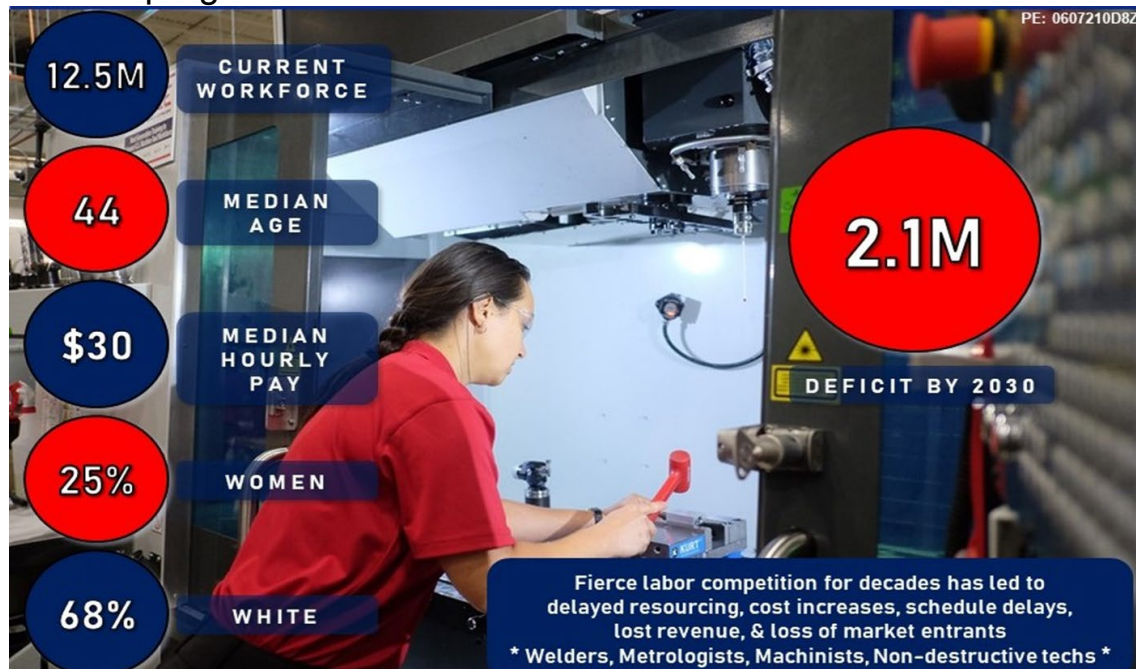




Strategic Context

“I am convinced of one thing, that in the future, talent, more than capital, will represent the critical factor of production.” Dr. Klaus Schwab, EC WEF

- 100’s of thousands of manufacturing jobs are coming to the defense industrial base in the coming years
- Sufficiently skilled and sized workforce needed to produce “nextgen” systems
 - U.S. Navy will onboard nearly 20,000 in the next 10 years to support construction and sustainment of its Columbia-Class Submarine – this **doesn’t include** the supply chain which is estimated to need nearly 100K for this program alone



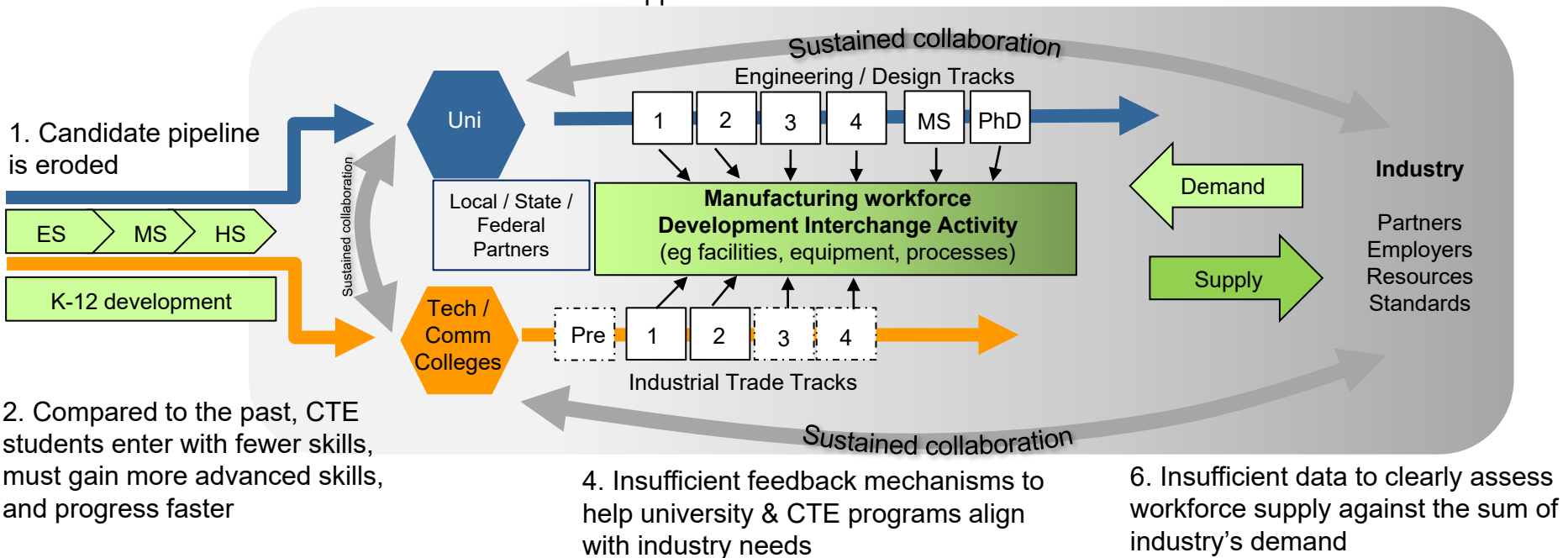


Today's Challenges

- America lost its relationship to manufacturing and with it, its focus on cultivating career and technical education (CTE) programs in schools across the country
- America needs to regrow CTE in K – 12 and bring an applied manufacturing focus to undergraduate programs

3. Lack active and balanced governmental participation to promote and support industrial education

5. Academia struggles with the high costs of workplace development programs

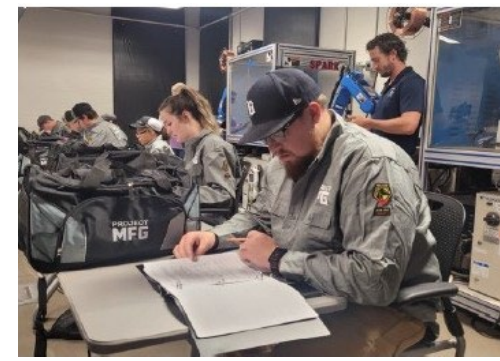
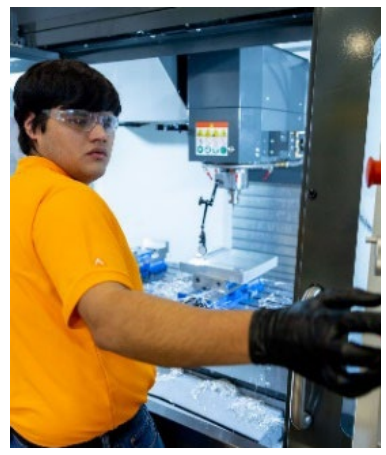


IBAS Program shaped the pilot strategy to resolve these chronic, systemic issues and has invested \$130+M across 16 projects to address the skilled manufacturing workforce imperative



Solutions & Recommendations

- **Fully leverage** NSF's three missions of Research, Economic Development, and National Security
- Areas where NSF can provide maximum impact:
 - **Incentivize** and **accelerate** undergraduate programs to adopt an applied manufacturing focus in engineering programs
 - **Explore** use/expansion of new CHIPS Act – Research Security Authorities – to catalyze entrance of domestic engineers of all ages into talent pipelines
 - **Join** DoD on ABET engagement – to revise engineering curricula certification to include both 'engineering and manufacturing' disciplines



NSF is a central component of an integrated whole-of-government approach to identify and help mitigate critical needs across U.S. manufacturing and industrial base sectors