NumFOCUS: An Approach to Sustaining Scientific Software
PRESENTED BY: Andy R. Terrel
MISSION

Promote sustainable high-level programming languages, open code development, and reproducible scientific research.
NUMFOCUS
WE ACCOMPLISH THIS MISSION.

EDUCATIONAL PROGRAMS
Scholarships, Diversity, Sustainability

FISCAL SPONSORSHIP
Legal and Fiscal services

EVENTS
Conferences and Meetups

DATA SCIENCE AND SCIENTIFIC COMPUTING COMMUNITY
Common challenges and communication
NUMFOCUS

OPEN CODE = BETTER SCIENCE

Touching Humanity
HURRICANE DATA SCIENCE

\[
\frac{\partial \eta}{\partial t} + \frac{\partial (\eta u)}{\partial x} + \frac{\partial (\eta v)}{\partial y} = 0
\]

\[
\frac{\partial (\eta u)}{\partial t} + \frac{\partial}{\partial x} \left( \eta u^2 + \frac{1}{2} \eta g^2 \right) + \frac{\partial (\eta uv)}{\partial y} = 0
\]

\[
\frac{\partial (\eta v)}{\partial t} + \frac{\partial (\eta uv)}{\partial x} + \frac{\partial}{\partial y} \left( \eta v^2 + \frac{1}{2} \eta g^2 \right) = 0.
\]
HUMAN TRAFFICKING

FBI recovers 9 child sex trafficking victims in Colorado, Wyoming as part of national operation

Authorities say they have seen a growing — and alarming — trend of child sex trafficking being perpetuated through social media in Colorado

New Paltz man, 52, sentenced to federal prison for sex trafficking of minors

Two arrested for forcing two 16-year-olds into prostitution in Brooklyn apartment
HUMAN TRAFFICKING DATA SCIENCE
MORE SCIENCE
WHERE IS THE SOFTWARE PROJECT?
TRADITIONAL INNOVATION PIPELINE

Scientific Discovery → Archival Paper

Engineered Code ← Technical Innovation

Integration ← → Human problem
NUMFOCUS

OPEN CODE = BETTER SCIENCE

Building an Innovation Ecosystem
OUR SPONSORED PROJECTS

SPONSORED PROJECTS

- NumPy
- jupyter
- open Journals
- SymPy
- Matplotlib
- IPython
- R OpenSci
- FEniCS Project
- PyTables
- pandas
- nteract
- QuantEcon
- Econ-ARK
- Stan
-将军
- software carpentry
- PyMC3
- DATA CARPENTRY
- yt
- sunpy
Our Corporate Sponsors

IBM
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Intel
Two Sigma
Gordon and Betty Moore Foundation
ActiveState
Alfred P. Sloan Foundation
Our Supporting Members

My career is built on top of NumFOCUS-sponsored projects.

Patrick Harrison, Supporting Member

The NumFOCUS toolkit is indispensable to a data scientist.

Daniel Kapitan, Supporting Member

Science needs open-source software.

Osvaldo Martin, Supporting Member
PYDATA IMPACT 2016

9 Events
7 Countries
331 Speakers
2,812 Attendees

183 Diversity Scholarships
$257,849.67 Proceeds Benefitting NumFOCUS
Functioning Principles
WHY NUMFOCUS

• PROJECTS NEED FUNDING
• PROJECTS NEED STABILITY
• PROJECTS NEED INDEPENDENCE
• PROJECTS NEED LOGISTICAL SUPPORT
HOW NUMFOCUS MEETS PROJECT NEEDS

• FISCAL & LEGAL SERVICES
• SUSTAINABILITY
• COMMUNITY
WHAT HAPPENS WHEN YOUR PROJECT RECEIVES CORPORATE FUNDING?
FISCAL SPONSORSHIP

• LEGAL SERVICES
  – Licensing
  – Trademark Registration & Ownership
  – Contracts & Agreements

• FINANCIAL SERVICES
  – Accounts Payable & Receivable
  – Grant Administration
  – Contractor Agreements
  – Taxes & Reporting

• OPERATIONAL SERVICES
  – Technical Infrastructure
  – Conference & Event Planning
  – Consulting on a variety of administrative requests
HOW DOES YOUR PROJECT SURVIVE?
WHY IS INCREASING PUBLIC ENGAGEMENT IMPORTANT?
HOW CAN YOUR PROJECT INTERACT MORE WITH THE COMMUNITY?
EDUCATIONAL PROGRAMS

• CONFERENCES
• WORKSHOPS
• SPRINTS & HACKATHONS
• GSoC
• VIDEOS
• MEETUPS
• DIGITAL COMMUNITIES
NUMFOCUS BEHIND THE SCENES

• STAFF
• BOARD OF DIRECTORS
• ADVISORY COUNCIL
• SUSTAINABILITY ADVISORY BOARD
• DISC COMMITTEE
• PYDATA LOGISTICS COMMITTEES
• PROJECT LEADS
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