



Commonwealth of Virginia House Appropriations Committee Welcome to CCAM



9:30 – 9:35	Welcome to CCAM (and Safety Briefing) – Joe Moody
9:35 – 10:05	Secretary of Finance Presentation and Committee Meeting
10:05 – 10:15	CCAM Overview – Joe Moody
10:15 – 10:25	CCAM Technology – Bob Fagan
10:25 – 10:40	CCALS Overview – Mark Manasco
10:40 – 10:50	Workforce Development – Bruce Sobczak
10:50 – 11:10	Intern Presentations – 3-5 minutes each
11:15 – 12:15	Tour of CCAM – Bob Fagan
12:15 – 1:00	Working Lunch and Wrap Up Discussion



CCAM Overview

Joe Moody – President and Executive Director



CCAM delivers production-ready manufacturing solutions at the speed of industry with the intellectual rigor and innovation of universities.



Aerospace



Marine



Energy / Mining



Automotive



Power Electronics



Consumer Products

Industry Driven Partnership Growing Advanced Manufacturing Capabilities



Unique IP Ownership Model

- Promotes Competitive Advantage for Members

Network of Capabilities

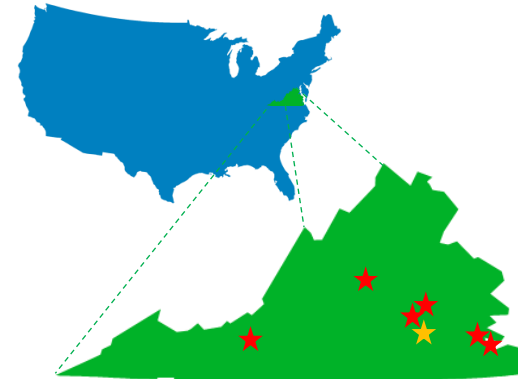
- Leverages Capabilities of University and Government Members
- Bridges the Gap Between Fundamental Research and Commercialization

Collaborative Membership

- Fosters Innovation Amongst Members
- Lowers R&D Costs for Member Companies



- 62,000 ft² Purpose Built Facility with 16,000 ft² Industrial High Bay in Disputanta, VA
 - 16,000 ft² Industrial High Bay
 - Labs: Material Characterization, 3D Visualization, Metrology Room, etc...
- 20 acre Campus with Room for Expansion



VirginiaTech
Invent the Future

VSU
VIRGINIA STATE



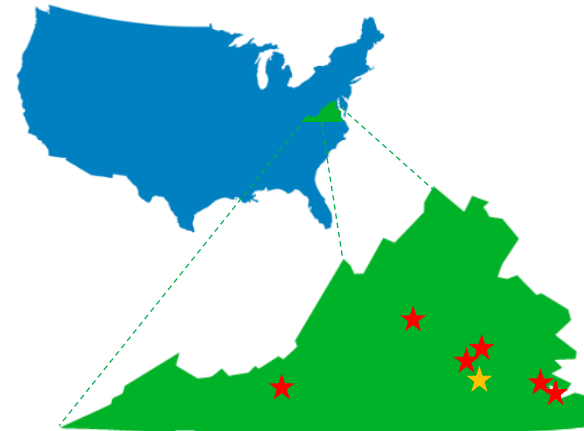
VCU
VIRGINIA COMMONWEALTH UNIVERSITY

UNIVERSITY OF VIRGINIA

OLD DOMINION UNIVERSITY
IDEA FUSION

- Research Conducted Across Multiple Facilities Working Collaboratively
 - Access to Member University Expertise, Labs, and Capabilities
 - Access to Member Company

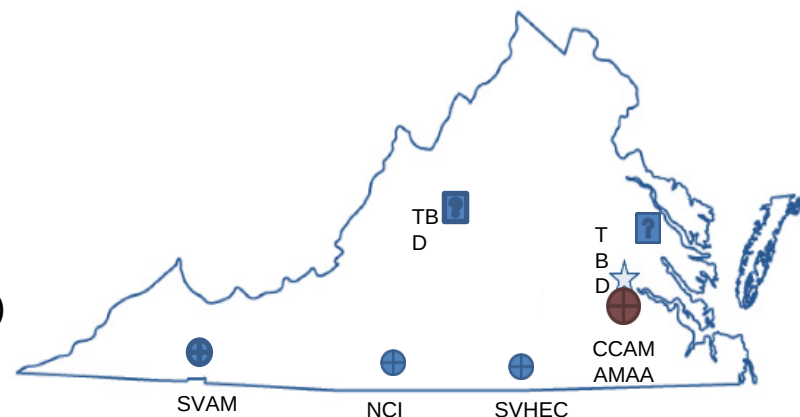
- **Virginia Universities have received millions of dollars of funding from CCAM Related Activities Since 2010**
- **Active Intern Program – Interns Involved Directly in CCAM Research**
 - 59 Students have Interned at CCAM since 2012
 - Planning 30+ Interns in 2015
- **CCAM Partnership has Increased Engagement with:**
 - CCAM Industry Leading Member Companies (e.g. Rolls-Royce, Airbus, Alcoa, Siemens...) and suppliers.
 - Fellow institutions of Higher Learning
- **CCAM Resource Access Expands Project Potential**
 - Access to Advanced Manufacturing (AM) and testing equipment
 - Access to technical expertise (e.g. surface engineering, machining, thermal spray)



SVHEC, NCI and SVAM COEs, and CCAM AMAA

- \$25M Matching Funds Committed by State in 2014
- \$1.5M Planning Grant Awarded By State in 2015
- \$2 Million Awarded to Each CoE for Start-up
- Curriculum Development in Process (CCAM Collaboration)
- Equipment Identified and Ordered (Deliveries Underway)
- Instructor Recruitment and Development in Process
- Transitioning Soldier Training Program with Ft. Lee – First Cohort Complete

CCAM / COE Collaboration Areas



Each COE / AMA to Produce 70 to 80 students with “Industry Recognized Certifications” per year. Skills in Machinists, Welders, Industrial Mechanics

CCAM Foreign Direct Investment (FDI)

- 4 Announced FDI Companies – 3 Creating Jobs in Virginia
- 9 Additional FDI Companies being Actively Recruited

	Company Name	Industry	Investment in Virginia	Value of Capital Investment	New Jobs Created	Mean Salary	Location	Size of Factory	Announcement Date	Start to Create Jobs	Status
Announced	Kilgour Aerospace	Aerospace	Engine and airframe components	\$27m	155	\$31,000	Henry County	70k	Jan-14	Jan-16	Announced / Delayed
	Nulife Glass	Processing	Process CRT TVs into Lead Concrete	\$6m + \$4m building	46	\$37,000	Bristol	130k	Jan-15	Feb-15	Creating Jobs
	Hardide	Aerospace	Gas vapour deposition coatings	\$7.25m	29	\$50,000	Henry County	25k	Jan-15	Feb-15	Creating Jobs
	Detectamet	Plastics	Manufacture and distribute plastics	\$1m	30	\$35,000	Southpark, Richmond	20k	Feb-15	Apr-15	Creating Jobs

- **CCAM has Demonstrated Benefits to Commonwealth of Virginia**
 - One-of-a-Kind Collaborative Research Center in North America
 - FDI Business Development Successes Creating Jobs
 - Attracting and Retaining Companies to VA and VA Universities for Research
 - Centers of Excellence Creation in SVHEC, NCI, and SVAM
 - CoEs putting in place training programs that previously didn't exist in the regions, but are specifically demanded by Advanced Manufacturing companies
 - Internships for Next Generation Technical Leaders
- **CCAM is Able to Deliver Growth and Continued Success to VA**
 - A Partner with VTICRC and the Commonwealth on Growing the New Virginia Economy





CCAM Technology

Bob Fagan – Chief Technology Officer

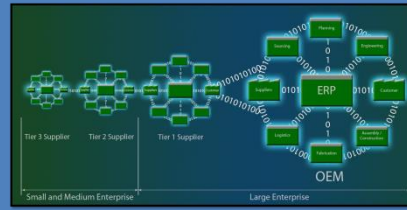


Technology Focus Areas Determined by CCAM Members

Technology Focus Areas



Surface Engineering



Manufacturing Systems



Machining Technologies



Additive Manufacturing



Welding / Joining



**Composite Materials /
Processing**

Coating Process Development

- Thermal Barrier, Abradable
- Hardness, Anti-friction
- Paints, Specialty

Digital Factory

- Product Lifecycle Management
- Physical Cyber-Security
- Big Data

Additive Manufacturing

- Structural Material
- Integrated Manufacturing

Leverage CCAM Network Resources



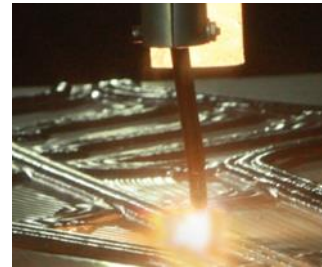
**CCAM Process Research
Floor**



**University Based Research
Facilities**



**Corporate Partner
Development Capabilities**



NASA Langley Facilities



TRANSFORMING LOGISTICS

**Commonwealth of Virginia
House Appropriations Committee
September 21, 2015**



Background

❑ Virginia is a hub of logistics

- Pentagon and key logistics staff for the Department of Defense are in Virginia
- Fort Lee is the home of the Army Logistics University (ALU) and the Army Combined Arms Support Command (CASCOM)
- Fort Belvoir is the home of the Defense Logistics Agency (DLA)
- Richmond is the home of DLA – Aviation and DLA – Operations Research and Resource Analysis (DORRA)
- Port of Virginia offers the deepest shipping channels on the U.S. East Coast
- On-dock rail service makes the port a true multi-modal transportation hub
- Panama Canal expansion enhances Virginia's position as a logistics hub

❑ Virginia's universities provide expertise critical to logistics systems

- Business – supply chain management, currency exchange issues, contract management
- Engineering – process modeling/optimization, risk management, security, human factors
- Public policy – compliance, export control, taxation, infrastructure investments
- Workforce – STEM degree programs, certificate programs, interns

❑ Central Virginia can and should be a leader in the future of logistics

- Focal point is needed to bring public and private entities together
- Commonwealth Center for Advanced Logistics Systems (CCALS) provides the solution

A New Model for Collaboration



Commonwealth Center for
Advanced Logistics Systems

Founded in December 2012



Key Attributes of CCALS:

- Industry-driven
- Multiple Universities
- Global Corporations
- Government Members
- Translational Research
- Workforce Development
- Enabler of Federal Funding
- Focus in Major Economic Sectors for Virginia



Public-Private Partnership

Mission

❑ Bridge the gap between fundamental research and commercialization

- ❑ Accelerate technology into markets
- ❑ Demonstrate technology on real problems

❑ Foster collaboration among diverse industry and government sectors

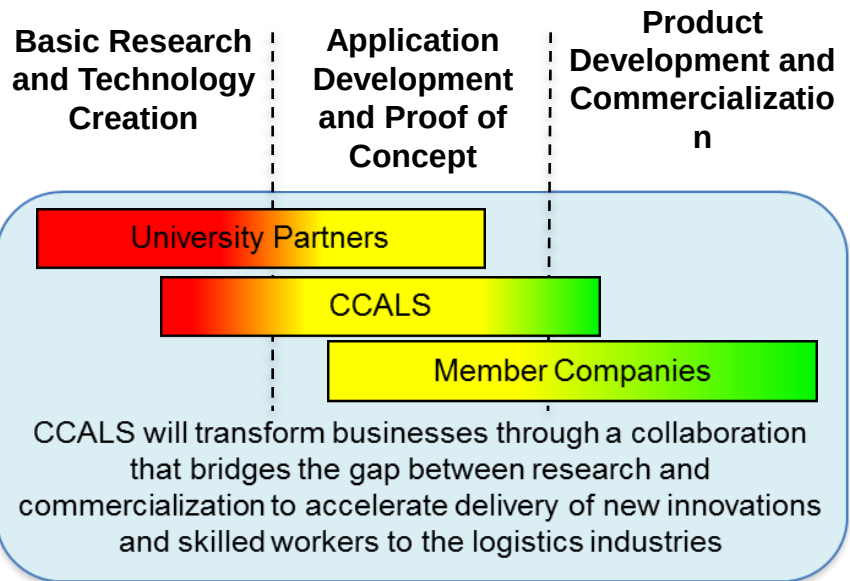
- ❑ Directed Research for the exclusive proprietary benefit of an individual member company
- ❑ Generic Research for the benefit of all member companies

❑ Lower R&D costs for member

- ❑ Shared facilities and personnel
- ❑ Shared pre-competitive research

❑ Train next generation of logistic technology leaders

- ❑ Provide market-ready experience to students
- ❑ Connect industry with students



Research Focus

- supply chain risk management
- logistics “big data” analytics
- supply chain enterprise systems
- logistics systems reliability
- modeling and simulation of logistics systems
- supply chain cyber and physical security
- human factors analysis in logistics

Members/Partners

☐ University

- Longwood University
- University of Virginia
- Virginia Commonwealth University
- Virginia State University



☐ Industry

- Logistics Management Resources (LMR)
- LMI
- ORBIS America (SEP 15)



☐ Government Associate

- Crater Planning District Commission (CPDC)
- U.S. Army Combined Arms Support Command (Fort Lee)
- Defense Logistics Agency (SEP 15)
- Port of Virginia (POV)
- Commonwealth of Virginia Secretary of Technology



☐ Public Sector Partners

- Virginia Economic Development Partnership (VEDP)

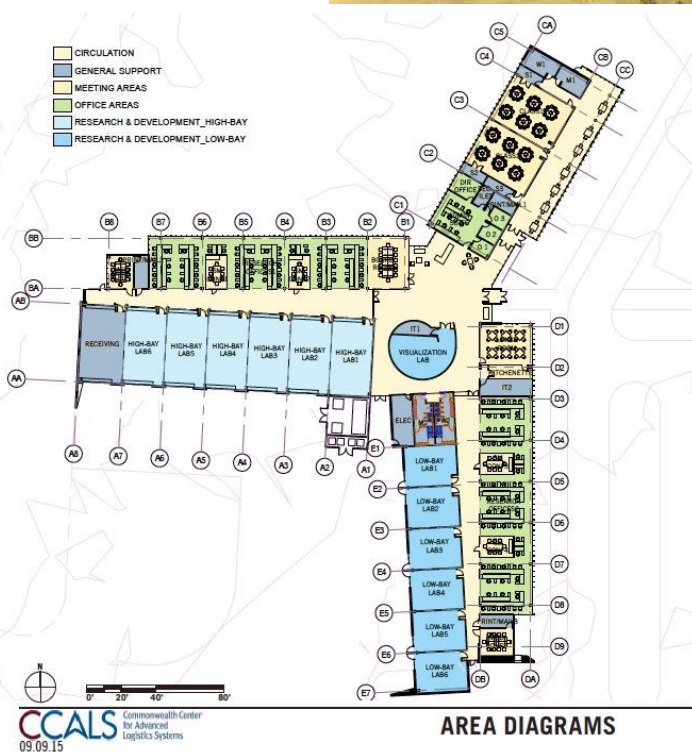


Collaborative Research

- ❑ Port of Virginia (POV) research partnership utilizing CCALS expertise :
 - Mutually beneficial arrangement w embedded researcher
 - Shared cost for not less than three years
 - Design decision systems for vessel berthing, gate turn times, and traffic optimization based on simultaneous road closures
- ❑ CIT Commonwealth Research Commercialization Fund (CRCF):
“Aviation Drop-In Biofuels - Sustainable Supply Chain”
- ❑ Cyber Security & Optimal Grid Power Flow Under a Coordinated Attack
- ❑ LMI Research Institute Academic Partnership Program
- ❑ Naval Aviation Warfare Center Aircraft Division (NAWCAD) Partnership
- ❑ Fermata Vehicle to Grid Technology: Modeling & Simulation of Fleet Vehicle Batteries for Integrated Logistics and Grid Services
- ❑ US Army Research Development, and Engineering Command (RDECOM)
Cooperative Research & Development Agreement (CRADA)



Aerial View



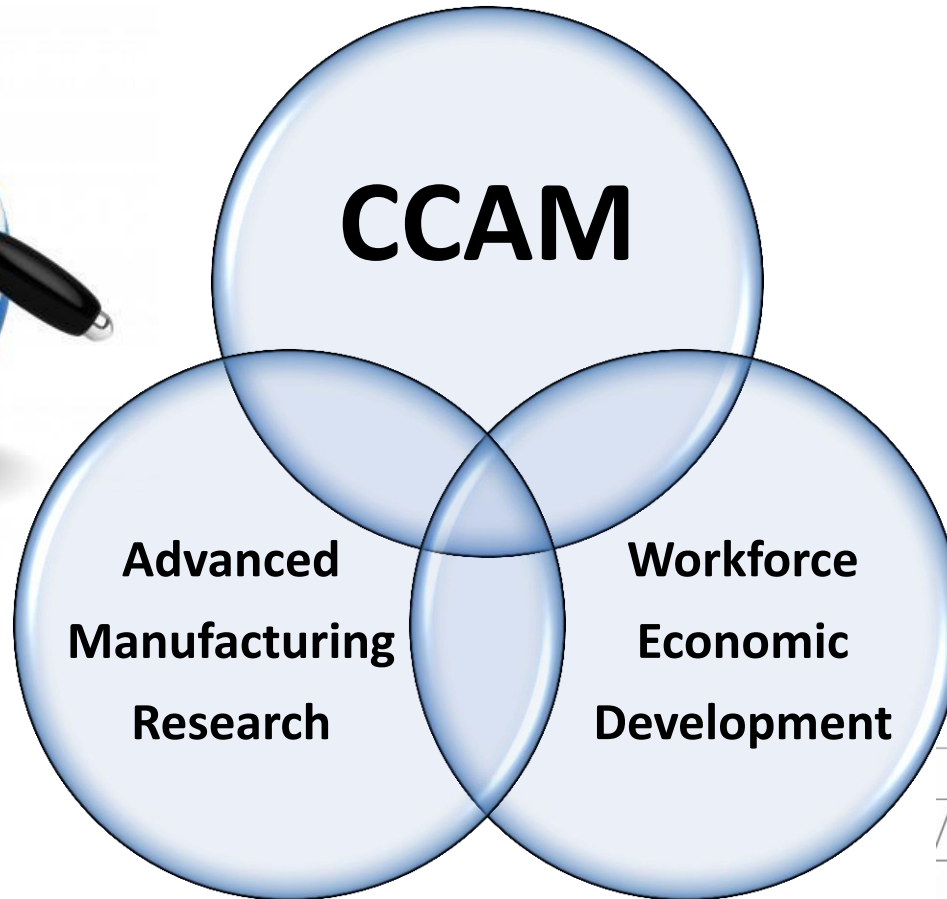


CCAM Workforce Development

Bruce Sobczak – Director, Workforce Development

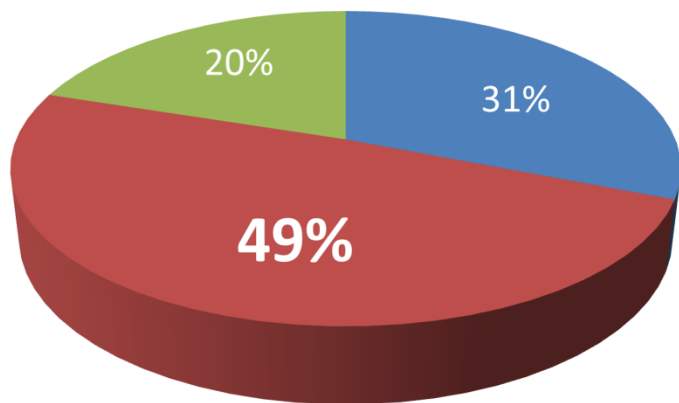


**COMMONWEALTH CENTER FOR
ADVANCED MANUFACTURING**



Industry Consistently Citing Needs

Mid Skill Level, US 2012 to 2022



SKILLS REQUIRED



- 50% of manufacturing companies plan to increase US based production over the next five years
- 80% of manufacturing companies report a moderate to serious shortage of qualified applicants
- The Boston Consulting Group reports that within this current decade manufacturers will need to fill 800,000 jobs nationally.

Source: The Manufacturing Institute, 2014

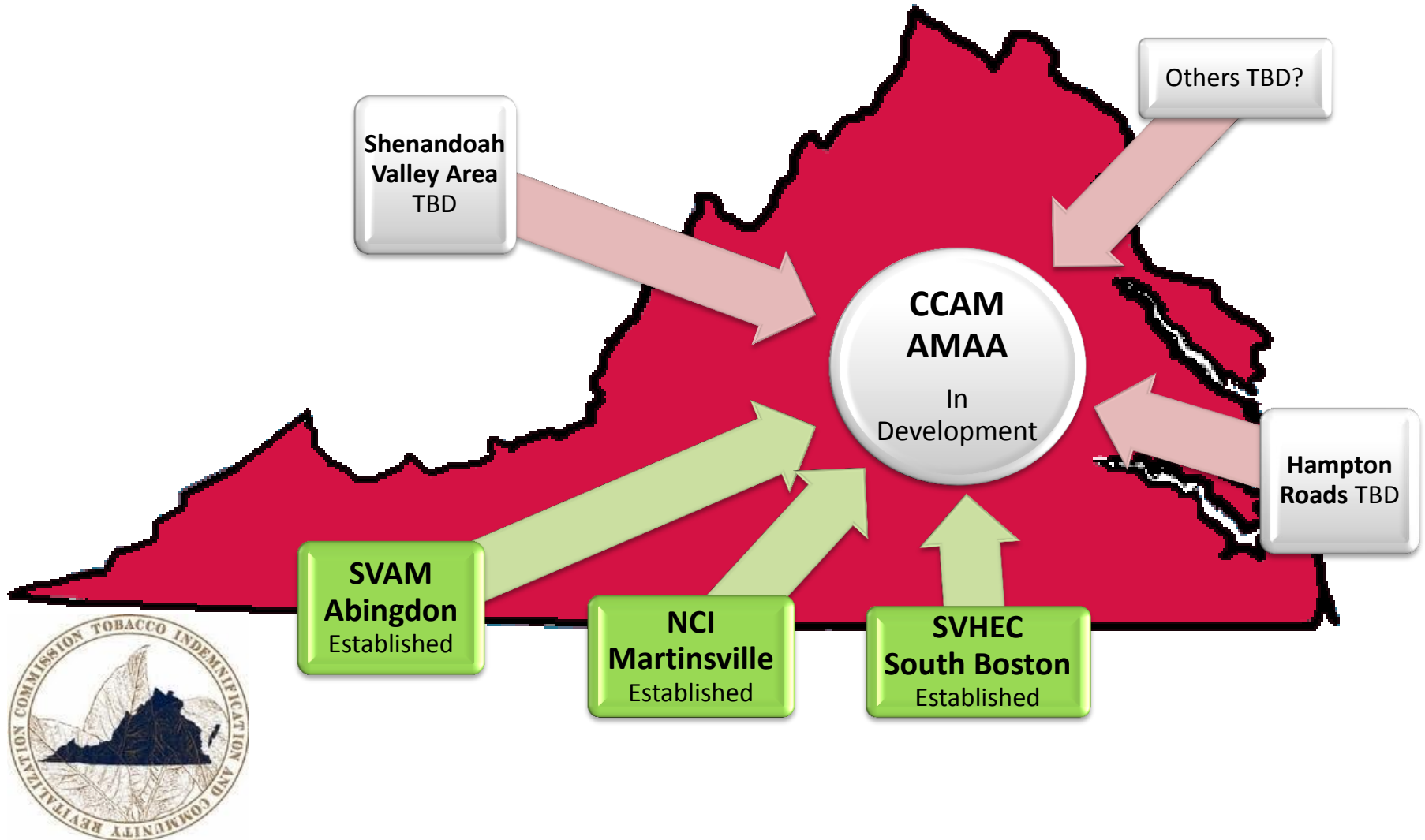
World Class Training Center Alliances



Rolls-Royce®

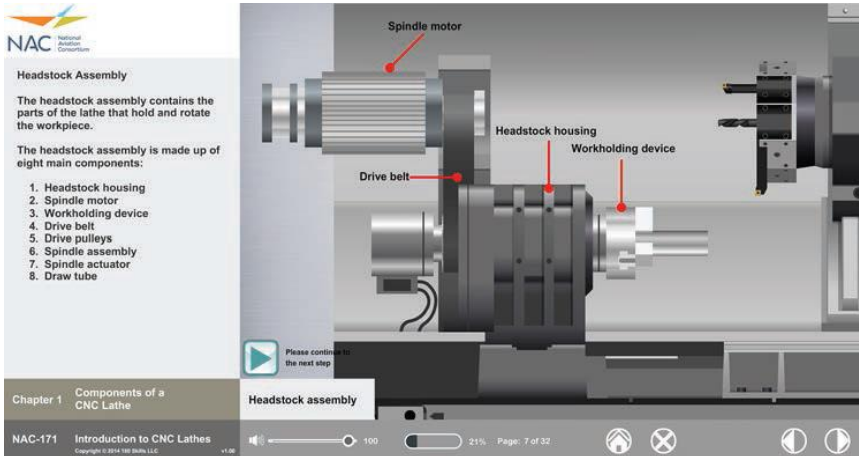


AMRC
TRAINING
CENTRE Engineering the Next Generation



Training for Transitioning Military





CNC Machinist Program – for transitioning soldiers

- ***162 modules of on-line***
- ***300+ hours hands on lab***
- ***OSHA 10 Safety Certification***
- ***4 NIMS Certifications earned***
- ***Completion in 5 months***

Employers Across the State Responding



Employer Participation

- Rolls Royce
- Coesia North America
- Enclos Inc.
- Kosmo Machine Inc.
- DuPont Advanced Fibers Systems
- Jewett Machine Inc.
- L&R Precision Tooling Inc.
- Anderson Machine Manufacturing Inc.
- Richmond Tooling Inc.
- And others



Proven Model Ready for Expansion



**TIDEWATER
COMMUNITY COLLEGE**
From here, go anywhere.™



**OLD DOMINION
UNIVERSITY**
IDEA FUSION





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Intern Presentations

