Commercial Software
aka <u>Ultimate</u> Software Reuse

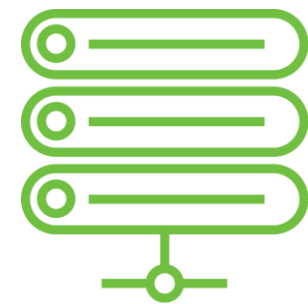Dave Pearah, CEO

The HDF Group

Who is the HDF Group?

"De-facto standard for scientific computing" and integrated into every major scientific analytics + visualization tool

HDF Group has developed open source solutions for Big Data challenges for over 31 years

Small not-for-profit company (~ 40 employees) with focus on High Performance Computing and Scientific Data

Headquarters in Champaign, IL

Our flagship platform – HDF5 – is the heart of our open source ecosystem.

Thousands use + build on HDF5 every day (983 projects on Github)

What are you optimizing for?

	"Scientific" Software	"Commercial" Software
Goal	Fastest code RUN time [Formula 1]	Fastest code AUTHOR time [Toyota Camry]
Constraint [expensive / scarce]	HPC cycles [hardware]	Programmers [people]
Scope	Your project / paper	Lots of users

Incentives drive behavior:
- Minimal focus on quality, testing, build tools, release management, community engagement, documentation, training, etc.
- Code too specific to be a general use
- Preference for C/Java/Fortran vs. Python
- Natural tendency to write code from scratch vs. seek good-enough existing options

Commercial Scientific Software: Rarest of Birds

- **While uncommon, there are vendors – like HDF Group – who are excited to support scientists**

- **Challenges to achieve sustainability**

    - Lack of software funding in general, particularly for open source

    - When we are fortunate to get funding, it's often **<u>not</u>** for sustaining engineering

    - Lack of strong commercial (i.e. non-science) market

Easy Short-Term Solution

- **If you use open source software in your scientific apps, give back:**

  - **Sweat equity**: contribute code and bug fixes; help with testing, releases, documentation, training, etc.

  - **Contracting**: If you're working with hardware integrators, insist that they work with and support the creators of the tools and apps you use every day

  - **Financial support**: partner with vendors / committers on your proposals, purchase support, etc.

https://www.hdfgroup.org/support/