A company reimagined, with Bro at the core.

Greg Bell, CEO

NATIONAL SCIENCE FOUNDATION

FY 2017 Budget Request to Congress

February 9, 2016

About the Cover:
This cover shows two of the winning images from The Vizzies Visualization Challenge. The images are (top): a photograph of microscopic crystals found in a sea urchin's tooth, and (bottom) an image showing the connectivity of a cognitive computer based on the macaque brain.

For more information see: www.nsf.gov/news/special_reports/scivis/

Image credits: Pupa U. P. A. Gilbert and Christopher E. Killian, University of Wisconsin, Madison (top); Emmett McQuinn, Theodore M. Wong, Pallab Datta, Myron D. Flickner, Raghavendra Singh, Steven K. Esser, Rathinakumar Appuswamy, William P. Risk, and Dharmendra S. Modha (bottom)

But first, the most gratifying Bro news of 2016.

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Highlights

For over 60 years, NSF has pursued investments in fundamental research and education to fulfill its mission of promoting the progress of science and engineering. In doing so, NSF-supported research has connected the discovery and advancement of knowledge with the potential societal, economic, and educational benefits that are critical for continued U.S. prosperity. Below are just a few of the important recent advances that NSF funding continues to enable.

Supercomputer Cybersecurity

The Bro Network Security Monitor protects many scientific computing networks.

Credit: Bro Center of Expertise

Computer networks at national labs, scientific computing facilities, universities, and large companies identify and block hundreds of thousands of hostile intrusions every month, thanks to a freely available cybersecurity software advanced by NSF-funded computer scientists at the University of California, Berkeley. The programmable "Bro" code analyzes a network's unique data traffic patterns and tailors its defenses as needed, depending on the anomalies detected. The code played a critical role in identifying hackers trying to sell access to federal supercomputers. The NSF-funded Bro Center of Expertise provides resources for users to protect their cyberinfrastructure.

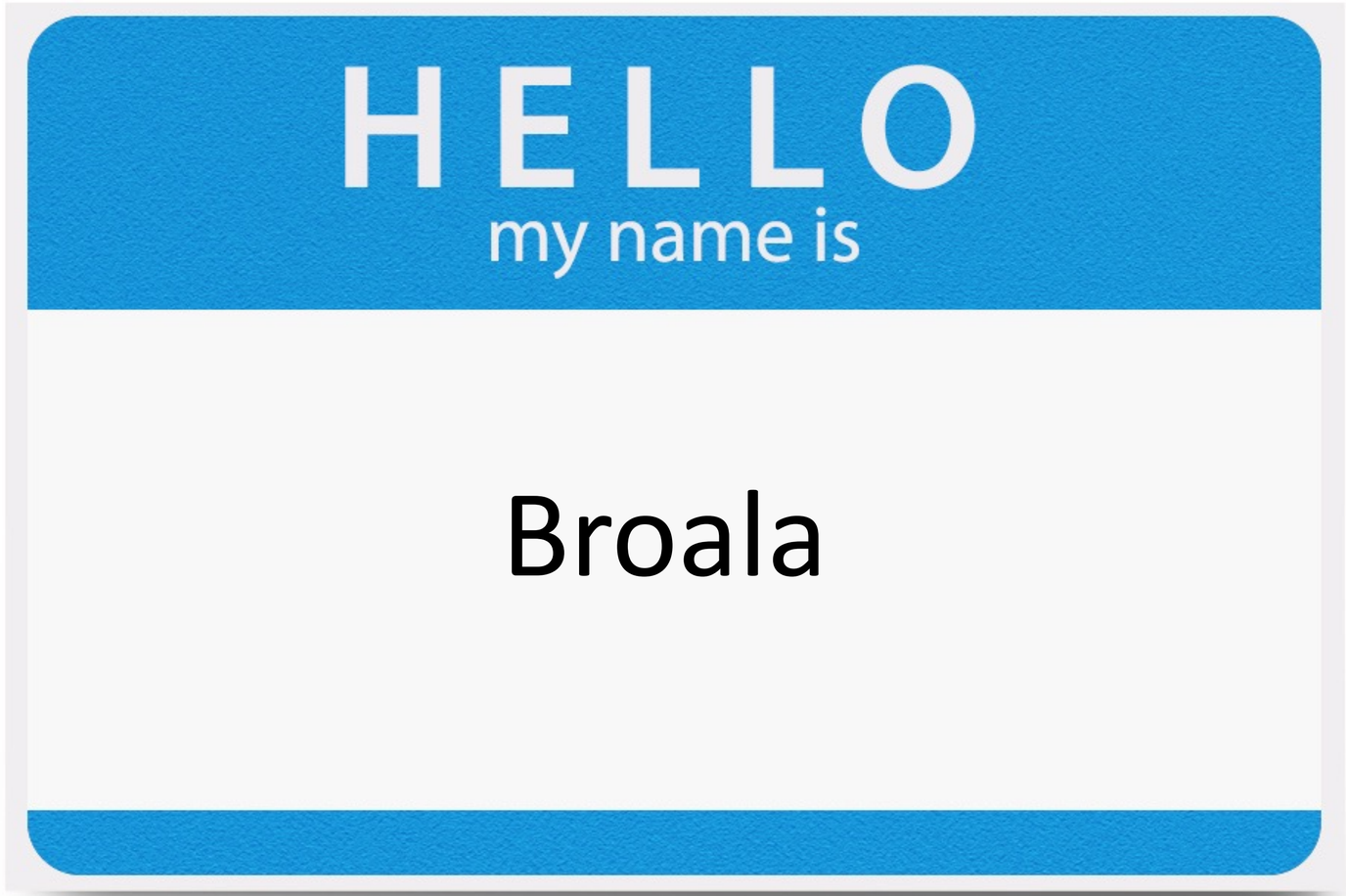
Hunting for Gravitational Waves

NSF, in May 2015, helped dedicate the Advanced Laser Interferometer Gravitational-Wave Observatories (LIGO) in Washington State. Researchers using the facilities seek to observe and record gravitational waves for the first time. Those discoveries would allow us to learn more about the phenomena that generate the waves, such as supernovae and colliding black holes. The Advanced LIGO project represents a major upgrade expected to enhance the sensitivity of LIGO's instruments by a factor of at least 10 and can see a volume of space more than 1,000 times greater than the initial LIGO. The existence of gravitational waves is a crucial prediction of the General Theory of Relativity.

Image of the LIGO observatory in Hanford, Washington, where astronomers completed a major upgrade in a quest to understand the extraordinary mysteries of our universe.

Credit: *Cfoellmi via Wikimedia Commons*.

www.psdgraphics.com



Gregory Bell
CEO

Seth Hall
Co-Founder and
Chief Evangelist
Bro's Biggest Fan

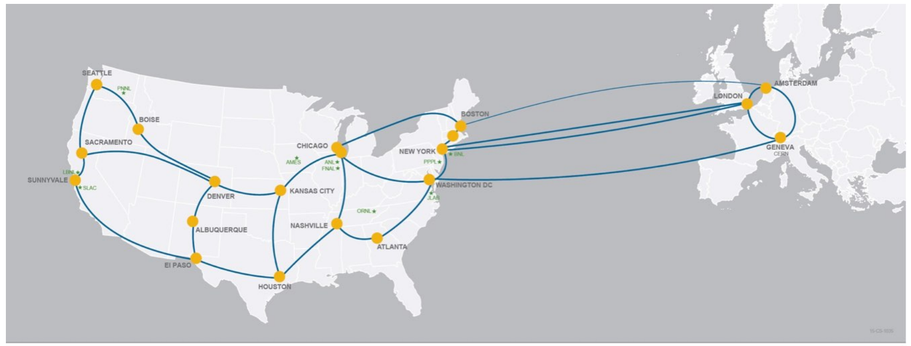
Robin Sommer
Co-Founder and CTO
Bro's open-source lead

Vern Paxson
Chief Scientist
Bro's Inventor

BERKELEY LAB

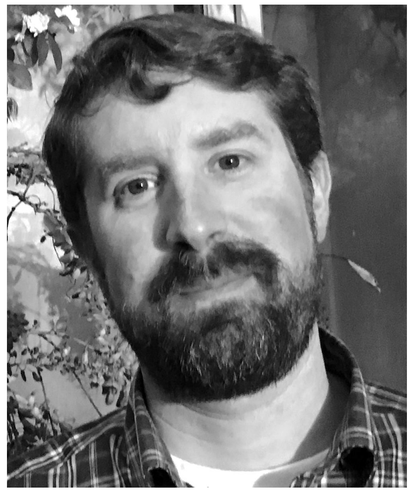
ESnet

ENERGY SCIENCES NETWORK



CENIC

AMNESTY INTERNATIONAL



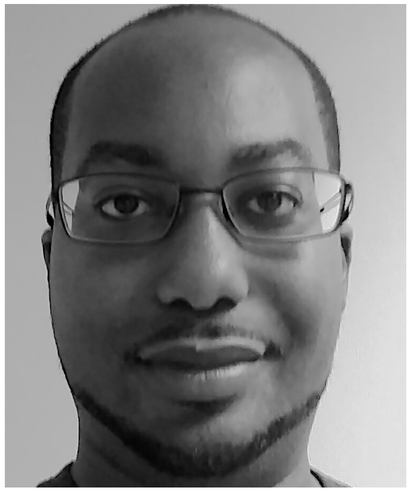
Vincent Stoffer
Director of Customer Solutions

Shaun Rowland
Director of Platform Engineering

Johanna Amann
Encryption, APIs, Power of Flight

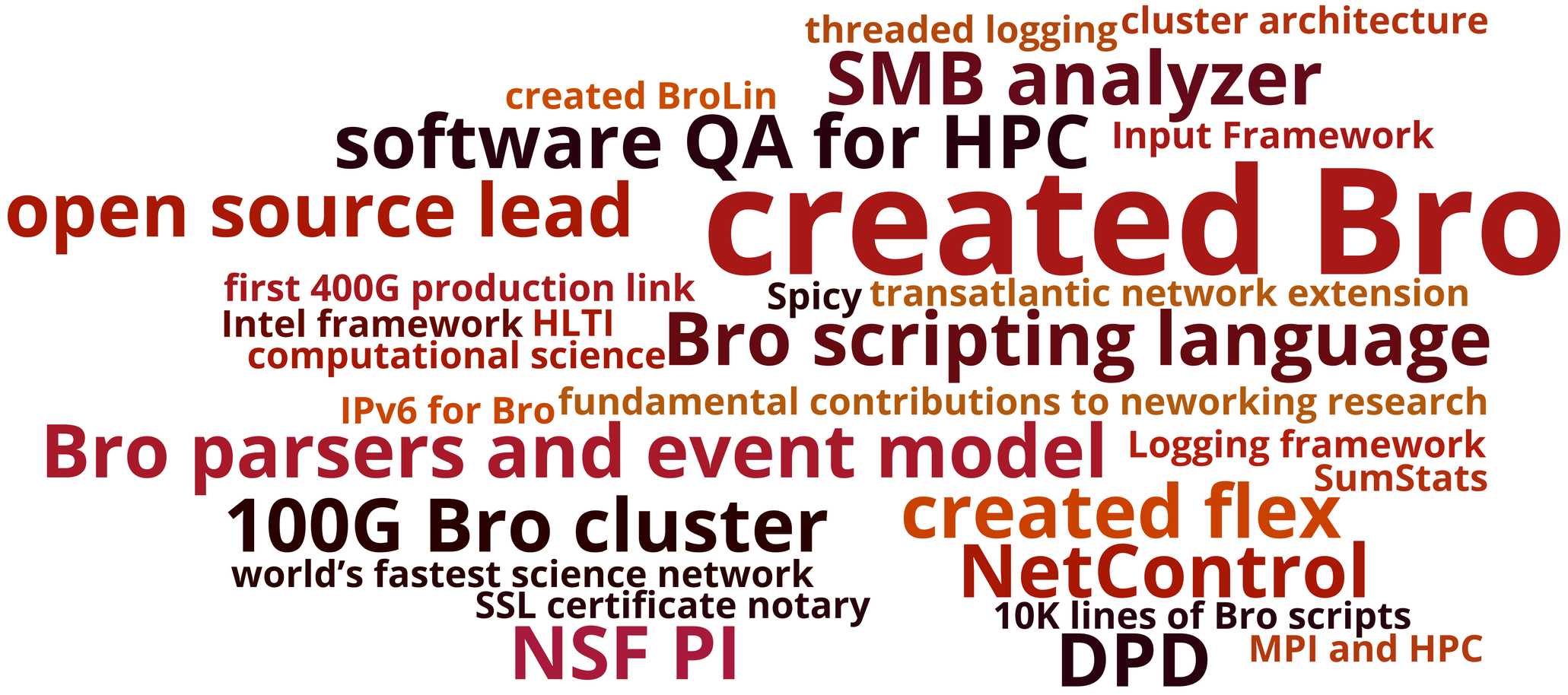
Sophia Pasadis
Business Operations

Jonathan Perkins
Platform Engineer



Mark Arnold
Platform Engineer

Some collaborations and contributions



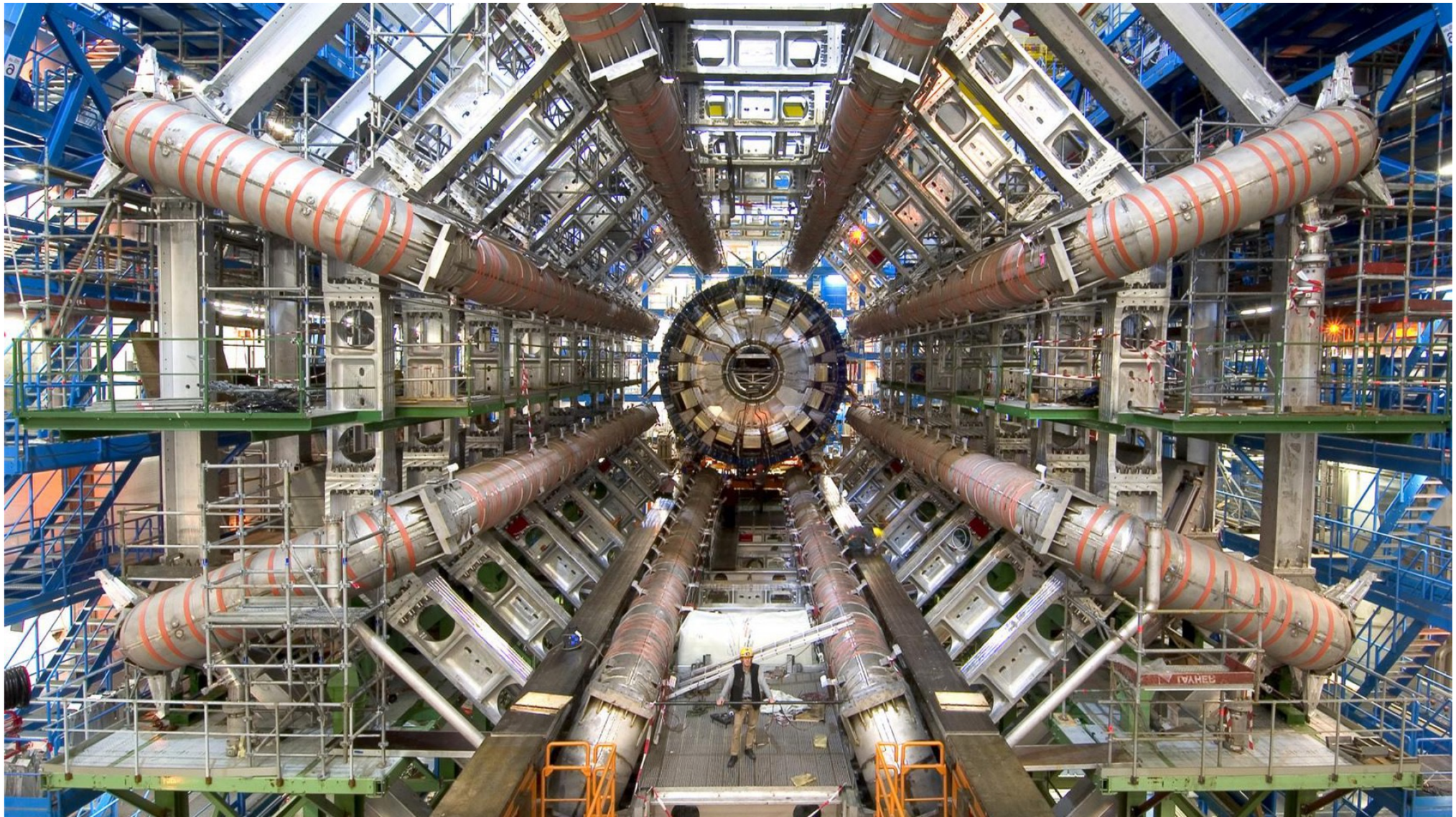
As creators of Bro, we have a special obligation towards this community to explain our values, goals, and intensions.

Values first.
Where do we come from?

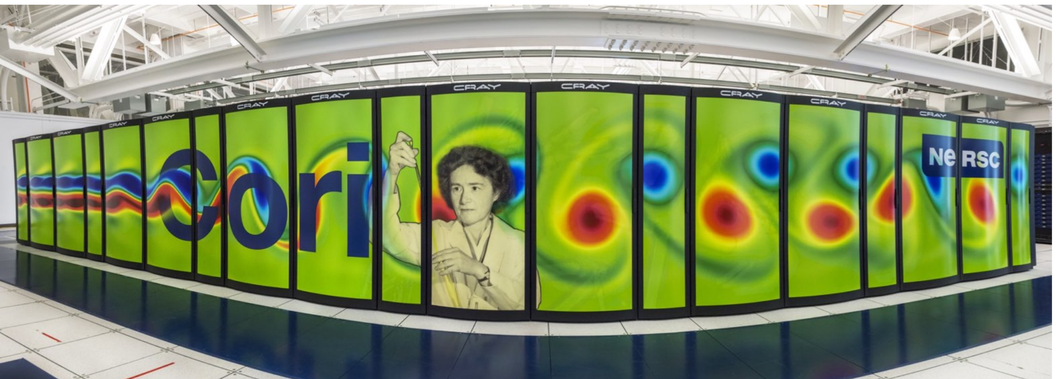
The intellectual history, from Vern Paxson

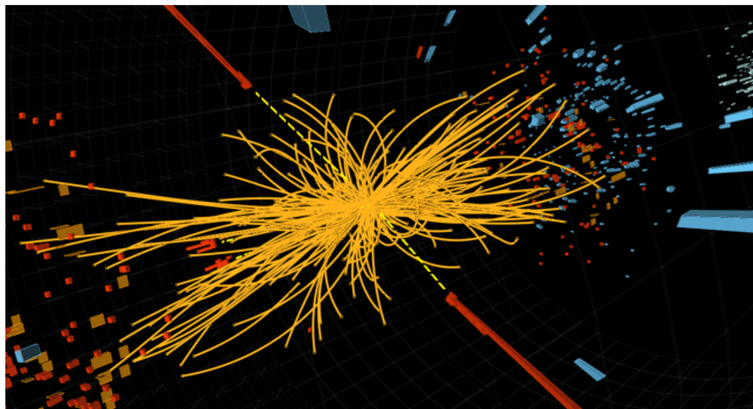
https://www.youtube.com/watch?v=pb9HlmV0s2A&feature=youtu.be

The cultural history: team science, 100 Nobel Prizes

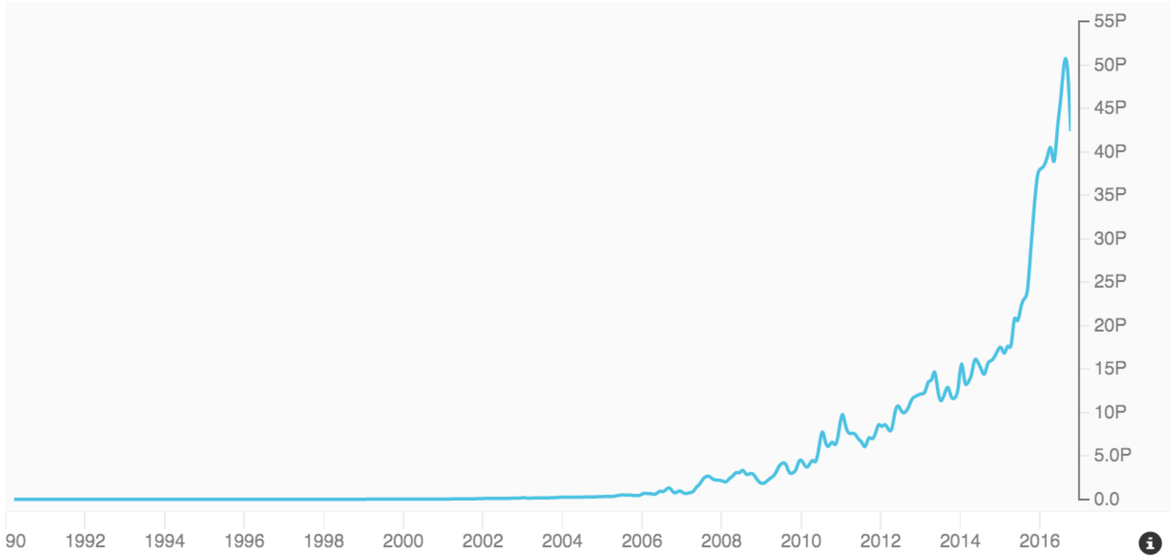


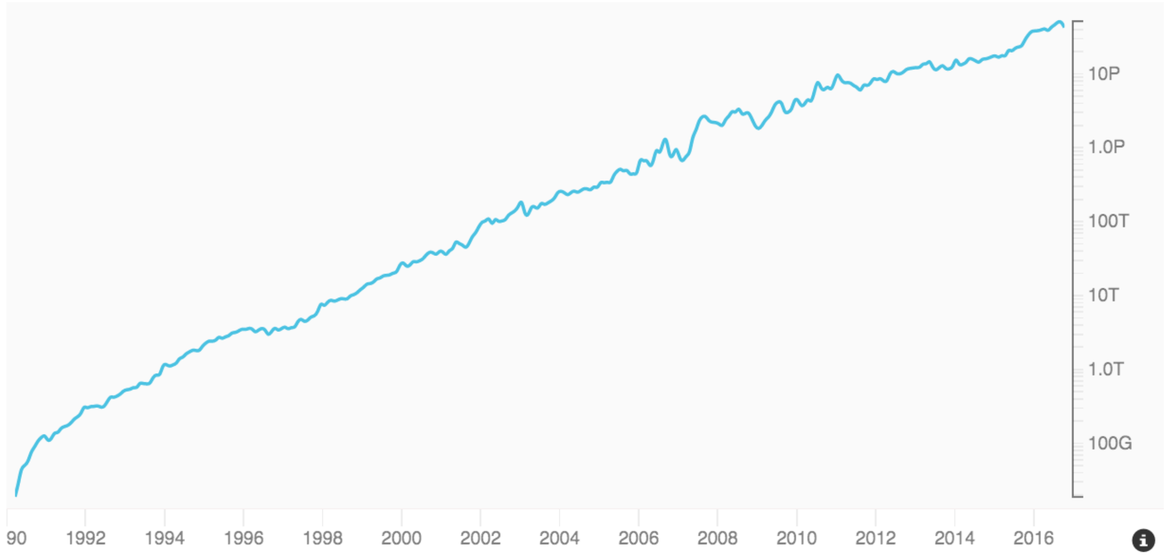
World of research and discovery: $1B instruments, massive data sets, HPC, applied math, global scientific collaboration.





Extremely formative: non-blocking networks

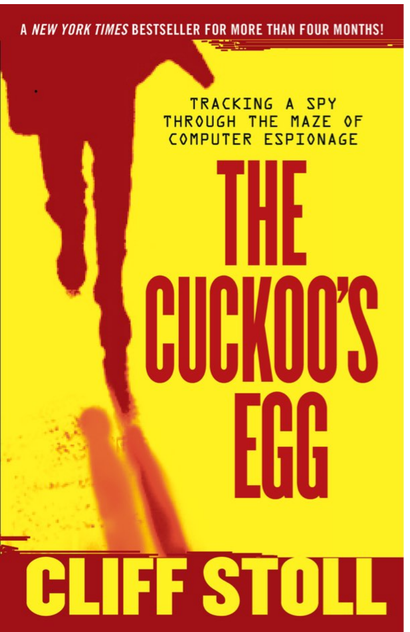




Network traffic on DOE's mission network ESnet, PB/month, since early 1990s

source: https://my.es.net/network/traffic-volume

And remember that DOE has national security missions, including stewardship of the nuclear weapons complex.



Bro comes from an environment where:

- the threat model is complex
- ‘normal’ traffic is virtually impossible to define
- new protocols, techniques, architectures are routinely born
- the mission requires bleeding-edge performance
- no clear boundary between ‘inside’ and ‘outside’

Just like Bro, we're a product of our environment.

We come from mission organizations.

We value honesty, excellence, generosity, service.

Bro is in our DNA, and we are dedicated to making it better.

Our goals as a company

1. Make the world's networks safer, more productive, and more enjoyable.

2. Build a thriving company by creating superb products.

3. Contribute material and intellectual support to Bro.

Our down payment on material support:

And we invite you to join us!

Things we will do as a company:

- Act in the best interests of the Bro project, contributing money, time, engineering cycles
- Push the boundaries of Bro, and return improvements to the open-source project
- Build and sustain the community: podcasts, blogs, videos
- Continue to define the cutting edge in network monitoring and security

Our rules of engagement:

- Don’t fork Bro
- *Robin’s rule* (“if the company develops features that the Bro project might have taken on *without* the company’s existence, we open-source them”)
- …as illustrated by the case of the SMB Analyzer

From values to identity

New
- business model
- staff
- products
- momentum

} ⇨ requirement for more fitting identity

Our transition began with series of interviews

- “**I can’t think of a brand in this space that I like**. I guess I’ve been in security too long and I’m jaded by commercial products.”
- “The category has a history of over-promising, and providing vague checklists of features.”
- “**The industry is all about fear**.”
- “Customer crave honesty.”
- “What does Broala even mean?”

To those who participated: thank you. Our branding team shared only a few anonymized quotes.

Our branding transition began with series of fascinating interviews

- “**I can’t think of a brand in this space that I like.** I guess I’ve been in security too long and I’m jaded by commercial products.”
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The cybersecurity industry

A swamp of macho posturing, militarism, fear-baiting, and specious appeals to authority.

The reason this feels uncomfortable? At root, it’s authoritarian.

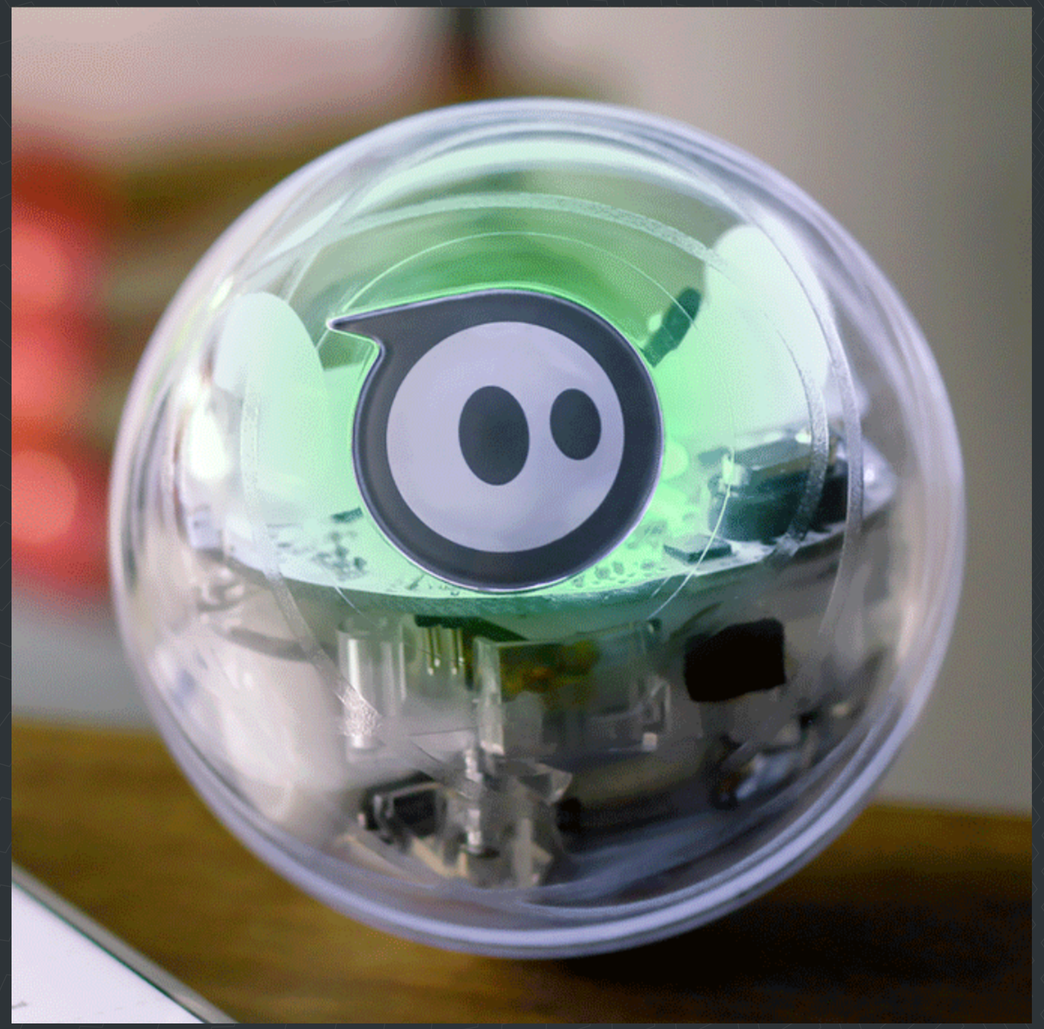
- also condescending

We stand a world apart from that.

We illuminate.
We make unknowns known.
We make the complex tractable.
We help you build cybersecurity on a foundation of data.
We strive to be symbiotic with the Bro project.

ILLUMINATE YOUR NETWORK

And we come with swag:



Corelight is thriving

- profitably bootstrapping, challenged by growth
- customers include ~10% of the Fortune 50, soon more
- focused on problems of scale, at least for now
- rapidly adding new capabilities to our first product BroBox One (with 8 software releases in 10 months)
- pipeline of new products, physical and virtual

Why choose Corelight?

- Customers appreciate our team's definitive knowledge of Bro.
- Our products come from the same people who conceive and implement features, commit changes, and resolve issues in the core Bro codebase.
- We can tune for stability, optimize for performance, extend capabilities – all with confidence.

Notable collaborations

+

We see tremendous potential in the **integration of data** from networks and endpoints. Each perspective complements the other.

Tanium and Corelight are natural partners: technically, culturally, geographically.

We are working together diligently to build and validate integrations that create value for our customers.

Notable collaborations

+

We also see great potential in the **coupling** of programmable networks with monitoring solutions based on Bro.

NetControl(++) is the mechanism.

Recapitulates the history of Bro: a productive feedback loop between NSF-funded research and real-world deployment.

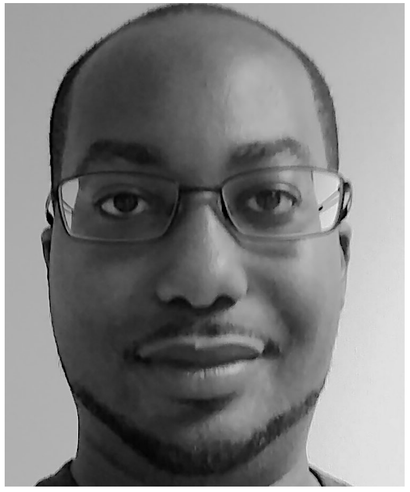
We are seeking great team members.











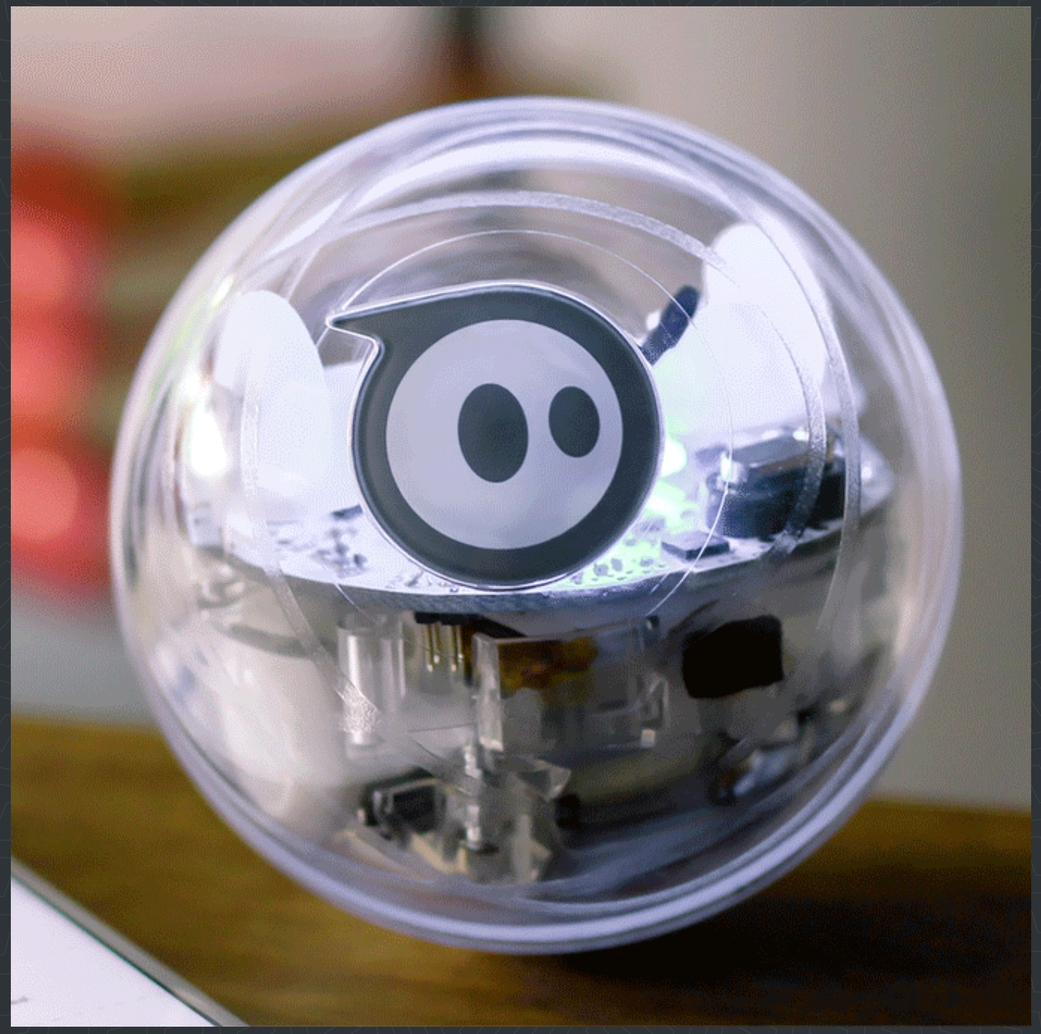

Are you:

- at the top of your game technically?
- a virtuoso collaborator?
- attracted to our values?
- inspired by tackling challenges *together*?

jobs@corelight.io

Parting words

- The future of Bro has never been brighter: Mozilla-funded package manager, SMB analyzer, NetControl, Conservancy, rising adoption…
- Corelight will be here to support the Bro project, and help illuminate your network.



Let the social begin!

AND PLEASE JOIN US IN SUPPORTING BRO'S FOUNDATION

ILLUMINATE YOUR NETWORK

CORELIGHT.IO