notebooks in IoT pl...	1	1.2%

Our survey was promoted on Project Jupyter's social media accounts, recruiting many of their followers. The results revealed the "community" as the most often visited part of the website yet 27.38% of these followers rarely or never interact with the Jupyter community. And despite having 92.85% of the responses use Jupyter tools daily/weekly, 70.24% do not contribute, primarily due to the lack of awareness, intructions, and confidence. These insights helped us determine some of the jobs to be done for the website.

research synthesis affinity diagram

Affinity diagrams are used to organize data into groupings based on their natural relationships. We created two using insights gathered from our surveys and in-depth interviews with Jupyter users, non-users, contributors, and community members. The diagrams later helped us construct jobs-to-be-done and archetypes.

Functional Motivations

The insights around functional motivations were sorted into the following categories:

Defining Jupyter

Reputation

Open Source

Benefits

Pain Points

Community

Usage

Website



User Comments

"The website doesn't have screenshots, or things that will help me understand the use cases..."



"The website needs the importance of education and nonprofit research as core values..."

Social and Emotional Motivations

The insights around functional motivations were sorted into the following categories:



Defining Jupyter

Reputation

Open Source

Benefits

Pain Points

Community

Usage

Website

User Comments



"I love building things with people, and open source is a fantastic way to do so."

"I don't contribute because I don't believe I have the skill or confidence to provide valuable input."

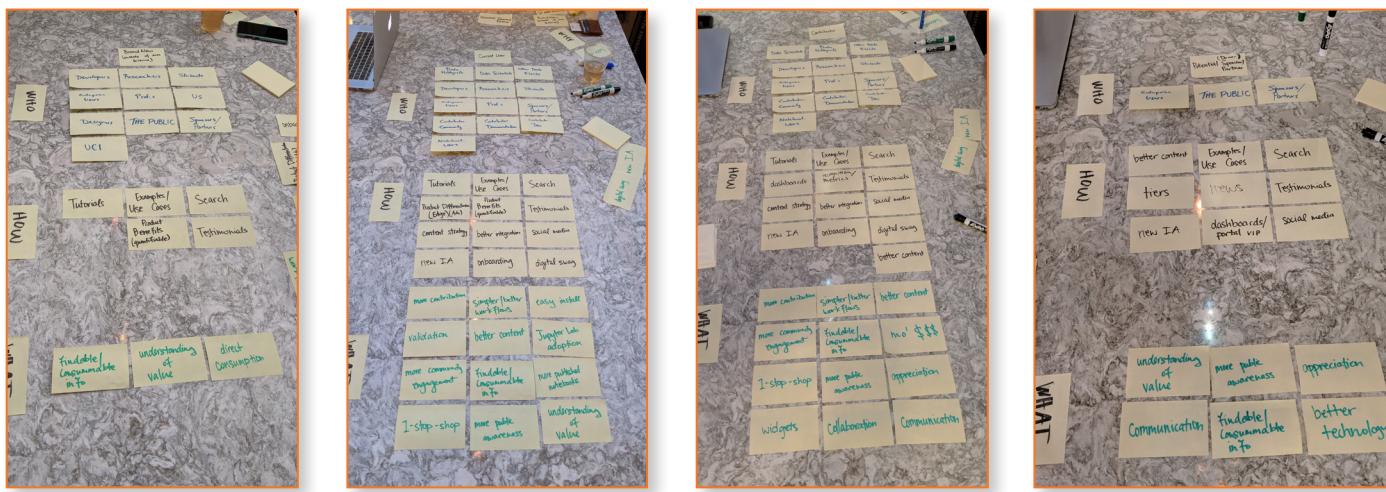
"There really needs to be a cultural change, to not just encourage to do their work reproducibly and openly, but to make it the norm."

Members of this community share Jupyter's mission values with pride, thus caring deeply for its success. Jupyter's technical merit is abundantly clear, so our challenge here is to capture the social and emotional appeal on the website.

research synthesis

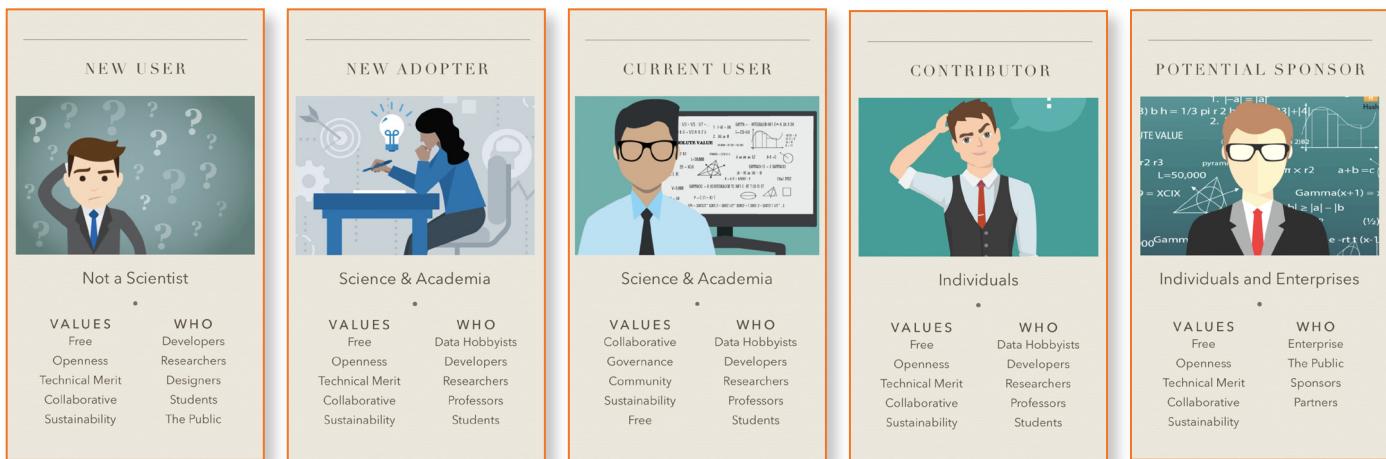
cognitive walkthrough

We used cognitive walkthroughs to aid our understanding of the site's information architecture, user journey flows, and navigation pain points.



user archetypes

Based on the affinity diagrams, we arrived at 5 distinct archetypes. These archetypes embody various different backgrounds and needs of potential visitors to Jupyter.org.



research synthesis

usertesting.com

UserTesting.com - Test Observations & Next Steps

Test Protocol

A prototype test was launched on UserTesting.com for the Team iO's design mockup on figma. The goal of this test was to get feedback on their understanding of the Homepage and Technologies Page. The questions asked the testers to read through these pages and express out loud what they thought of each section, the headers, verbiage, tagline, CTAs, etc. The goal was to see what testers did or did not understand, as well as their interpretation of various elements. 11 sessions were recorded. Each session included 4 post-test written response questions to summarize their positive and negative experiences.

Key Takeaways

Critiques (from most repetitive)

1. Don't know what Jupyter actually offers/does based on Homepage; "not enough info"
2. Don't know what Notebooks are, *knows you need to know Notebook to understand Lab*
 - a. Thus also can't understand Lab or Hub
 - i. The 1 Notebook user who took the test liked the Lab and Hub descriptions and pages
3. Can't fully grasp technology breakdown if unfamiliar with coding (e.g. can't understand kernels, servers, etc)
4. Should capitalize page titles
 - a. *Suggested by half of users*
5. Too much white space
 - a. *May be affected by desire for longer/more verbiage to explain offerings*
6. Should have visuals and "videos and other forms of multimedia to rationalise and explain" Jupyter's concepts and offerings

Praises (from most repetitive)

1. Enjoys minimalist layout and vibrant colors
2. Finds pivot table efficient & visually helpful (despite not understanding tech verbiage)
3. Finds breakdown of technology (1 2 3 4) helpful (despite not understanding verbiage)
4. Appreciates chunking digestible byte-sized info

stand Jupyter's values.

knowledge were able to understand Jupyter's

knowledge were able to get a general sense of who

in the homepage are often corrected after reading

This leads us to switch around a few sections on the and the technologies sooner and alleviate frustrations

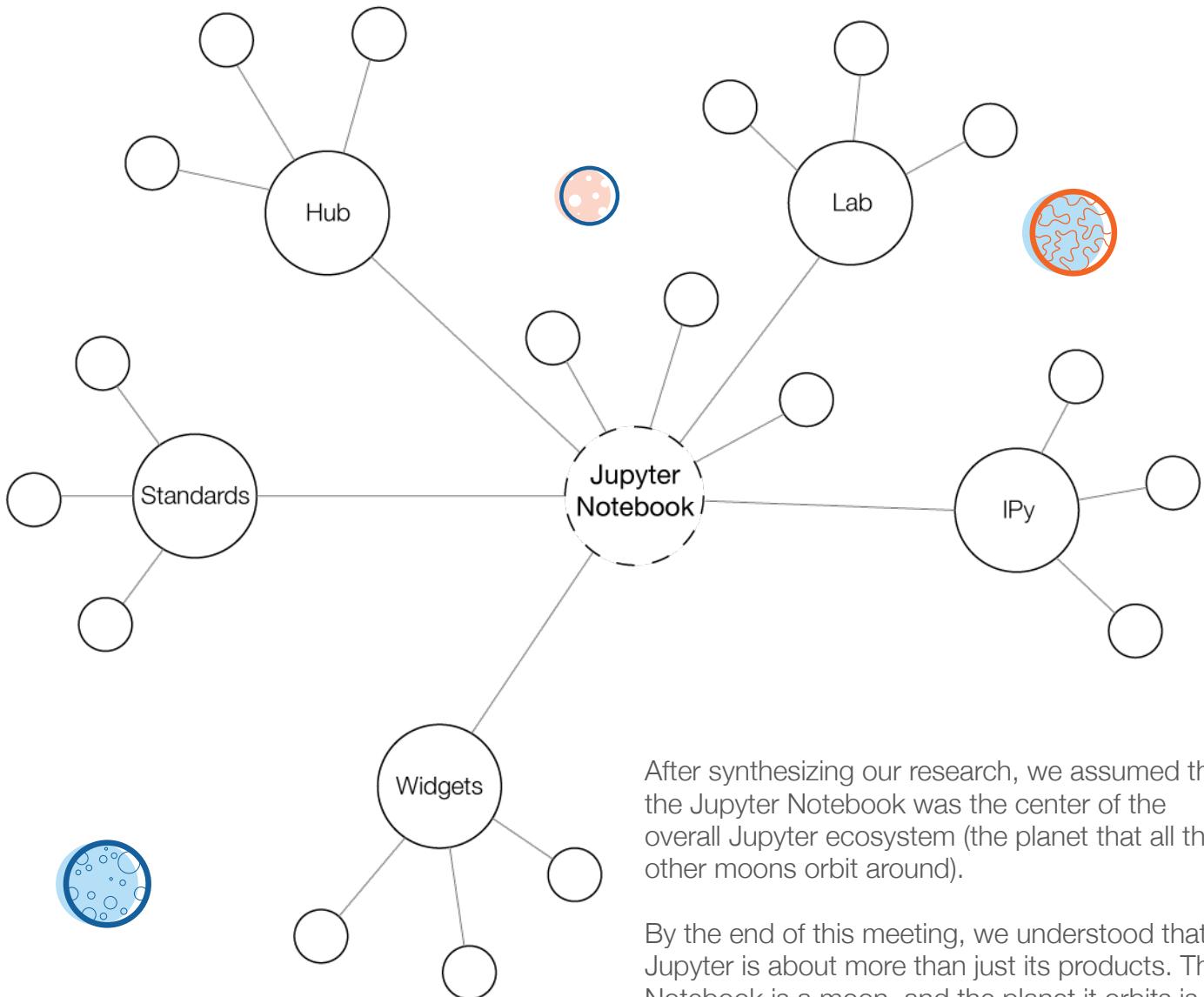
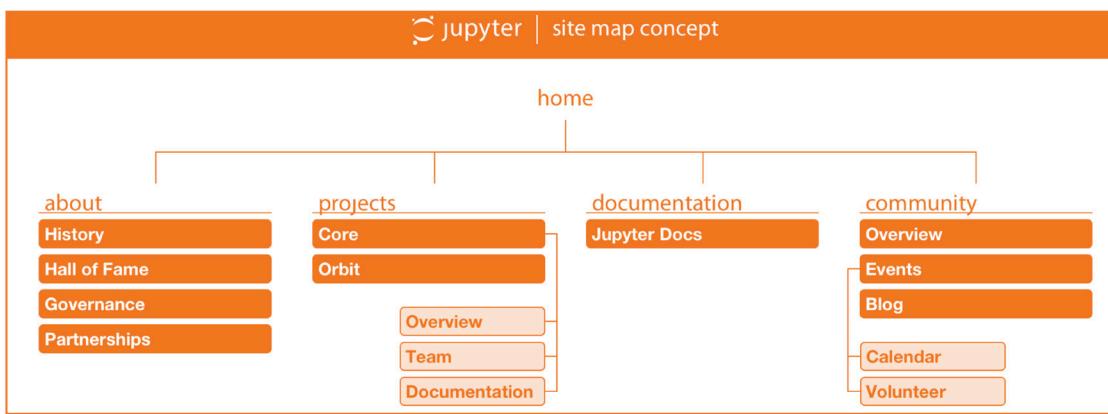
pend entirely on visitors' computing knowledge, time
r, actually using the tools, and *visual aids* provided by
community.

In our final round of tests on UserTesting.com, participants responded well to the prototype. The last mile proved difficult as we honed in on the terminology used around the technologies. Not only is Project Jupyter a complex ecosystem, but the tools they've produced are difficult to explain to the average person. However, between the community's feedback and our qualitative data, we made some final content and design changes that optimized user comprehension across all levels of technical knowledge.

offsite design jam

When it was time to transition from the research phase to the design phase, we gathered in San Luis Obispo, CA for 3 days to present our research findings to our clients and begin structuring the website.





After synthesizing our research, we assumed that the Jupyter Notebook was the center of the overall Jupyter ecosystem (the planet that all the other moons orbit around).

By the end of this meeting, we understood that Jupyter is about more than just its products. The Notebook is a moon, and the planet it orbits is the standards and initiatives to make science more open and transparent.

solutioning round 1

build & test



The image displays six wireframe mockups arranged in a 2x3 grid, each featuring an orange border. The top row contains two mockups: 'Jupyter Docs' on the left and 'Projects & Products' on the right. The bottom row contains four mockups: 'Core Project > JupyterHub' on the far left, 'Core Project > JupyterHub > Binder' in the middle-left, 'Orbit Project > Kernel Gateway Product' in the middle-right, and 'Core Project > JupyterHub > JupyterHub Product' on the far right.

- Jupyter Docs:** This wireframe shows a search interface with filters for 'By category', 'By project', and 'By user'. It includes a 'Documentation' section for 'Kernel Gateway' and a 'Projects & Products' section for 'most popular' projects like 'Apple Notebook', 'Apprenda', 'Apache Calcite', 'Apache Beam', 'Apache Ignite', and 'Apache NiFi'.
- Projects & Products:** This wireframe shows a search interface with filters for 'By category', 'By project', and 'By user'. It includes a 'Projects & Products' section for 'most popular' projects like 'Apple Notebook', 'Apprenda', 'Apache Calcite', 'Apache Beam', 'Apache Ignite', and 'Apache NiFi'.
- Core Project > JupyterHub:** This wireframe shows a 'Project Overview' section with placeholder text about the JupyterHub product. It includes sections for 'JupyterHub' (with 'LARGE COMPUTING' and 'SMALL VIRTUAL ENVIRONMENT' buttons), 'Binder' (with a 'GET INVOLVED' button), and 'Features' (listing 'Feature 1' through 'Feature 4').
- Core Project > JupyterHub > Binder:** This wireframe shows a 'Team leadership' section with placeholder names for team members (John Doe, John Doe, John Doe, John Doe, John Doe) and a 'contributors' section with placeholder names (John Doe, John Doe, John Doe, John Doe, John Doe). It also includes a 'Try & Install' section with 'try Binder using JupyterHub' and 'Install Binder' buttons.
- Orbit Project > Kernel Gateway Product:** This wireframe shows a 'Team leadership' section with placeholder names for team members (John Doe, John Doe, John Doe, John Doe, John Doe) and a 'contributors' section with placeholder names (John Doe, John Doe, John Doe, John Doe, John Doe). It also includes a 'Try & Install' section with 'try Kernel Gateway using JupyterHub' and 'Install Kernel Gateway' buttons.
- Core Project > JupyterHub > JupyterHub Product:** This wireframe shows a 'Team leadership' section with placeholder names for team members (John Doe, John Doe, John Doe, John Doe, John Doe) and a 'contributors' section with placeholder names (John Doe, John Doe, John Doe, John Doe, John Doe). It also includes a 'Try & Install' section with 'try JupyterHub Product using JupyterHub' and 'Install JupyterHub Product' buttons.

For the initial mockups, we used Validately.com to conduct remote and unmoderated user testing. Our goal was to see whether those who are unfamiliar with the website could intuitively navigate the website based on the information architecture and hierarchy. We discovered that the emphasis on individual communities was far too confusing and thus had to reconsider the information architecture.

solutioning round 2

build & test

We were presented with a unique challenge: grouping Jupyter's offerings in a way that is easily digestible by first-time visitors while still showing a hierarchy between the communities and their offerings. We consulted an engineer from Project Jupyter who was able to break down these tools into higher level sub-groups: kernels, servers, and front end applications. This would later help new users conceptualize Jupyter's technologies. Additionally, we created a distinction between the core communities and tools with 3rd party communities and tools, pointing to the greater Jupyter ecosystem.

compute together

Project Jupyter is a free suite of tools for computing openly, transparently, and collaboratively, built by and for a worldwide community.

Contributions from Around the World

At the core of Project Jupyter is people - exceptionally talented individuals from all over, working together in a self-governed model of contribution.

Join the Community

With the Goal of Open Science for All

Project Jupyter embodies a vision for the future where all scientific work is done in the open, for the betterment of business, policy, and society at large.

Learn More

Transformative Impact

Industry

Leaders in the tech industry, including Google, Intel, and Microsoft rely so heavily on Jupyter that entire commercial platforms have been built around them.

Research

Want to build a Jupyter Notebook? Check out our guide to getting started with Jupyter Notebooks.

Academia

Jupyter tools are used to teach the most popular courses at prestigious institutions like MIT, Berkeley, Cal Poly, Columbia, Harvard, and MIT.

Journalism

The Los Angeles Times, FiveThirtyEight, and many other news organizations use Jupyter Notebooks for data-driven journalism.

Featured Products

JupyterLab

JupyterLab is the latest iteration of the Jupyter Notebook, which combines live code and equations with easy-to-read text and visualizations into one interactive document.

Benefits

Scalable

Use container technology such as Docker, Kubernetes, or OpenShift to simplify software deployment, isolate environments, and enable deployment for up to tens of thousands of users.

Flexible

Manage user access and authentication via OAuth, GitHub, or your own custom identity system to create a secure environment for your organization.

Customizable

JupyterHub supports dozens of different ways to serve a variety of environments and user needs, including commercial cloud providers, enterprise, Jupyter Notebook, RStudio, Jupyter, and more.

Portable

JupyterHub is entirely open source and can run on a variety of infrastructure, including commercial cloud providers, enterprise, or even your own laptop hardware.

Get Started

The Littlest JupyterHub

Easily set up and run JupyterHub for a small number of users (1-100) on a single virtual machine.

Virtual Server Deployment

Zero to JupyterHub for Kubernetes

Run JupyterHub on top of Kubernetes so it can be efficiently scaled and maintained for a large number of users and resources.

Large Deployment

Documentation

All of our documentation resources, including installation guides, reference, and troubleshooting, are available on Read the Docs.

Read the Docs

Join the Community

Like all Jupyter projects, JupyterHub is built entirely by a community of contributors.

We would love for you to get involved and help with documentation, testing, code, bug reporting, or however else you would like to contribute!

Introduce Yourself on Discourse

Discourse is the main communication channel we use.

Meet the Team

Join our monthly meeting, see who our core team.

Jupyter Products

Empowering users to create and share with the world

Jupyter products have revolutionized interactive computing, allowing code and data analysis to be easily understood and reproduced by others.

All of our products are 100% open source and free for all to use.

How it All Works

Jupyter tools come together to create a unique 3-layer system that optimizes the power of interactive computing.

- Kernels**
Kernels are what power Jupyter front end applications, allowing users to execute code in more than a dozen programming languages.
- Servers**
A server structure enables kernels to talk to front end applications, and gives those applications the ability to run on the same or remote machines.
- Frontend**
Frontend applications allow users to write and run individual code blocks, explore and manipulate data, and share findings with others.
- Standards**
We have defined the standards and protocols needed to create kernels and wrap out languages and still be compatible with the Jupyter ecosystem.

Featured Products

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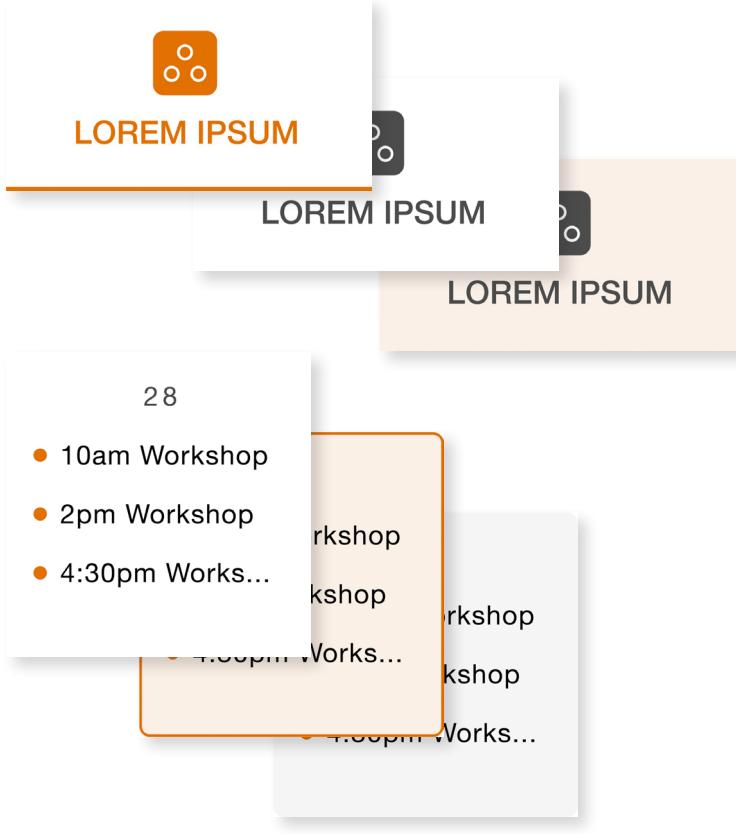
Discourse is the main communication channel we use.

Meet the Team

Join our monthly meeting, see who our core team.

final deliverables

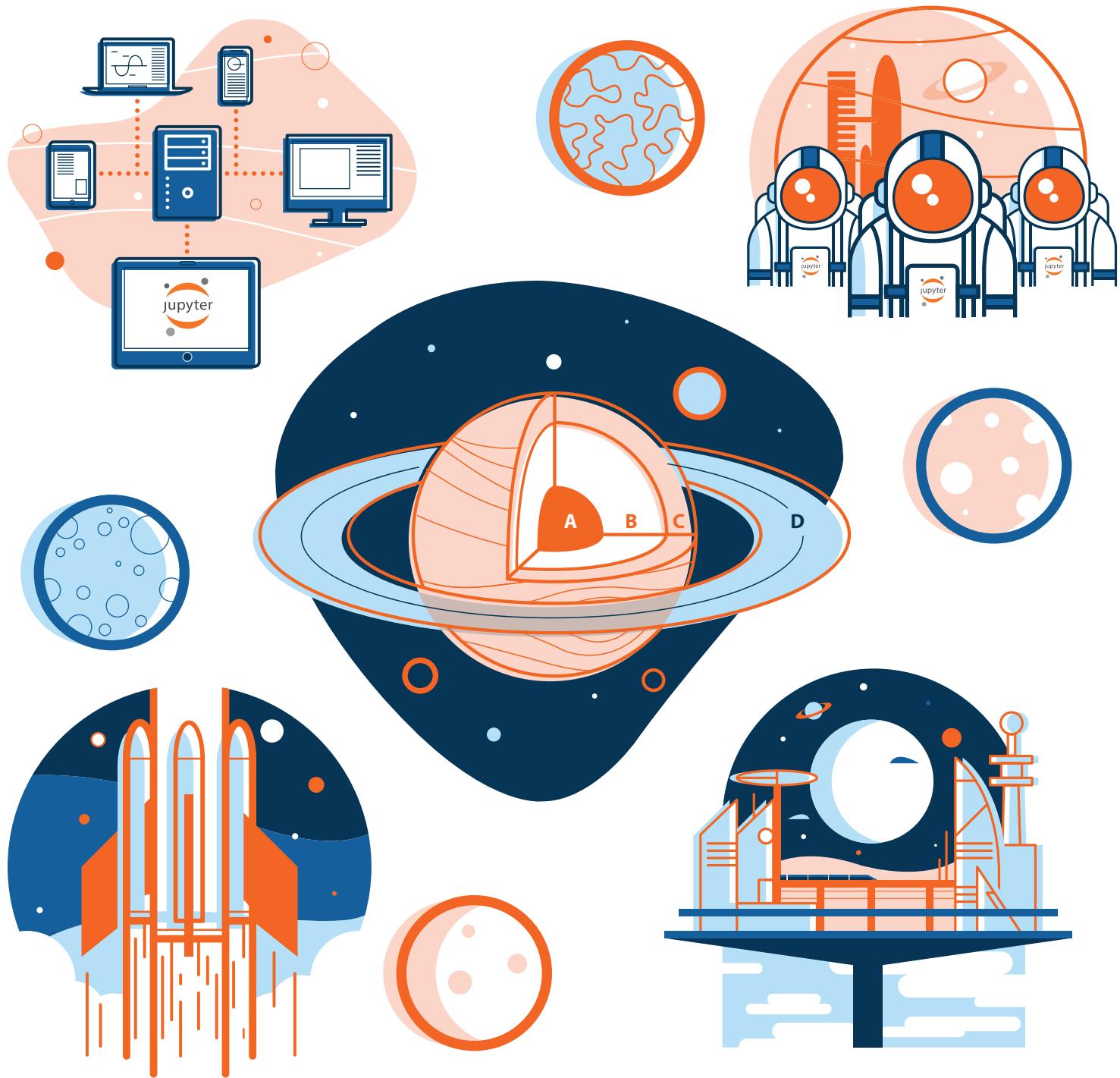
design system



In congruence with client needs and further evangelizing the benefits of open-source, we decided to move forward utilizing Google's established Material Design as the foundation for our design system. By customizing this open-source library of design components, we enabled a depth of branding without having to leverage the tested, flexible, and accessible aspects Material Design has to offer. This held substantial benefits for development as well, freeing a majority of development time that would have otherwise been spent on recreating custom components and their nuanced functionality from scratch.

illustrating Jupyter

Refreshing Jupyter's branding with engaging artwork was a much-needed tweak for the website, and illustrator Ryan Erickson was able to weave an incredible story and atmosphere through his unique, offset linework and futuristic, imaginative illustrations.



final deliverables

hifi prototype

After several rounds of usability tests and collaboration with the community, we were able to create a high fidelity prototype that was user-friendly, accessible, and scalable. We improved content discoverability for users both new and current by building a website filled with engaging content, an organized sitemap, and a dynamic pivot table.

compute together

Project Jupyter offers hundreds of open source computing tools. Built by and for a worldwide community.

Free, open source tools

Data science
Four individual code kernels you can test as you go and see results immediately.

Scientific computing
Explore your thought process step-by-step and tell a story with visualizations.

Machine learning
Build a scorable, reproducible and extensible machine learning infrastructure.

Data analytics
Produce rich, interactive output, including HTML, Images, and video.

Why use Jupyter?

Our tools support interactive computing and data analysis across any programming language.

Industry
Powering entire platforms at Google, Intel, and LinkedIn.

Research
Assisting in Nobel Prize-winning discoveries.

Academia
Teaching students at Harvard, Columbia, and MIT.

Journalism
Leading data-driven reporting at The New York Times.

Worldwide community

Contributors from around the world work together to improve Project Jupyter. Both for themselves and others.

Improve our tools
Join the millions of others who are taking Project Jupyter to the next level.

Attend an event
Meet with members of the community at one of our upcoming events.

Vision for the future

We develop open standards in the hopes of building a better future. A future where all science is open and transparent.

Support us
Make a donation or help us achieve our goal of open science for all.

Our history
What started out as a single effort has exploded into a global community.

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Last updated Mon, Aug 19, 2019
The Jupyter Trademark is registered with the U.S. Patent & Trademark Office

about

Building an open future

We are a non-profit organization dedicated to making science more open and transparent.

Our history

In 2001, Fernando Pérez set out to create a notebook interface for Python. He chose Python because it was an open source programming language.

"My family and friends in Colombia didn't have access to computers at home, so I wanted to be able to share my work with them."

After almost a decade of work, Pierrehumbert Brian Granger joined forces to create the first Jupyter Notebook.

Passion for the mission extended. People began using it with programming languages other than Python. Seeing this shift, Pérez and Granger decided to start Project Jupyter.

'Jupyter' name

The name Jupyter is a reference to the core ingredients we used for its creation: Julia, Python, and R. It is also an homage to Galileo, who recorded his discovery of Jupiter's moons in a notebook.

Leadership

Today, Pérez serves as the organization's leader. Granger oversees all the operations and logistics. A team of core contributors makes up the Steering Committee that ensures the long-term success of the project.

Donate

Have you found Project Jupyter to be useful in your work, research, or company? Please consider making a contribution.

Your contributions will help fund the development of our software, documentation, and community.

The NumFOCUS Foundation manages all donations, which are tax-deductible in the United States. NumFOCUS is a 501(c)(3) non-profit foundation.

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technologies

Create and share with the world

All our technologies are free and open source, and support interactive computing across all programming languages.

JupyterLab

The new interface for Jupyter Notebooks

Use text editors, terminals, and data viewers side-by-side with notebooks in a tabbed workspace.

Configure and arrange the interface to support a wide range of workflows for data science, scientific computing, and machine learning.

JupyterHub

Jupyter workspaces on shared resources

Allow users to access notebooks and run codes, all at the same time and using the same resources.

Deploy to a large number of users and manage administration, ideal for computer classrooms, and research labs.

Our technology

The three main layers of our technology are kernels, servers, and frontends. Each is interchangable.

A Kernels
The core of a Jupyter technology. Kernels exist for every programming language, such as Python and R.

B Servers
The middleware that connects kernels to frontend applications. It can be local or run in the cloud.

C Frontends
The applications interactive interfaces. Popular examples include Jupyter Notebook, JupyterLab, and JupyterHub.

D Standards
A set of open standards that anyone can leverage. They are built on top of the Jupyter framework.

Tools and customizations

Highlighted tools are built and maintained by the Jupyter community:

Categories	JupyterLab	Jupyter Notebook	docker-stacks
Promises	An extensible interface for interacting and sharing data and code based on the Jupyter Data Science Architecture.	The Jupyter Notebook is a web-based notebook environment for interactive computing.	Jupyter Docker Stacks are a set of ready-to-run containers for running Jupyter applications and interactive computing tools.
Servers			
Kernels			
Infrastructure			
Widgets			
Customizations			
Standards Protocol			

Google **Microsoft** **Bloomberg**
O'REILLY **ANACONDA** **rackspace**
Github **NetApp** **softwarefactory**
CODE NEURO **NEU LLNL** **COCALC** **BRYN MAWR** **UCB**
CAI POLY **R-JOURNAL**

Hydrogen **Hydrogen** is a language-agnostic Jupyter kernel for the Jupyter Notebook. It runs in a browser-based environment and interacts with Jupyter Notebooks.

jupyter-notebook **jupyter-notebook** is a Jupyter Notebook magic for browser integration and cell competition.

docker-py **docker-py** is a Python library for the Docker API.

merlot **merlot** is a fast and forward-thinking generic tool for working with JSON and JSON-like data structures, and provides insights about the data.

stencila **stencila** is a library for creating and manipulating mathematical and scientific documents.

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jupyter notebook



A single environment for interactive computing

Combine live code, data, text, and visualizations into a single, interactive environment.

Benefits

- The Jupyter Notebook enables users to create and share documents that combine live code with narrative text, equations, plots, and visualizations.
- It provides the building blocks for interactive computing with data: a file browser, terminals, and a text editor.
- It has become ubiquitous with the rapid growth of data science and machine learning.
- Useful** Run individual code blocks so you can test and modify them without restarting.
- Reproducible** Allow others to run the same file in the exact same environment.
- Visual** Export your thought process step-by-step: Tell a story with visualizations in a way that feels simple and fun.
- Shareable** Export to a variety of formats, including a webpage, PDF, and Word document. Share it using email, Dropbox, or GitHub.

Get started



Run JupyterLab in your browser on any computer, without having to worry about setup.

Try it out Try it in your browser. No installations required. [TRY NOW](#)

Install Install using the Anaconda Distribution or Pip. [INSTALL](#)

Documentation



User and developer guides are available on [readthedocs.org](#). [GET HELP](#)

Contribute

A community of contributors builds and maintains Jupyter Notebooks.

We would love for you to get involved and help in whatever way you'd like!

- Discourse** Introduce yourself and all know how to contribute to our community.
- Community Calls** Our monthly community calls are open to anyone who wants to participate.
- Github** Next time you see the "good first issue" or "Help wanted" labels.
- Guidelines** Check out our general guidelines for contributing to Jupyter Notebooks.
- Extensions** Express your Notebook with many available extensions.
- Security Issues** Report any security issues you've found. You can encrypt your report.

Customizations

Tailor the Notebook for your specific needs and use cases.

Extensions

nbviewer → nbtime → nbgallery → jupyter	Tools for diffing and merging of Jupyter notebooks.	A system for assigning and grading notebooks.	Create an assignment with Jupyter and JupyterLab.
enterprise_gateway → nbscheduler → nbcache → docker	View and stop running Jupyter Notebook servers.	Notebook Caching layer in Docker.	Ready to deploy Jupyter as a Docker container.
telemetry → rformat → kernel_gateway →	Configure event logging for Jupyter Notebooks and extensions.	Reference implementation of the Jupyter Notebooks API.	Jupyter Kernel Gateway.

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jupyterlab



The new interface for Jupyter Notebooks

Use text editors, terminals, and data file viewers side by side with notebooks in a tabbed work area.

Benefits

- JupyterLab offers the building blocks of the classic Jupyter Notebook as a more flexible and powerful frontend application.
- Configure and arrange the interface to support a wide range of workflows, from a single terminal to complex components and integrate with existing ones.
- JupyterLab is great for data science, scientific computing, and machine learning.
- Versatile** Drag and drop to re-order notebook cells and copy them between notebooks.
- Interactive** Run code blocks interactively from text files (e.g., R, Python, etc.).
- Connective** Link a code console to a notebook kernel, and switch between them without closing up the notebook.
- Efficient** Edit your code kernels with file previews, save Markdown, JSON, CSV, Vega, Vega-Lite, and more.

Get started



Run JupyterLab in your browser on any computer, without having to worry about setup.

Try it out Try it on a temporary server created just for you. [TRY NOW](#)

Install Install using Conda, Pip, or Pipenv. [INSTALL](#)

Documentation



User and developer guides are available on [readthedocs.org](#). [GET HELP](#)

Contribute

A community of contributors builds and maintains JupyterLab.

We would love for you to get involved and help in whatever way you would like!

- Discourse** Introduce yourself and let us know what you're interested in contributing.
- Team** Join our core team members and join our monthly meeting.
- Github** File an issue with the "good first issue" or "help wanted" labels.
- Guidelines** Check out our general guidelines for contributing to JupyterLab.
- Extensions** Customize JupyterLab with many available extensions.
- Security Issues** Report any security issues you've found. You can encrypt your report.

Customizations

Tailor JupyterLab for your specific needs and use cases.

Extensions

documentation

Get the help you need

Looking for documentation on a particular tool? Check out our list of repositories below.

Search by project name [SEARCH](#)

All of our documentation resources, including user guides, developer guides, and frequently asked questions, are available on these tools.

BY PROJECT	E jpm-magics	G otree	I otree	K otree	M Metadata Service	O otree	S otree-2019-advanced-topics								
jupyterlab	etc kernel	oceanus	oceanus	oceanus	Metadata Service	oceanus	topic-2019-advanced-topics								
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standards	enterprise gateway	oceanus	oceanus	oceanus	Metadata Service	oceanus	topic-2019-advanced-topics								
BY NAME	A accessibility	B atom-notebook	C atom-notebook	D atom-notebook	F First User Authenticator	H Hem Chat	J Jupyter	L Latex	N Native Authentication	P OAuthenticator	R otree	T Topic	U User Authentication	W win-terminal	Z zdp-cluster
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