

WHO WINS IN A FIGHT?

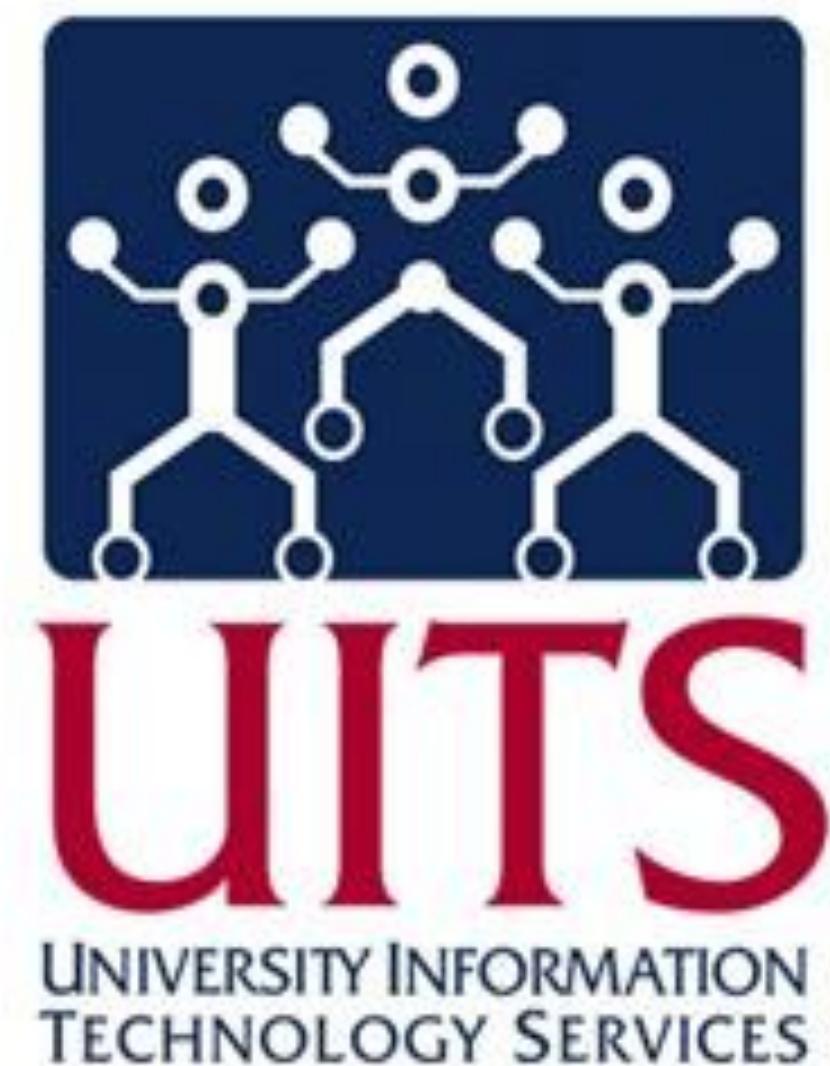


Blake Joyce
[@bjoyce3](https://twitter.com/bjoyce3)

IPFS Camp

Who Wins in a Fight?

Superman, IPFS, iRODS, or Dat



Blake Joyce
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GitHub: bjoyce3
GitHub picture ---->



Researchers have data problems

Untitled layer

Individual styles

UA HPC

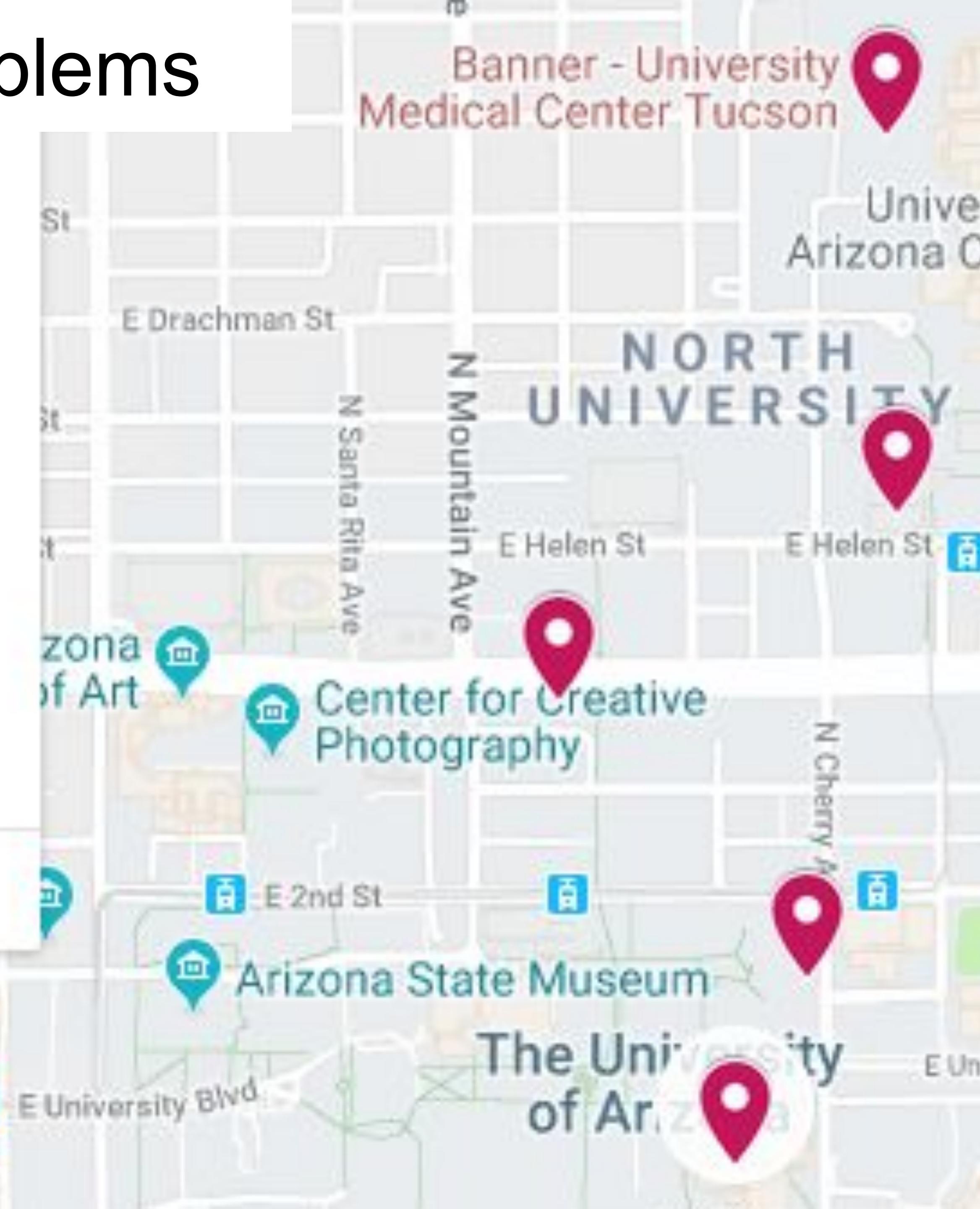
BIO5 Institute

Banner - University Medical Ce...

Steward Observatory (Universi...

University of Arizona Librarie...

Base map



BIO5 - data gets made

HPC -
analysis

Library - Long-term
Repository

- All separate copies
- No changes carried forward
- No idea how they relate

Arizona Data Sites

Changes saved in Drive

Add layer Share

Banner - University Medical Ce...

Steward Observatory (Universi...

University of Arizona Libraries ...

Tucson Area Data Sites

Individual styles

Vatican Advanced Technology...

Large Binocular Telescope Ob...

Kitt Peak National Observatory

Submillimeter Telescope

Fred Lawrence Whipple Obser...

Mt. Lemmon Sky Center Obse...

Patterson Observatory

Base map

San Francisquito

San Miguel

Buenos Aires
National
Wildlife
Refuge...

Arivaca

Tumacacori-Carmen

Patagonia

Elgin

Huachuca

Sierra Vista

(90)

Tombstone

Dragoon

Sun

Fort Grant

Mt Graham

Momoli

Picacho

Mammoth

Red Rock

10
Marana

Mt Lemmon

Oro Valley

Saguaro
National Park

Catalina
Foothills

Tucson

Valencia West

Three Points

286

Kitt Peak

Comobabi

Ills

Topawa

86

Vail

Sahuarita

Corona De Tucson

Green Valley

Amado

Tubac

Elgin

Sonoita

Patagonia

Sierra Vista

(90)

Mescal
Benson
Coronado
National Forest

Las Cienegas
NCA

Elgin

Patagonia

Sierra Vista

(90)

Sierra Vista

(90)

Google My Maps

-  Submillimeter Telescope
-  Fred Lawrence Whipple Obser...
-  Mt. Lemmon Sky Center Obse...
-  Patterson Observatory

Arizona Tri-U Research Computing ...

 Individual styles

 ASU Tempe campus - Registr...

 The University of Arizona Colle...

 NAU-Phoenix Biomedical Ca...

 NAU

 USDA ALARC

 University of Arizona Yuma Ag...

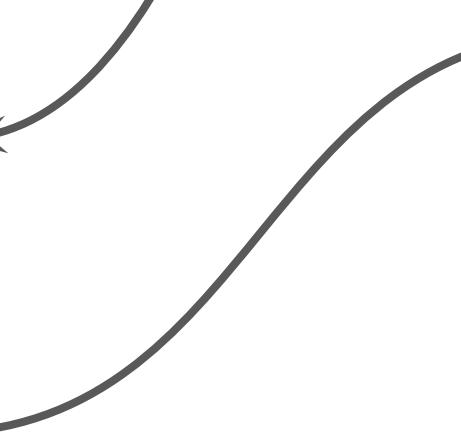


And Sometimes: it takes an entire world

- The Event Horizon Telescope Project
- Telescopes around the world
 - Needed to create a lens the diameter of Earth
 - Just one crazy idea researchers have
 - Pretty awesome
- Created a data set that was hard to move...



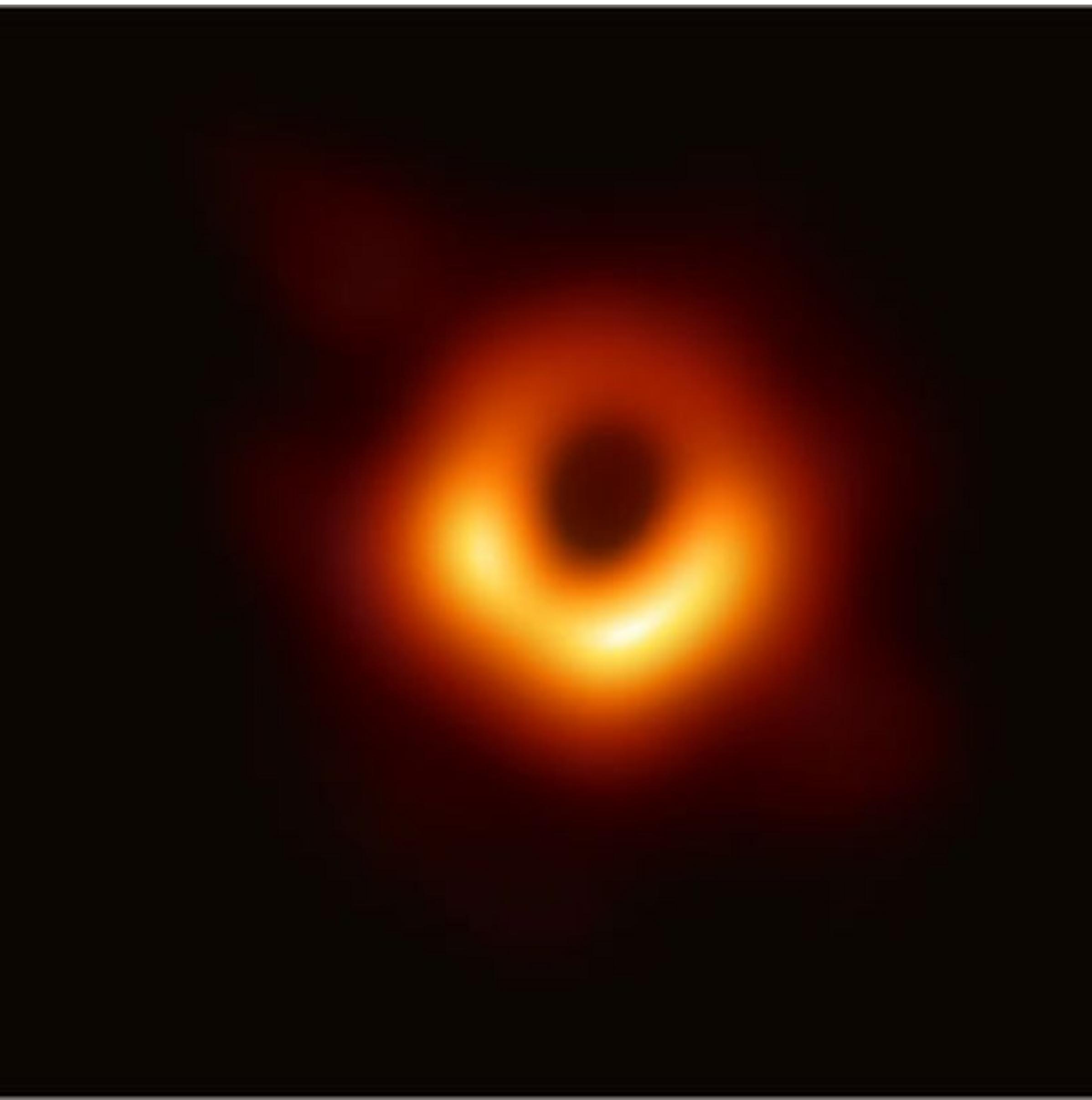
But when we can move data....



We See the Unseen. And the impossible is possible.

This is what a black hole looks like (now)

We (humans) were (very) sure this is how they looked



Who Wins in a Fight? Superman, IPFS, Dat, or HTTPS

- Benchmark file transfers
 - Distances
 - Size of files
 - Types of files (lots of little files, a few big files)
 - Number of participants/people pulling data
- Determine transfer speeds

Null hypothesis: only Superman is faster than a speeding bullet (1,200 m/s or 3,900 ft/s).

We've Even Got an Open Science Framework Project

The screenshot shows a project page on the Open Science Framework (OSF). The top navigation bar includes links for 'My Quick Files', 'My Projects', 'Search', 'Support', 'Donate', and a user profile for 'Blake L Joyce'. Below the navigation is a secondary menu with 'Distributed Data Protocol Benchmarking' as the active project, followed by tabs for 'Files' (selected), 'Wiki', 'Analytics', 'Registrations', 'Contributors', 'Add-ons', and 'Settings'. The main content area displays several sections: 'Introduction', 'Experimental Design', 'Hypotheses', 'Treatments', and 'Protocol'. The 'Hypotheses' section contains three statements: H₀, H₁, and H₂. The 'Treatments' section lists three categories: Data, Protocol, and Type of Data, each with specific options.

OSFHOME ▾

My Quick Files My Projects Search Support Donate Blake L Joyce ▾

Distributed Data Protocol Benchmarking Files Wiki Analytics Registrations Contributors Add-ons Settings

Introduction

Experimental Design

Hypotheses

H₀: File transfer protocols are not different across geographical, file type, file size, file complexity, or number of downloads.

H₁: The Dat protocol is faster across local regions. The rate of speed increases with number of participants pulling the same data within a geographic region.

H₂: The Dat protocol rate of speed is faster farther the geographic region is away from the original server (source) and the greater the number of participants.

Treatments

1. Data
 - 1 MB 10,000 files
 - 1 GB 10 files
 - 1 TB 10 files
2. Protocol
 - Dat
 - HTTP
 - IRODS
3. Type of Data
 - Images