INCLUSIVE AND ACCESSIBLE SCIENTIFIC COMPUTING IN THE JUPYTER ECOSYSTEM

ISABELA PRESEDO–FLOYD `(she/her)`
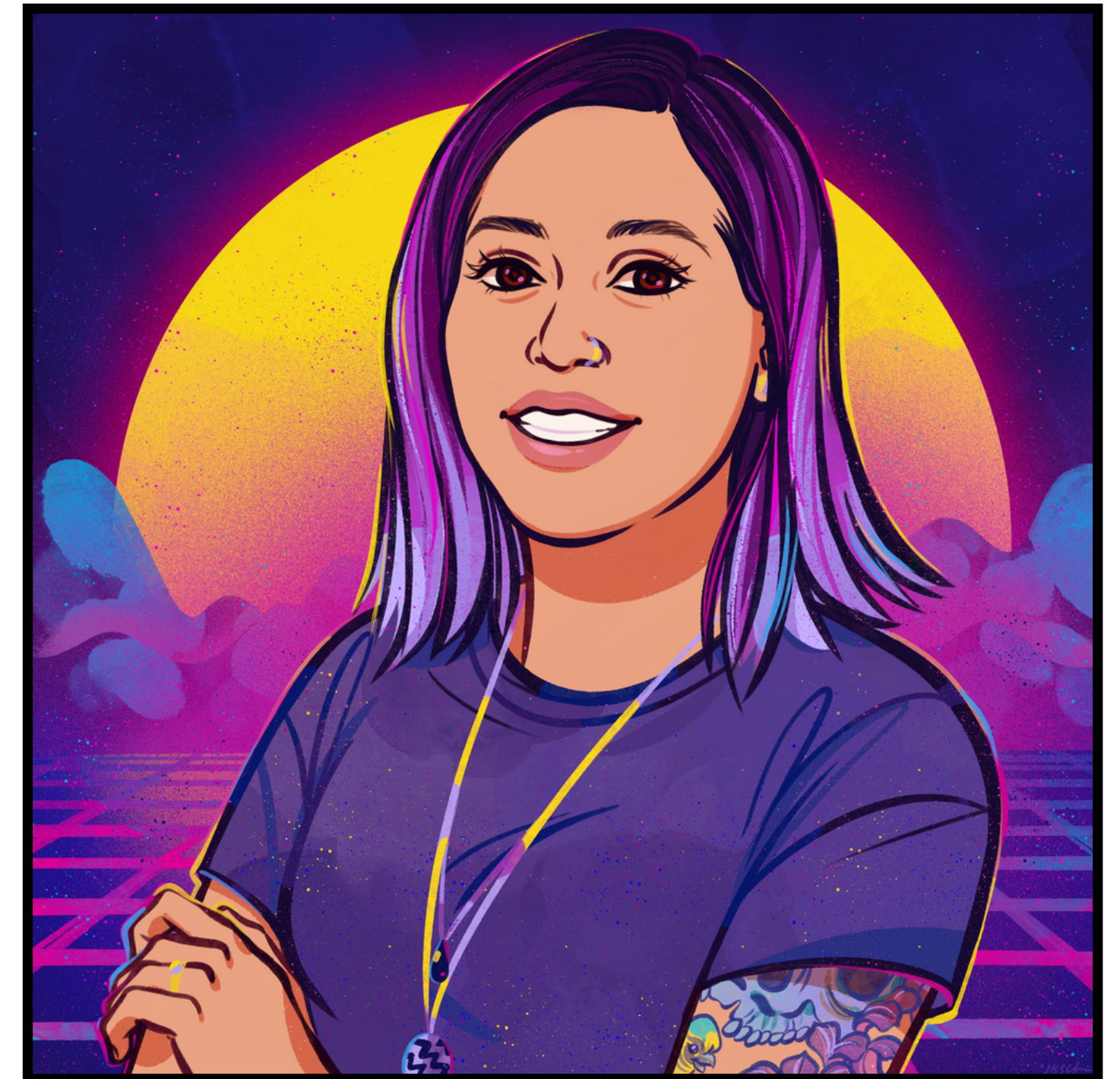
TANIA ALLARD `(she/her)`

QUANSIGHT LABS

TANIA ALLARD

- Co-Director Quansight Labs

- PSF board of directors

- PyLadies Global Council member

ISABELA PRESEDO–FLOYD

- UX/UI Designer at Quansight Labs

- Jupyter Accessibility

- Accessibility and community nerd

THE TEAM

ISABELA PRESEDO-FLOYD

UX/UI Design

TONY FAST

Community and Outreach

GABRIEL FOUASNON

FrontEnd Development

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Slides: 10.6084/m9.figshare.16913428

DO YOU NAVIGATE/VISIT WEBSITES

ON A NORMAL WORK DAY?

DO YOU USE A MOUSE ON A NORMAL WORK DAY?

CAN YOU DO YOUR WORK FROM A

LAPTOP OR EVEN YOUR PHONE

WITHOUT ASSISTIVE TECHNOLOGY?

DO YOU WORK WITH JUPYTER

NOTEBOOKS?

ACCESSIBILITY 101

BUILDING A COMMON VOCABULARY

ACCESSIBILITY DEFINED

1. The qualities that make an

   experience open to all

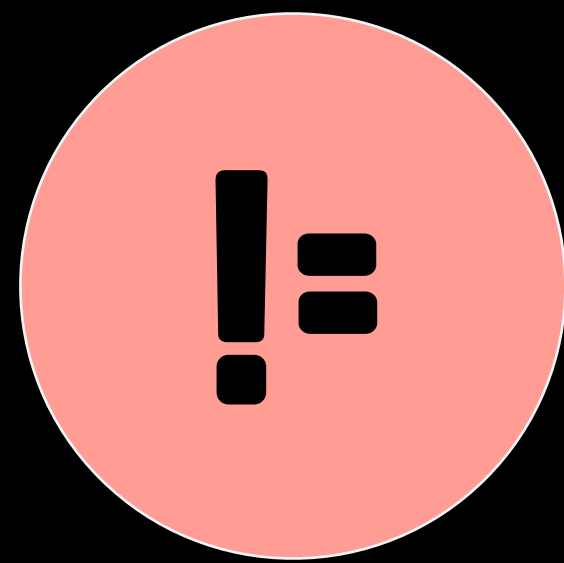2. A professional discipline aimed at

   achieving No 1

DISABILITY

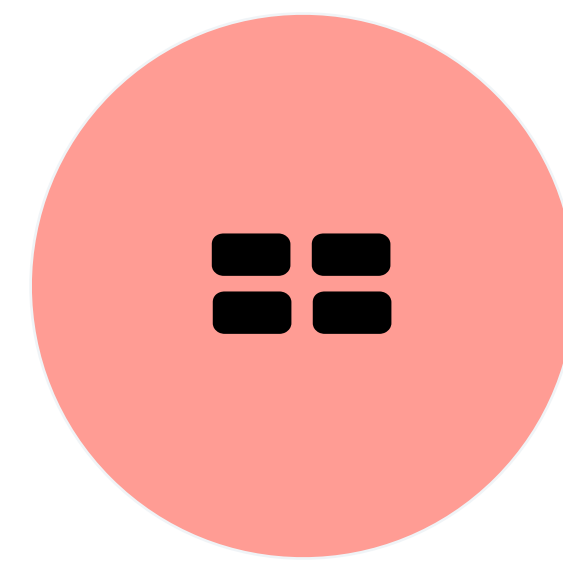Disability happens at the points of interaction between a person and

society or technology.

Physical, cognitive, and social exclusion is the result of

mismatched interactions.

DISABILITY != PERSONAL HEALTH CONDITION

DISABILITY == MISMATCHED HUMAN INTERACTIONS

DISABILITY CAN BE...

PERMANENT

One arm

TEMPORARY

Arm injury

SITUATIONAL

New parent

Illustration taken from Microsoft's inclusive design toolkit.
For in depth explanations of permanent, temporary and situational see:
https://www.microsoft.com/design/inclusive/

DISABILITY CAN BE...

PERMANENT

Permanent 26K

TEMPORARY

Temporary 13M

SITUATIONAL

Situational 8M

Total: 21M+

Source: United States Census Bureau, Limbs for Life Foundation, Amputee Coalition, MedicineHealth.com, CDC.gov, Disability Statistics Center at the UCSF

ACCESSIBILITY IN JUPYTER

THE CURRENT LANDSCAPE

AS A PERSON WITHOUT A DISABILITY
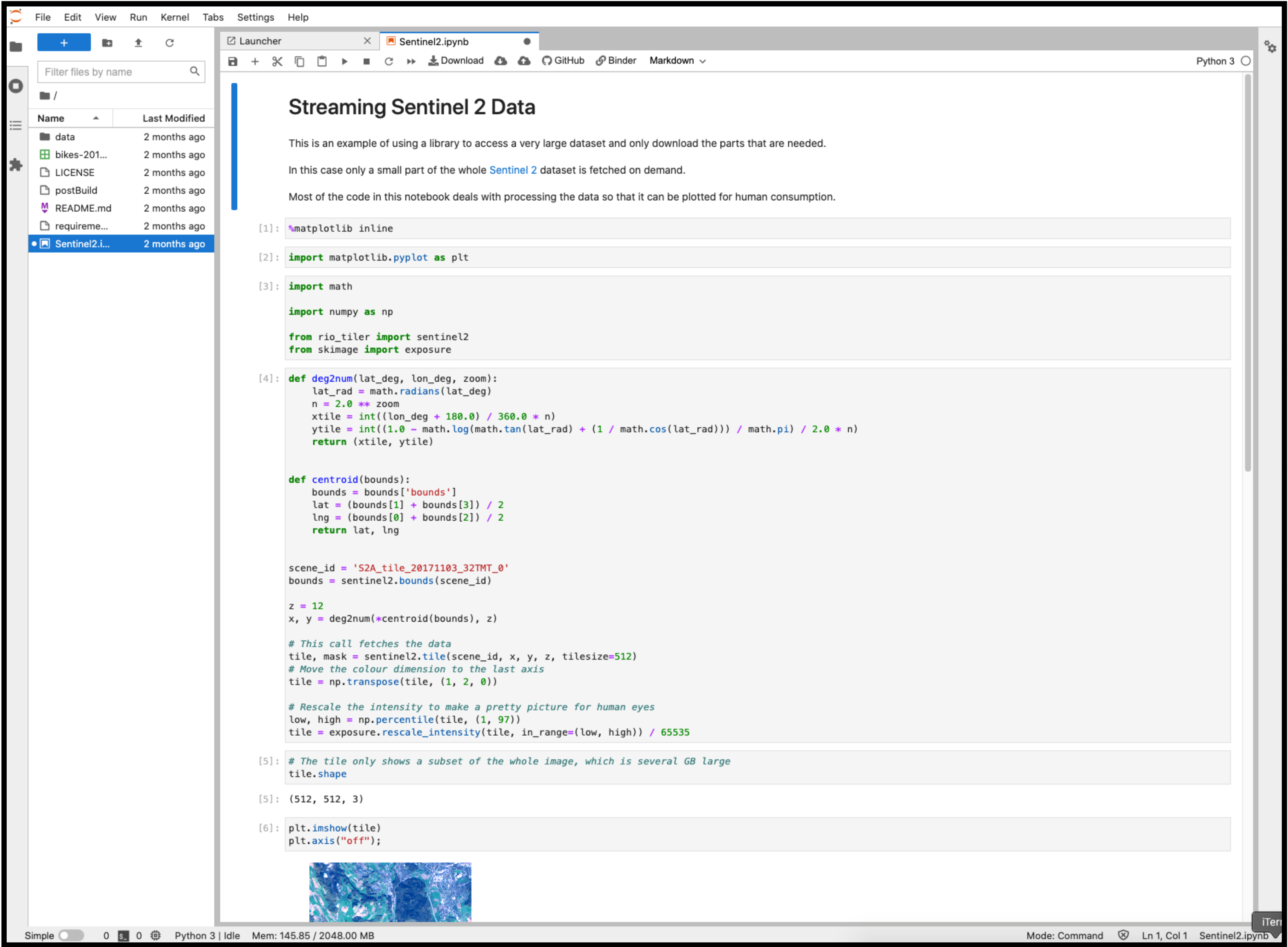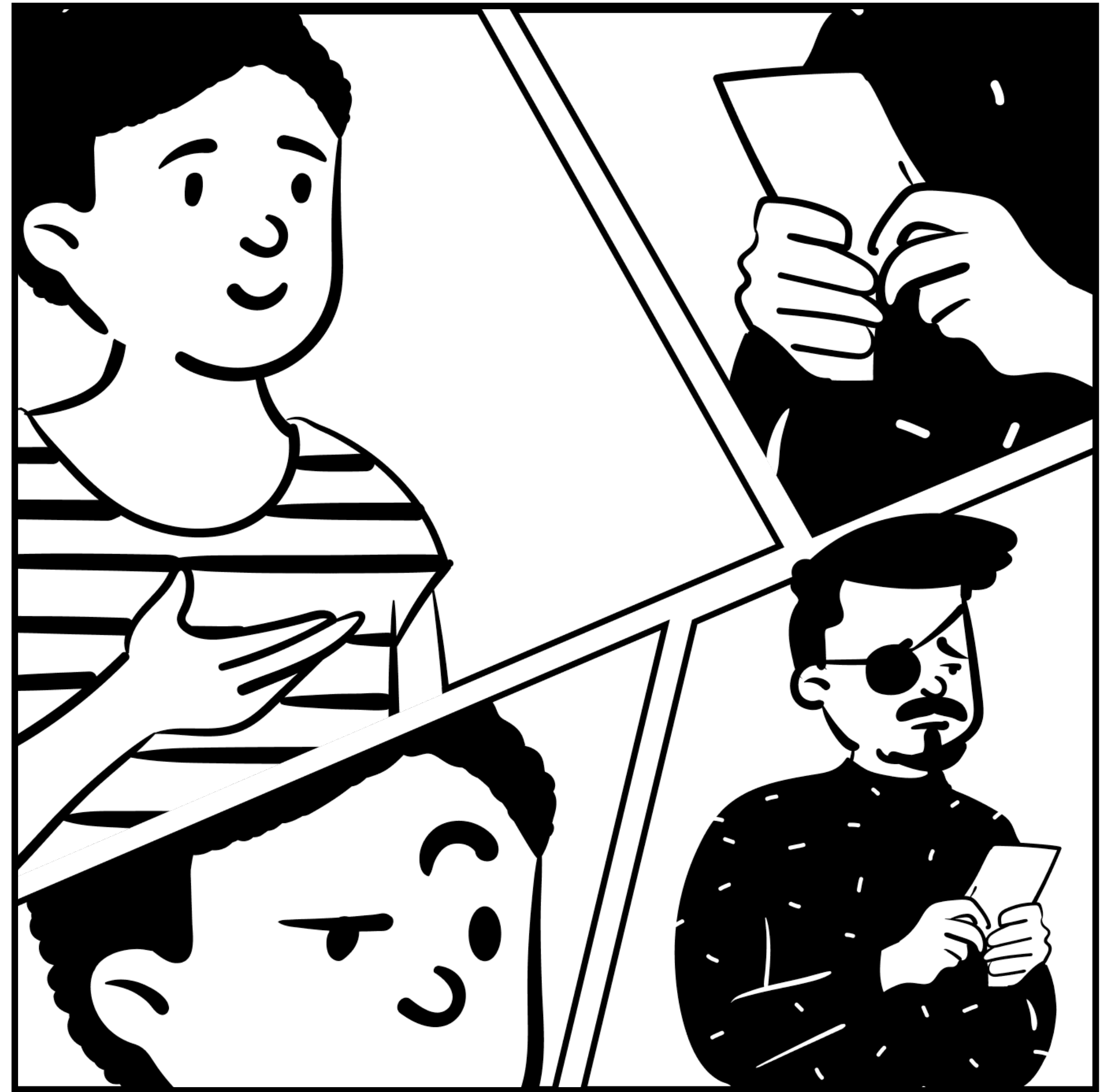

Screenshot of JupyterLab for https://github.com/binder-examples/getting-data
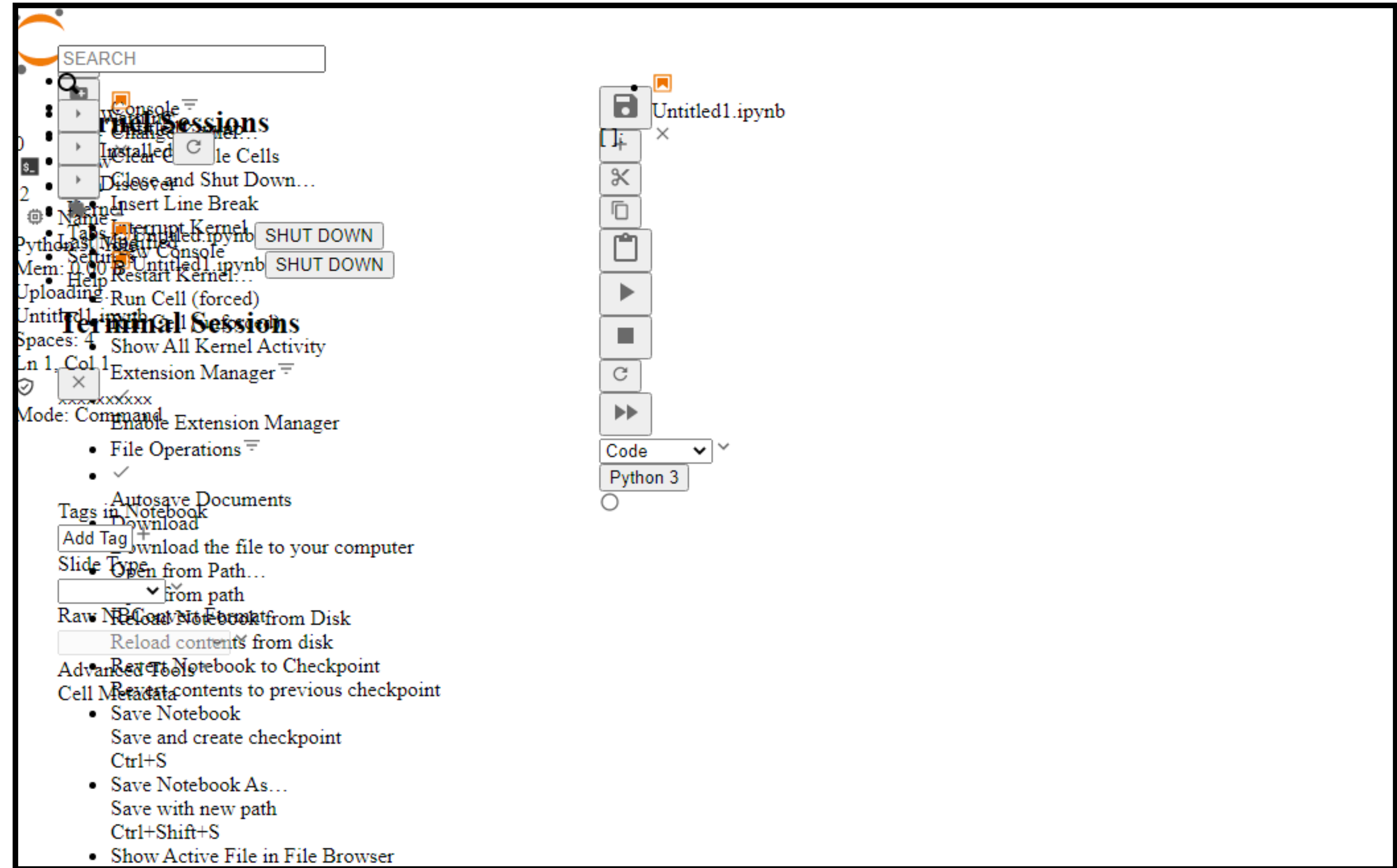
SHARING A JUPYTER NOTEBOOK

With a blind person or someone

with a temporary disability.

IF YOU NEEDED TO USE A SCREEN READER

Screenshot of JupyterLab as experienced by individuals with a Disability who need to use assistive technology

HTTPS://GITHUB.COM/JUPYTERLAB/
JUPYTERLAB/ISSUES/9399

MAIN AREAS NEEDING ATTENTION

KEYBOARD NAVIGATION AND ACTIONS: MOUSE FREE EXPERIENCE

KEYBOARD FOCUS

ALT TEXT PROVIDED FOR NON STATIC ELEMENTS

FULL COLOUR BLINDNESS SUPPORT

ZOOM UP TO 400%

BETTER USER INPUT LABELLING

WORKING TOWARDS WCAG [WEB CONTENT ACCESSIBILITY GUIDELINES] COMPLIANCE

KEYBOARD NAVIGATION AND ACTIONS

KEYBOARD FOCUS

ALT TEXT PROVIDED FOR NON STATIC ELEMENTS

FULL COLOUR BLINDNESS SUPPORT

ZOOM UP TO 400%

BETTER USER INPUT LABELLING

PLOTS

BINDER

DASHBOARDS

DOCUMENTATION

JUPYTER BOOK

NBVIEWER

OUR APPROACH

WHAT WE AIM TO DO WITH THIS GRANT

UNIVERSAL DESIGN

An environment (product, service,

in that environment) should be

designed to meed the needs of all

people who wish to use it.

ADAPT TO JUPYTER

UNIVERSAL DESIGN MATTERS

OPEN PRODUCTS AND EXPERIENCES TO MORE PEOPLE

INCLUDES A RANGE OF ABILITIES

REFLECT HOW PEOPLE ARE AND HOW THEY WORK

LOWER BARRIERS TO PARTICIPATION IN SCIENCE AND SOCIETY IN GENERAL

WORK IN THE OPEN

https://github.com/orgs/Quansight-Labs/projects/5

https://github.com/Quansight-Labs/jupyter-a11y-mgmt

NOTHING ABOUT US

WITHOUT US

Slides: 10.6084/m9.figshare.16913428

INCREASE PUBLIC AWARENESS AND UNDERSTANDING OF DISABILITY

ADOPT

A Jupyter strategy and plan of action for disability inclusion

STRENGTHEN

The community participatory pathways

EXTEND

To other projects in the Jupyter ecosystem

REUSE

Develop an accessibility framework for projects in the scientific computing ecosystem

THANK YOU

Feel free to reach out at

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