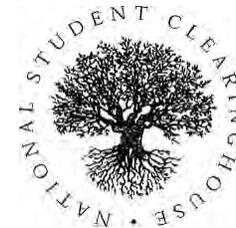




Empowering The Mobility of Digital Academic Records

Spring Summit – 4th May 2017

Extending the Capacity of Higher Education to Scale The Output of Verified Workforce Ready Graduates



Executive Summary – PESC Award Submission

- CWA – mentored scalable 3-credit virtual internships:
 - Acceleration, awareness, experience and workplace readiness
- Experiential, competency based model proven **solving real world problems** Solving real world problems
 - Transportable across sectors and faculty –
- Leveraging the NIST Frameworks and NICE taxonomy
 - Faculty thinks Performance – industry wants to see KSAs learning outcomes for Job Roles and Progression
- NSC MyHub & iQ4 integration – transportable verified academic and co-curricular experience, KSAs, Badges, Certificates, Progression,.....

The lack of cyber skills is a critical issue for employers

Currently Cisco estimates **1mm unfilled security job world wide**

- Cyber security skills shortage a critical issue for the public and private sector
- “Most organizations do not have the people or the systems to monitor their networks consistently or determine how they are being infiltrated” (1)
- The regulatory landscape and nature of attacks change rapidly
- The projected dramatic increase in IoT and continued increase of sophisticated state-sponsored cyber will further increase vulnerability



Source: ISACA

Sources:

(1) Mitigating the Cybersecurity Shortage - Cisco



Cybersecurity Workforce Alliance

Leadership Coalition in Cyber Workforce Development



Founding Members

- Federal Reserve Bank NY
- Morgan Stanley
- Goldman Sachs
- Bank NY Mellon
- Fidelity Investments
- Deloitte & Touche LLP
- Capgemini
- JPMorgan Chase
- Express Scripts
- Citizens Bank
- US Bank
- FS Roundtable
- Fidelity
- Bank of America
- American Express
- Standard Chartered Bank
- Dilworth Paxson LLP
- RANE Network



Cybersecurity Workforce Alliance

Mission

Improve the cybersecurity skills and scale the college/university student workforce so they are more attractive to hire and can provide almost immediate value to the public and private sectors by improving a organization's Cybersecurity resilience and capabilities.

Outcomes

Align and enhance applied-learning curricula to develop skills in cybersecurity and information risk

Reduce the amount of training for college hires

Increase Awareness and Experience

Align Professional Certificates to Role Profiles

4 Cornerstones and Governance

Technology
Development & Mobility Platform

Engagement & Scale
Extending the Workplace into the classroom

Standards
Taxonomy, Student Data

Business Case
ROI, Plug and Play



**IQ4 AND NATIONAL STUDENT CLEARINGHOUSE
AWARDED 1ST PLACE IN 18TH BEST PRACTICES COMPETITION**

EXTENDING THE CAPACITY OF HIGHER EDUCATION TO SCALE THE OUTPUT OF VERIFIED WORKFORCE-READY GRADUATES

Collaboration on Standards
Mapping Education's Supply to Industry's Needs

CWA Workforce Workgroup Map

1,235 Cyber taxonomy definitions

514 common across all Digital/IT

44 Cyber/Gov'ce/Risk/Compl' roles

20 Common KSA's to all roles and "knowledge Units" for academic learning outcomes

> 56% KSA's in roles found in Professional Certificates

Job Role	Specialty/Job Family	Competency	Knowledge/Skill
236 Cybersecurity - Investigator	Digital Forensics	Computer Languages	Skill in understanding OS/64 architectures and protocols of usage
240 Cybersecurity - Investigator	Digital Forensics	Computer Languages	Skill with OS/64 (Open Source Software), must have extensive experience in working with OS/64 license management tools such as Black Duck software
244 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Skill in using binary analysis tools (e.g., Hexchat, command code and, hexdump)
248 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Knowledge of virtual machine event streams, debugger aware malware, and packing
252 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Skill in analyzing anomalous code as malicious or benign
256 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Skill in analyzing volatile data
260 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Skill in interpreting results of debugger to ascertain tactics, techniques, and procedures (TTP)
264 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Knowledge of computer networking concepts and protocols, and network security methodologies
268 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Knowledge of file system implementations (e.g., New Technology File System (NTFS), File Allocation Table (FAT), File Extension (EXT))
272 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Knowledge of types of digital forensics data and how to monetize them
276 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Knowledge of types and collection of persistent data
280 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Knowledge of processes for collecting, packaging, transporting, and storing electronic evidence to avoid alteration, loss, physical damage, or destruction of data
284 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Knowledge of bases and collection of persistent data
288 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Knowledge of legal rules of evidence and court procedure
292 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Knowledge of bases and collection of persistent data
296 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Knowledge of network security architecture concepts, including topology, protocols, components, and principles (e.g., application of defense-in-depth)
300 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Knowledge of data backup, types of backups (e.g., full, incremental), and recovery concepts and tools
304 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Skill in ETL processes
308 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Knowledge of encryption algorithms (e.g., Internet Protocol Security (IPSEC), Advanced Encryption Standard (AES), Generic Routing Encapsulation (GRE), etc.)
312 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Knowledge of anti-forensics tactics, techniques, and procedures (TTPs)
316 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Knowledge of Threats of Crime
320 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Knowledge of Underground Economy
324 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Knowledge of Human Factors/Digital Ergonomics
328 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Knowledge of hacking methodologies in Windows or Unix/Linux environment
332 Cybersecurity - Investigator	Digital Forensics	Computer Network Defense	Skill in setting up a forensic workstation

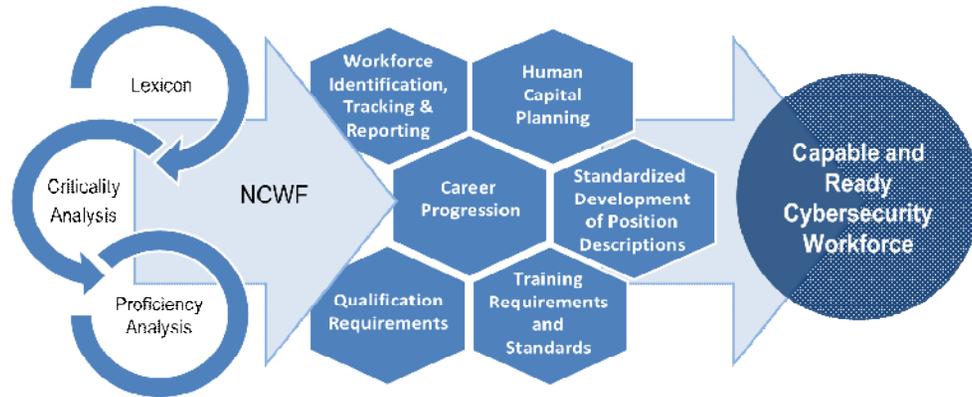
Cross Sector Taxonomy – Transportable Role Definitions, Specialty, Competency, Knowledge, Skill, & Abilities

Education can design courses for Learning Outcomes (Knowledge Units) that industry wants

Professional Certificates Mapped to learning and roles

Digitally Badged / Validated Skills & Experience Passport

Standards Based Real World Epic-Challenges



Taxonomy Link - for Roles, KSAs & Learning Outcomes



CYBERSECURITY WORKFORCE ALLIANCE
VIRTUAL INTERNSHIP FALL SHOWCASE

TINYURL.COM/VIRTUALINTERNSHIPRSVP
RSVP BY DEC 5

12.12.16
THE EPIC CHALLENGE:
THE THREAT WITHIN
1:00 - 4:00 PM

1:00 - PRESENTATIONS OF STUDENT WORK
2:30 - STRUCTURED NETWORKING RECEPTION

FEDERAL RESERVE BANK OF NEW YORK THE LIBERTY ROOM 33 LIBERTY STREET, NEW YORK, NY 10045

JOHN JAY UNIVERSITY OF CYBERSECURITY UNIVERSITY AT ALBANY IQ4 sifma XQA
Cybersecurity Workforce Alliance

Scaling the Integration of Academic and Applied Learning



Project home | Discussions | Project plan | Lessons | Assignments | Resources | Members

Workgroups

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Discussions

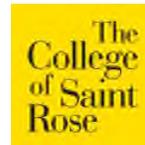
102 unread

Recent Activity

- Where do you see yourself in 5 Years ?**
smash Apr 30, 2017 9:21 PM
In five years I aspire to have completed law school and to be practicing law h
- Should Drones/UAS be allowed on UAlbany campus?**
smash Apr 30, 2017
I agree that drones, if allowed on campus, should be strictly used for educati sporting events. Operating ...



Founders Hosts



Participating Schools



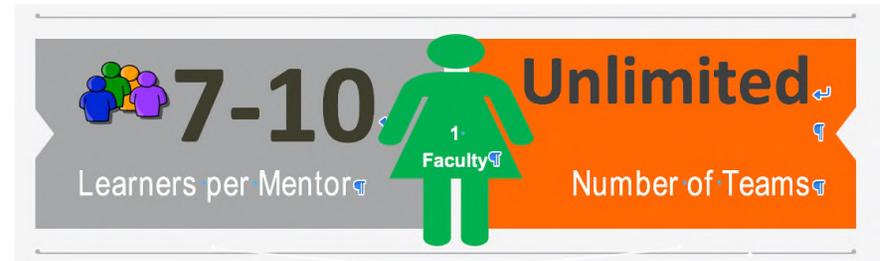
sCALE

CWA Mentors 1.5 hours per week for 12 weeks

Membership

Jan 2015 14

May 2017 > 550



Federal Reserve Banks (NY, Chicago, Boston), Goldman Sachs, Morgan Stanley, NASA, JPM Chase, American Express, Bank of America, Blackstone, Bay Networks, Capgemini*, Citizens Bank, Deloitte, Express Scripts, Bank NY Mellon, Standard Chartered Bank, BNP Paribas, US Dept. Interior, Dilworth Paxson LLP, Dolus Counter Fraud, Coalfire, Red Owl, & Many More!

Scalability -Take The Workplace To The Classroom – Capacity and Expertise For Education

Mentor – Active Calendar

The screenshot displays the Mentor Active Calendar interface. At the top, there is a navigation bar with a hamburger menu, the XQA logo, and a search icon. Below this is a secondary navigation bar with icons for Passport, Projects, Workgroups, and Role Profiles. The main content area shows the project name "The Threat Within - CWA SUNY UAlbany" and a settings gear icon. On the left, a sidebar contains navigation options: Project home, Discussions, Project Plan, Assignments, Resources, and Members, along with an "Add to Passport" button. The central calendar view shows a grid with a lesson titled "LESSON 1 Introduction to the" on Sunday. An "Edit Live Session" modal is open, allowing users to set the date (9/5/2016), time (12:00 PM to 1:30 PM), and repeat frequency (checked for "Repeat same time each week"). It also includes a section to "Select three Subject Matter Experts including one lead" with a list of names and checkboxes for selection. The bottom right corner features the IQ4 logo and the text "Confidential".

Edit Live Session

Date: 9/5/2016 From: 12:00 PM To: 1:30 PM

Repeat same time each week

Select three Subject Matter Experts including one lead * ?

Lead	Expert
<input type="checkbox"/>	<input type="checkbox"/> Teresa Durocher
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Erick Rudiak
<input checked="" type="checkbox"/>	<input type="checkbox"/> Robert Francis
<input checked="" type="checkbox"/>	<input type="checkbox"/> Alexander Stein
<input type="checkbox"/>	<input type="checkbox"/> Nicole Rossi
<input type="checkbox"/>	<input type="checkbox"/> Dennis Paige
<input type="checkbox"/>	<input type="checkbox"/> Miheer Khona
<input type="checkbox"/>	<input type="checkbox"/> Doug Falk
<input type="checkbox"/>	<input type="checkbox"/> Karl Schimmeck
<input type="checkbox"/>	<input type="checkbox"/> Charles Camarda
<input type="checkbox"/>	<input type="checkbox"/> John Carr
<input type="checkbox"/>	<input type="checkbox"/> Alan Mace
<input type="checkbox"/>	<input type="checkbox"/> Frank Cicio
<input type="checkbox"/>	<input type="checkbox"/> David Robinson

GO TO LESSON →

IQ4
...great minds
Confidential

Mentors Assess Progression & Performance

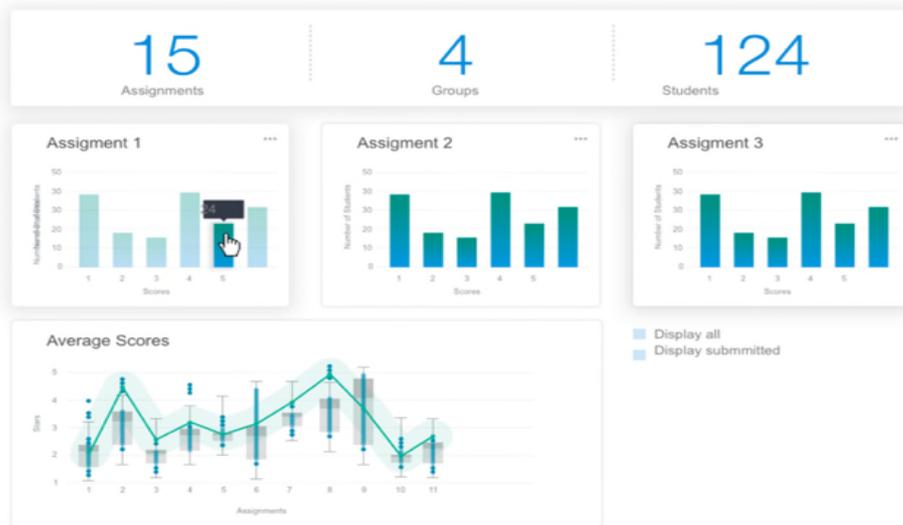


Passport Projects Workgroups Communities

The Threat Within - SPRING 2016 SUNY
Tackling Skills Shortages - Cybersecurity Financial Services and Healthcare firms report a significant shortage of graduates with the skills, experience and an understanding of financial markets and ...



- Project home
 - Discussions
 - Project plan
 - Assignments
 - Resources
 - Members
- Add to Passport



Cybersecurity Workforce Alliance

7-10

Learners per Mentor



Unlimited

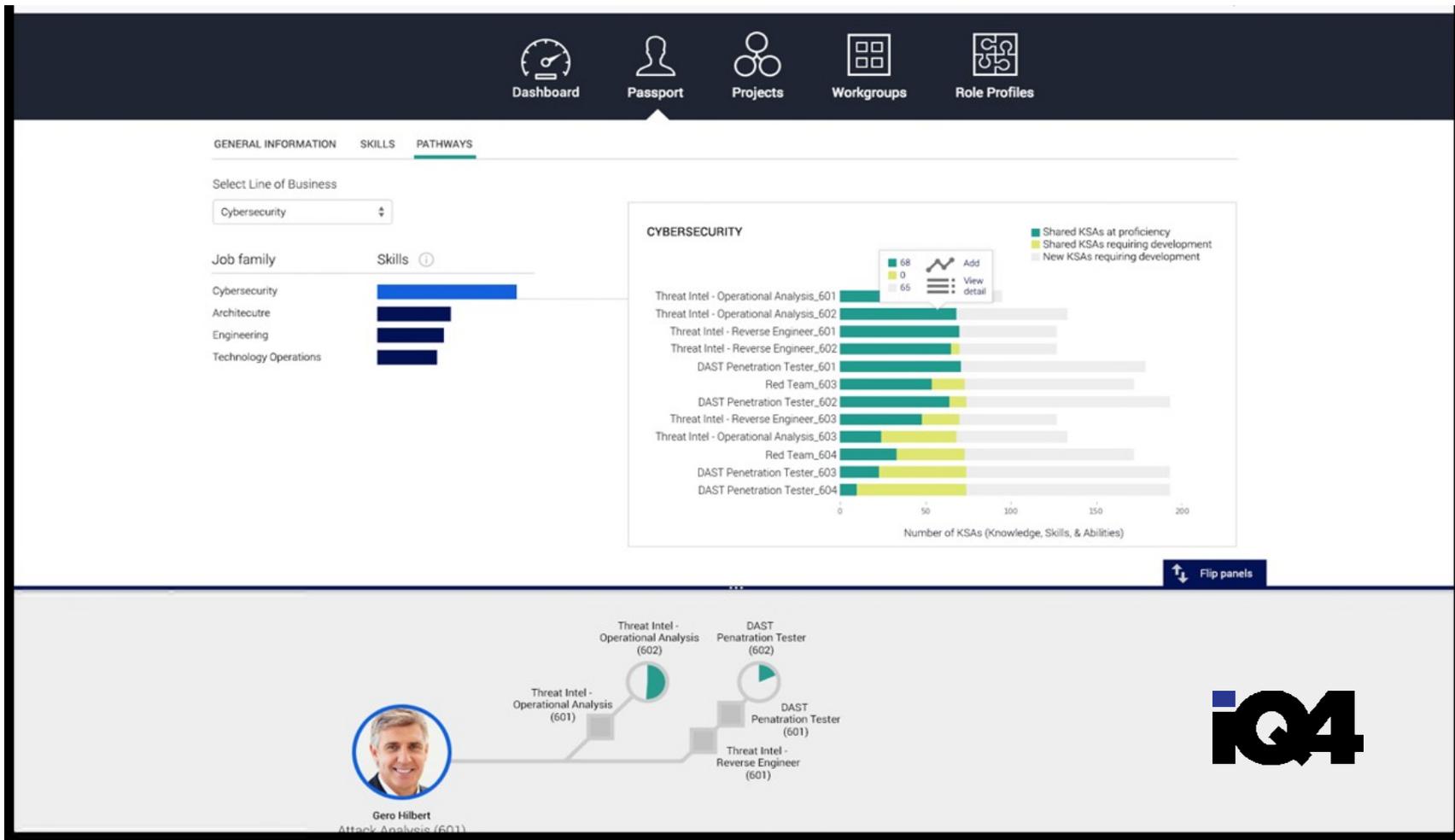
Number of Teams

Team & Roles-based Virtual-Menternships[™] = Experiential Learning Projects

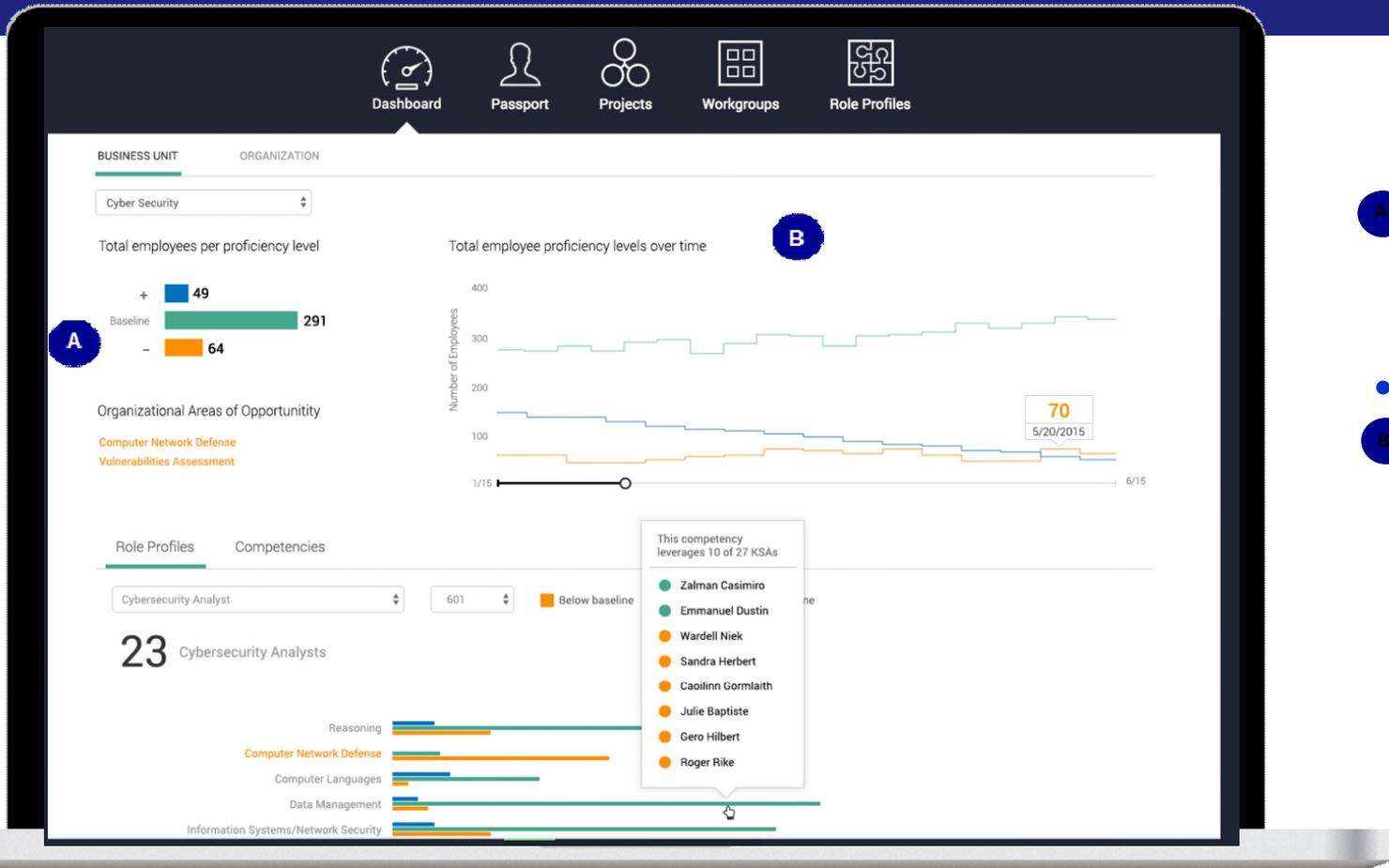
Web - Weekly Project Activity



Individual's Proficiency Profile by Line of Business and Job Family with Career Pathways Below



Dashboard Analytics - Competency and Skills Analysis



- A** Baseline analysis and organizational areas of opportunities
- B** Measured performance and progression mapping

AGENDA

1:00 - 2:20 PLENARY SESSION

Welcome to the Federal Reserve Bank of NY

Keynote Speakers:

RUTHE FARMER

Senior Policy Advisor for Tech Inclusion
White House Office of Science & Technology Policy

CHARLES CAMARDA, PH.D.

Astronaut and Sr. Advisor for Innovation, Office of the Chief Engineer
NASA

Student Presentations:

SUNY | UNIVERSITY AT ALBANY
CUNY | JOHN JAY COLLEGE OF CRIMINAL JUSTICE

2:20 - 2:30 BREAK

2:30 - 3:30 STRUCTURED NETWORKING

Hosted by **SCOTT MCMILLAN**

Chief People Officer & Head of Global HR Services
CapGemini

3:30 - 4:00 CLOSING SESSION & CYBER IQ AWARDS

Hosted by **PHIL VENABLES**

Partner & Chief Information Risk / Security Officer
Goldman Sachs

“This is how you develop an industry-driven partnership with higher education”. - (Employer)

The Power of the Mentor Network? “Priceless” (Student)

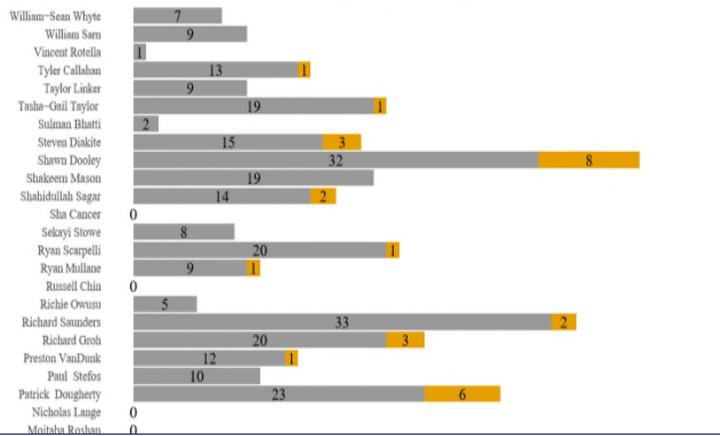
I have been in college for 4 years and have never taken a class that helped with my understanding of the professional world the way this did. (Student)

In the labs you can fail and fix things easily by just pressing the delete button and starting all over again until you get it right. You just can't do the same with this course as it is an inter-personal team challenge. (Student)

This is where the rubber hits the road between education and the workplace (Educator)

Measuring Success Across The Board

SUNY Fall 2016 – Student Activity counts through Sat Dec 17 09:16:41 2016



- Over 400K Hits On Site*
- Students Have Received Internships/Full-Time Offers At:

Deloitte.

FBI

PwC

International Securities Exchange

HARVARD
RESEARCH

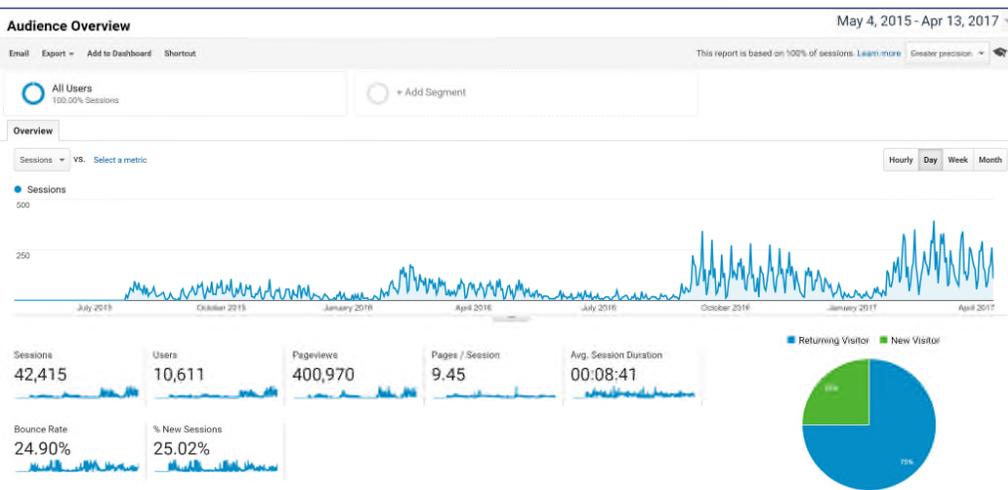
Bank NY Mellon



GAMING



Pharma Co



WIN.....

Students

Millennials engaged
aware, inspired.

Knowledge and domain
experience from “virtual
Internship” to punch
above the rest.

Jobs and careers.

WIN.....

Academia

Offer courses
augmented by
experience.

Scale the resource pool.

Attraction, retention
and broader
engagement with
employers.

WIN.....

Industry

Cut the cost and time to
hire and time to
productivity while
increasing retention.

Eliminate the war-for-
talent.

Greater Assurance and
Protection.

WIN.....

Government

Acceleration of
competent cross sector
workforce resource
pool.

Metrics – inputs,
outputs and jobs.

Cost to economy cut.
Better protection.

Prosperity dividend
from skills export.

The 21st Century's Mobile Resume: Student Passports

People ▾ Allison Bridges Go!

Passport Projects Workgroups Role Profiles Communities

 Allison Bridges
SUNY Albany

Invite | Email: abridges@albany.edu | Phone: (954) 830-5873 | Add to Contacts | Chat

Skills
HTML, Dance, Writt ... more

Personal Highlights
Graduated with Honors from SUNY Ulster, President's List: Fall 2015. Dean's List: S 2014, Fall ... more

Portfolio All Skills Education Experience Certificates  Highlights

Resume | Internship with the Dutchess County District Atto... | Receiving my Army Commendation Medal | Airman Leadership School graduation | 1N0X1 Technical School graduation | Staying at the Musangsa Zen Buddhist Temple, S... | Volunteering with Semper Fi Parents of the Huds... | Meeting Robin Williams in Baghdad

Your passport is now available at: ✕

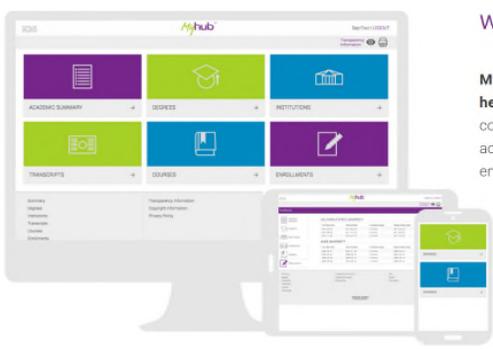
http://www.iq4.com/members/?user_id=2239 

OK



DEMO

MY Education, MY Information, MY Hub



What is Myhub?

Myhub is your doorway to all your student-level academic records held by the National Student Clearinghouse®. You can see the content of your actual records as well as who has had authorized access to your records and why (e.g., graduate school application, employment screening).

[CREATE YOUR ACCOUNT NOW](#)

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Transparency Information

- ACADEMIC SUMMARY →
- DEGREES →
- INSTITUTIONS →
- TRANSCRIPTS →
- COURSES →
- ENROLLMENTS →

IC4 Myhub Sap Four | LOGOUT
Transparency Information

- Courses
- ACADEMIC SUMMARY
 - DEGREES
 - INSTITUTIONS
 - CERTIFICATES
 - COURSES
 - TRANSCRIPTS
 - ENROLLMENTS
 - TRANSPARENCY INFORMATION
 - PRIVACY POLICY

CALIFORNIA STATE UNIVERSITY

Description	Name Number	Semester	Begin Date End Date	Grade	Grade Effective Date	Number Of Credits	Course Exchange
'Biology'	BIO 433	Fall	2011-09-02	A	2011-11-25	3	Collins School
'Chemistry'	CHEM 432	Spring	2012-03-01	A	2012-06-05	3	Collins School

DUKE UNIVERSITY

Description	Name Number	Semester	Begin Date End Date	Grade	Grade Effective Date	Number Of Credits	Course Exchange
Biology I For Science Majors	BIOL 1406	Spring	2006-03-06	A	2006-05-31	3	Lone Star Colloce System District
Molecular Biology	MBIO 101B	Fall	2006-09-15	A	2006-11-30	3	Lone Star College System District
Beg Spanish I	SPAN 1411	Fall	2006-09-15	A	2006-11-30	3	Lone Star College System District

Courses



ACADEMIC SUMMARY



DEGREES



INSTITUTIONS



CERTIFICATES



COURSES



TRANSCRIPTS



ENROLLMENTS



TRANSPARENCY INFORMATION



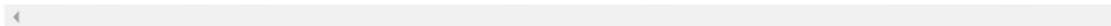
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Beg Spanish I	SPAN 1411	Fall	2006-09-15	A	2006-11-30	3	Lone Star College System District



Any Questions?



Student Passport

Alison Bridges

Skills: HTML, CSS, JavaScript, PHP, Python, Java, C++, JavaScript, PHP, Python, Java, C++

Personal Highlights: National and International LEAD Global President's List Fall 2015, Davis Cup Spring 2015 Fall

Portfolio: All Skills, Education, Experience, Certifications, Personal Highlights

Co-Curricular Transcript

Kristin C Sullivan

Skills: English, Technical writing

Personal Highlights: Student Leadership Conference (SLC) 2014, Student Leadership Conference (SLC) 2015, Student Leadership Conference (SLC) 2016

Myhub

Sap Four | LOGOUT

Transparency Information

ACADEMIC SUMMARY → DEGREES → INSTITUTIONS →

TRANSCRIPTS → COURSES → ENROLLMENTS →

Summary, Degrees, Institutions, Transcripts, Courses, Enrollments

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NATIONAL STUDENT CLEARINGHOUSE

Academic Career

- For Transfers
- For Employers
- For Anything



Confidential



Join The CWA Movement Today
Solve a Workforce Problem
Get the young into work

CWA@iQ4.com

peter@iQ4.com

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frank@iQ4.com 201 914 4655