



*SCCAP Presentation to
ET Forum Fall 2019
October 17, 2019
Oviedo Campus - Seminole State College*



Space Coast Consortium Apprenticeship Program

SCCAP is a State of Florida registered apprenticeship program offering apprenticeship opportunities in the following occupations:

- Mechatronics Technician
- Advanced CNC Machinist
- Fiber Composite Technician

SCCAP is an autonomous sub-committee of **SpaceTEC Partners, Inc.**

SCCAP is an industry-driven apprenticeship program led by a consortium of advanced manufacturers in the **Space, Aerospace, Aviation, Aircraft and Defense industries**, with a focus on implementing world-class apprenticeship programs in occupations that require higher levels of education to perform in today's competitive advanced manufacturing environment.



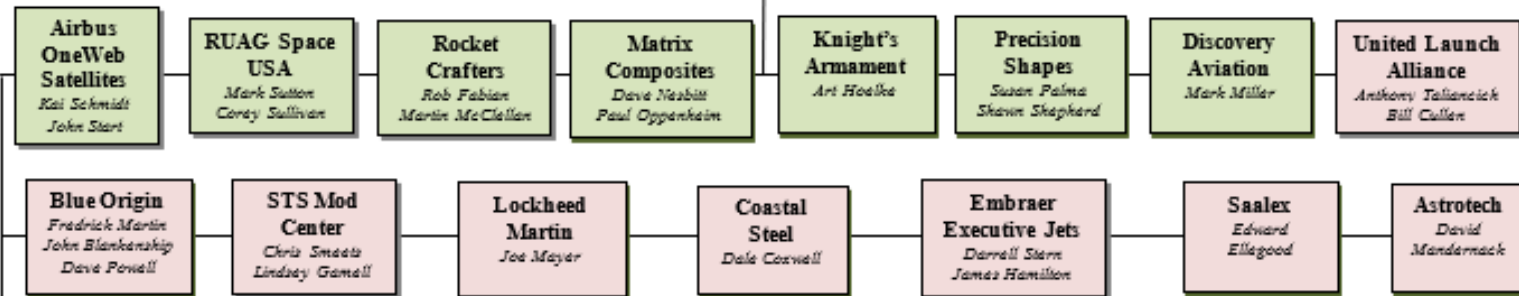
Space Coast Consortium

Fiscal Sponsor – SpaceTEC Partners, Inc.

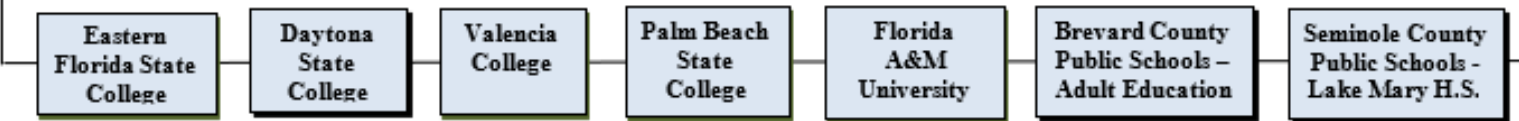
Executive Committee

Kai Schmidt – Chair
Mark Sutton – Secretary
Art Hoelke
Steve Kane
Bryan Kamm – Lead Advisor

Consortium Members:



Education Partners:



Credentialing Partners:

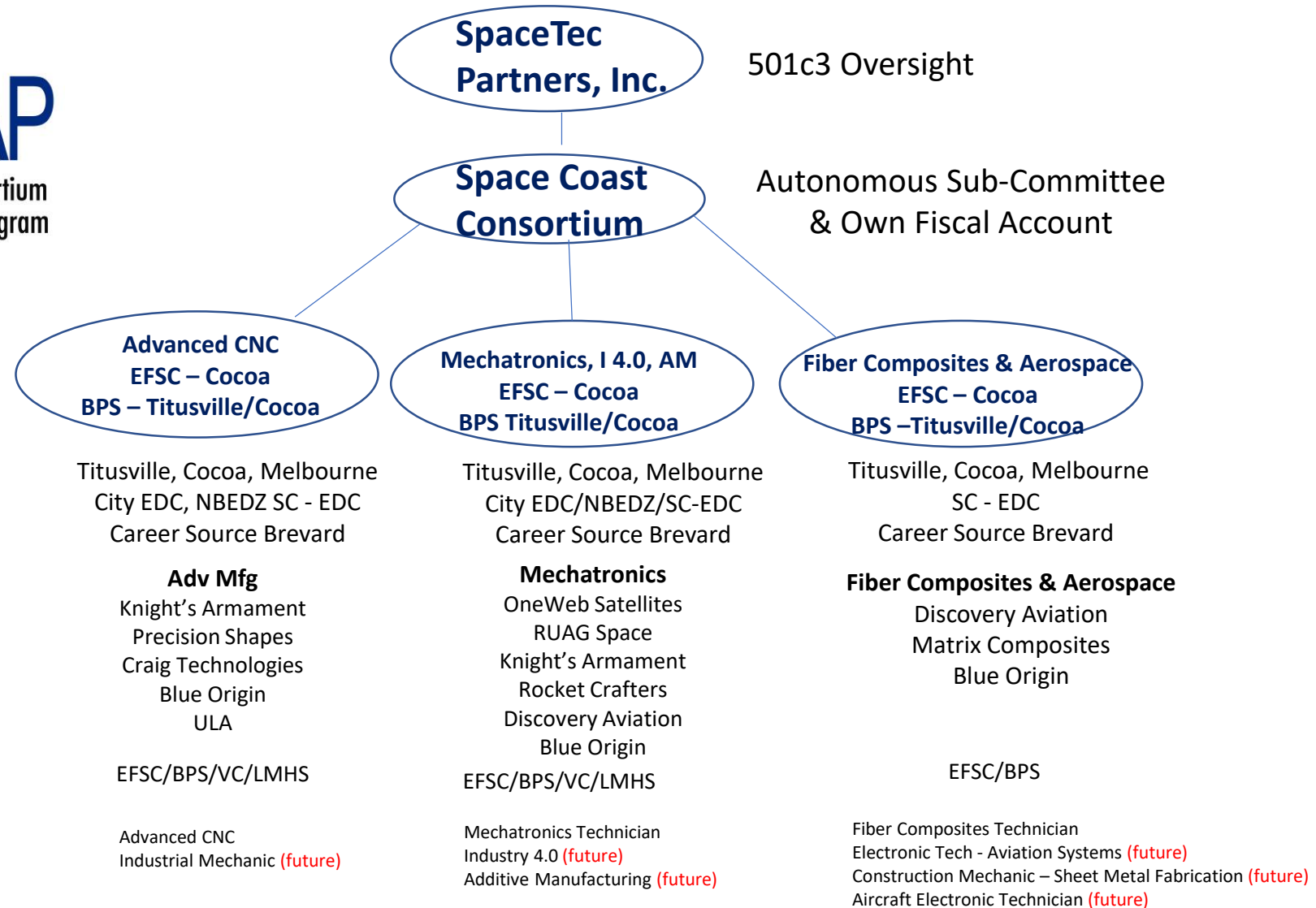


Key:
Pledged:
Pending:
Educational Partner:



THE CENTER FOR WORK ETHIC DEVELOPMENT

Proposed Space Coast Consortium Relationship Oversight



Funding/Grants

- 1) Governor DeSantis Executive Order (\$26 M towards Workforce Education; \$10 M towards Apprenticeships) Florida Career Pathways Grant
- 2) CareerSource Brevard Sector Strategies Funding to Reimburse Companies for On-the-Job Training
- 3) NSF ATE – I Supplemental Grant (\$120,000 awarded to SpaceTEC/MakerTEC for Apprenticeship Exchange Delegation Tour to Germany)

SCCAP History and Achievements

Building Industry, Education and Government Stakeholder Support

- Three Years of Workshops to Establish Consortium Apprenticeship Stakeholders and Local Support
- 4 Workshops & 16 Consortium Meetings in 3 years – **Media Events (Press Releases)**

2017

- NIMS Advanced Manufacturing Intermediary Sponsorship Grant (\$20,000 to KCG 08/17)
- Presentation to AIA Workforce Summit (Nov 2017) – **Media Event (Press Releases)**

2018

- EFSC/DSC 3.7M Job Growth Grant Fund (May 2018) – **Media Event (Press Releases)**
- SCCAP Position under SpaceTEC (August 2018) – **Media Event (Press Releases)**
- Consortium Raised \$17,600 (**OneWeb, RUAG, Knight's Armament, SpaceTec/MakerTEC**)
- 2018 IMTS GAP™ Apprentice Competition (Sept 2018) – **Media Event (Press Releases)**
- 2018 National Apprenticeship Week (Nov 2018) – **Media Event (Press Releases)**

2019

- FDOE Registration of Apprenticeship Program (**approved February 26, 2019**)
- Town Hall Meeting (Invitation to Educators, Students and Parents (**March 27, 2019**) **Media Event (Press Releases)**
- Recruitment of Student Apprentices (**April – May 2019**)
- Two Week Summer Orientation (1 day at EFSC; 2 days at Company) (**June 2019**)
- Student Apprentice Selections and Offers (**July 2019**)
- SCCAP FESTO MAP2 & Apprentice Signing Ceremony (**July 29, 2019**) **Media Event (Press Releases)**
- First Cohort of 9 Mechatronics Apprentices Start Fall 2019 (**August 12, 2019**)



SCCAP MAP2 & Apprentice Signing Ceremony – July 29, 2019



**Governor Ron DeSantis Addresses
Audience at SCCAP MAP2 & Apprentice
Signing Ceremony**



**Governor Ron DeSantis And Company
Sponsors OneWeb Satellites, RUAG Space,
Rocket Crafters and Knight's Armament Pose
with first 9 Student Apprentices**



Recent Press Regarding SCCAP

- July 29, 2019 – SCCAP Festo MAP2 & Apprentice Signing Ceremony
 - Attended by Florida Governor Ron DeSantis
 - <https://www.clickorlando.com/business/space-coast-launches-first-spaceflight-industry-led-apprenticeship-program>
- Airbus OneWeb Satellites – An Example of Industry 4.0 Manufacturing
 - <https://youtu.be/elO1lWaUblE>
- Festo Didactic MAP2 (Mechatronics Apprenticeship Program Partners) & Industry 4.0 Implementation
 - SCCAP is second roll out of Festo MAP2 in the US starting with 4 companies (20 goal)
 - First US Implementation of MAP2 in Mason, Ohio in 2016 at Festo Distribution Center (4 companies; currently expanded to 14 companies)
 - <https://storage.googleapis.com/wzukusers/user-17919389/documents/37e5fb4c91b147269d5e9ef33534c66b/OWS-SCCAP%20Press%20Release%20final.pdf>
- See SCCAP Webpage for more details and news media coverage regarding SCCAP
 - <https://www.bkammconsulting.com/space-coast-consortium>

SCCAP Focus for 2019 - 2020

- **NSF ATE – I Grant Supplement – College Delegation Tours to Germany in 2019/2020**
 - SpaceTEC/MakerTEC partnering with SCCAP, Kamm Consulting Group, EFSC and WSU Tech
 - \$120,000 Grant Award for two one week trips
 - Funding will support a total of 24 instructors and students
 - Purpose: To Tour German Apprenticeship Programs at Vocational Schools and Companies and to establish Apprenticeship Exchange Programs (Instructor/Student/Standards/Curriculum/Lab Exercises)
 - Other Colleges May Participate Via Invitation Only
- **State of Florida Legislative Support regarding State Statute Amendments And Funding**
- **Funding Sought For Additional Equipment for Mechatronics, Fiber and CNC programs**
- **Implementation of All 3 Occupations**
 - 1st Cohort of 8 Mechatronics Technician Apprentices (Fall/Spring/Fall - 3 semesters)
 - 2nd Cohort of 15 Mechatronics Technician Apprentices (Fall Semester 2020)
 - 1st Cohort of 13 Fiber Composites Technician Apprentices (Fall Semester 2020)
 - 1st Cohort of 8 Advanced CNC Machinist (Fall Semester 2020)
- **Festo MAP2 1st Year Cohort Competition at IMTS 2020 Student Summit (Ohio/Florida/Germany)**



Why Apprenticeships Are Important at the College Level

- **Best Target Market For Students Eager to Work While Going to College**
 - Students Already Committed to Seeking 2 or 4 Year Degree in Their Chosen Field
 - Most Students Require A Part Time Job To Make Ends Meet
 - Students Would Prefer to Work In Their Chosen Field of Study
- **Employers Prefer Career-Oriented & Self-Motivated College Students**
 - **SCCAP Employers Require Industry 4.0 Apprentice Technicians to Obtain at least a 2 year College Degree**
 - Students Have Chosen A Field of Study, but Lack Experience
 - Students Are Challenged Academically, as Well As Mentally to Prepare for A Career
 - Employers Can Provide The Mentoring & Experience Needed to Excel in Career
 - Employers Can Hand Pick Their Future Employees Through Apprenticeships
- **Colleges Have the Facilities For A Training Center and Can Hire Instructors**
 - Students Need Rigorous Academic Theory Plus Training Center (Lab) Experience taught at College
 - This prepares Students For Simultaneous Hands-on Experience & Mentoring at the Company
- **Apprenticeships are Win-Win for Colleges, Employers and Students**
 - Colleges – A Program Exists with Employers That Attract Students To the College
 - Employers – Have A Continual Feedstock of Quality Potential Employees
 - Students – Gain Experience While Learning, Have an Income and Sponsor to avoid College Debt, obtain a degree, and Have Lucrative Job Waiting When they Graduate



Educational and Mapping Partners

(Driven by Space Coast Consortium Workforce Needs)

- **Participating Educational Partners:** EFSC, Valencia College, LMHS, BPS
- **Standardizing Programs in Feeder Schools to SCCAP:** Implementing Same Programs and Same Quality
 - Valencia College (NIMS Credentials in CNC Machining – 22 wk); Mechatronics NIMS Credentials (using FESTO Mechatronics & Industry 4.0 Equipment)
 - Lake Mary High School – NIMS CNC Machining; developing Mechatronics Program using FESTO Mechatronics and Industry 4.0 Equipment
- **Standards Mapping Partners:** NIMS, FESTO, KCG, SPACETEC
- **Other Mapping Partners:** SCCAP Consortium Members, GACC/AHK, Swiss Embassy/SERI, Urban Institute

RUAG Space Mapping: Aerospace Skills Needs

RUAG Job Positions	Matching German & Swiss Apprenticeship Standards
Production Operations Manager	Machine & Plant Operator, Production Mechanic
Production Supervisor	Aircraft Mechanic, Machine & Plant Operator, Production Mechanic
CNC Operator Machinist	Machine & Plant Operator, Mechatronics Technician , Precision Machinist
Quality Inspector	Materials Tester
Floor Assembler I, II & III	Industrial Mechanic , Joiner, Mechatronics Technician , Precision Machinist
Materials Handler I, II & III	Industrial Clerk, Warehouse Logistics Operator

RUAG Standards Needed:

1. Machine & Plant Operator
2. Production Mechanic
3. Aircraft Mechanic
4. **Mechatronics Technician**
5. **Industrial Mechanic**
6. **Precision Machinist**
7. Materials Tester
8. Joiner
9. Industry Clerk
10. Warehouse Logistics Operator

Current Florida Industry German Certifications:

- Electronics Technician for Industrial Engineering
- **Mechatronics Technician**
- **Industrial Mechanic**
- **Precision Machinist**

RUAG Space & OneWeb Mapping

OneWeb Job Positions	Matching German & Swiss Apprenticeship Standards
Production Supervisor	Aircraft Mechanic, Machine & Plant Operator, Production Mechanic
Production Planner	Production Mechanic
Quality & Conformity Technician	Materials Tester; Materials tester specializing in systems technology
Floor Assembler I, II & III	Mechatronics Technician
Materials Handler I, II & III	Industrial Clerk, Warehouse Logistics Operator
Warehouse Logistics Operator	Warehouse Logistics Operator
Manufacturing Engineer	Machine and Plant Operator; Electronics technician for automation technology; Electronics technician for aviation systems;
Maintenance Technician	Industrial Mechanic; Industrial electrician in industrial engineering
Electronic Technician	Electronics technician for automation technology; Industrial electrician specializing in industrial engineering
Mechanical Engineer / CAD	Technical product designer - specializing in machinery and plant construction

RUAG Standards Needed:

1. Machine & Plant Operator
2. Production Mechanic
3. Aircraft Mechanic
4. **Mechatronics Technician**
5. **Industrial Mechanic**
6. **Precision Machinist**
7. Materials Tester
8. Joiner
9. Industry Clerk
10. Warehouse Logistics Operator

OneWeb Standards Needed:

1. Production Mechanic
2. Materials Tester in Systems Technologies
3. Electronic Technician for Aviation Systems
4. Electronic Technician for Automation Technologies
5. **Industrial Electrician in Industrial Engineering**
6. Technical Product Designer in Machinery and Plant Construction

2019 COHORT – EFSC FALL SEMESTER Occupations/Apprentices Requested

Company	Employer's Agreement	FESTO MAP2 Registration form	Mechatronics	Composites	CNC	TOTAL	Not Ready to Participate in 2019
RUAG Space	X	X	2			2	
OneWeb Satellites	X	X	5			5	
Knights' Armament	X	X	1			1	
Blue Origin							X
Rocket Crafters	X	X	1			1	
Matrix Composites	X						X
Discovery Aviation	X	X					X
ULA							X
Precision Shapes	X						X
Total			9			9	

ANTICIPATED 2020 COHORT – EFSC FALL SEMESTER

Occupations/Apprentices Requested

Company	Employer's Agreement	FESTO MAP2 Registration form	Mechatronics	Composites	CNC	TOTAL	NEW Ready to Participate in 2020
RUAG Space	X	X	2			2	
OneWeb Satellites	X	X	5			5	
Knights' Armament	X	X	2		2	4	
Blue Origin	X	X	2	2	2	6	X
Rocket Crafters	X	X	1			1	
Matrix Composites	X			10		10	X
Discovery Aviation	X	X	1	1		2	X
ULA	X	X	1		1	2	X
Precision Shapes	X				2	2	X
Craig Technologies	X	X	1		1		X
Total			15	13	8	36	6

WorldSkills Results – Abu Dhabi 2017



<https://worldskillsabudhabi2017.com/en/news/results/>

Ranking	Country	Points
1	China	109
2	Korea	88
3	Switzerland	81
4	Brazil	75
5	Russia	59
6	Chinese Tapei	56
7	France	52
8	Austria	49
9	Japan	43
10	United Kingdom	32
11	South Tyrol, Italy	26
12	Germany	24
35	United States	4

Florida Manufacturing Apprenticeship Programs in 2019

Region	Programs	Apprentices
1) NE FL	1	1
2) NW FL	0	0
3) CFL	3	51
4) WFL	2	31
5) SFL	1	9
6) SWFL	<u>1</u>	<u>24</u>
Total	8	116

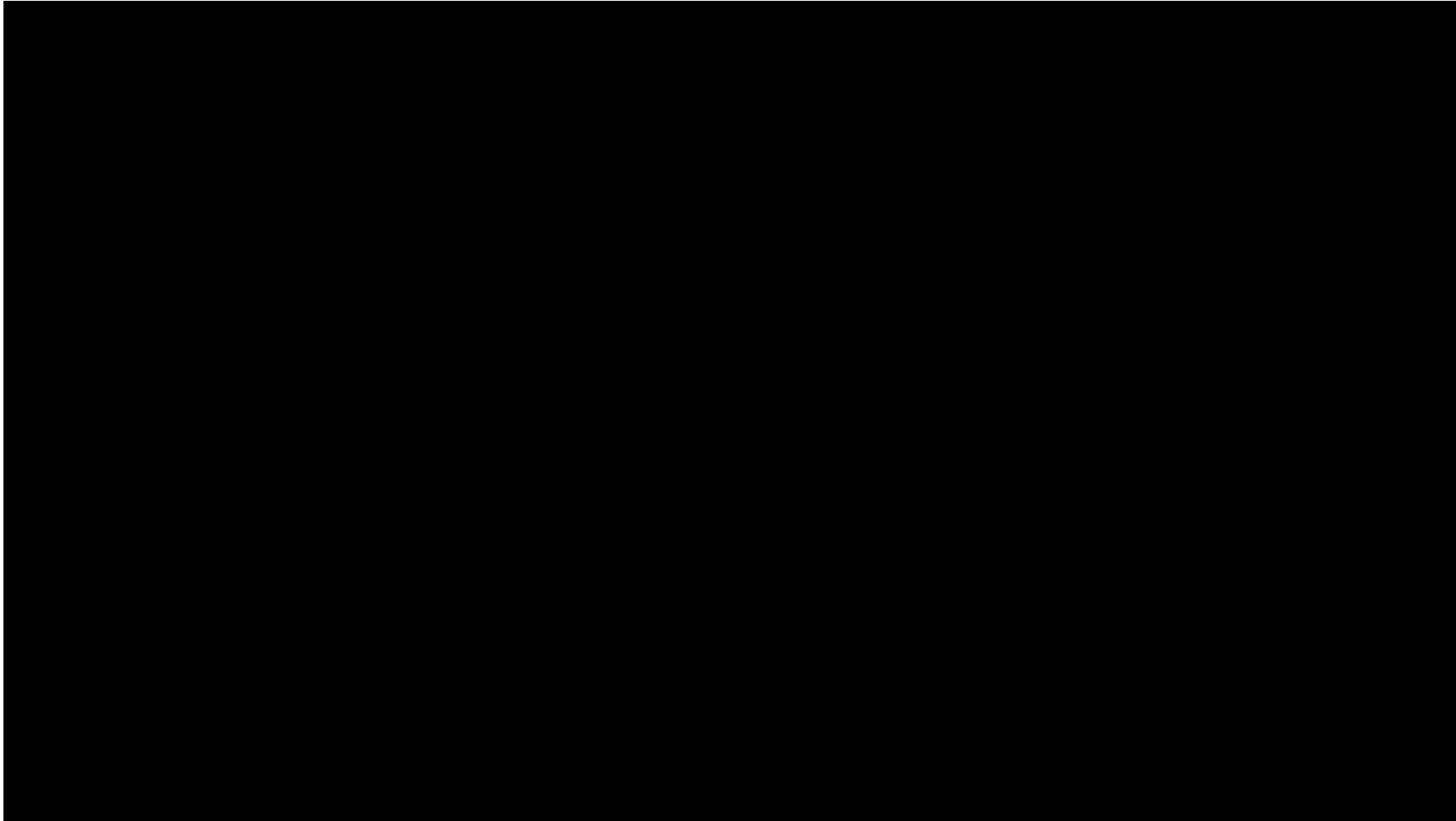
+ 1; + 19 – SCCAP
(As of 02/26/19)

Total Apprentices statewide (all industries) 11,438

Total Apprenticeship programs (all industries) 196

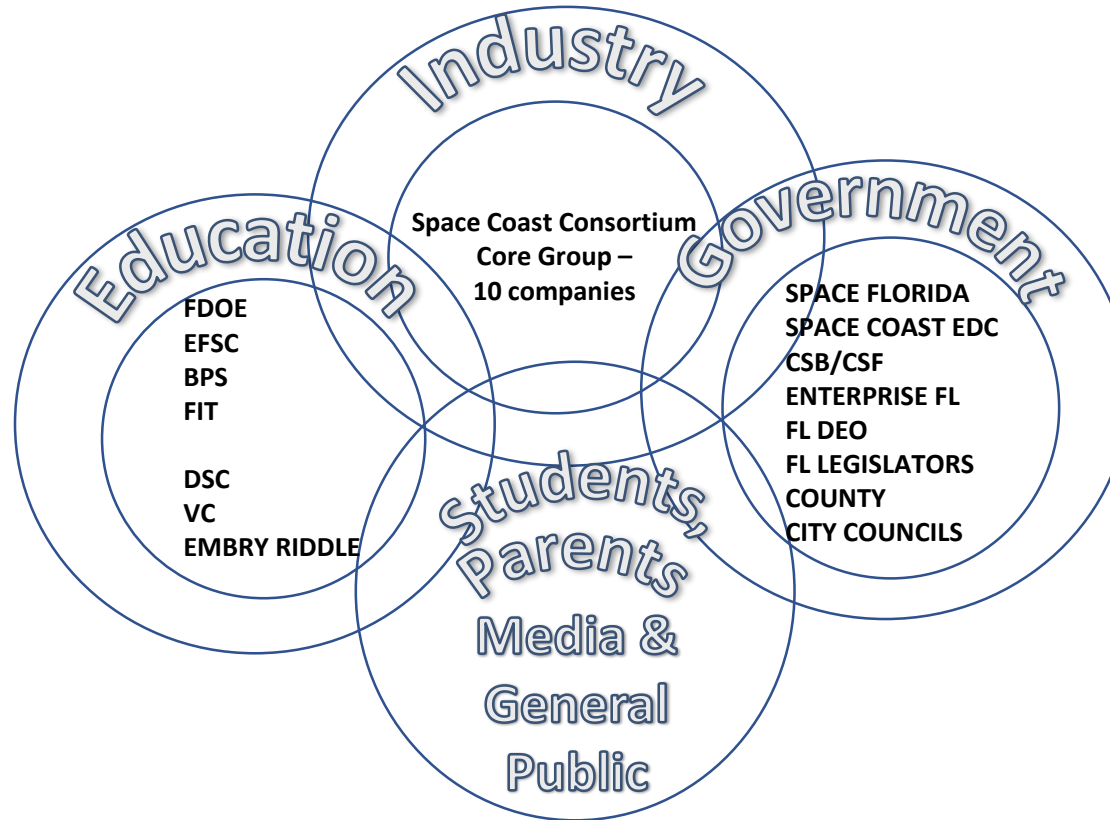
TRUMP Admin Apprenticeship Executive Order Goal = 500K to 5 M in 5 Years!

World GDP Chart from 1960 to 2017



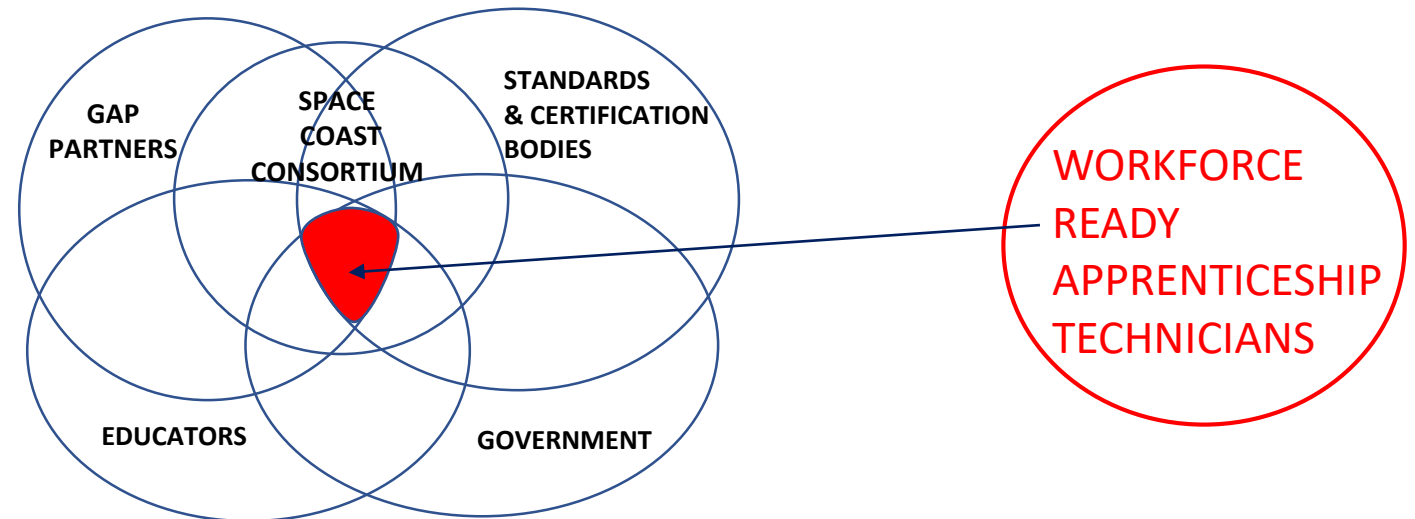
Local Spheres of Influence

*Stakeholder
Influences
Required in
Regions*



*Champions Required to
Carry Torch in Each
Sphere*

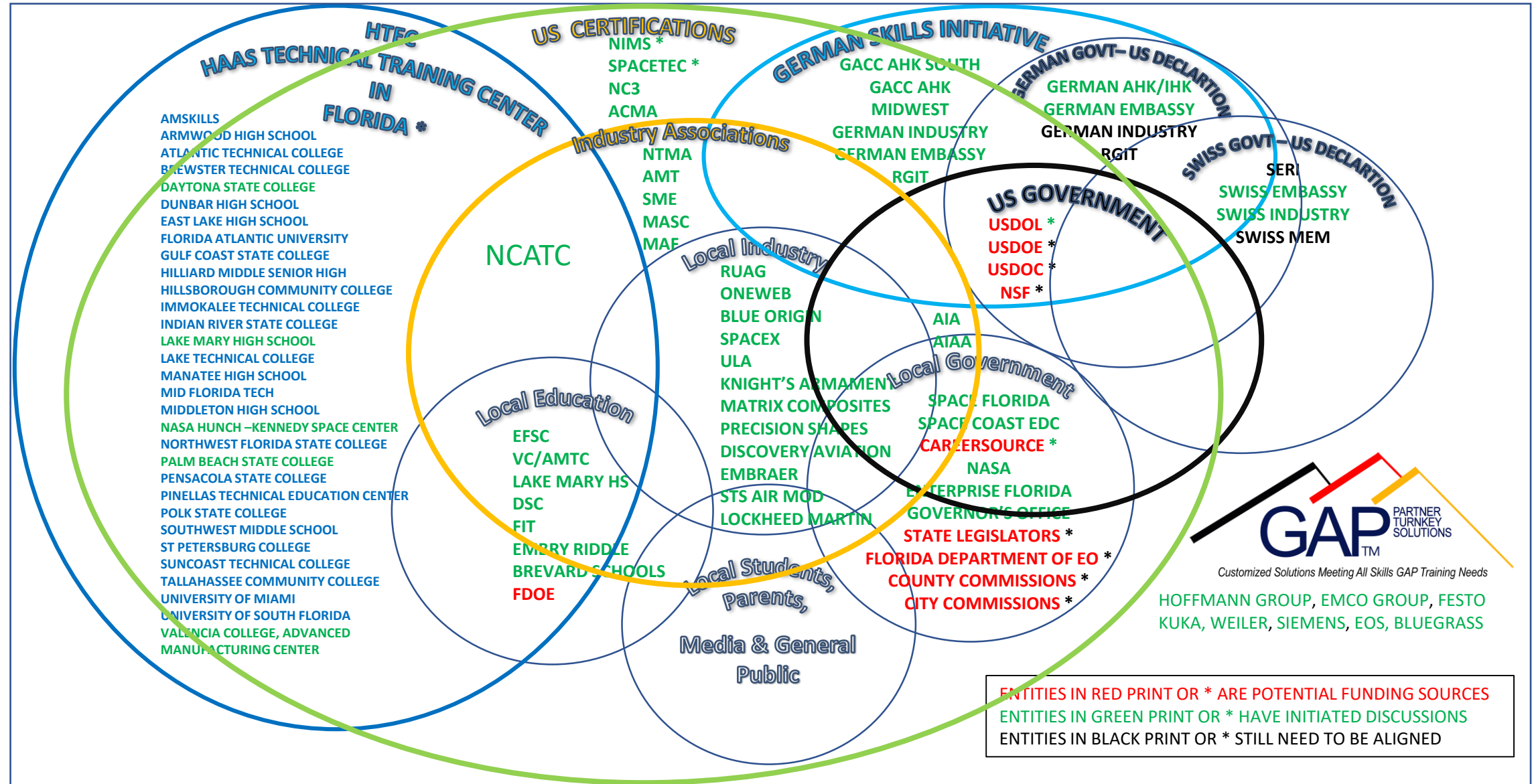
CONSORTIUM APPRENTICESHIP ROAD MAP



THE HEARTBEAT OF OUR FUTURE WORKFORCE

Kamm Consulting™ Local, State & National Spheres of Influence

SNAPSHOT of September 4, 2019



Bridge the



Services

- Complete GAP™ Turnkey Solutions for Industry 4.0 Advanced Manufacturing
 - Equipment
 - Standards
 - Curriculum
- International business partnering and site selection
- Workforce training partnering
- International apprenticeship exchange program partnering
- Vendor equipment and training partnering

Turnkey Solutions Partners



WHAT
DOES



BRING
TO The
SPACE
COAST?

- WORLD CLASS MULTI-DISCIPLINED APPRENTICESHIP PROGRAMS FROM GERMANY, AUSTRIA AND SWITZERLAND – 89 Adv Mfg Occupational Standards
- 4 YEAR APPRENTICESHIP COMBINING ACADEMIC THEORY WITH PRACTICAL HANDS-ON TRAINING (2 + 2 – HS & COLLEGE)
- A REGIONAL TRI-COUNTY APPRENTICESHIP INITIATIVE
- ALIGNMENT WITH NIMS, US DOL, FDOE & CAREER SOURCE FL – POTENTIAL SEED FUNDING SOURCES
- ALIGNMENT WITH LOCAL, STATE AND US INDUSTRY, EDUCATION & GOV'T AND NFP STAKEHOLDERS
- SEED FUNDING OPENS DOORS FOR ADDITIONAL FUNDING SOURCES (CITY, COUNTY, STATE AND FEDERAL)
- GLOBAL STANDARDS REVIEWED AND MODIFIED ANNUALLY BY INDUSTRY, EDUCATION AND GOVERNMENT IN GERMANY & SWITZERLAND – **DON'T REINVENT WHEEL**

Six Steps Process to



Implementation

Step 1: Speaking Workshops

Step 2: Community Assessment Workshops

Step 3: Industry and Community GAP™ Consulting

Step 4: Community Mapping

Step 5: Standards Mapping

Step 6: Community GAP™ Business Plan to Solicit Funding



OBSERVATIONS: US Short Term “Quick Fix” Training vs. GAP™ Long Term Training Solution



US Short Term “Quick Fix”

- Based upon supply and demand
- Concentrates on filling bodies in positions
- Training is limited to a specific task
- Targeted for existing employees
- Technical colleges still carry “Loser” stigma
- Technical college grads lack experience
- Social behavior issues are predominant
- Does not improve global competitiveness
- Company does not create future leader/mentors

GAP™ Long Term Solution

- Based upon global competition
- Concentrates on developing innovators
- Training focuses multiple disciplines
- Targets high school and college age
- World class gold standard erases stigma
- World class apprentices (4 years exp.)
- Social behavior issues become non-issue
- Begins a path towards global longevity
- Company creates future leader/mentors

- **GAP™ MANUFACTURERS ATTRIBUTE INDUSTRIAL SUCCESS TO THEIR APPRENTICESHIP TRAINING**
- **GAP™ OCCUPATIONAL STANDARDS ARE WORLD-CLASS BENCHMARKS IN INDUSTRY 4.0 ADVANCED MANUFACTURING**

Decisions to Go With Festo MAP2 and Festo Industry 4.0



1. Mechatronics Occupational Standards are world-class benchmark apprenticeship standards used in Germany, Switzerland and Austria
2. Industry 4.0 was Founded in Germany and Festo was a Co-founder and Contributor to Industry 4.0 technologies
3. Festo MAP2 was created from the same Mechatronics Occupational Standards used by Festo globally with over 500 apprentices and implemented in 2016 at Festo's Distribution Center in Mason, Ohio
4. Airbus OneWeb Satellites and RUAG Space have first hand experience in Europe with the quality of these Mechatronics Occupational standards



Quote from Thomas Lichtenberger, Festo Didactic, Inc at SCCAP MAP2 and Apprentice Signing Ceremony:

“Festo is a worldwide integrator for industrial automation and the largest supplier of industrial automation components and mechatronics and Industry 4.0 training equipment. In fact, Industry 4.0 was a movement that started in Germany and Festo is proud to be a founding member and leading contributor to this movement”.

Elements of FESTO's **MAP²** - Mechatronics Apprenticeship Partners Program

FESTO

General Education:

- Apprentices will attend classroom instruction 1 day per week at college
- Tuition paid by companies



Technical Hands-on Training:

- Apprentices will attend hands-on training with Festo Didactic 1 day per week
- Training fees paid by companies



Training on-the-job in the companies:

- Companies assign qualified trainers
- Companies develop related training plans
- On the job training consists of about 2,000 hours



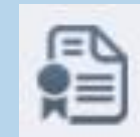
Train-the-Trainer for participating companies: Develop the necessary skills for

- Technical training and knowledge transfer
- Teaching methods and training standards
- Training for competencies
- Evaluation criteria and progress-checks
- Course preparation and implementation
- Monitoring and improving



Degrees and Certifications:

- Associate's Degree
- Optional Capstone Project certification
- Stackable/Portable Industry Certifications in process
 - Festo Certification with NC3
 - Alignment to others



Festo Group – Industrial Automation and Education

An independent family-owned company



Turnover: 2.5 billion EUR / 19.000 employees worldwide / 61 subsidiaries

Active in 176 countries for 300,000 clients

Innovative and self-learning: 3,000 patents, more than 100 innovations/year Education investments: 1.5% of sales



Festo Didactic is the world-leading provider of equipment and solutions for technical education – your global partner for workforce development.

GARP Apprenticeship Consortium Near Stuttgart, Germany

- Started with 13 companies and now has expanded to 182 companies!
- In one of the most concentrated advanced manufacturing regions in the world!

Willkommen
in einem
starken Verbund.



Werden Sie Mitglied.

Apprenticeship Program Development

Montez King

Executive Director, NIMS

Member of:





About NIMS

Industry-Defined
Skill Standards

Industry-
Recognized
Credentials

Training

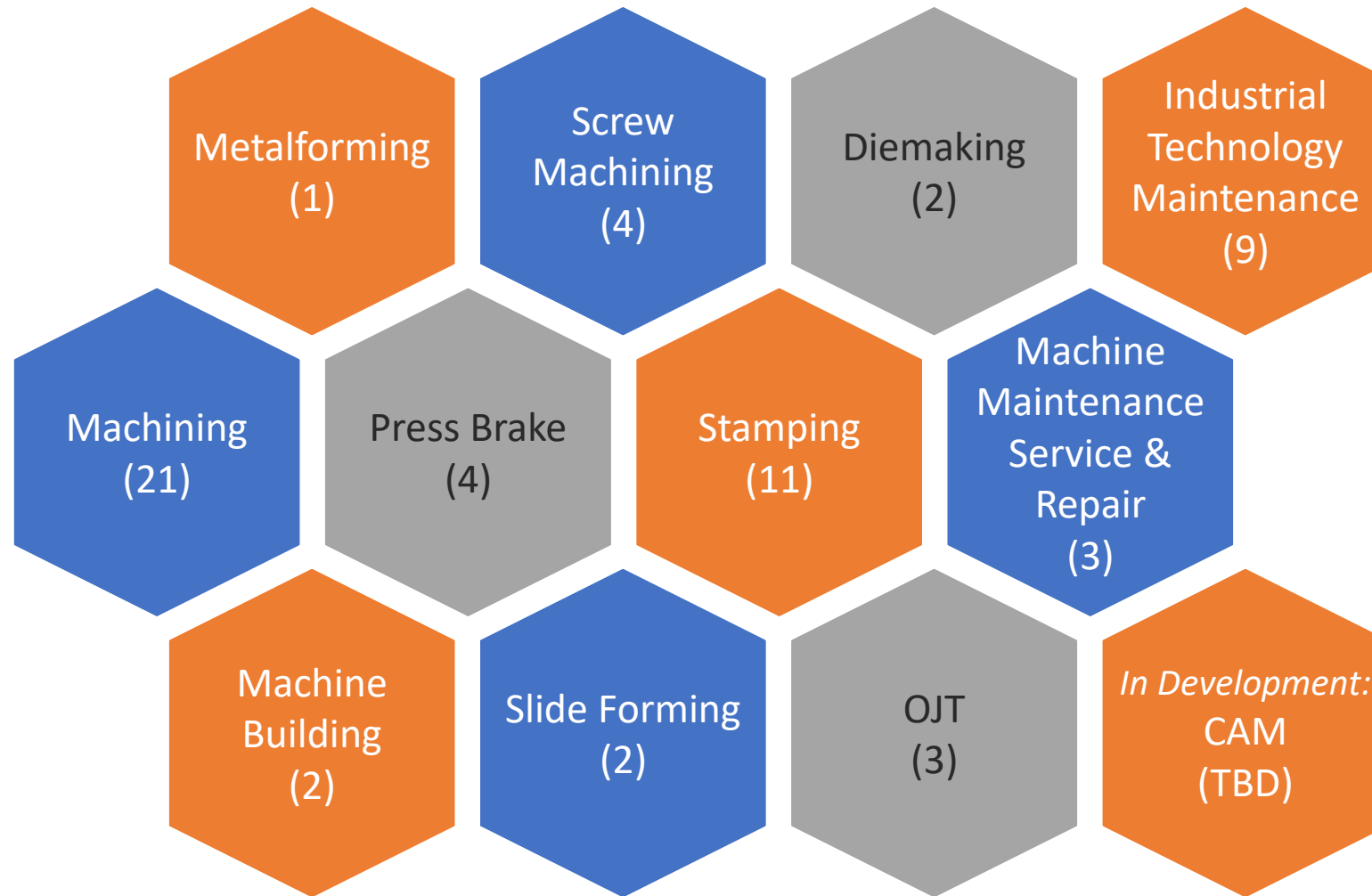
Accreditation of
Training Programs

- Standards developed, piloted and accredited by industry subject matter experts.
- Performance & theory exams verify specific knowledge, skills and abilities.
- **Over 128,000 nationally-portable credentials issued and 60,000+ candidates registered.**
- Schools, training programs, and companies train students and employees to NIMS standards.
- NIMS workshops support training providers with integration of curriculum and NIMS standards.
- Over 200 training and educational programs are NIMS accredited.

- Industry, Associations, Military, Public & Private Education
- 1,733+ testing locations
- 20,973 credentials issued in 2017

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Credentials



SpaceTEC Partners Exams and Credentials



Active:

- Aerospace Core
- Vehicle Processing
- Composites

Inactive:

- Manufacturing ¹:
 - Structures and Assembly
 - Manual Machining
 - CNC Machining
 - Cutting/Welding

¹ All include Manufacturing Essentials



Active:

- Basic Electricity and Electronics (BEE)
- Basic Composites
- Aviation Structures
- Aviation Mechanical Assembly
- Avionics
- Aircraft Electronics Technician Practical Skills Certificate ²

In Development:

- Advanced Electricity and Electronics (AEE) ³
- Aviation Structures (Journey Level)
- Aviation Electrician - EWIS
- Advanced Composites

² Complementary to ASTM AET

³ Requires written exam through ETA-I



Administered by Credential Testing Services, a division of SPI



Active:

- Aircraft Electronics Technician (AET)
- Endorsements:
 - Autonomous Navigation Systems (ANS)
 - Dependent Navigation Systems (DNS)
 - Radio Communication Systems (RCS)
 - Onboard Communications & Safety Systems (OCS)
- Foreign Object Elimination (FOE)
- Aerospace/Aircraft Assembly
- Unmanned Aircraft Systems Maintainer (> 50 lbs.)
- Avionics 1 – Direct Current ⁴
- Avionics 2 – Alternating Current ⁴
- Avionics 3 – Analog Systems ⁴
- Avionics 4 – Digital Systems ⁴

In Development:

- Corporate Cabin Crew

⁴ End of course testing for Nida Corporation Avionics Computer-Based Training



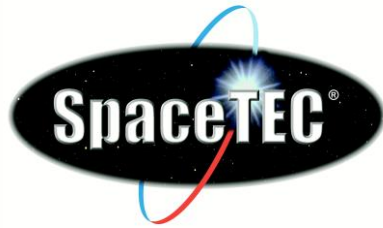
Administered by Credential Testing Services, a division of SPI



Active:

- Advanced Manufacturing Technician
- Aerospace Electrical Assembly
- Aerospace Quality Technician
- Aerospace Structures Technician
- Apprentice Tool Maker Technician
- CNC Lathe Production Technician
- CNC Machining Center Production Technician
- Composites Manufacturing & Repair Technician
- Drafting and CAD Technician
- Mechatronics & Industrial Automation Technician
- Quality Assurance Technician
- Safety Technician





Approved Training and/or Testing Centers

