



UNIVERSITY OF
LOUISVILLE

KENTUCKY
CYBERSECURITY
CENTER

louisville.edu/research

A GROWING THREAT

Cybersecurity is a critical element of modern business, government and the lives of all Americans, and cyberattacks of all sorts continue to grow in number and impact.



\$4.82 MILLION

The average cost of a critical infrastructure data breach in 2022, according to IBM.

3 MILLION

Workforce gap for qualified defense civilians and active military personnel with specialties in cybersecurity, per ISC2.

4,000

Currently unfilled highly-paid positions in Kentucky alone, forfeiting potential tax revenue and leaving our critical infrastructure, utilities and businesses vulnerable.

CYBERSECURITY'S NEW KENTUCKY HOME

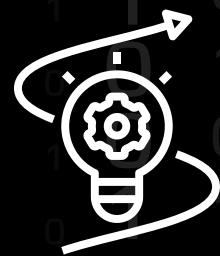
KentuckyCYBER will tackle this head-on by bringing together public and private partners for workforce development, research and innovation.

Vision: Kentucky's critical infrastructure, state and local agencies, and major economic sectors will thrive on a secure cyber infrastructure built by our own skilled workforce.

Mission: To accelerate adoption of cybersecurity systems in Kentucky by combining assets of higher education, state and federal agencies and private sector companies in an innovation park.



TAKING THE FIGHT ONLINE



COLLABORATIVE CYBER- INNOVATION ECOSYSTEM

Collaborative ecosystem combining world-class equipment, facilities and researchers with industry, government and others to solve problems and develop new technology and cyber-related companies.



EDUCATION AND WORKFORCE DEVELOPMENT

Crafting a future cybersecurity workforce through cutting-edge curriculum, training and upskilling, including industry credentials and certificates via a consortium of universities, community colleges and P-12 programs. The goal is to create a pipeline of qualified cybersecurity talent to fill high-paying job vacancies and defend our infrastructure.



DEDICATED CYBER RANGES AND INCIDENT RESPONSE

Secure environment for academic, industry, state and critical utility partners to gain hands-on cyber skills and conduct product development and testing. These ranges and staff will provide incidence response and unbiased policy analysis.

BUILDING CONNECTION

KentuckyCYBER will be located at the Industry 4.0 Research Park:

- 30-acre parcel of developable land adjacent to the UofL J.B. Speed School of Engineering and just off
- I-65 Physical space will house SCIFs, cyber-ranges, students, professionals, and organizations that will make up the ecosystem that generates innovation and serves the state and its businesses.



WHY UofL?



UofL is uniquely qualified to host KentuckyCYBER:

- Only Carnegie Research-1, Community-Engaged institution in Kentucky nationally recognized as a Center of Academic Excellence in Cybersecurity (CAE) by the Department of Homeland Security (DHS) and the National Security Agency (NSA).
- NSA, DHS, and Department of Defense have already made significant investments in cybersecurity research and education at UofL.

Testimony from Rick Halbleib, President, Global Watchmen Associates

Georgia Cyber Center

Augusta, Georgia

To: Kentucky Appropriations and Revenue Committee
By: Michael Shaffer, EVP Strategic Partnerships and Economic
Development, Augusta University
August 17, 2022

GEORGIA CYBER CENTER TIMELINE

2017

January

Gov. Nathan Deal announces Georgia Cyber Center

June

Groundbreaking first building at Georgia Cyber Center

November

Gov. Nathan Deal announces 2nd building

2018

January

Groundbreaking 2nd building at Georgia Cyber Center

May

Original completion date for ARCYBER headquarters

July

First Building opens at Georgia Cyber Center

2019

January

Second building opens at Georgia Cyber Center

2020

September

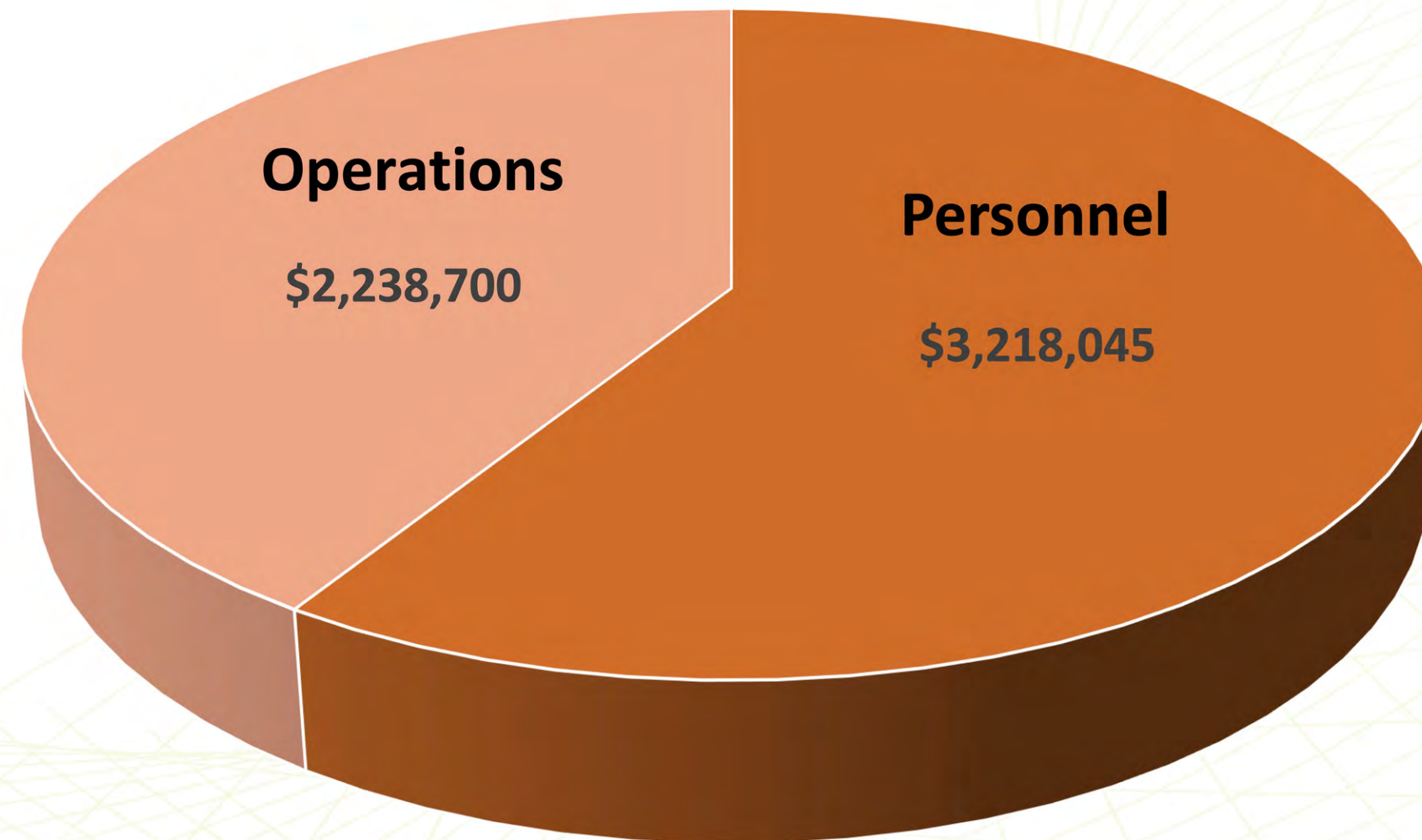
ARCYBER dedicated new headquarters

Background

- Total Investment, \$122 million
 - \$106 million from state of Georgia for project
 - \$16 million from City of Augusta for parking deck
 - Project built on 16 acres of land already owned by Augusta University
- Mission: Cultivate an ecosystem where the combined talent of government, academia, and private industry will
 - deliver affordable and relevant cybersecurity training and education
 - develop the state's cybersecurity workforce
 - solve complex cybersecurity challenges
 - offer unbiased advice to policy-makersin order to provide our state and the nation with a decisive advantage in cyberspace.
- A successful model for ecosystem development and financial dependence requires a strategic balance of government, industry, and academic resident partners

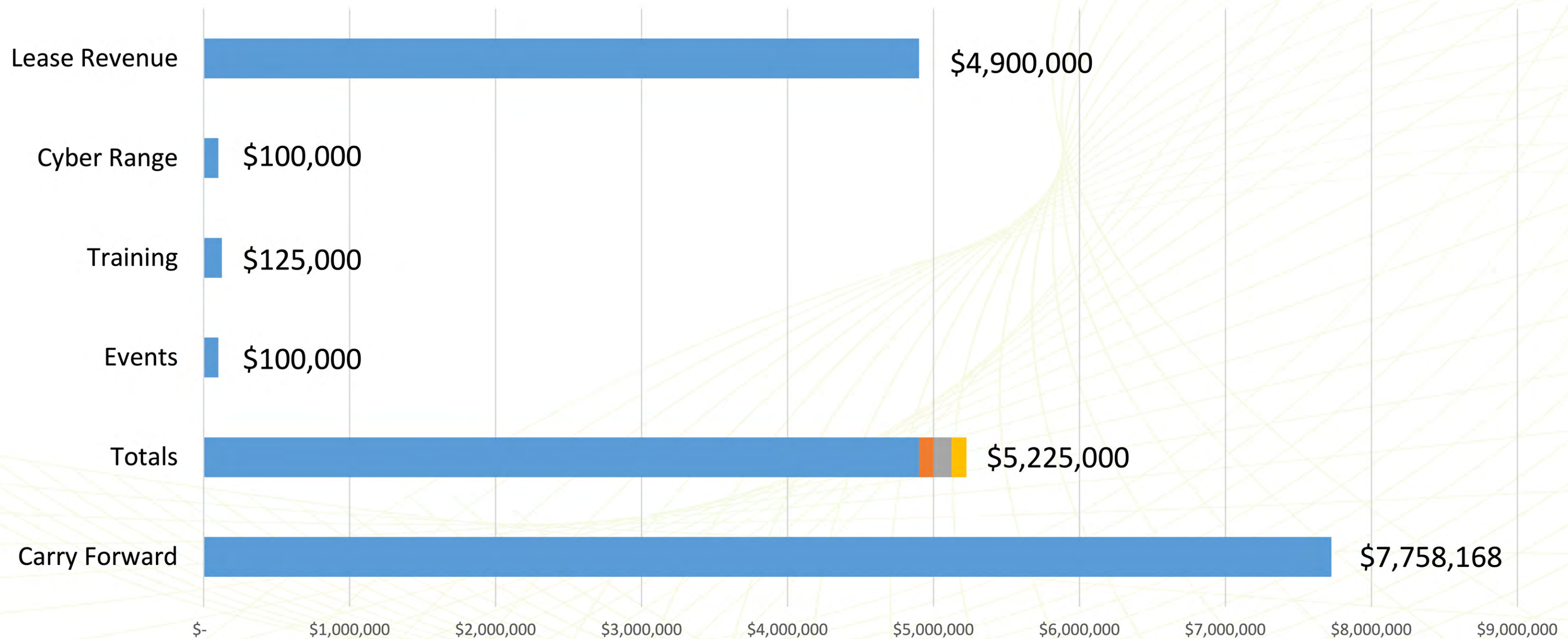
Budget: State Allocation

Total State Allocation FY23: \$5,456,745



Budget: Earned Revenue

Total FY23: \$12,983,168

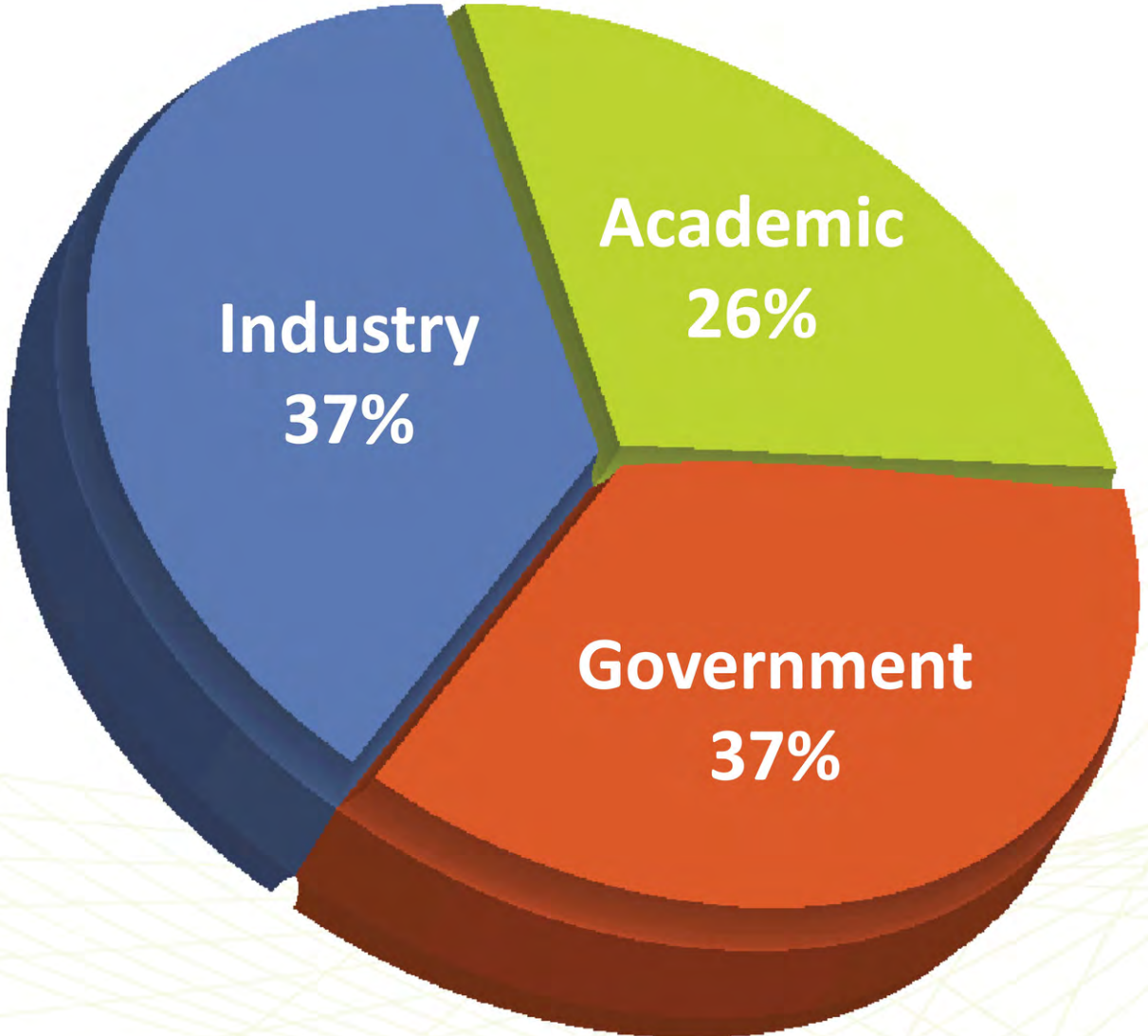


Refresh Plans

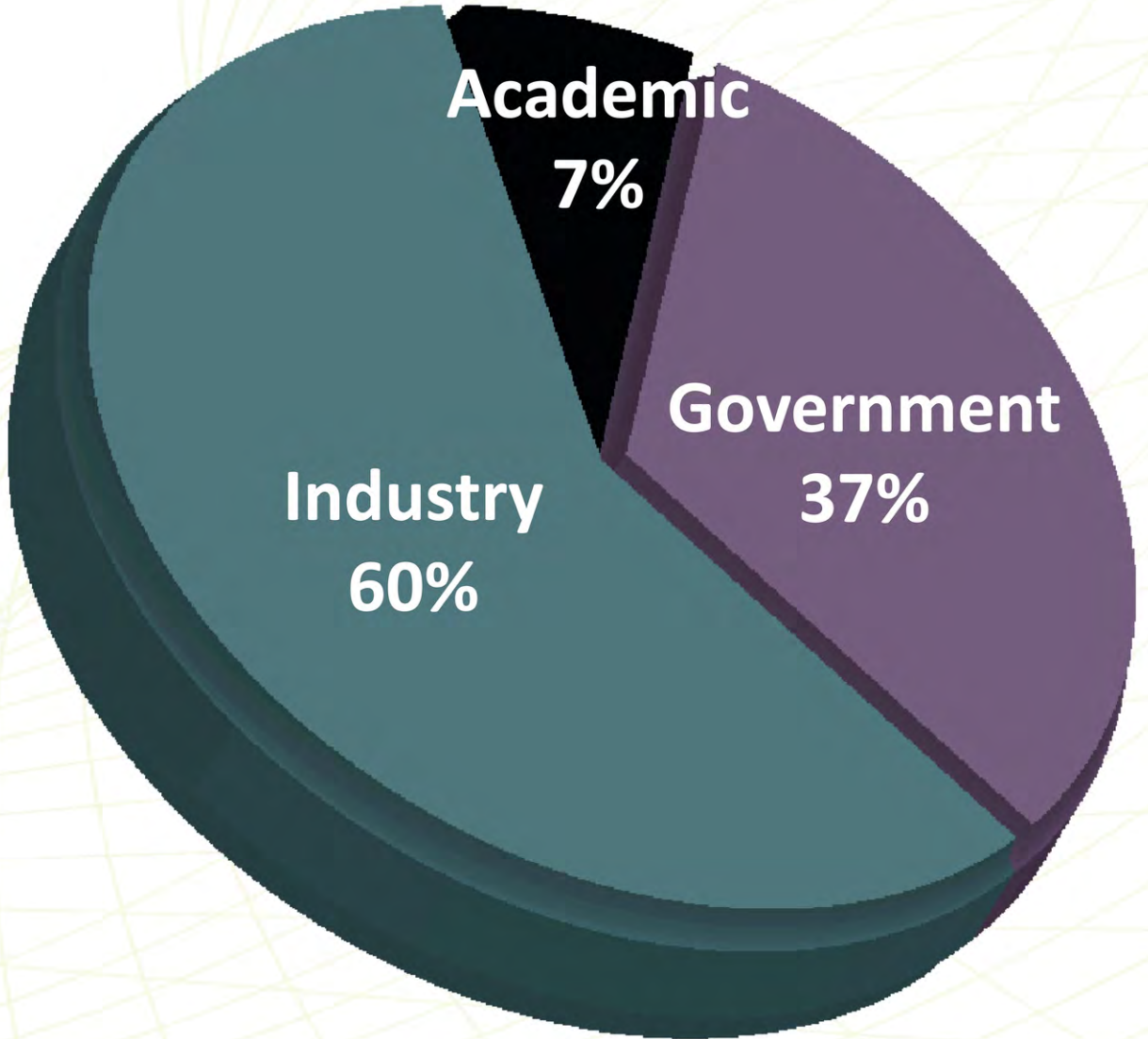
- The Georgia Cyber Center's business plan was developed as a self-sustaining model, utilizing reserves to fund operational expenditures and minimizing appropriated operational budget allocations
- Facilities refresh plan
 - At end of 20 year refresh plan, \$32M will have been spent on continually maintaining and refreshing the facilities
 - Requires reserving \$1.6M each year
- Information technology/Audio visual refresh plan
 - At end of 10 year refresh plan, \$7.6M will have been spent on upgrading technology
 - Requires reserving \$900k each year

Tenant Mix

By Rentable Square Footage



By Lease Payments



Georgia Cyber Center

Augusta, Georgia

Thank you

Cyber Training and Biometrics Research

- Developing Cybersecurity Workforce Certificate providing online, badge/microcredential-based cyber training;
- Total of \$8.3 million from National Security Agency;
- UofL leads consortium of schools, each an NSA-designated National Center of Academic Excellence in Cyber Defense;
- Also furthers cutting-edge biometrics research using keystrokes and other haptics to verify identity.





Curricula developed as core foundation with tracks in healthcare industry and logistics (labs, datasets, etc.)

Tech industry badges earned throughout (IBM, Microsoft, Google, etc.)

Train the trainer and open-source modules available-please inquire

Success coaches assigned to each student

Cybersecurity Certificate
 6 months duration.
 8-week courses
 online, instructor-led
 labs, applied learning.
 Cohorts of 35-40
 First group launched Fall 2021

<https://louisville.edu/education/nsacybersecurity/>
 Free monthly Information sessions including sample modules – call/visit website for registration/details 502-852-3871

PATHS to Associate, Bachelors, and Graduate Degrees **AND/OR** Certificates!

More Cyber Training Programs

Military

The **Cybersecurity Certifications, Careers and Communities (C4) Project** provides training to military, veterans and their spouses transitioning to civilian cyber careers;

- Backed by \$2 million from the Commonwealth of Kentucky;
- So far, has produced 184 graduates.

Law Enforcement

The **Law Enforcement Cybersecurity Project** provides training to law enforcement and criminal justice employees fighting cyber crimes;

- Backed by grant from the U.S. Department of Homeland Security;
- 171 participants across a variety of ranks from 32 states.

Teachers

The **National Cyber Teaching Academy** provides cyber training to high school teachers;

- Scholarships to teachers pursuing 12 credit hour certificate;
- 400 high school teachers applied, and 31 were accepted to begin in summer 2022.

FY2023 BUDGET AND GOALS

Personnel: Director, technical specialist (including benefits)	\$420,000
Upskilling and training development and offerings	\$220,000
Cyber-range hardware and software	\$400,000
FY23 Total	\$1,040,000

GOALS:

- Hire Executive Director dedicated to planning and building this integrated education, innovation and research collaborative;
- Hire a technical specialist to implement cyber-resources in the first year to serve the state, its critical infrastructure, and workforce training programs;
- Develop consortium partners and consortium agreements;
- Implement cyber-range for selected critical state infrastructure;
- Provide upskilling and training opportunities to state employees and critical infrastructure operators;
- Provide technical assistance to the state for implementation of Strengthening American Cybersecurity Act of 2022.

FY2024 BUDGET AND GOALS

Personnel including benefits	\$760,000
Upskilling and training development and offerings	\$1,715,000
P-12 pipeline programs	\$325,000
Architecture, engineering, and construction management for future building	\$6,000,000
Site Infrastructure Improvements (site access, road construction, utility installation)	\$1,900,000
FY24 Total	\$10,700,000

GOALS:

- Extensive roll-out of upskilling/training/education at UofL and across higher education institutions in Kentucky;
- P-12 workshops for teachers, lesson development, integration with Kentucky Department of Education on learning outcomes and readiness standards;
- Architecture and engineering design for the physical space required;
- Site improvements for the future home of KentuckyCYBER.

**ANY
QUESTIONS**





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Leading the Charge on Industry 4.0



- Center for Organizational Readiness toward Enterprise 4.0 (CORE4.0);
- Backed by \$500,000 from the U.S. Economic Development Administration;
- Aimed at helping companies prepare for Industry 4.0's smart and connected technology such as automation, artificial intelligence and the Internet of Things;
- Survey by Deloitte: just 10% of companies had a long-range Industry 4.0 strategy.

An aerial photograph of a university campus. A large, modern, multi-story building with a grid of windows is the central focus. It is situated on a riverbank, with a dense line of green trees in front of it. The river reflects the sky and the building. In the background, other campus buildings and a bridge are visible under a cloudy sky. The overall scene is captured in a slightly desaturated, blue-toned aesthetic.

Supplemental Information

Ecosystem of Resident Partners

GOVERNMENT

Defense Digital Service
SWAT team of nerds working to improve technology across the Department of Defense
Georgia Bureau of Investigation
Investigates cyber crimes involving use of cyber technology
Georgia National Guard
National Cyber Range
Test Resource Management Center
Savannah River National Lab

INDUSTRY

BAE Systems
CSRA Alliance for Fort Gordon
Cyber Fusion Innovation Center (CFIC)
Cyber Security Solutions
ECS
Network Designs, Inc.
Northrop Grumman
OPS Consulting
Parsons Corporation
Peraton
Scientific Research Corporation
Sealing Technology
Softact Solutions, LLC

ACADEMIA

Augusta Technical College
Offers certificates to Associate Degrees in information technology and cybersecurity
Augusta University
Offers Bachelors and Masters Degrees in computer science, information technology and cybersecurity
the Clubhouse
Collaborative workspace that supports entrepreneurs

Benefits to Augusta University

- Up to date technology and equipment
 - At end of 10 year refresh plan, \$7.6M will have been spent on upgrading technology
- Up to date facility
 - At end of 20 year refresh plan, \$32M will have been spent on continually maintaining and refreshing the facilities
- Grant dollars
 - Access to top of the line equipment and technologies and ability to collaborate with resident partners and other USG institutions to bolster research capabilities
- Increased asset value
 - Value of asset increased by \$12M from resident partners building out their space at their cost

Benefits to Augusta University, School of Computer and Cyber Sciences

- Increased enrollment
 - Fall 2021, 3% increase year over year
- Faculty recruitment
 - 21 new faculty since 2019
- Experiential learning opportunities for students with government and industry resident partners
- Enhanced student experience
 - Networking, internship, and employment opportunities
 - In FY2021, 48 students at Georgia Cyber Center had internships, 71% of those were with resident partners

Benefits of Cybersecurity to the Region, Augusta, Richmond County

Total Economic Impact



2020 Impact of Cybersecurity in Richmond County
(Private Sector, U.S. Army CCoE, and Cyber Command within identified taxonomy)

Benefits to the State

“We will work together to ensure that this facility is an effective education and training center from which all manner of state, local and private organizations can benefit”
- Governor Nathan Deal, State of the State Address, January 2017

	FY 2019	FY 2020	FY 2021	FY 2022
Federal/State Personnel Trained	784	276	437	509
Federal/State Agencies Trained	53	34	65	39
Training hours delivered by Georgia Cyber Center	265	672	2124	1287