



**MANUFACTURING  
SKILL STANDARDS  
COUNCIL**

**Closing the Skills Gap in Texas in the  
Manufacturing and Logistics Sectors  
MSSC VIRTUAL SUMMIT SUMMARY REPORT**



**August 2020**

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## EXECUTIVE SUMMARY

### INTRODUCTION

This Report reflects the input received from 33 federal, state, and regional thought and opinion leaders, on both the opportunities and the challenges of closing the Skills Gap in the Manufacturing and Logistics Sectors. That is, providing the training and educational opportunities critical to equip our workforce with the skills and competencies needed by the Advanced Manufacturing and Transportation Distribution Logistics Sectors. The participants represent 5 broadly defined sectors of stakeholders, all of which are critical and germane to the issue. They include Workforce Development; Education; Business & Industry; Justice Involved; and Veterans.

The fundamental premise of the Summit was that two COVID-19 driven megatrends are significantly increasing opportunities for in-demand, high-skill, high wage jobs in the United States: the *reshoring of manufacturing* and *sharp increase in eCommerce in the logistics sector*. These trends could expand current production and contribute additional economic growth, increasing national security benefits to the nation.

To do so, we must be able to close the skills gap to meet the unmet demand for skilled workers in these two sectors. This requires equipping job seekers with the skills and competencies needed by both manufacturing and the supply chain, which is necessary to move parts and components to production, and products to market.

The Summit was hosted by the Manufacturing Skill Standards Council on August 20, with most speakers from Texas, where MSSC was holding its annual Leadership Meetings. The purposes were to provide information to and receive input from representatives of key stakeholder sectors, relative to the challenges and opportunities inherent to closing the skills gap, as well as determine their views on the critical issues, best practices, use of nationally recognized industry certifications and apprenticeship models, navigating the new realities of COVID-19, and determining their interest in enacting regional and state wide strategies as an outcome of the Summit.

### PRINCIPAL FINDINGS

In evaluating the input received, we have drawn two fundamental conclusions: (1) there is strong, consistent interest, across the stakeholder groups, in aligning and integrating their resources to close the skills gap in manufacturing and logistics; and (2) there is a consistent view that the way we approach the challenges must be different than the ways we've done so in the past.

There are 3 significant, relevant, overarching themes expressed at this Summit, relative to specific issues and recommendations, to be addressed by all stakeholders. The 3 themes are as follows:

**Connectivity:** stated as the need to provide connectivity in terms of (1) access to WiFi, given the virtual learning environment and the lack of internet access in more than 50% of all households in the US; and (2) connectivity to the agencies and organizations that provide direct assistance to populations reentering the community from the military, incarceration, addictive treatment, or other facilities or situations.

**Education & Awareness:** stated as the need to improve and expand outreach to students and their families, to educate them on (1) the value of career & technical education; (2) the value of Apprenticeship Programs and Industry Certifications; and (3) the related career opportunities that education and training provides, changing their perceptions.

**Alignment:** stated as the need to ensure that education and training programs are aligned with the skills, competencies and knowledge required for the jobs employers offer.

An additional outcome of this Summit was a commitment on the part of most panelists to continue their dialogue after the Summit to flesh out specific action plans to implement many of the panel recommendations.

## PLENARY SESSION

### PREMISE

*The Plenary Session focused on four significant, relevant, overarching topical Issues that must be understood, as well as addressed by federal and state agencies, and the broader stakeholder community. The four Issues are as follows:*

- ❖ **MEGATRENDS** – Leo Reddy, Chairman of the Board, Manufacturing Skill Standards Council
- ❖ **ADDRESSING THE SKILLS GAP THROUGH STATE STRATEGIC PLANNING** – Wes Jurey, Immediate Past Chair, Texas Workforce Investment Council and Senior Advisor, MSSC
- ❖ **COMMUNITY COLLEGES ROLE IN BUILDING TALENT PIPELINES** – Chancellor Cesar Maldonado, Ph. D, P.E., PMP, Chancellor, Houston Community College
- ❖ **IMPLICATIONS OF THE FIRST STEP ACT** – Ryan Raybould, Chief Legal Counsel to Senator John Cornyn

### MEGATRENDS

*Leo Reddy, Chairman of the Board, Manufacturing Skill Standards Council*

As shown in the MSSC Texas Fact Sheet [here](#) we have enjoyed working here over the years with some 70 corporations and over 110 educational institutions. This is why Texas has consistently ranked number 5 or 6 among the 50 states using MSSC.

We are here today to suggest ways to move Texas even farther up that scale by encouraging you to give high priority in your economic development planning to two critical areas of your economy in which MSSC offers a strong suite of stackable, industry-wide certifications: Manufacturing and Logistics. Click [here](#) to view a description of Manufacturing and Logistics programs.

These two sectors play a key role in the Texas economy employing over 13% of your total labor force. Most importantly, these are both technology-intensive sectors that offer in-demand, higher wage, higher skilled career pathways. Further driven by COVID-19, there are megatrends in both these sectors that are accelerating employment growth.

*In manufacturing*, the President's "Made in America" campaign to bring manufacturing jobs back to America has borne fruit, with 180,000 jobs reshored since 2017. Driven by alarms over our excessive dependence on China for medical equipment, pharmaceuticals, and vaccines, COVID-19 is accelerating reshoring.

This experience is also illuminating similar dependencies in rare-earth minerals, 5G communications systems, electronic equipment, computers, cell phones, and foreign-supplied components for the nation's defense production and electric grid needs.

Putting these events together, we are now seeing the emergence of a mega-trend toward optimally self-sufficient supply chains in America's domestic manufacturing. Texas can lead the way by increasing manufacturing jobs 100 to 200% to remove the U.S. lack of self-sufficiency in these key product categories.

*In logistics*, the nation is experiencing an even more dramatic megatrend in retail. E-commerce is the fastest growing segment of the retail sector. Business-to-customer direct shipping has steadily increased its percentage of shipping volume since 2014.

Precipitated by COVID-19, 25% of all retail spending will be online by 2025, a megatrend expected to force 100,000 retail stores to close. One effect is the sharp rise in employment

in the nation's distribution and fulfillment centers, with Walmart announcing 200,000 and Amazon 100,000 new logistics jobs.

As a state with one of the nation's most impressive transportation-distribution-logistics infrastructure, Texas is well positioned to leverage this trend to greatly increase career pathway opportunities in this sector.

To retain and attract leading manufacturing and logistics corporations to invest and locate in Texas, there is no more important requirement than to build, upgrade and document the skills of your workforce. A 2019 survey by *Site Selector Magazine* found that the No. 1 criterion used by companies in selecting sites for locating plants and distribution centers was the availability of a skilled workforce.

MSSC is thus well positioned to serve as a strong partner if Texas takes advantage of these megatrends to increase the number of higher skilled workers in manufacturing and logistics as a state economic development strategy.

Since MSSC's focus is on the front-line workforce in both sectors, our forte is building a robust pipeline of workers from entry level to first line supervision. For this purpose, we work with a diverse population: secondary school students, community college students, unemployed, opportunity youth, career changers, veterans, and incarcerated. This includes minority populations that have been especially hard hit by COVID-19.

The long list of distinguished speakers on this Summit Agenda will provide many examples of how MSSC works with *all* these populations. We will also explain how, in response to COVID, MSSC now makes most of its certification training and testing available *online* so that individuals can secure our credentials at home in a matter of week—and at low cost.

We will also showcase the extent to which we use a wide range of technologies in both the content and delivery of our curriculum. This is why we are especially pleased to use this Summit meeting today to announce a new MSSC Certification in Supply Chain Automation.

This announcement will include a live demo of a new, highly innovative hands-on training and testing device called Skill Boss-Logistics required for this new SCA certification. This device was developed for MSSC by Amatrol, the nation's leading manufacturer of industrial technician training equipment, with input from many of the nation's leading distribution and delivery companies, including Target, FedEx, UPS, Walmart, and Honeywell.

MSSC hopes that the important conversations that we will have today with leaders from TX industry, education and government will support the Governor's Strategic Plan.

## **ADDRESSING THE SKILLS GAP THROUGH STATE STRATEGIC PLANNING**

***Wes Jurey, Immediate Past Chair, Texas Workforce Investment Council and Senior Advisor, MSSC***

Texas, like all states, is challenged to close the Skills Gap in many of our critical Industry Sectors, including Manufacturing & Logistics. We recognize Manufacturing is vital to wealth generation, and Logistics is vital to the supply chain.

I was privileged to have been appointed Chairman of the Texas Workforce Investment Council (TWIC), which is the Texas Workforce Board, by Governor Perry, and to lead the development of the current 8-year Strategic Plan for the States Workforce System, which includes 8 State agency members. That plan was approved by Governor Abbott in 2015.



We addressed the Skills Gap in the Current 8-year plan, the development of which was a 3-year process.

In the 1st year, the 8 Agencies each presented their initial draft plans to the Council, as well as to all 8 Agencies. The public review of the plans, which provided significant insight into each of the Agencies, became the genesis for the establishment of the “Tri-Agency Partnership”, which aligned and integrated the resources of the Texas Workforce Commission, the Texas Education Agency, and the Higher Education Coordinating Board. In essence, those 3 Agencies identified ways in which they could more effectively work together. That ultimately led to the development of a Tri-Agency Plan, entitled “60 x 30TX”, calling for 60% of Texans ages 25-34 to have a certificate or degree by 2030 ([View Report Here](#)). Essentially, a playbook for our states workforce system, focused on getting every student ready for work, college or the military.

Our 2nd year, we focused our research on key issues identified by the Agencies – I’ll discuss 3 in particular.

## 1. INDUSTRY CERTIFICATIONS

- I appointed a Task Group comprised of Agency representatives and knowledgeable Business & Industry leaders. They spent 2 years studying the use of more than 5,000 Industry Certifications utilized in Texas. As a part of that process, Leo Reddy, Chairman of the Manufacturing Skill Standards Council (MSSC) made a presentation to the Group.
- We then developed an approach and proposed specific criteria for industry certifications to be recognized in Texas.
- Our final step was meeting with the Executive Directors and Chairmen of our 28 local workforce boards. They were each asked to survey the businesses in their Advisory Committee & Boards with 1 question:
  - Of the 5,000+ certifications in use in Texas, which ones would make a significant difference in your hiring design between two applicants, all things being equal, except one has a certification on this list the other does not. Only 187 made the initial list!
  - In follow up, I visited personally with a number of prominent busy and Industry leaders. They essentially confirmed their growing acceptance and use of industry certifications as the basis of employability, over 2 or 4 year degrees, and that of the hundreds of thousands of certifications and credentials in the market place, less than 300 truly qualified as “nationally recognized by industry.”
- In conclusion, TWIC, in its role as the Texas Skill Standards Board issued a Report, that included the Criteria for Certifications to be approved by TWIC. ([View Report Here](#))

## 2. UNMET DEMAND

- In recent years Texas has experienced record low unemployment, as well as significant, unmet demand for skilled workers in a number of critical industry sectors. That unmet demand still exists in the midst of the high unemployment numbers due to COVID-19, as its basically caused by a lack of skilled job seekers, rather than an adequate number of job seekers.
- Two sectors among the highest, in terms of unmet demand, are Manufacturing & Logistics, both vital to economic growth.
- In all economies, only 3 fundamental things happen:
  - You generate wealth
  - You recirculate the wealth generated
  - The wealth migrated to other regions

- Manufacturing generates wealth, by creating a product selling for more than the cost of production.
- Logistics (the supply chain) supports the movement of parts and components into the production facilities and the movement of products to market, important to recirculating wealth within the region.
- The value to employers was evident in my direct communications with employers.
- During a presentation attended by 80 Logistics Centers at Alliance Airport, Walmart discussed their use of MSSCs Certified Logistics Technician (CLT). They stated that their training cost for non-certified new hires was approximately \$10,000 per in the first six months, with a 50% retention rate. However, their training cost for new CLT hires was \$1,000 per, with a 90% retention rate.
- In essence, the promotion and use of the Certifications recognized by business and industry within high school CTE programs, by community college, and within jails and prisons pre-release plays a critical role in the development of Talent Pipeline Models, capable of creating the skilled, certified job seekers needed to close the Skills Gap.

### 3. OPPORTUNITY POPULATIONS

- During the first year of the planning process, I met with each Agency Director, following their Agencies presentation, to ensure my own understanding. Those presentations and subsequent de-briefings made clear the need to provide direct support to individuals we are now calling “opportunity populations.”
- In Texas the evidence clearly supported the need to provide resources and direct support to more effectively serve Veterans and Justice involved youth and adults.
- The two populations represent a significant percentage of the adult workforce. Nearly 1 in 3 working age Americans have a record. The percent of our population incarcerated in Texas is significant. In Tarrant County where I live, the number of non-duplicated individuals returning to the County annually from incarceration is 25,000; approximately 1.2% of the County’s population. Of those 25,000, approximately 68% will be rearrested in the first three years, more than half in the first year.
- Thanks to Federal Reform, including the passage of the First Step Act, resources are available to support justice reform, which can lead to a reduction in recidivism. As two examples, there are federal tax credits available to employers who hire individuals who are Veterans or Justice Involved, as well as Bonding for Justice involved new hires. Yet these resources are not well known to business & industry.
- In Texas, the majority of those individuals incarcerated are minor, nonviolent offenders; the majority of those are first time minor offenders. Yet the perception remains that most incarcerated individuals are committed for violent crimes.
- In my conversations with Justice officials they stressed the need for individuals, upon release, to secure living wage employment, as the first step toward a reduction in recidivism, and the individual’s ability to lead a sustainable life.
- From my perspective, we must focus on establishing effective Models that support the successful Reentry of opportunity populations back into their communities.
- In Tarrant County, where I live, we welcome back approximately 25,000 non duplicated adults annually who are released from incarceration. In the first 3 years,

however, approximately 68% will be rearrested, with more than half of those in the first year.

- In a real sense, we cannot afford to allow those individuals to recidivate, becoming wasted assets, as there is a cost of excluding individuals with a record from work, leading to sustainable lives.

## **SUMMATION**

From my perspective, if we are to close the skills gap to meet the demand, supporting opportunity to bring manufacturing home and expand the supply chain, there are 4 key factors –

1. **NEW MODELS**: Continually embrace and develop new methods, approaches and models that align and integrate the resources of state agencies, as well as regional and local entities, with the needs of business and industry.
2. **SERVE ALL**: Strive to serve ALL POPULATIONS through the development of Industry Led Talent Pipeline Models, engaging business & industry, government, and education.
3. **CERTIFICATIONS**: Utilize Nationally Recognized Industry certifications, as well as apprenticeship and pre-apprenticeship programs, to develop the skills and competencies needed.
4. **EMBRACE INNOVATIVE TEACHING & INSTRUCTIONAL APPROACHES**: If COVID-19 has taught us anything, it's that we must become adept at how we deliver instruction and training.

## **COMMUNITY COLLEGES BUILDING TALENT PIPELINES**

*Cesar Maldonado, Ph. D, P.E., PMP, Chancellor, Houston Community College*

Education plays a critical role in the future of manufacturing, and now more than ever, it is so important that we work together to invest in the people and technology that are driving the future of the industry.

## **INDUSTRY REALITIES**

I don't have to tell you that the ever-evolving field of technology is constantly developing new innovations which create exciting opportunities for today's manufacturers. You live it.

- With this growth and change in the manufacturing industry comes the very real challenge of finding available workers who have been properly trained to succeed in the new manufacturing environment.
- A 2018 report conducted by Deloitte found that 89 percent of manufacturing jobs were unable to be filled because of a lack of educated workers.
- As a leader in the nation in manufacturing and trade, Houston has over 6,400 manufacturing employers and includes transportation and logistics as major industry sectors. That's a lot of jobs to fill.



- As an educational leader in Houston, HCC has over 20 campus locations and Centers of Excellence; offers over 100 fields of study and over 270 certification programs; employs over 5,000 full- and part-time faculty and staff; and last year, had over 104,000 students attended one or more of our classes.
- As an institution of higher education in Houston, Houston Community College is investing a good deal of its resources in looking at how we approach skilled workforce education and shifting our priorities to meet the new realities of our economy.
- In talking with industry leaders and looking at how HCC can support a new workforce in manufacturing, I understand that many of the manufacturing jobs once performed by people can now be completed by robots – many but not all.
- I know you still need workers who can turn a wrench or fire up a blowtorch, but what I am learning from industry leaders is there an ever increasing need to for skilled workers who know how to create and use programs and robotic machines that now run the factories and distribution centers.
- I understand that a greater number of people are needed who are able to automate the industry, and this includes not only development, but operation and maintenance as well.
- Manufacturing is investing in this automation, and HCC is watching and reinventing how we educate the workers of tomorrow.

## HCC INVESTMENTS

### *COVID-19 Response*

- First let me address the reality we all find ourselves in right now, and that is how we continue to operate in the new normal of the COVID-19 pandemic. Just as every industry has had to pivot, higher education has really had to innovate.
- We have to continue to train our workforce while ensuring the safety of our students, faculty, and staff. Safety is not optional – it is at the core of our operating philosophy.
- We understand online learning, in and of itself, is not sustainable for our students continued educational growth.
- And I have to say I believe workforce training and lab-based courses have been impacted the most and greatly challenged us to figure out how to deliver the instruction necessary to meet the educational rigor on which HCC prides itself.
- At the core of HCC's mission is providing the knowledge and skills necessary to prepare our students for their next level of education or entry into the workforce – and for many of our students this is best done with some face-to-face. Student interaction is an important part of learning, and it builds teamwork – which is how we work in the 21st century.
- With this in mind, HCC has developed “Next Learning” which provides students with several paths to continue their education and be successful in gaining their technical certificates or degree.

- We offer online classes anytime and on a schedule giving students flexibility. We also are offering what we call Flex Campus which combines in-person classroom teaching with reduced number of people in the classroom, and the others live streaming. The students rotate between in-person and live streaming.
- Our hands-on lab courses are being conducted in person with a reduced number of students in the lab.
- And, our Manufacturing Lab courses are now being enhanced with virtual reality and augmented reality (VR/AR) content allowing the courses to pivot online should we have to and introducing students to these new innovations which are critical operating components of the industry.
- So, just as IoT (Internet of Things) solutions continue to transform the Manufacturing sector, we at HCC found the opportunity to better integrate Virtual and Augmented Reality technologies as part of our learning applications in these courses.
- Integrating VR and AR allows us to deliver instruction remotely, allowing our students to have access to review and practice processes before coming to the lab to demonstrate their competency reducing the amount of physical time they need in an actual traditional lab.
- In manufacturing terms, this approach uses advanced technologies to reinvent our products – our courses – from design and engineering to manufacturing production, accelerating our operational efficiency, and delivering the services our students require at the time and place where they need and prefer to access them.
- So, I understand how important it is to innovate. I understand the need for an industry – be it manufacturing or education – to change, grow and develop new ways of operating.

## **Investing in People**

- While the manufacturing sector continues to develop technologic solutions for advancement and industry shifts requirements for a new workforce, higher education is looking at the long-term impact – how do we best educate our students for the jobs of the future?
- Who are these workers of the future?
- In terms of HCC, our students range in age from 15 to 80.
- They come to HCC from many different paths - some are high school students in dual credit programs, some are on their way to a four-year degree, others are studying for a second degree, and many are incumbent workers that come for workforce certifications or to launch a new career and we also have a robust channel for military veterans.
- Of course, the addition of students in the First Step Act – and adding to these channels.

## Preparing for Technological Advancements

At HCC we are pushing to develop more advanced coding curriculums and are placing an emphasis on teaching trades and skills that manufacturing companies are currently seeking or will need in the future as advancements in innovation continue.

Through our Center of Excellence in Advanced Manufacturing and our Center of Excellence in Logistics, HCC is supporting regional efforts to develop a sustainable, scalable, replicable model to begin to close the gap in mid-level skilled professional needed in critical industry sectors.

HCC has been proud to partner with the MSSC for more than eight years to offer the Certified Production Technician, Certified Logistics Associate, and Certified Logistics Technician programs that allow graduates to enter the workforce and launch a career pathway in high-demand professions.

To increase these efforts locally, just last year, HCC added to its college dual-credit program partnering with school districts offering Certified Production Technician programs as pathways to work and to college. We hope that these opportunities overcome the pipeline challenges brought by COVID-19.

- Senator Cornyn is a strong supporter of the credit program in county, state, and federal prisons in the Gulf Coast Region through the “First Step Act,” and we thank him for his efforts and support for these programs.
- At HCC we are tapping into technologies of the future, like 3D printers and drones. We offer our students the opportunity to learn how to design, print and build using 3D technology – during the ongoing COVID-19 pandemic HCC has produced thousands of PPE for first responders using our 3D printers – quickly putting our training capacity to public use.
- These exciting technologies are all around us - in use by Space X, the Department of Defense, and manufacturing and logistics companies throughout the world.
- For those of us who remember firsthand the return of the Gemini crew in the 1960s, who would have thought that a person would be able to return from travel to space to fly home to Houston within hours to be with their families and sleep in their own beds. For those of you who weren’t alive then, the spacesuits alone probably would have taken hours to get out of back then. The reentry the Space X astronauts experienced was extraordinary by comparison – thanks to technological advances.
- As each year goes by, it is clear that having an ever-increasing impact on our world of work. These technologies, as well as virtual reality and augmented reality which I mentioned earlier, take this to the next level.
- Preparedness for the workforce most definitely affects the ability of a company or industry to take advantage of technologies.

## Industry Partnership

- Deloitte and the National Association of Manufacturers in a recent report traced the ongoing challenges many US manufacturers face in attracting, upskilling, and retaining a prepared workforce, and not surprisingly, attracting and retaining a quality workforce remains the number one business challenge that surveyed manufacturers reported.
- The average college readiness of students is not getting any better and the skills needed to operate in a 21<sup>st</sup> Century manufacturing facility are ever evolving. HCC is working hard to get students up to speed through our partnerships with area K-12

systems, creating a pipeline for a more diverse education, a more technological experience and better opportunity for success in the workforce.

- HCC is ready to work with you to identify the best pathways for increasing digital skills that employers need and those of the existing manufacturing workforce, and help you train your current workers and future workers for the critical jobs needed to move the manufacturing industry forward.
- Working with industry leaders, such as MSSC, is essential to our college. Aligning our curriculum to include relevant and current credential preparation validates our graduates' training to meet industry standards. We are grateful to Mr. Reddy and his national leadership in workforce development, and we are proud of our role in this collaboration to continue to improve the quality of American manufacturing.
- With guidance from you on what you need, we can provide the training needed for workers in programming, critical thinking, knowledge of computers and technology just to name a few.
- Can we broaden the stackable model to lateral models, transferring existing skills to adjacent jobs with short turn-around training for context?
- How can we leverage artificial intelligence to increase worker pipeline throughput?
- As you move into your panels and continue your discussions, I urge you to think about where advancement in manufacturing and at your company will be in three, five, ten years and what education your workers need to get you there.

## **THE FIRST STEP ACT**

### ***Ryan Raybould, Chief Legal Counsel to Senator John Cornyn***

Senator Cornyn was the leading champion in the U.S. Senate for the First Step Act, signed by President Trump on December 21, 2018, with strong bipartisan support. It improves criminal justice outcomes, as well as reducing the size of the federal prison population while also creating mechanisms to maintain public safety.

The first section of the Act is devoted to reducing recidivism. It requires the Attorney General to develop a risk and needs assessment system to be used by the Bureau of Prisons to assess the recidivism risk of all federal prisoners and place them in recidivism reduction programs and productive activities. The system provides guidance on the type, amount and intensity of these programs and activities.

The First Step Act allows Judges to hand out lighter sentences and sentences that allow training to reduce prison time and recidivism risks levels. These levels are not a static calculation and incarcerated can do more to decrease their recidivism levels through training.

This includes receiving credit for completing industry certifications, as well as degrees. In selecting certifications, the BoP values transparency and empirical evidence. The MSSC is a well vetted program that is successful in demonstrating that it reduces recidivism rates substantially.

Learning skills in in-demand occupations is demonstrably a way to break the cycle of crime. Senator Cornyn has an especially strong interest in programs that reduce the risks of recidivism.

## USE OF ADVANCED TECHNOLOGY

### Panelists

- ❖ **Neil Reddy**, CEO, MSSC (Moderator)
- ❖ **Tristian Kanwar**, Vice President, Supply Chain Strategy within the Operations & Engineering (OES) business group at Rockwell Automation, where Tristian is responsible for Rockwell Automation's supply chain digital transformation.
- ❖ **William B. Bonvillian**, Lecturer, MIT; Senior Director, Office of MIT Open Learning, Author, *Advanced Manufacturing* (MIT 2018), and Co-author, *The New American Innovation Policies* (MIT 2018) and *Workforce Education – a New Roadmap* (MIT 2021)

#### ***Neil Reddy:***

Because MSSC must keep its Production Standards current, MSSC formed a 23-member subject matter experts group in 2019 called *Select Committee on Newly Emerging Manufacturing Process Technologies* that identified 9 newly-emerging Industry 4.0 technologies that MSSC later added to its 2020 Production Standards:

- 5G
- Industrial Artificial Intelligence
- Autonomous Robots
- Industrial Internet of Things
- Additive Manufacturing (3D Printing)
- Data Analytics
- Advanced Materials
- Augmented Reality
- Nanomanufacturing

Both Mr. Kanwar and Mr. Bonvillian served on that Select Committee.

#### ***Tristian Kanwar:***

As we continue to navigate through COVID the role of digital enablement has become all the more relevant as companies strive to add further resilience to their supply chains.

When we think of the challenges that COVID has represented across the plan, source, make, deliver continuum digital enablement is a key factor to **building resilience**. In particular, plant physical safety, end to end orchestration, digital and physical security, protection of supply and redundant manufacturing.

**In all these areas worker digital enablement is critical:**

- 1) Mixed and Augmented reality for expedited training experiences – helping to expedite line transfers as we look for redundancy
- 2) Virtual customer engagements for customer witness testing- bringing data to customers without having to expose them to a plant environment
- 3) Remote maintenance applications- ability for worker to collaborate as technician time is stretched owing to shift separation and social distancing requirements
- 4) Staffing assignments as part of a scheduling solution within which integrates training and certification but works on logic that incorporates risk around moving people through a plant in the event

**In order to achieve this level, there needs to be a focus on talent in the following areas:**

- 1) Competency assessment- what is the level of understanding of digital tools and data across the plant environment
- 2) Career path- explaining how digital enablement broadens opportunity
- 3) Training and development maps at all levels

To accomplish this and accelerate the value creation and resilience that comes from a digitally enabled workforce, there needs to be a specific focus on digital optimization and enablement.

- 1) Team focused on the rapid scaling and deployment of primary digital use cases
  - a. Digital worker enablement
  - b. Predictive analytics
  - c. OEE and Utilization
  - d. Visibility and enforcement
- 2) Embed digital into the DNA of the plant- for instance the linkage of data and digital management through integration in the Production or Operating System

***William Bonvillian:***

Despite sceptics the reality is that we need advanced manufacturing technologies to:

- Compete with low cost, low wage competitors in Asia.
- Improve efficiency and productivity.
- Offsets the cost advantage, and innovation has its own rewards in new markets and opportunities.
- We need to apply our still strong R&D and innovation system to manufacturing
- Will need new mechanisms – manufacturing institutes, technology development strategies, integrating manufacturing into federal R&D programs, scale-up support, etc.

**But we don't get to Advanced Manufacturing unless the Workforce is Ready -**

- Lesson from Germany: the 60 Fraunhofer Institutes have a “Fraunhofer Academy.”
- It trains workers for “Mittelstat” small and mid-sized as well as large firms in the advanced technologies that its Institutes are creating.
- It is the Advanced Manufacturing Technology DISSEMINATION MODEL:
  - It's learning by doing, classroom and workplace
  - The way advanced manufacturing technologies get into company plants
  - Learning walks on two feet, not through plans
- Online and new technologies can help training scale.
- Need new delivery models – at Co's, CC's, HS's, colleges.
- That's why MSSC's upgrading its signature Certified Production Technician (CPT) program to “CPT 4.0” with the nine technologies identified by a Select Committee, is so important – need standards and certifications to teach to.



## SPECIAL EVENT- Launch of New MSSC Certification: CT-SCA

### Presenters

- ❖ **Michael Mikitka**, Executive VP for Education, MHI
- ❖ **Steve Harrington**, Industry Liaison, National Center for Supply Chain Automation
- ❖ **Neil Reddy**, CEO, MSSC
- ❖ **Paul Perkins**, President, Amatrol and inventor of the CT-SCA hands-on training and assessment device called “[Skill Boss-Logistics](#).”

Launch of new MSSC Certification: Certified Technician in Supply Chain Automation (CT-SCA). This industry-recognized certification is for a technician *who installs, operates, supports, upgrades or maintains the software, hardware or material handling equipment which supports the supply chain*. MSSC developed this new hands-on training and certification program with the National Science Foundation-funded National Center for Supply Chain Automation, the Material Handling Industry (MHI), the Material Handling Equipment Distributors Association (MHEDA), Amatrol, and NOCTI.

See [video](#) of this launch presentation, including live demo of “Skill Boss-Logistics” by Paul Perkins

## PRIMARY STAKEHOLDER SESSIONS

A primary goal of the Summit was to bring together thought and opinion leaders from five (5) major stakeholder groups, each one critical in terms of the need to align and integrate their resources and goals, if we are to succeed in closing the skills gap.

These sectors (with their inherent subcategories) were broadly defined as (1) Workforce Development; (2) Education; (3) Business & Industry; (4) the Justice System; and (5) Veterans & Military.

Speakers representing each sector were in federal, state and regional positions. Each individual was asked to express their viewpoints and those of the organizations they represented, around five (5) topical areas.

Those areas included (1) Critical Issues; (2) Best Practices; (3) Use and value of Industry Certifications & Apprenticeships; (4) Navigating the new reality; and (5) actionable recommendations.

We have summarized each panels remarks in each of the five topical areas, and have then summarized the recommendations and conclusions that were consistently expressed by all five sectors.

# WORKFORCE DEVELOPMENT SESSION

## Premise

*Ensuring our workforce has the skills and competencies necessary in today's workplace is one of the most critical issues we face. The Workforce Panelists, representing federal, state and local workforce Agencies & Boards, focused on their perspective of the role of the public workforce system in closing the skills gap; in particular, the use of nationally recognized industry certifications and apprenticeship models; and their focus on alignment and integration of resources with other agencies.*

## Panelists

- ❖ **Dudley Light**, Regional Apprenticeship Director, US Department of Labor
- ❖ **Julian Alvarez**, Labor Commissioner, Texas Workforce Commission
- ❖ **Michael Temple**, Executive Director, Gulf Coast Workforce Board
- ❖ **David Setzer**, Executive Director, North Central Texas Workforce Board
- ❖ **Gary Allen**, Manager, Economic Development, Workforce Solutions East Texas Board

## Critical Issues

- Securing adequate funding, and more effective outreach to youth are two of our biggest challenges.
- We need career counselors in our high schools; a significant number of high school students are not College bound.
- We need to more effectively communicate the successes we are having, the value of Apprenticeship Programs and Industry Certifications, and simply raising awareness.

## Best practices

- Texas Tri-Agency Partnership, aligning and integrating the resources of the Texas Workforce Commission, the Texas Education Agency, and the Higher Education Coordinating Board came out of the States Strategic Planning Process, resulting in a playbook for our states workforce system, focused on getting every student ready for work, college or the military.

## Use of Industry Certifications/Apprenticeship

- Apprenticeship Programs are one of the best opportunities, and have changed significantly over the years.
- They are excellent earn while you learn opportunities.
- The first state Apprenticeship Conference attracted far more interest than expected.
- Nationally recognized industry certifications are excellent tools and can be earned in a relatively short period of time, providing individuals with the skills and competencies employers need in a technology driven work environment.
- There is real value in programs valued by business and industry.

### Navigating the New Reality

- We have pivoted to an online virtual learning environment, demanding online access.
- Only half the households have WiFi connectivity in at-risk communities.
- We need to find the funds and path forward to provide connectivity; many students could not finish school due to their lack of connectivity.
- At the same time we are reaching more people in a virtual environment; the Gulf Coast Workforce Board had a Facebook live event that more than 400,000 people watched.

### Actionable Recommendations

- We must provide internet connectivity in a Virtual environment.
- We need to effectively communicate the value of industry recognized Apprenticeship Programs and Certifications.
- We must improve our outreach to youth.
- We need to provide certified career advisors for all students in our schools.
- We need to align our training programs with the skills and competencies employers need for the jobs they have.
- We need to offer programs that upskill, not just reskill the workforce.

## EDUCATION SESSION

### Premise

*Education is rapidly changing, driven by the need to pivot to new methods and techniques. The Education Panelists, representing federal, state and local public and higher education agencies and institutions, focused on the changing role of their organizations; the expanded role of distance learning; and the need to address the skills gap, utilizing nationally recognized industry certifications and remote testing capabilities. They also discussed how to best influence the evolution of the role their agencies are playing.*

### Panelists

- ❖ **Scott Stump**, Assistant Secretary, US Department of Education
- ❖ **Dr. Stacey Silverman**, Assistant Commissioner, Academic Quality & Workforce, Texas Higher Education Coordination Board
- ❖ **Garry Tomerlin**, Former Deputy Assistant Commissioner, Workforce, Texas Higher Education Coordinating Board
- ❖ **Mark Hays**, Vice Chancellor, Workforce Development, Dallas County
- ❖ **Daphne Rickard**, Executive Director, CTE, Fort Worth ISD

### Critical Issues

- The need to inform and educate students and their families about the value of technical careers in areas such as manufacturing & logistics.
- The need to influence change within the bureaucracy of education.
- The need to understand that augmented reality is driving both industrial and educational change.

### Best practices

- Perkins Reserve Act allowing for funds to be used for things like drones for CTE programs, creating interest in career fields not previously valued by students.
- Increased use of Apprenticeship Programs and Industry Certifications.
- Move to Virtual learning.

### Use of Industry Certifications/Apprenticeship

- Use of Apprenticeship Programs and Industry Certifications are expanding within public education.
- Workforce System now recognizes they represent employable Solutions.

### Navigating the New Reality

- COVID has driven education to become more flexible.
- Virtual communication has increased outreach to students to create greater awareness and understanding.
- Augmented reality is showing parents and students how much industry is changing.

### Actionable Recommendations

- Inform and educate students and their families about the value of career & technical education.
- Expand the use of Apprenticeship Programs and Industry Certifications.
- Expand the use of training equipment and devices, including drones.
- Embrace and expand the use of Augmented reality and virtual learning opportunities.



## BUSINESS & INDUSTRY SESSION

### Premise

*The fundamental driver of the economy at all levels is dependent upon the success of business and industry generating wealth from the products and commodities they make and sell. Vital to their success is a trained workforce. The Business Panelists, representing state and regional business associations and major employers, discussed the role business, and the associations that represent business, can and should play in providing leadership, information and resources to close the skills gap, utilizing nationally recognized industry certifications.*

### Panelists

- ❖ **Tony Bennett**, President & CEO, Texas Association of Manufacturers
- ❖ **Carlton Schwab**, President & CEO, Texas Economic Development Council
- ❖ **Peter Beard**, Senior Vice President, Workforce, Greater Houston Partnership
- ❖ **Wayne Mausbach**, Board of Directors, Greater Houston Manufacturers Association
- ❖ **Michael Packer**, Director of Manufacturing, Advanced Production Programs, Lockheed Martin Skunk Works
- ❖ **Mary Batch**, Talent Management Manager, Toyota Motor Production, and Workforce Solutions Alamo Executive Board Member
- ❖ **Eric Batten**, Texas Instruments

### Critical Issues

- **Tony Bennett** reported the fact that 2.4 manufacturing jobs are going to be vacant soon. Turned to panelists on what they were planning to do to rectify this issue at their companies.
- **Mary Batch** shared how Toyota is being challenged with low skilled workers and the fact that one-third of the workforce is retiring.
- **Michael Packer** spoke about the gap between medium and small enterprises.
- **Eric Batten** explained that getting families to understand that manufacturing isn't the same as what their parent were exposed to, is something that really needs to be addressed.

### Best practices

- **Wayne Mausbach** spoke on how offering programs as dual credit will give students a leg up after high school.
- **Peter Beard's** team has created the "My Life As" video series. This series highlights those in the manufacturing and logistics field that love what they do, which has inspired students.
- **Eric Batten** shared how their investment in coding provided programs for elementary students. This has been very successful.

### Use of Industry Certifications/Apprenticeship

- **Peter Beard** elaborated on their apprenticeship program and how they are navigating how to offer it to students under the age of 17.
- **Michael Packer** spoke on how their internships, although more so for engineering, actually has a 97% return rate. Introducing them to robotics really has gotten the students interested.

### Navigating the New Reality

- **Michael Packer** expressed that we need schools to foster interest in students and to teach the skills needed. Specialty trade skills are extremely hard to find right now.
- **Peter Beard** spoke on how educational facilities need to define what skills are needed for the workforce.
- **Carlton Schwab** said that 45,000 jobs were lost due to COVID and we need a relentless sales pitch to address our new needs for skilled workers.

### Actionable Recommendations

- Education needs to understand what skills are needed for the workforce.
- There is a need to inform students and their families about the value of technical skills and the professions that those skills lead to, to combat the lack of awareness and the negative perceptions.
- The need to provide effective career counseling in schools, and enhanced Career Awareness Programs.
- The challenge of filling manufacturing jobs given the restoring of the industry; the high retirement rate; and the lack of skills in the current workforce.

# JUSTICE INVOLVED

## Premise

*Today nearly 1 in 3 working age adults in America have a record. Assimilating the incarcerated among them into their communities upon release is a critical workforce issue as well as a community and societal issue. The Justice Panelists, representing correctional facilities, both privately managed and state operated; law enforcement, and Correctional Training Institutes, discussed the challenges they face in a rapidly evolving time for our nations justice system amidst legal reform, and their use of nationally recognized industry certifications.*

## Panelists

- ❖ **Michael Bell**, Vice President, Region III Corrections - Management & Training Corporation
- ❖ **Kristina Hartman**, Superintendent, Windham School District within the Texas Department of Criminal Justice
- ❖ **Doug Dretke**, Executive Director, Correctional Management Institute of Texas
- ❖ **Sheriff Ed Gonzalez**, Sheriff, Harris County Sheriff's Office

## Critical Issues

- 1 in 3 working age adults have a record; records make successful employment difficult.
- Employers need for accurate information and benefits to becoming 2nd Chance employers and dispelling inaccurate perceptions.
- Need for adequate technology to support training.
- Laws and public policies that impact employment.

## Best practices

- Pre-release training programs.
- Community Colleges, technical schools, apprenticeships, teachers employed by state agencies and school districts are good resources for training incarcerated individuals.
- Offer pre-release interview opportunities to employers.
- Websites enabling employers to review skill sets of incarcerated individuals.
- Federal programs that increase employer confidence in hiring returning citizens.

## Use of Industry Certifications/Apprenticeship

- Industry recognized certifications are valuable; however, there are some barriers associated with occupational licensing and the application process that need to be addressed.
- Need to inform individuals about the needs of employers as the basis to acquire certifications.

## Navigating the New Reality

- COVID is affecting justice systems worldwide.
- COVID highlights the need to provide more technology within prisons to enable the use of Industry Certifications.
- COVID has accelerated innovation within the Justice System and within Prisons.

### Actionable Recommendations

- Build upon recidivism provisions of The First Step Act.
- Reduce incarceration for lower level crimes.
- Make changes to laws and public policy.
- Work with legislators to maintain and increase funding for training and reform.
- Provide access to training and resources to those leaving incarceration.
- Make medical assistance and counseling available to help individuals deal with issues that could prevent their future success.
- Use more treatment, training and technology to reduce prison population.
- Engage Employers.

## VETERANS SESSION

### Premise

*Today's military personnel often return from service having stood in harm's way a significant portion of their career. Our effectiveness in assisting their reentry is important to our nation. The Veterans Panelists, representing national, state and regional agencies, associations and nonprofits who serve Veterans, discussed the challenges their organizations and agencies face in serving veterans; their perspective on the challenges veterans face on reentering the civilian world; and their views on how the use of nationally recognized industry certifications can more effectively serve the needs of veterans as they reenter their communities.*

### Panelists

- ❖ **Wes Jurey**, Immediate Past Chair, Texas Workforce Investment Council and Senior Advisor, MSSC
- ❖ **John Boerstler**, CEO, Combined Arms
- ❖ **Marcelo Uriegas**, CEO, American GI Forum
- ❖ **Babs Chase**, Vice President, The Manufacturing Institute, National Association of Manufacturers. "Heroes Make America" program
- ❖ **Marvin Branch**, The Manufacturing Institute, Program Manager for "Heroes Make America," program, Fort Hood, Texas

### Critical Issues

- Veterans and Civilians speak different languages.
- Translating what veterans have done to a hireable skill set is difficult.
- The need to connect veterans to the agencies and nonprofits that can provide assistance and support is vital to their successful reentry into the civilian world.
- Companies don't always know where to find talented veteran job seekers.

### Best practices

- Programs offered to service men and women while still serving, such as the highly successful NAM Heroes Make America program.
- Support to translate military experience to hireable skills.
- Organizations that primarily connect veterans to the agencies and organizations that provide assistance and support to both the veteran and their families.

### Use of Industry Certifications/Apprenticeship

- Programs that target veterans utilizing Apprenticeship Programs and Industry Certifications are of real value.
- Agencies that provide connectivity to these programs for veterans and their families are invaluable.

### Navigating the New Reality

- Pivoting to remote learning is critical.
- Use of ProctorU by MSSC enabled both the training and testing for certifications to be done remotely.
- Meetings and conferences conducted on social media platforms, such as Zoom, GoToMeeting, Webex Meet, Microsoft Teams, or Google Meet.
- Use of media platforms requires internet connectivity that more than 50% of households do not have.

### Actionable Recommendations

- Enable veterans to earn Certifications while serving in the Military.
- Provide connectivity to a variety of agencies and organizations as a component of the Transition Assistance Program, and/or provide information on the agencies that provide veterans assistance.



## CONCLUSIONS ACROSS ALL SECTIONS

In reviewing and comparing the comments made and views expressed by all the Summit Speakers, six (6) common themes were gleaned from those discussions. The following paragraphs identify those themes, issues, and recommendations.

### 1. Digital Access & Literacy

- Access to the internet was an important component of this; the lack of internet access by 50% of households, coupled with the lack of devices is a critical challenge, given the pivot by education to virtual learning and online delivery of curriculum, and the use of virtual and augmented reality.
- Access to high quality career development technologies was the second component; also exposure and access to the technologies used by business and industry in a world that is technology dependent.

### 2. Career Education, Awareness & Outreach

- Raising community awareness among students and parents was cited as an important issue; particularly as it pertains to the value of CTE Programs, that provide the skills and competencies needed to pursue a technical career in sectors such as manufacturing and logistics.
- Providing students access to high quality credentialed career advisors and licensed counselors with industry knowledge and experience; enabling students to understand what modern day industry careers are.

### 3. Apprenticeships & Certifications

- Collaboration among business, government, and education to offer students a continuum of options, to include job shadowing, internships, and apprenticeships.
- Greater utilization of nationally recognized industry certifications in secondary education, preparing students for a career after graduation.

### 4. Alignment & Integration

- Alignment of training programs and curriculum with the current skills and competencies needed by business and industry for the jobs they have.
- Alignment of Federal, State, Regional & Local Resources, as a means to more effectively utilize the resources we have, given the lack of basic needs, to include digital connectivity.
- The Texas Tri-Agency Partnership was frequently cited as a Model for state agency integration and alignment.

### 5. Opportunity Populations

- The growing awareness of the need to educate all Americans, inclusive of those re-entering their communities from incarceration, the military, addictive treatment facilities, and other populations who need assistance.
- 1 in 3 working age adults have a record; coupled with fact that 1/3 of the workforce is retiring, closing the skills gap demands we develop successful approaches to include these individuals in our workforce, both pre-release and post-release.
- The need to educate and inform employers about the reality of justice involved individuals; that the majority are minor, non-violent offenders, and the majority of those are first time minor non-violent offenders.
- To create awareness of the reality that Veterans need assistance as they reenter the civilian community; civilians and veterans speak different languages; translating

what they have done to a hireable skill set; connectivity to agencies and nonprofits that can provide assistance to Veterans and their families.

6. Public Policy

- Stated as the need to influence change in the bureaucracy of government; as well as make changes to laws and public policy.
- The need to work with legislatures to maintain and increase funding for all opportunity populations.
- The goal to reduce incarceration for lower level crimes.