#edspaces

© Keith Isaacs Photo

Decoding Cybersecurity

Tuesday, November 7th
2:30 – 3:30 PM

Jerry DeRomanis, AIA

Higher Education
Studio Manager
LaBella Associates

Danielle Lewis, NCIDQ, IIDA

Senior Interior Designer
LaBella Associates

Chad Weeden

Director of Esports
& CyberSecurity Range
Rochester Institute of Technology

Who's Here Today

ABOUT LABELLA

- Founded in 1978
- Full-service firm
- Headquartered in Rochester, New York
- Nearly 2000 employees between 37 offices
- Extensive Higher Education and K-12 portfolio
- Focus on client partnerships

WHERE WE ARE

LaBella
Powered by partnership.

RIT | Rochester Institute of Technology

Create a cross disciplinary center housed within GCCIS that reaches across both the school of computing and the entire university.

ABOUT ROCHESTER INSTITUTE OF TECHNOLOGY

Our Story

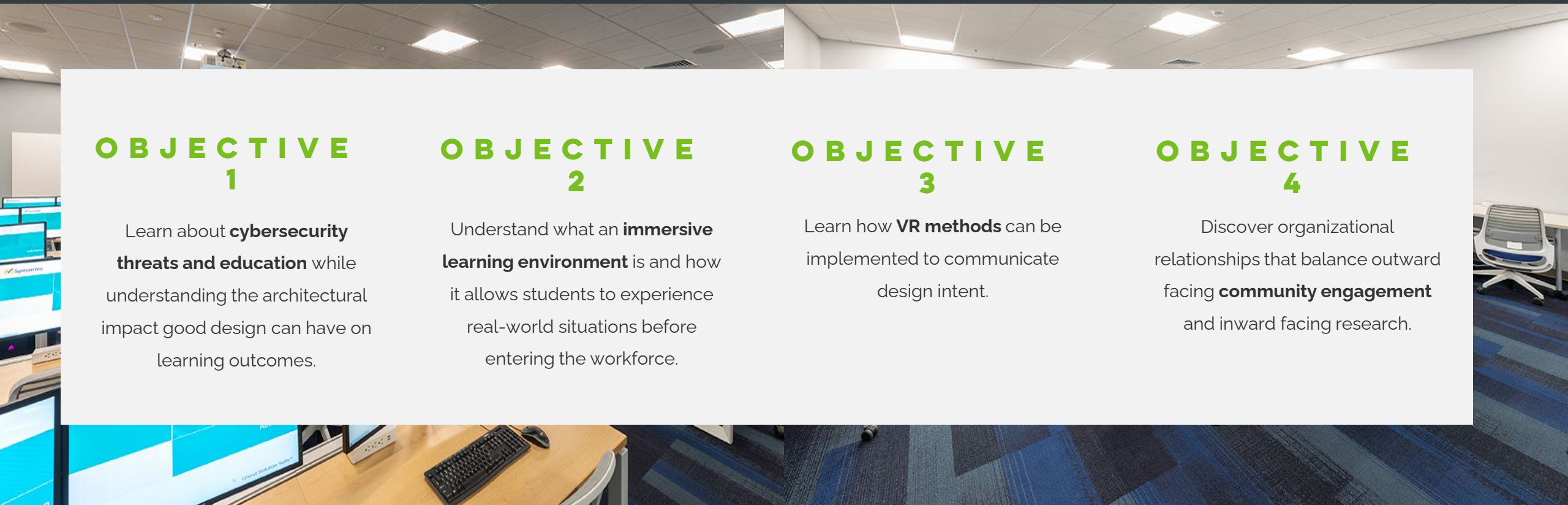
- Private University founded in 1829
- 9 colleges, 18+ research centers
- **3rd largest in STEM degrees among all private universities**
- 50+ MOU's and Partnerships.
- Campuses in Rochester, China, Croatia (Zagreb & Dubrovnik), Dubai & Kosovo
- **#41 "Most Innovative" schools, U.S. News and World Report**

Student Body

- **19,000+** students
  - 15,900 undergraduate
  - 3,100 graduate
  - ~15% international students
- **145,000+** alumni

DECODING CYBERSECURITY

LEARNING OBJECTIVES



OBJECTIVE 1

Learn about **cybersecurity threats and education** while understanding the architectural impact good design can have on learning outcomes.

OBJECTIVE 2

Understand what an **immersive learning environment** is and how it allows students to experience real-world situations before entering the workforce.

OBJECTIVE 3

Learn how **VR methods** can be implemented to communicate design intent.

OBJECTIVE 4

Discover organizational relationships that balance outward facing **community engagement** and inward facing research.

PROJECT TEAM

PRIMARY DESIGN-BUILD PARTNERSHIP

RIT

LeCHASE

LaBella
Powered by partnership.

INDUSTRY PARTNERS

EATON

IBM

OBLONG

LENEL·S2

ALLEGION

CAS
Cannan Alexander & Scott

DESIGN PARTNERS

EDR
a better environment

audio video
AUDIO-VIDEO CORPORATION

Kinly

intivity

IDS
ID SIGNSYSTEMS

CONSTRUCTION PARTNERS

mp&sm LLC
Monroe Piping & Sheet Metal, LLC.

Electrical Contractors SH Schuler-Haas Electric Corp
Schuler-Haas
Electric Corp.

Rochester Davis-Fetch Corp.
BUILT TO LAST

FLOWER CITY GLASS

Beaver Creek Industries
THE PROFESSIONAL'S CHOICE FOR ARCHICTURAL WOODWORK

DESIGN
2018
BUILD

T I M E L I N E

2020

9.18 - Project award

site demo START **– 10.18**

10.18 – SITE PERMIT

site utility START **– 11.18**

10.18 – site utility BID

Utility tie-ins **– 11.18**

site work STOP **– 12.18**

1.19 – Site BID

2.19 – Foundation BID

site/found START **– 3.19**

3.19 – Steel / Roof BID

3.19 – BLDG PERMIT

Foundations STOP **– 4.19**

4.19 – Glass / Elev. BID

Site Utilities START **– 5.19**

4.19 – Arch/Int. BID

5.19 – Furniture BID

8.19 – Millwork BID

Steel START **– 9.19**

10.19 – AV/CSR BID

Building Enclosed **– 12.19**

GMP to RIT – 12.19

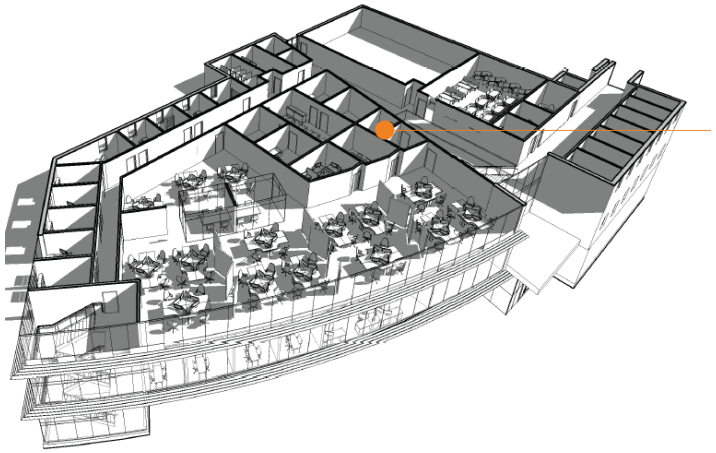
COVID – 3.20

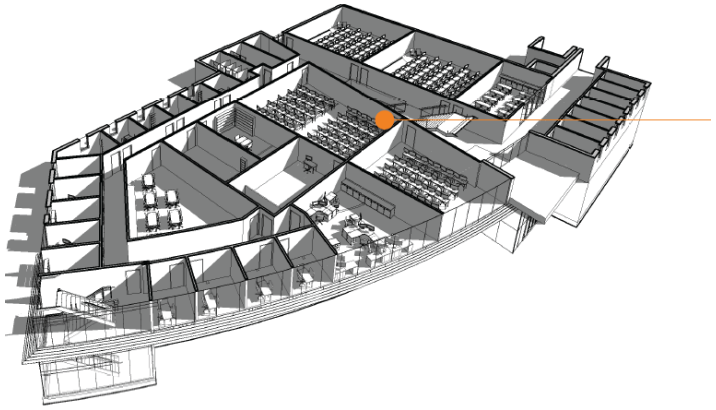
Elevator Install **– 5.20**

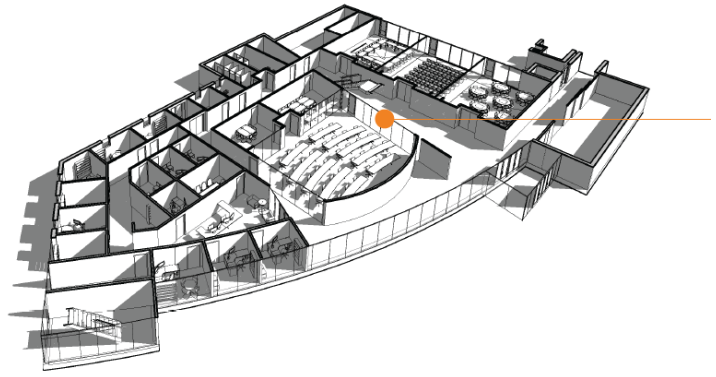
7.20 – AV/CSR (DB)

SUB. COMPLETION **– 8.20**

CSR COMPLETION **– 10.20**



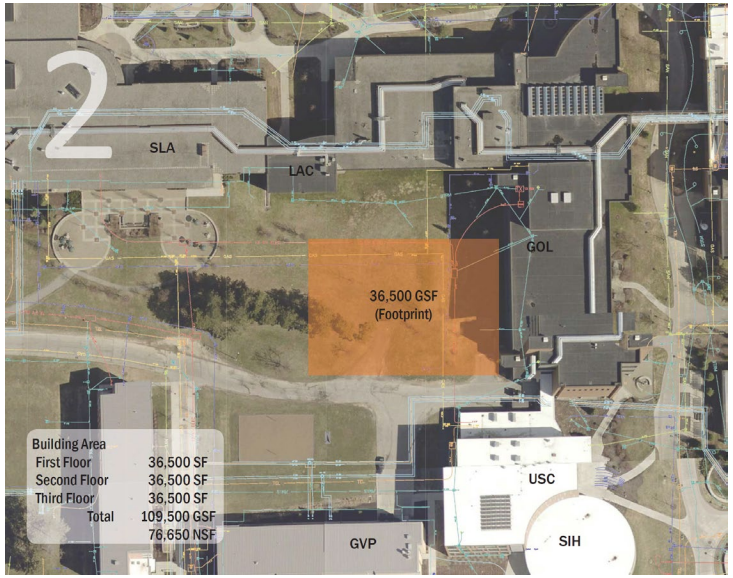




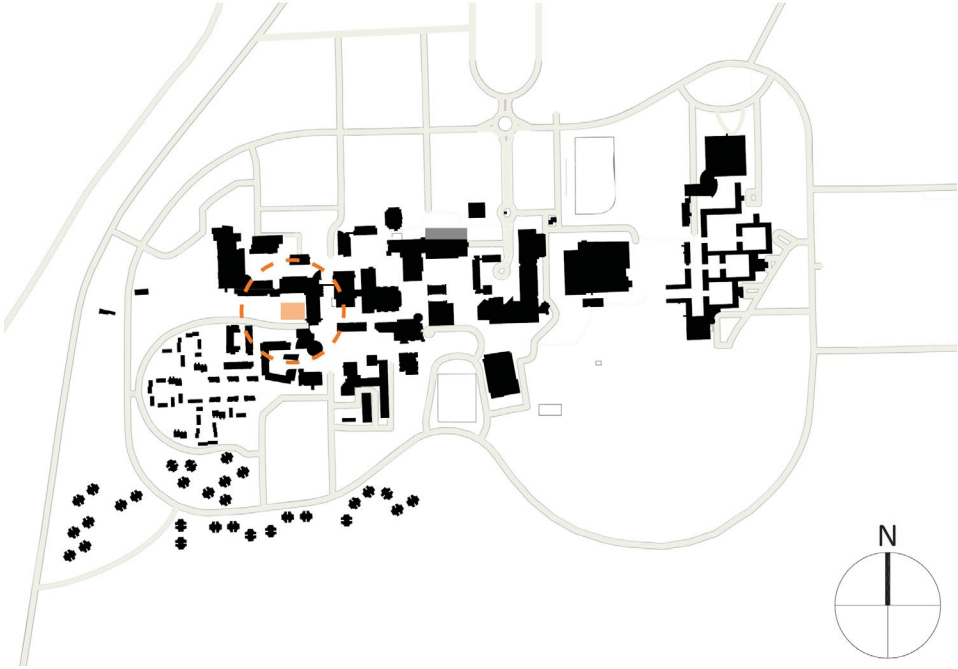
RIT GLOBAL CYBERSECURITY INSTITUTE

PROJECT DETAILS

LOCATION	Rochester, NY
PROJECT OWNER:	Rochester Institute of Technology (RIT)
CONSTRUCTION COST:	$18 Million
YEAR COMPLETE:	2020
BUILDING TYPE:	Core Learning Space: College/University
TOTAL FLOOR AREA:	50,000 SF (3 stories)
SPACE USAGE TYPES:	Classrooms, Instructional & Research Labs, Simulation & Training Rooms, Student Collaboration and Community Spaces, Offices.
DELIVERY METHOD:	Design-build with LeChase Construction



Visibility	1 2 3
Accessibility	1 2 3 4
Context	1 2 3 4
Potential GSF	1 2 3 4 5
Constructability	1 2 3 4 5
Average	1 2 3 4



Pros
Adjacency to Global Village
Close to SIMS Meeting Rooms
Utility Infrastructure
Site footprint

Cons
Low visibility
Existing viewshed
Disturbance during construction
Back-of-house

EXISTING SITE

CYBER THREATS & EDUCATION

CYBERSECURITY THREATS BY THE NUMBERS

2,200

ATTACKS

Are believed to occur each day in the United States alone. That's one attack every 39 seconds.

86

PERCENT

Of cyberattacks are motivated by financial gain, with personal information being a valuable asset to sell.

5,199

BREACHES

Reviewed as part of Verizon's 2023 Data Breach Investigations Report.

497

INCIDENTS

Occurred in the education sector alone in 2023.

CYBERSECURITY EDUCATION

WHAT DOES IT MEAN FOR OUR STUDENTS?

- 178 Bachelors of Science Degree Programs in Cybersecurity – *Cybersecurity Guide 2023*
- Students learn to preserve assets, identify security vulnerabilities, prove threats occurred, and design strategies for data recovery.
- RIT students won 2021 Collegiate Penetration Testing Competition Global Finals and the 2013 Collegiate Cyber Defense Competition National Championship.
- RIT has a 100% Outcome Rate of Graduates with a Cybersecurity Degree

CYBERSECURITY EDUCATION

WHAT DOES IT MEAN FOR OUR STUDENTS?

- Graduates go on to work for a multitude of industries, including

Computer & Electronic Hardware

Local, State, & Federal Government

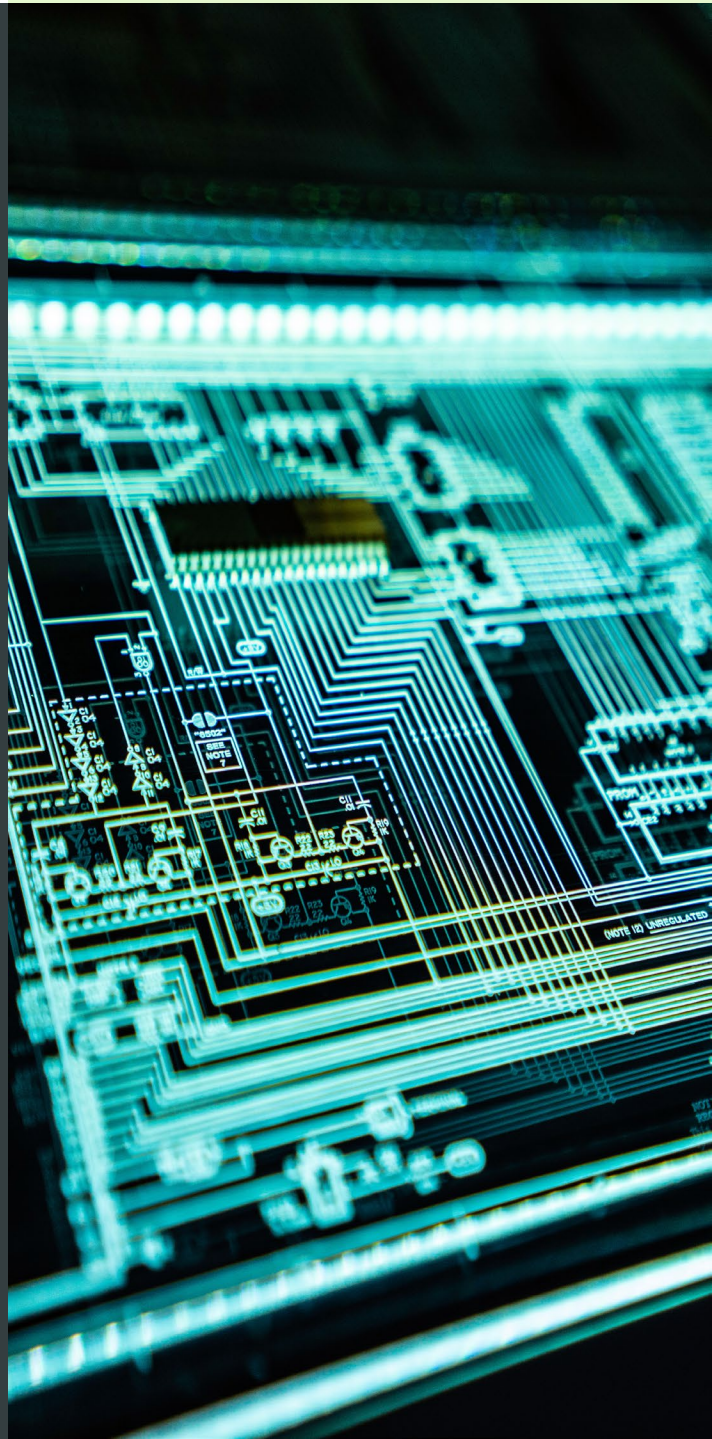
Internet & Software

Utilities & Renewable Energy

Healthcare

Medical Devices

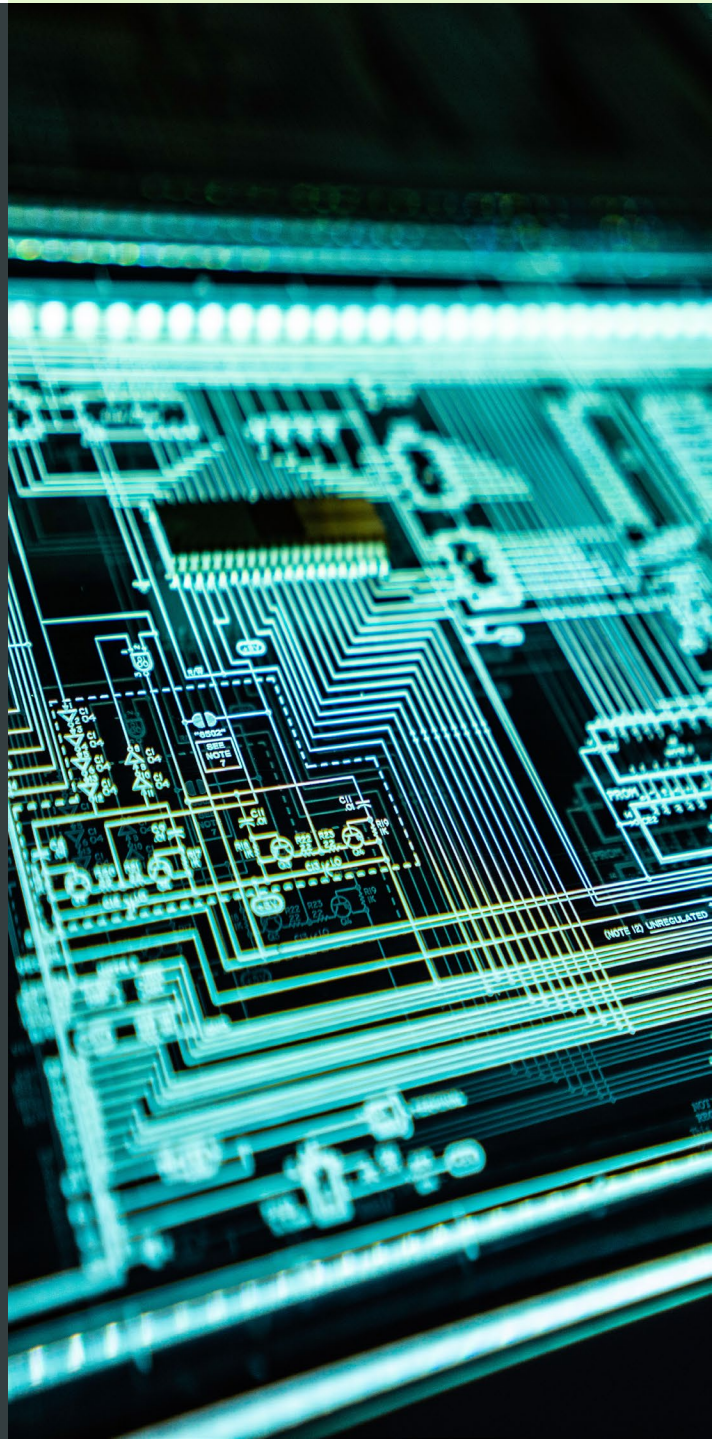
Telecommunications

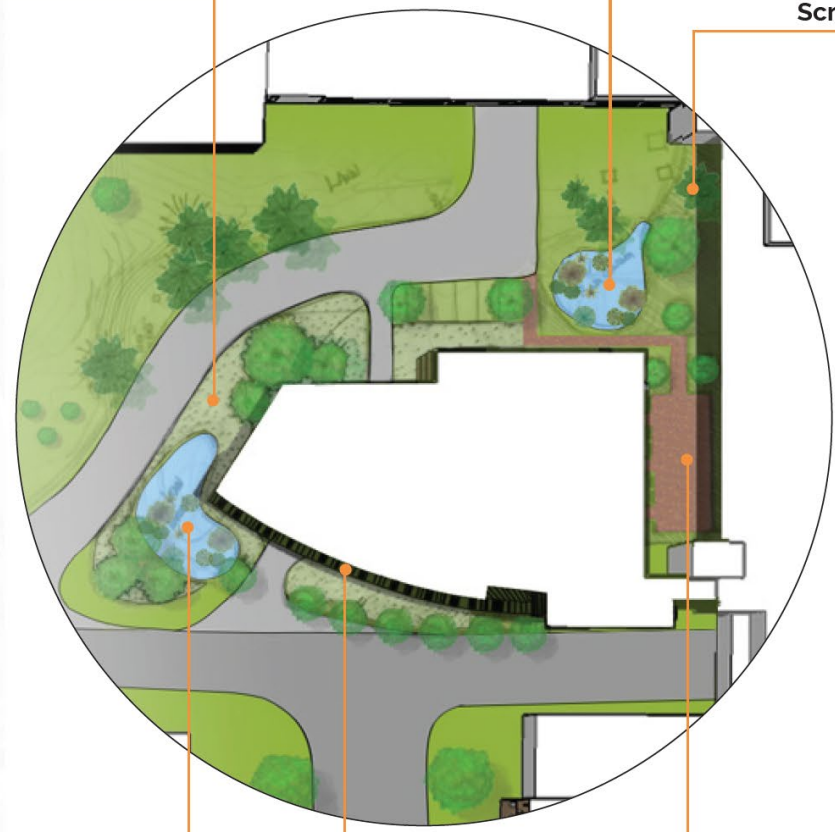


CYBERSECURITY EDUCATION

WHAT DOES IT MEAN FOR OUR STUDENTS?

- First year graduates of RIT's Cybersecurity Bachelors Degree Program earn an average salary of $98,500 annually or $113,800 with a masters degree.
- RIT has a 100% Outcome Rate of Graduates with a Cybersecurity Bachelors Degree and a 96% rate for graduates of the Masters Program





High Grass

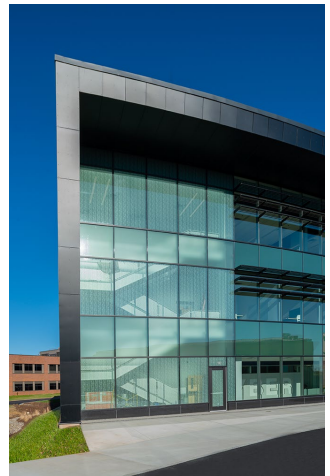
Bio/Rain Garden

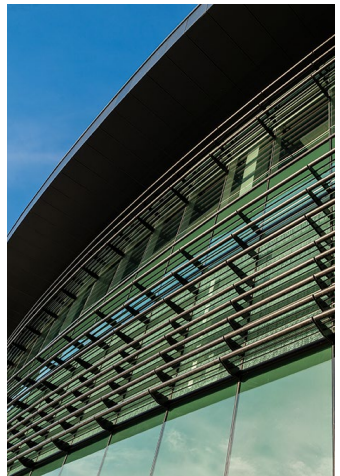
Evergreen Screening

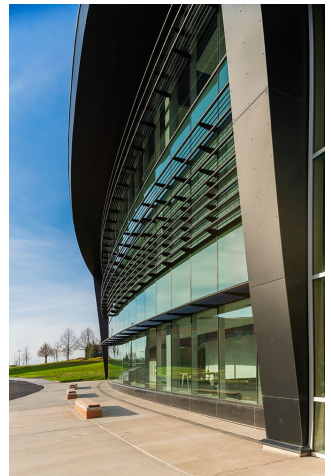
Bio/Rain Garden

Brick Plaza

Paved Binary Walkway







LOOKING BACK

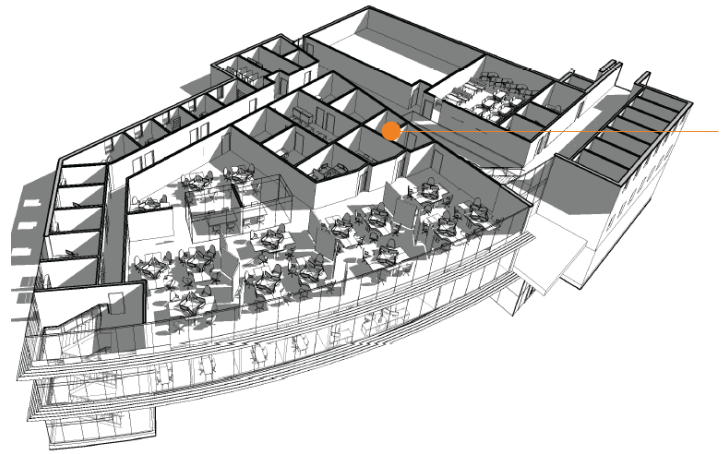
Two information security artifacts are on display at the Experience Center and highlight the history of Cybersecurity.

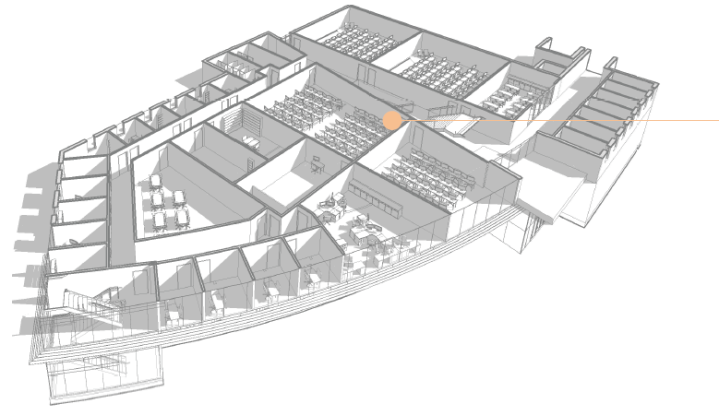
MOVING FORWARD

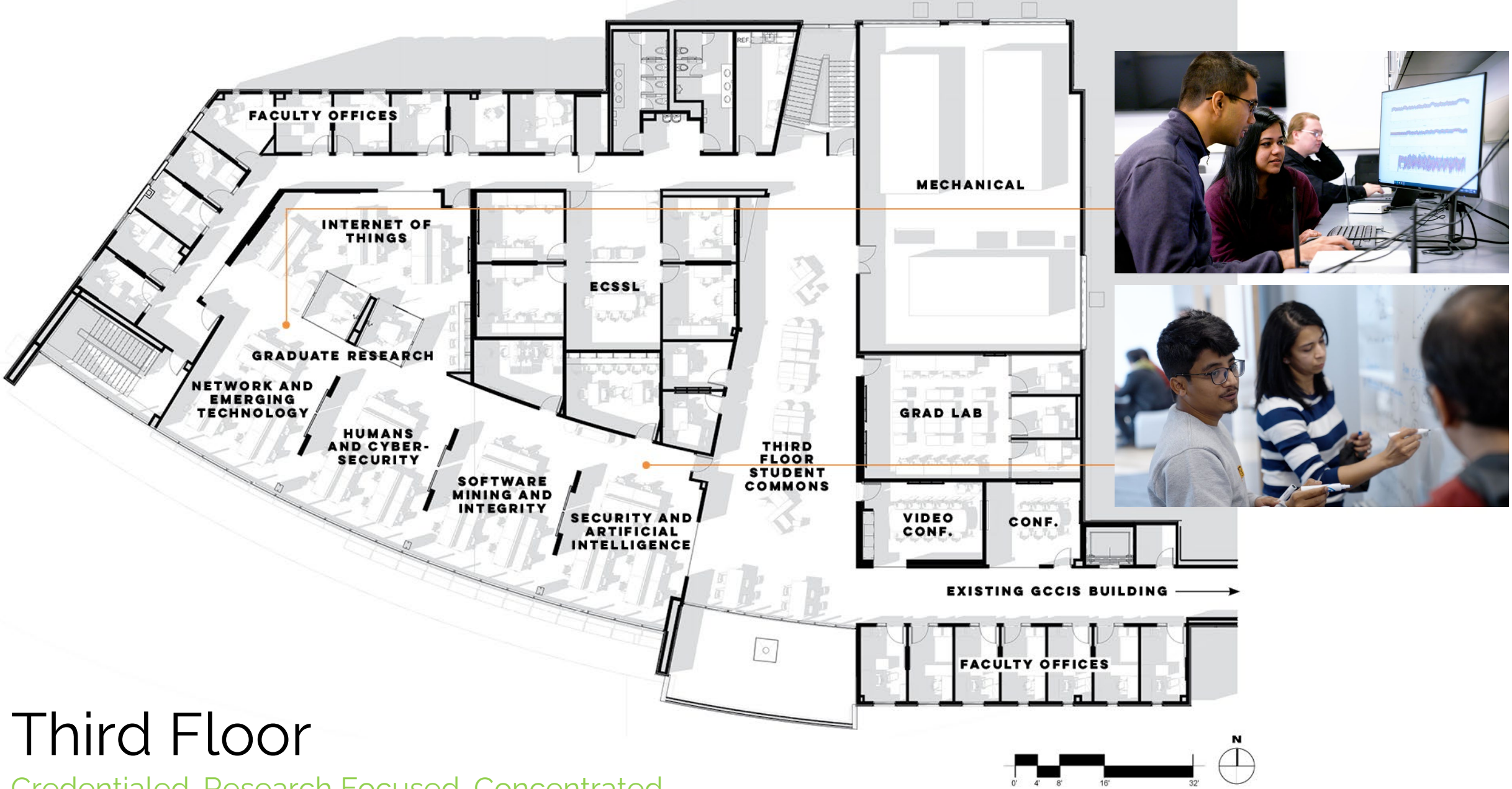
Cybersecurity Learning Experience Center is an outreach space to showcase interactive demonstrations and research projects with a goal to attract more young talents to study cybersecurity and take cybersecurity career paths. The experience center consists of the National Cybersecurity Hall of Fame display in the hallway, Cybersecurity Hygiene, Student Projects, Cutting Edge Research, and Hackers Village.

- Graduate Research Facilities
    - IoT, SMILE, SAIL, HEC, NETS
- Graduate Labs
- Eaton Cyber Security Lab
- SCIF Ready Experience Lab
- Faculty Offices

THIRD FLOOR





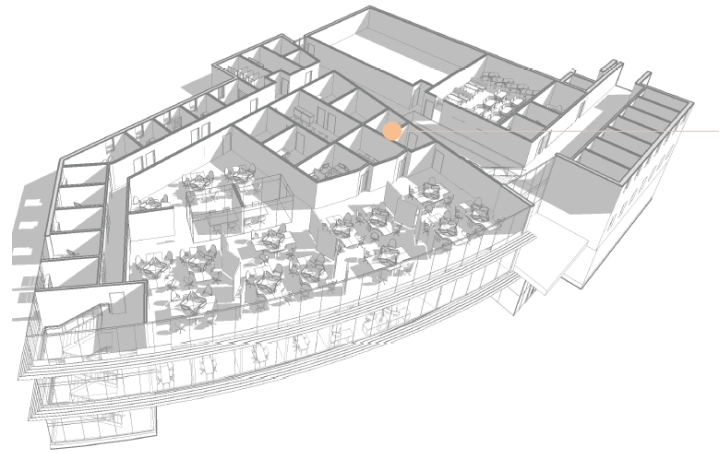


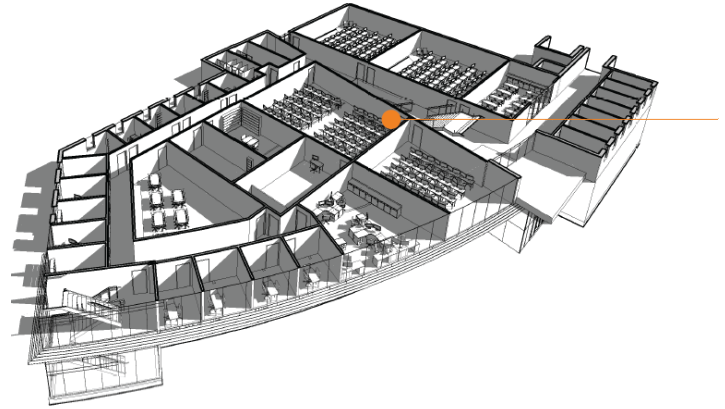
Third Floor

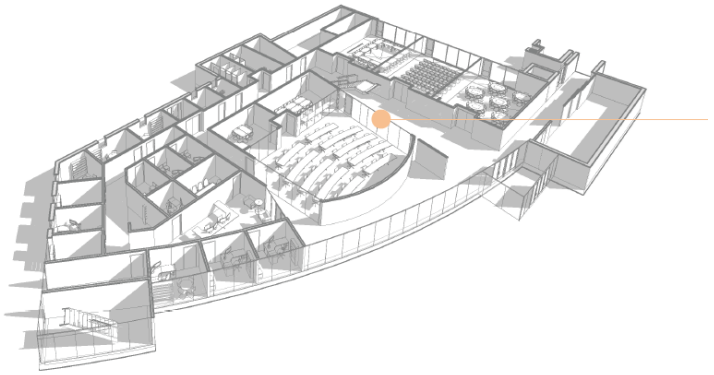
Credentialed. Research Focused. Concentrated.

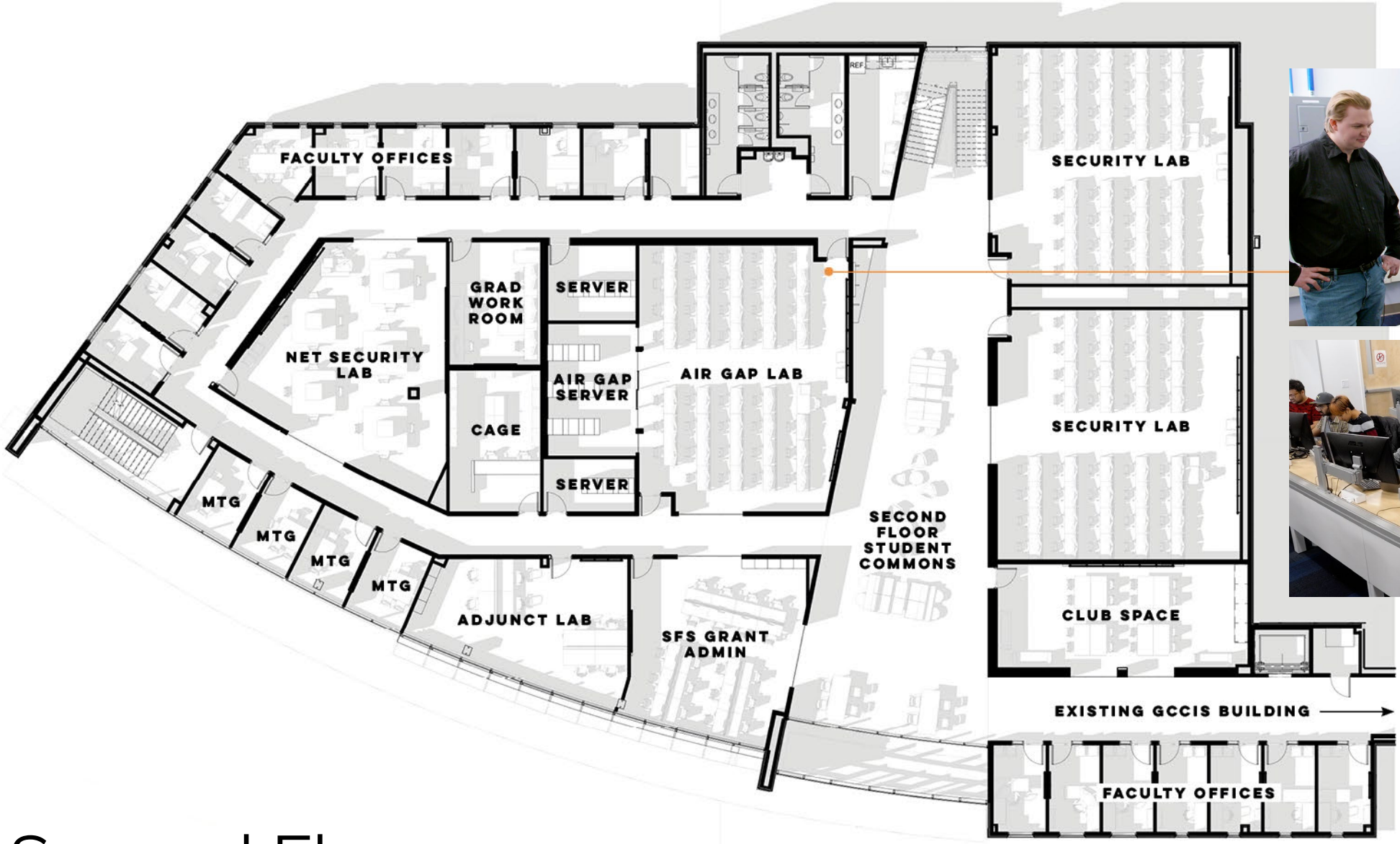
- Lab Facilities
    - Network Security Lab, Security Labs, Air Gap Lab
- Meeting/Breakout Rooms
- Secure Server Rooms
- Student Clubs
- Faculty Offices

SECOND FLOOR







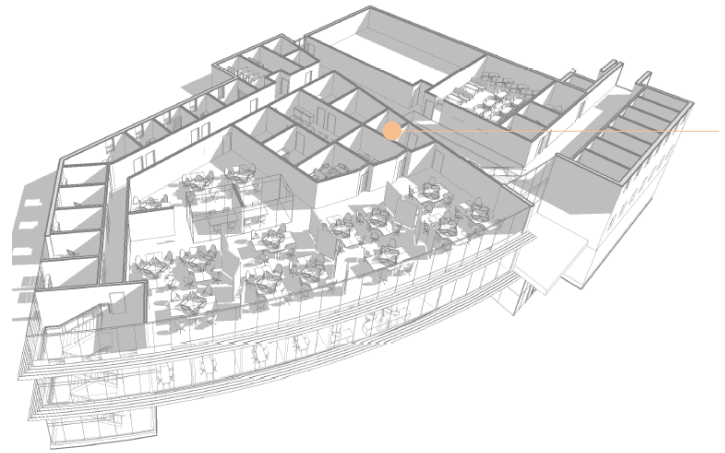


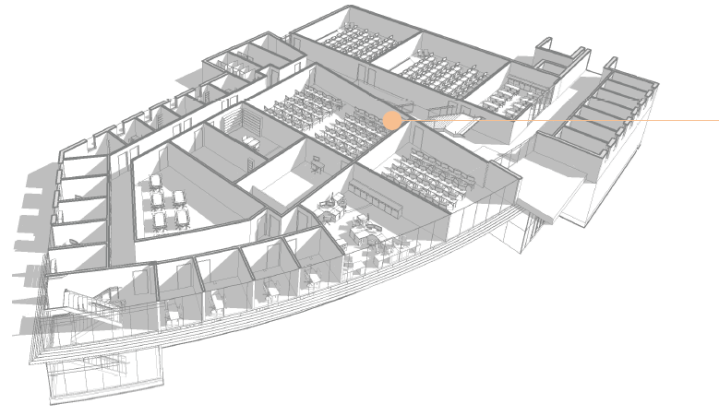
Second Floor

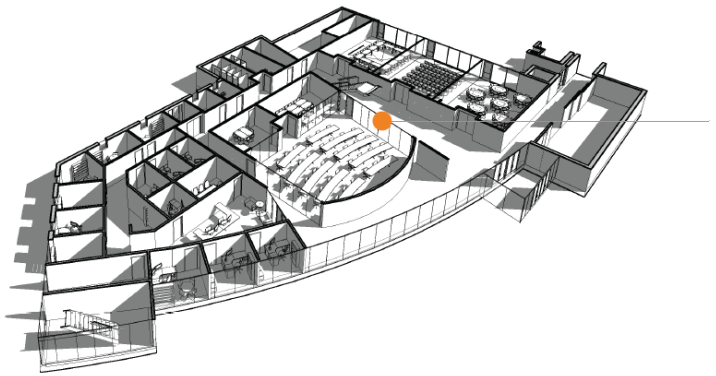
Accessible. Educational. Collaborative.

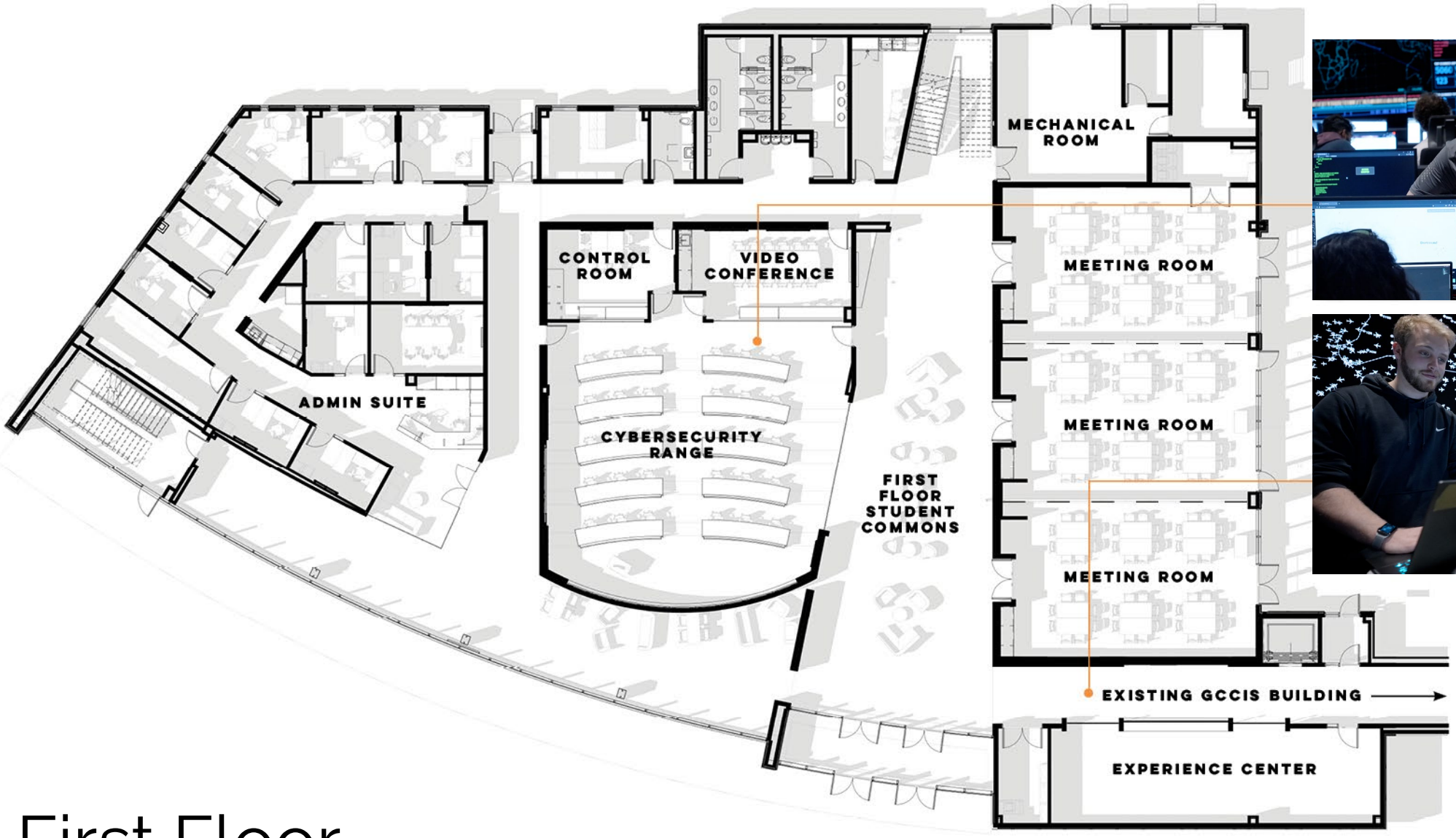
- Experience Center
- Multi-Purpose Meeting Rooms
- Cyber Security Range
    - Video Conference
    - Control Room
- Administrative Offices

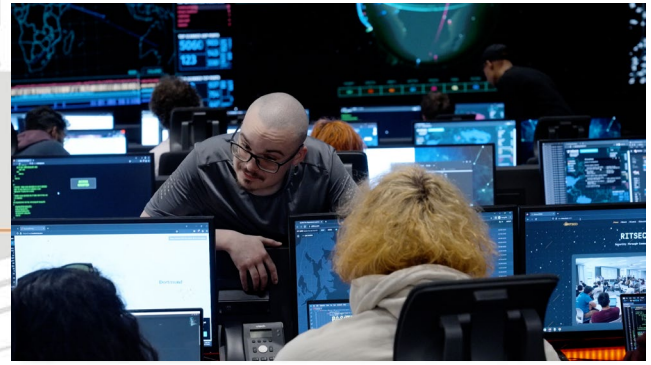
FIRST FLOOR

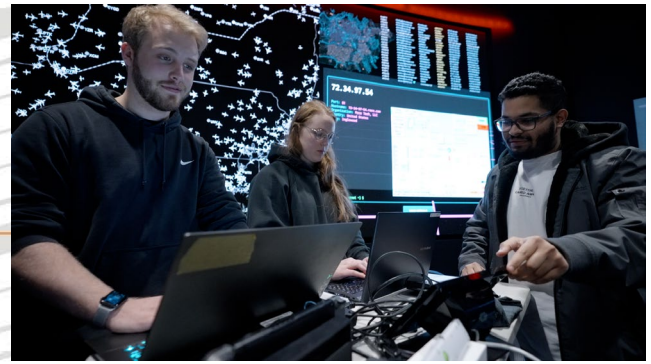








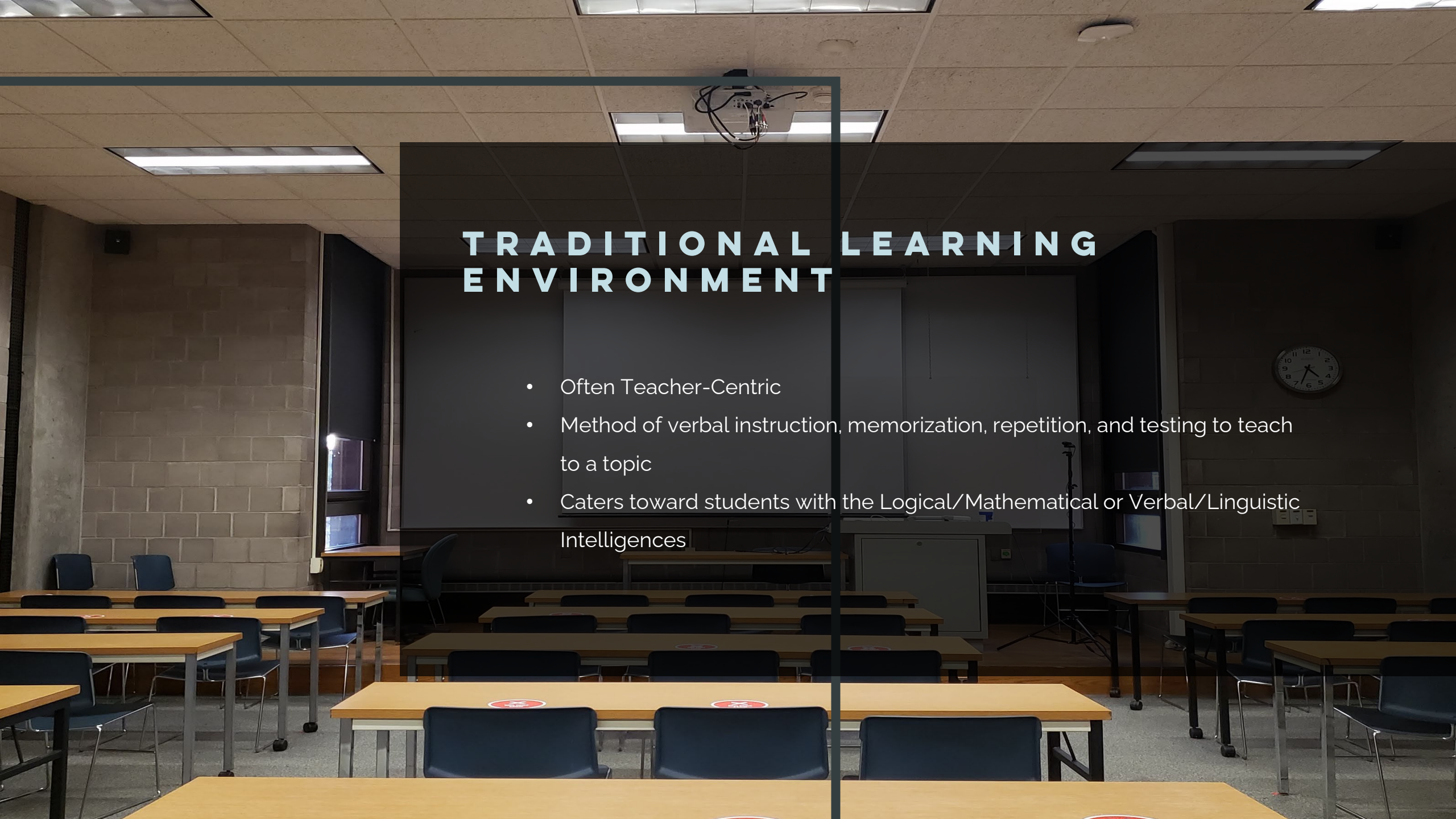




First Floor

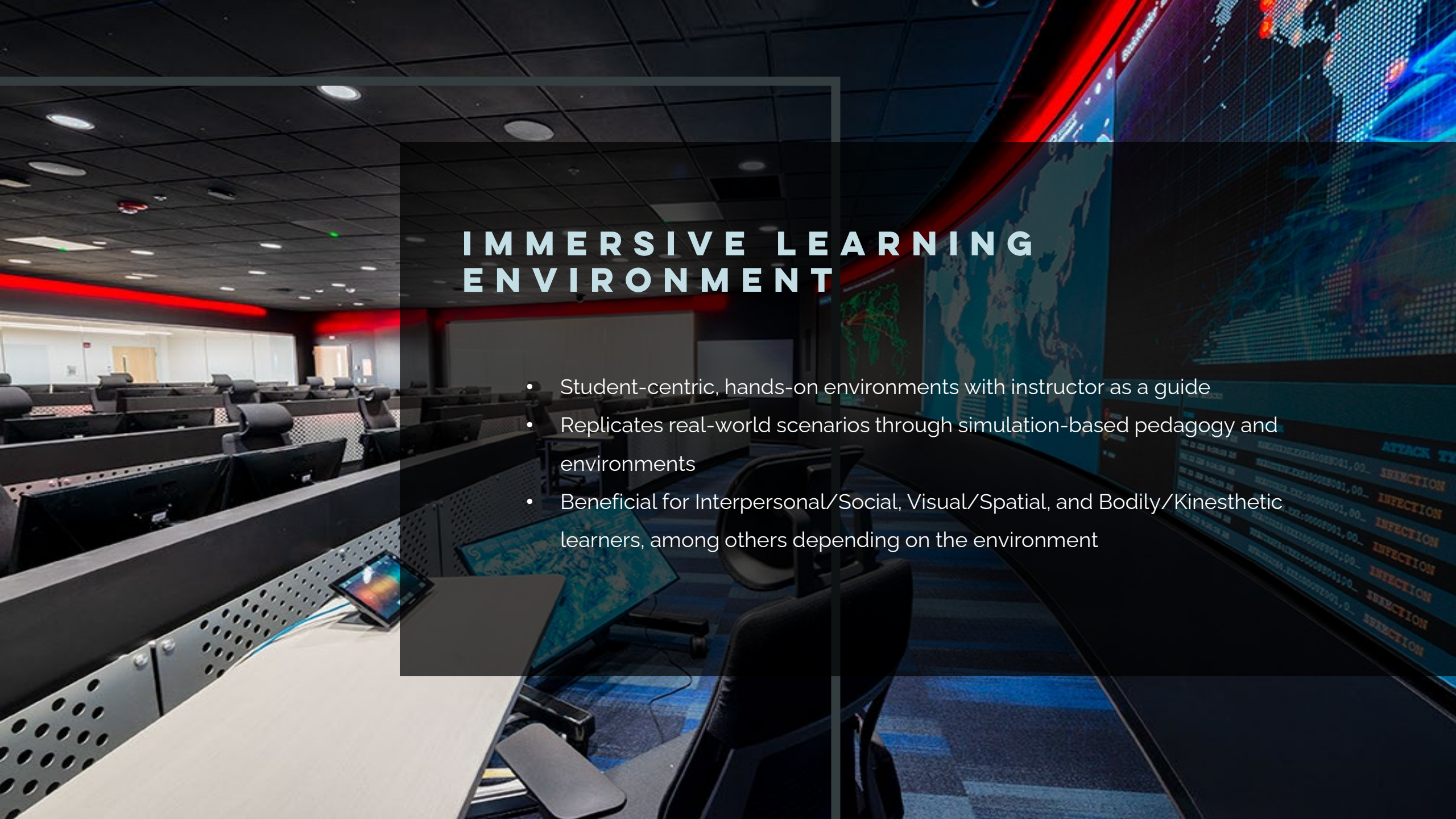
Inviting. Transparent. Educational.

IMMERSIVE LEARNING ENVIRONMENTS



TRADITIONAL LEARNING ENVIRONMENT

- Often Teacher-Centric
- Method of verbal instruction, memorization, repetition, and testing to teach to a topic
- Caters toward students with the Logical/Mathematical or Verbal/Linguistic Intelligences



IMMERSIVE LEARNING ENVIRONMENT

- Student-centric, hands-on environments with instructor as a guide
- Replicates real-world scenarios through simulation-based pedagogy and environments
- Beneficial for Interpersonal/Social, Visual/Spatial, and Bodily/Kinesthetic learners, among others depending on the environment

ILE's are particularly prevalent in spaces like nursing school environments, where hyper-realistic technology and environments prepare students for the healthcare field.

IMMERSIVE LEARNING ENVIRONMENTS

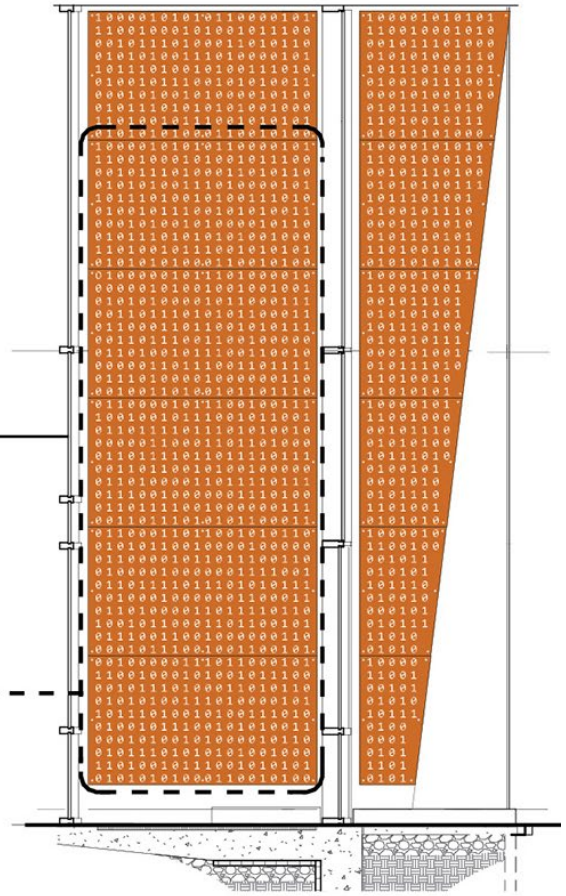
Learners can practice skills in a low-risk environment and are able to apply knowledge to actual situations.

IMMERSIVE LEARNING ENVIRONMENTS

ILE's use methods such as virtual reality, augmented reality, or other simulation-based methods to recreate real-world scenarios

IMMERSIVE LEARNING ENVIRONMENTS

Rendering

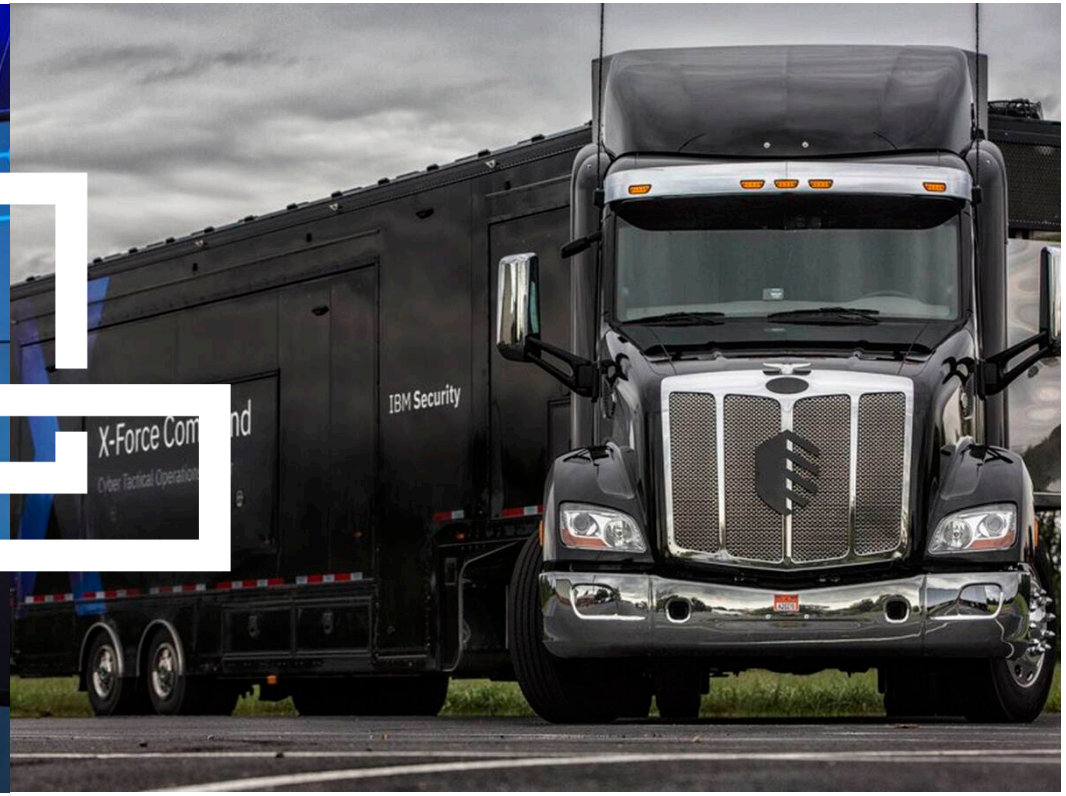


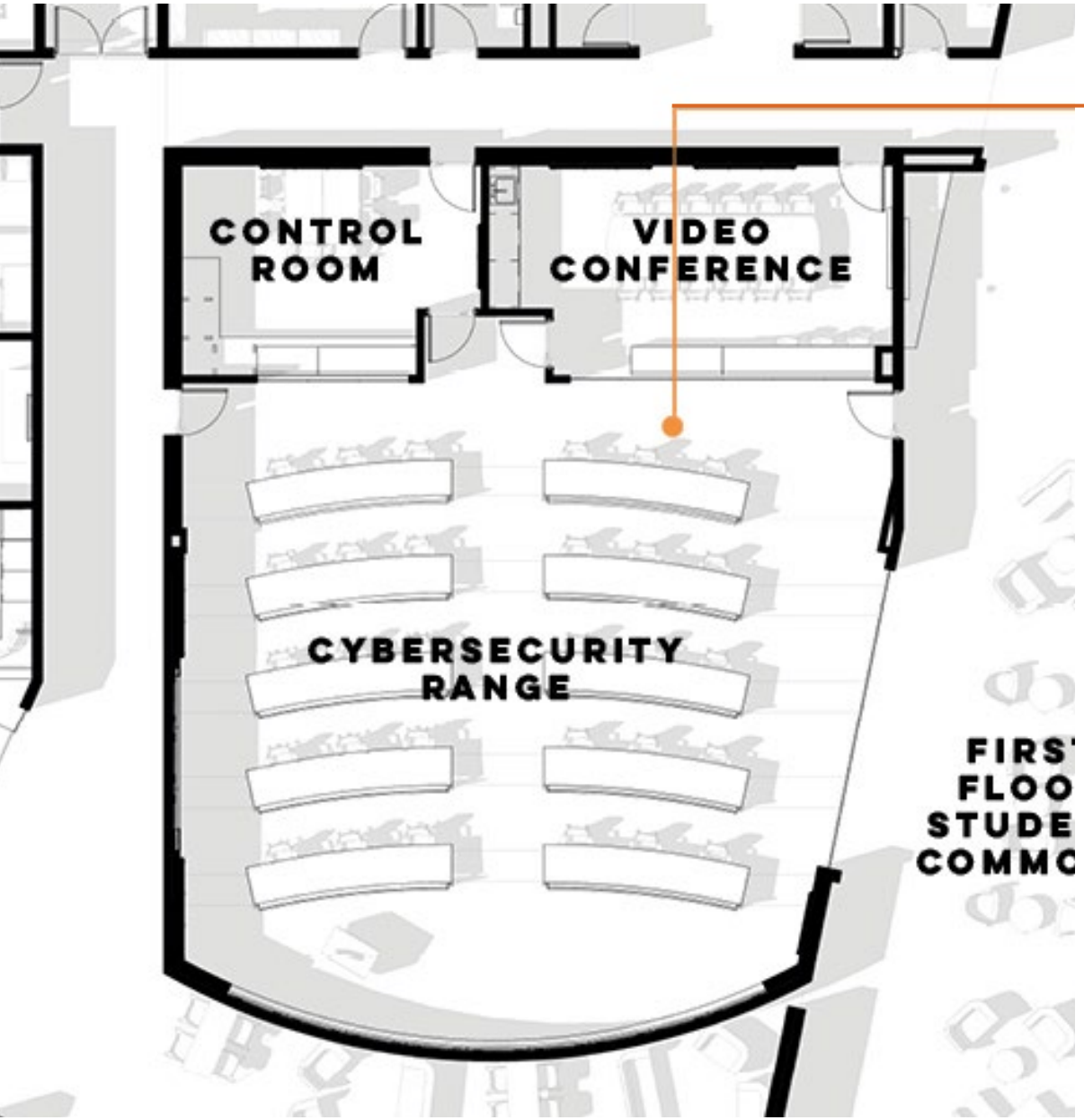
0 0 1 0
0 1 0 1 0 1
0 1 0 1 0 1
0 0 1 0

"At R I T success is not binary. You choose how to succeed and your choices are ∞" - Binary


IMMERSION IN THE
CYBERSECURITY RANGE

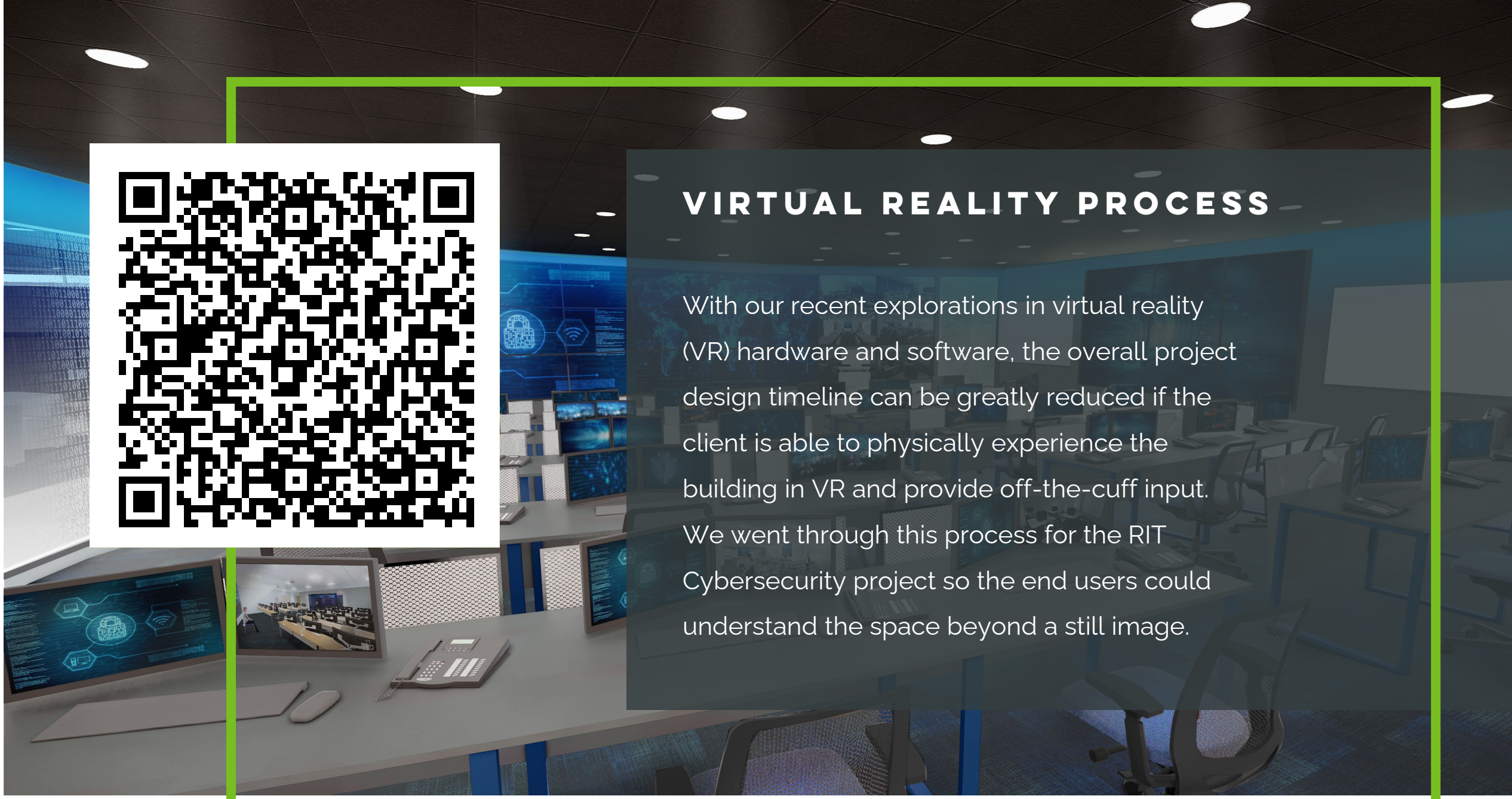
IBM X-Force





CYBER RANGE GOALS

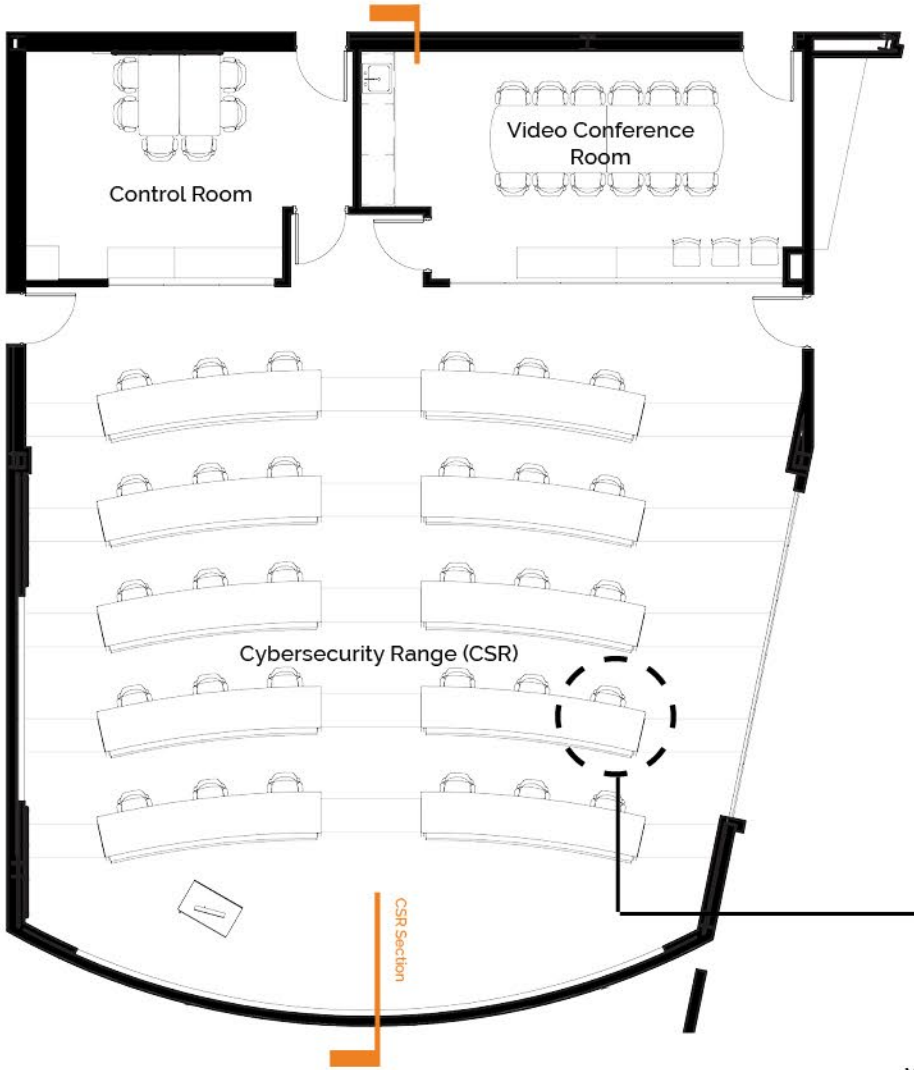
- Collaborative simulation environment that replicates real world command centers
- Program 4D elements which engage the students' senses to replicate high stress situations.
- Integrate discrete control room to interface with students without interrupting the simulated experience.
- Provide direct observation for administrators.
- Create a show piece for marketing the University and field of cybersecurity



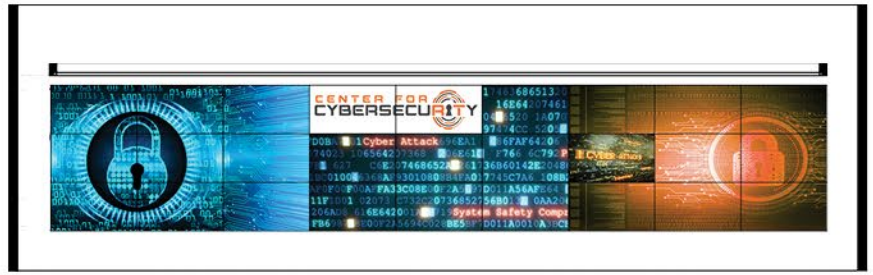
VIRTUAL REALITY PROCESS

With our recent explorations in virtual reality (VR) hardware and software, the overall project design timeline can be greatly reduced if the client is able to physically experience the building in VR and provide off-the-cuff input. We went through this process for the RIT Cybersecurity project so the end users could understand the space beyond a still image.

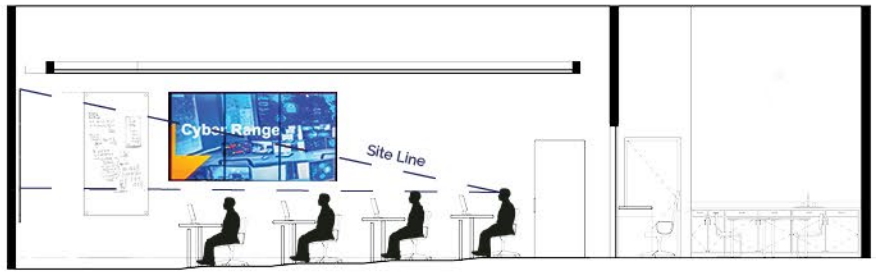

Cyber Range



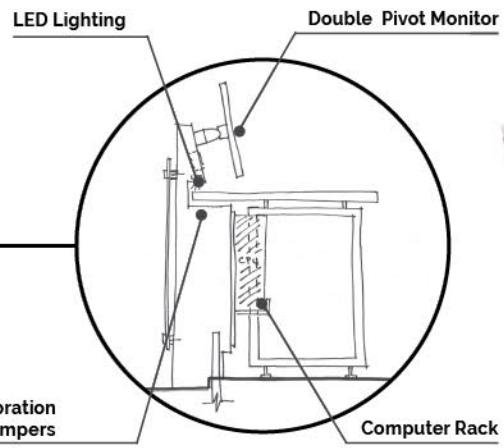
Cybersecurity Range (CSR) Plan
(Not to Scale)



CSR Section - Video Wall
(Not to Scale)



CSR Section - Sloped Floor
(Not to Scale)



IMMERSIVE ELEMENTS

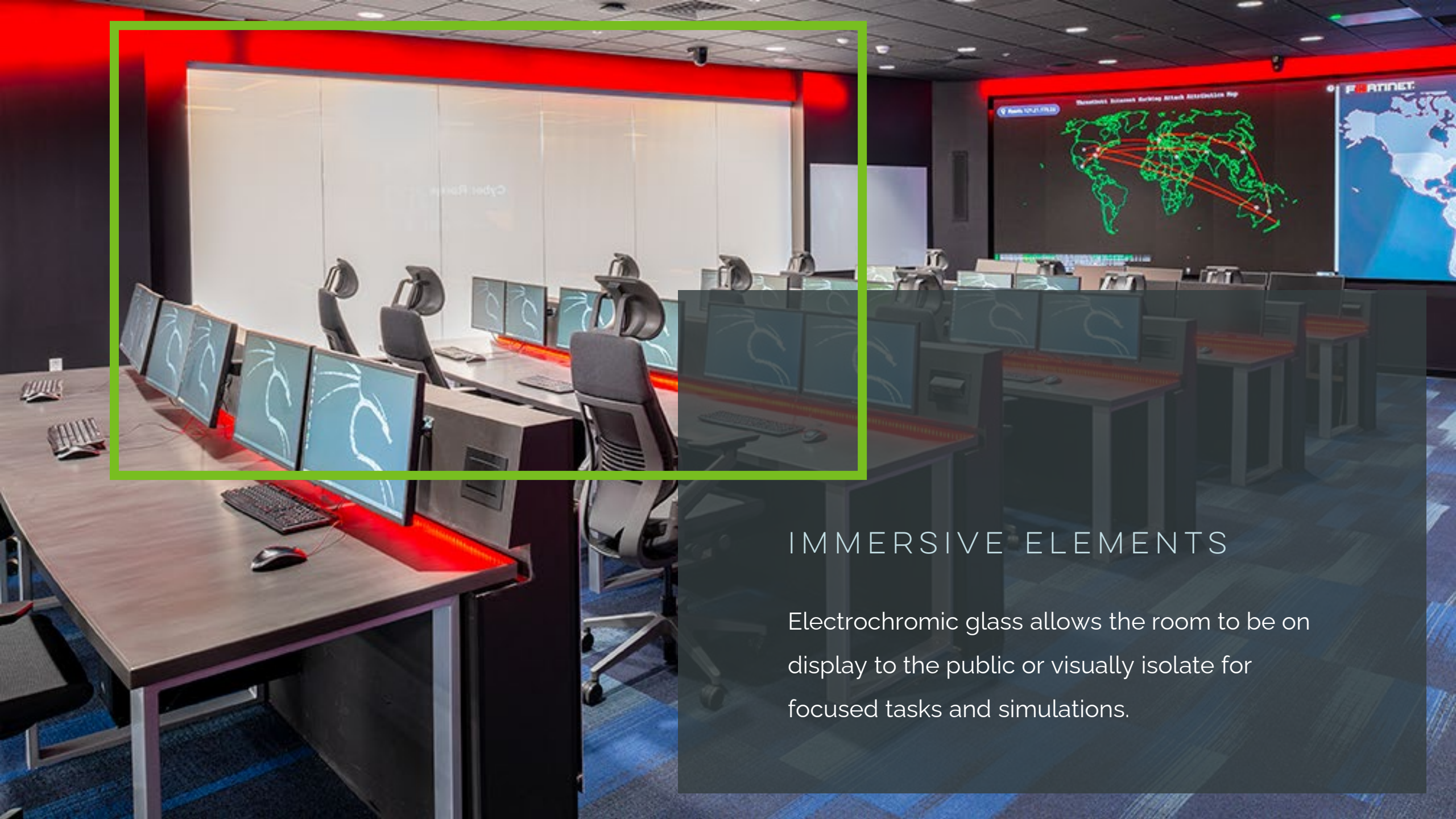
RGB capable LEDs are included at the ceiling and desk level. Lighting can be changed to indicate change in complexity or mood.


Hacking Attack Attribution Map
FORTINET
Cyber Range

IMMERSIVE ELEMENTS

38 foot concave 4k video wall and digital “cork board” provide seamless integration between live video feeds and student collaboration utilizing an Oblong Mezzanine control system.


RANSOMWARE



IMMERSIVE ELEMENTS

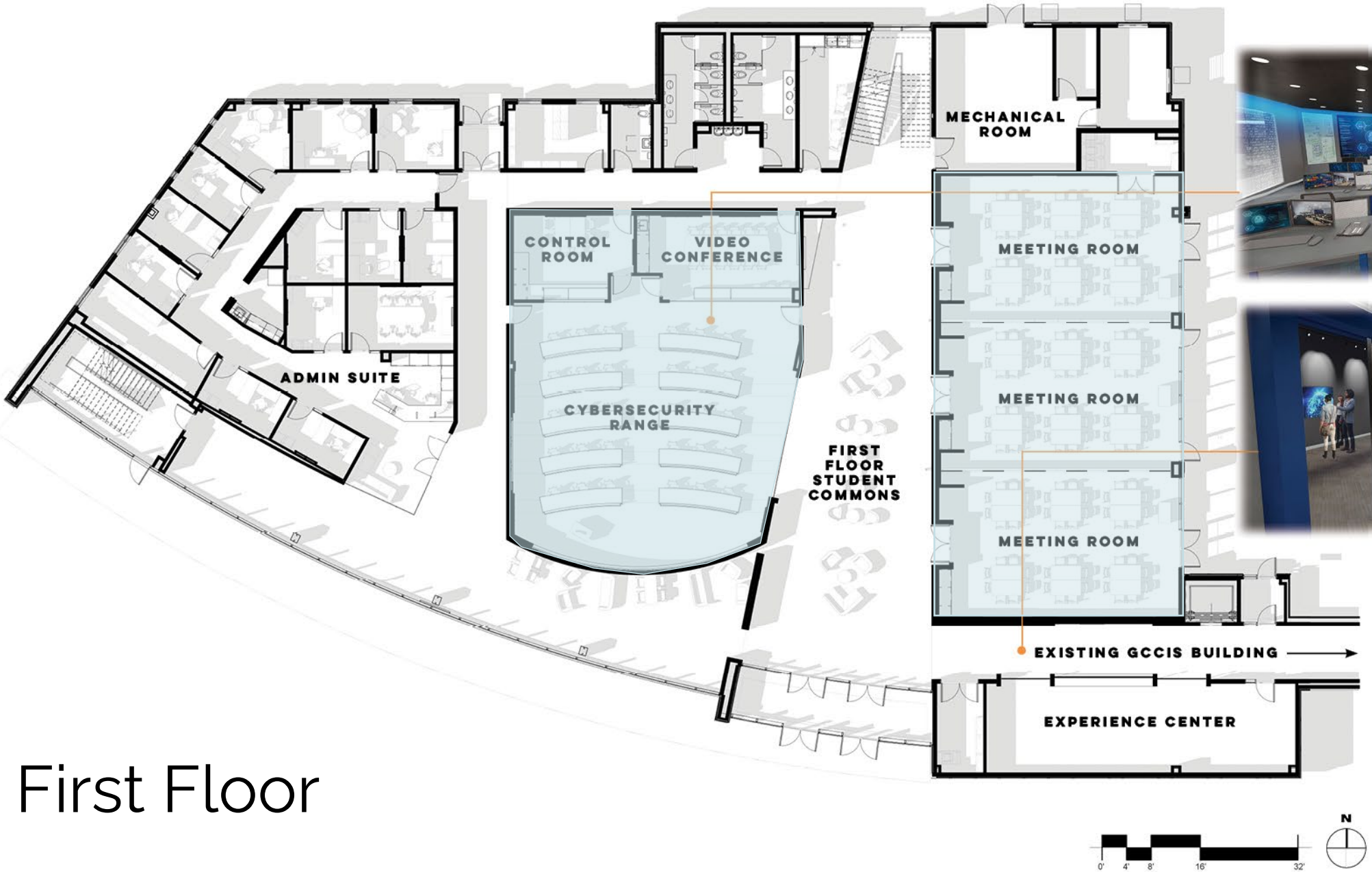
Electrochromic glass allows the room to be on display to the public or visually isolate for focused tasks and simulations.

IMMERSIVE ELEMENTS

Custom workstation design accommodates undermounted bass transducer which allows for a 4D experience to simulation cyber and physical attacks where the desks can vibrate and induce anxiety.

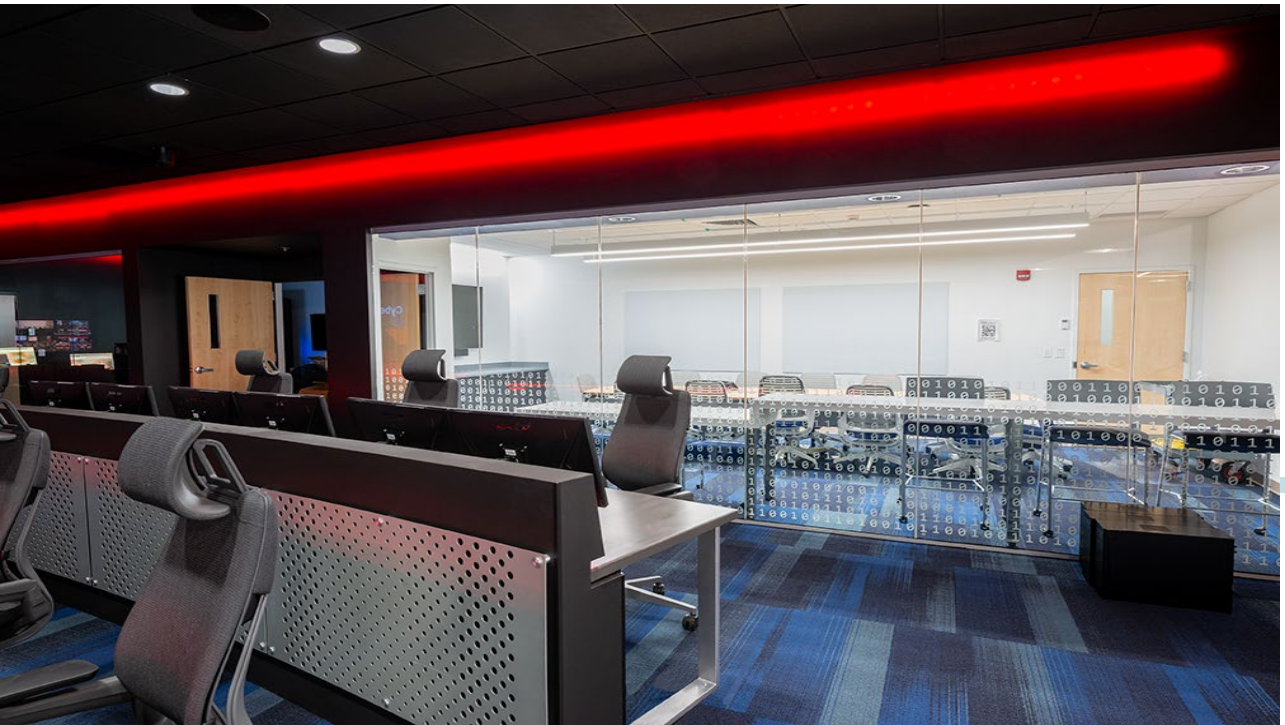
ADDITIONAL SUPPORT SPACES

First Floor


MECHANICAL ROOM
CONTROL ROOM
VIDEO CONFERENCE
ADMIN SUITE
CYBERSECURITY RANGE
FIRST FLOOR STUDENT COMMONS
MEETING ROOM
MEETING ROOM
MEETING ROOM
EXISTING GCCIS BUILDING
EXPERIENCE CENTER
0'
4'
8'
16'
32'
N

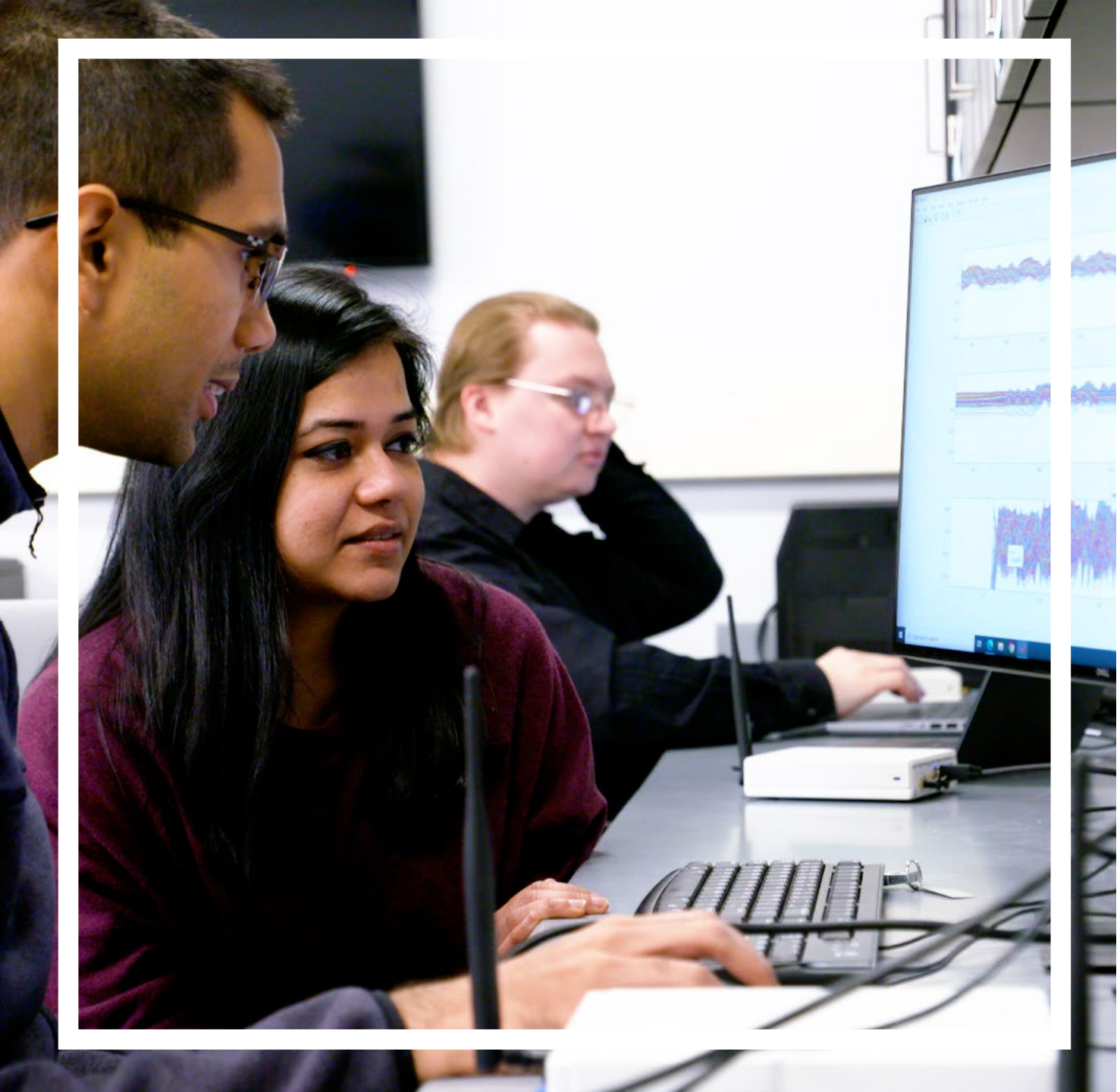
The control room with one-way glass allows for private viewing and running of simulations. The adjacent video conference space allows industry partners to watch sims and debrief.

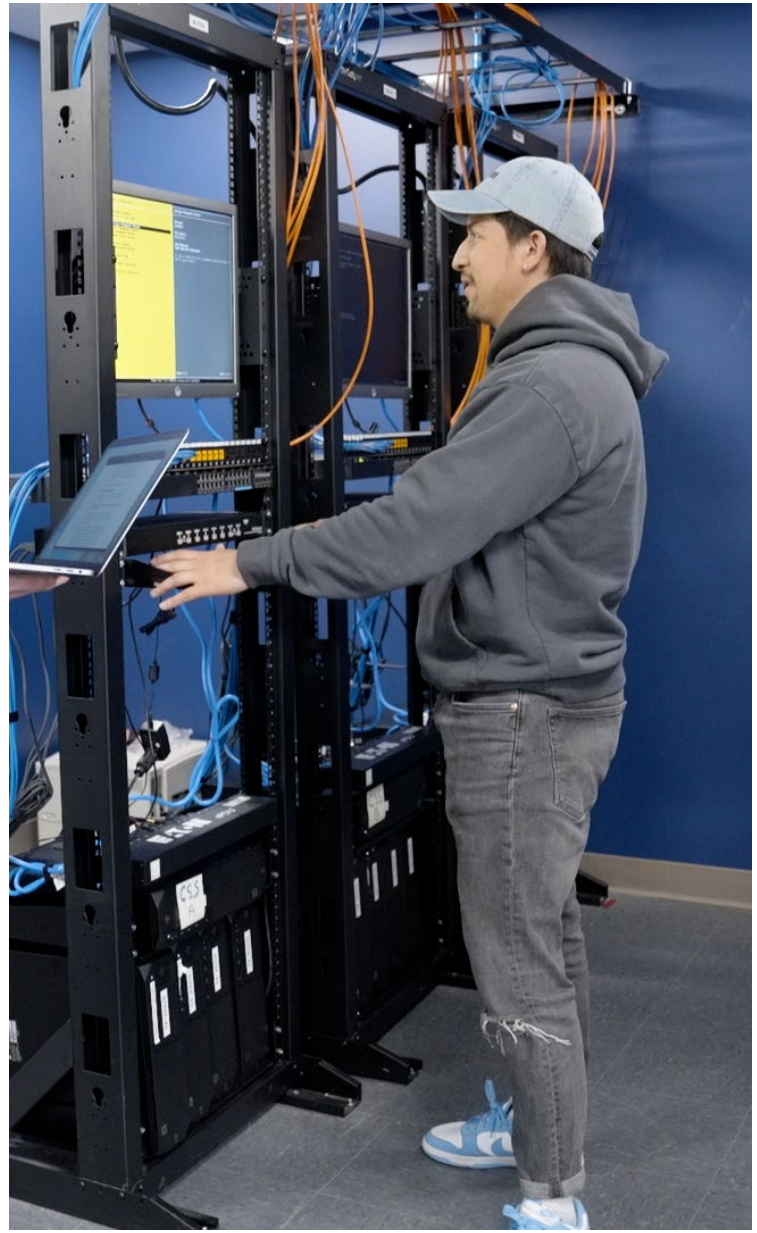
CONTROL & VIDEO CONFERENCE

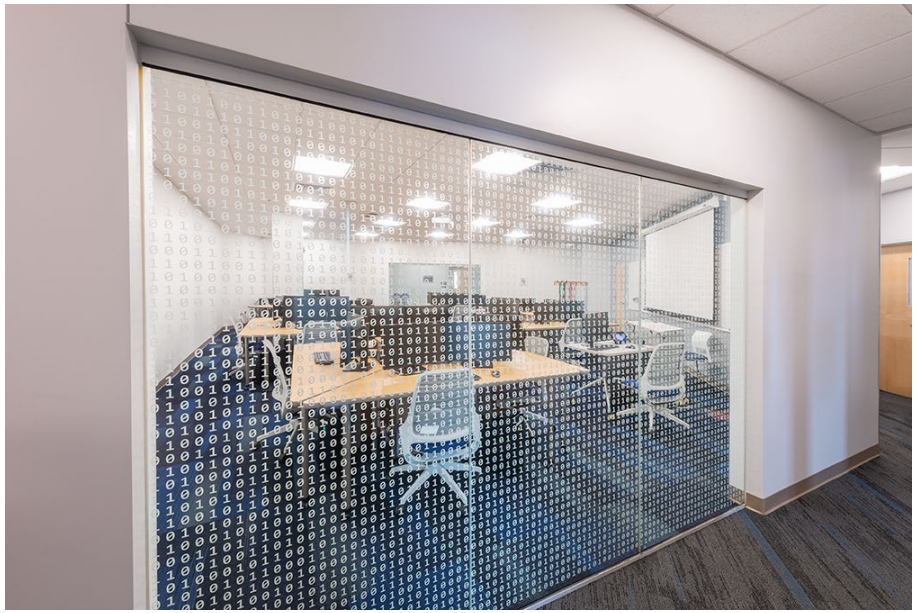


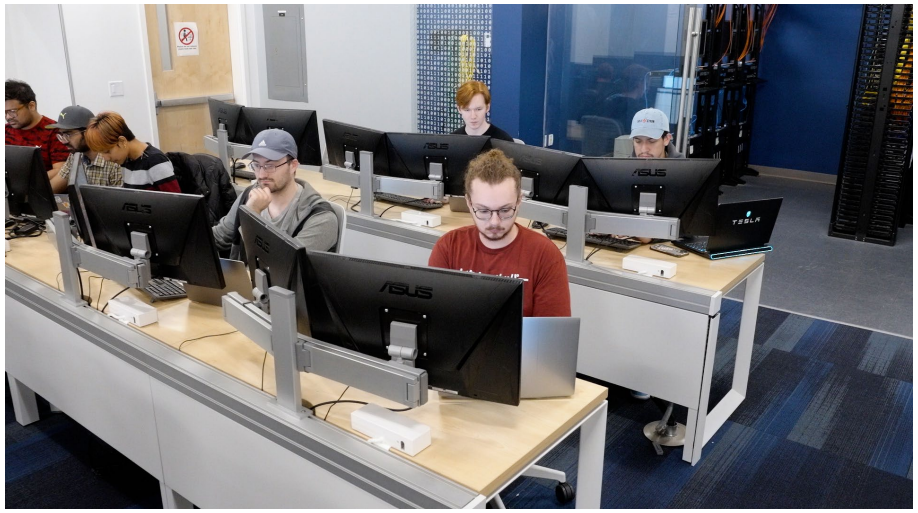
The large multipurpose meeting spaces can be divided into three to allow for multiple teams outside the cyber range.

MEETING ROOMS









RIT PARTNERSHIPS

RIT PARTNERSHIPS

Addressing the complex challenges of cybersecurity in our interconnected world requires teamwork. Join RIT and the ESL Global Cybersecurity Institute to support the development of technology and advanced knowledge that are needed to take on these challenges and make our world safer.

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- United States Air Force Research Labs (AFRL)
- Defense Advanced Research Projects Agency (DARPA)
- Office of Naval Research (ONR)

Why Use Partnerships?

At the ESL Global Cybersecurity Institute, partnerships promote a multidisciplinary approach to the discipline of cybersecurity. A multitude of faculty and researchers bring their expertise in computing, public policy, engineering, business, psychology, and more. Universities can offer benefits like this for:

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Direct access to talented students with hands-on training

RESEARCH

Direct access to talented students with hands-on training

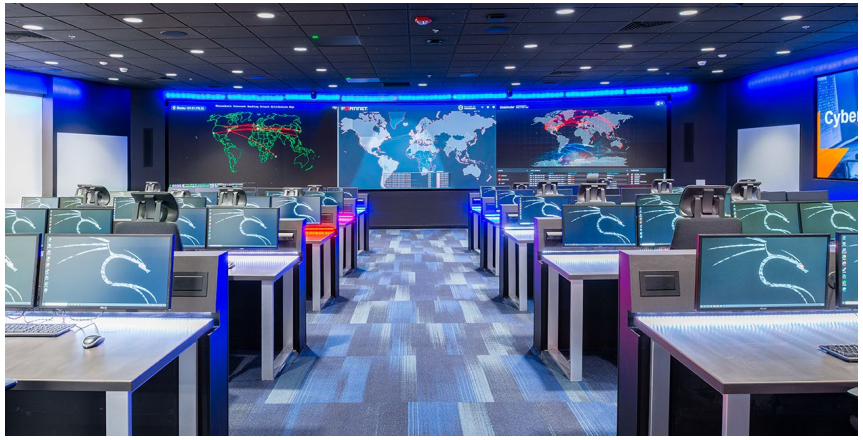
REPUTATION

Institutions have opportunities to enhance corporate image by partnering with leading research centers

ROI

Significant cost reduction in research and recruiting


BEFORE / DURING / AFTER



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