

# National Commission on Innovation & Competitiveness Frontiers

## Key Takeaways from 2024 Working Groups



### Working Group 2

## The Future of Technology: Developing and Deploying Disruptive Technologies at Scale

### Session 3: March 5<sup>th</sup>, 2024

*This Working Group session focused on reducing barriers in the lab-to-market pipeline, including challenges across research translation and commercial scaling.*

#### I. KEY THEMES

*Working Group discussion identified several key themes during this session:*

- 1) **Reducing barriers in the research translation process**, including facilitating better engagement between the research and investment communities.
- 2) **Creating and broadening access to early-stage testing programs and capabilities** to support development and demonstration of critical technologies.
- 3) **Accelerating the development, commercialization, and scaling of novel technologies**, including through enhanced domestic and international coordination.

#### II. PRELIMINARY IDEAS & POTENTIAL RECOMMENDATIONS

##### Reducing barriers in the research translation process

- Securing investment in nascent companies and technologies is often about leadership and business acumen. Instilling business perspectives and skills into potential entrepreneurs is important where possible, and federal programs like I-Corps help teach these skills and de-risk investments.
- Many academics are not well-suited to, or interested in, the CEO role. Programs to bring in business expertise (i.e., “rent-a-CEO”) could help bridge the transition from discovery to commercialization – particularly for acceleration of technologies with identified, viable commercial pathways.

- Nascent hard tech start-ups without clear paths to commercialization require infrastructure to be successful, including research and testing facilities, access to investors and professional networks, and scientific and business expertise. Programs like DOE LEEP link this infrastructure to promising innovators, successfully commercializing technologies – but these programs are oversubscribed and need to be more widely accessible.
- Ensure appropriate policy frameworks are in place to promote research translation. For example, misguided efforts around march-in rights could erect regulatory roadblocks and disincentives to perform, translate, and commercialize research. Meanwhile, policies to promote public trust in technology (e.g., data privacy protections) could help remove commercial uncertainty and accelerate innovation.

### **Creating and broadening access to early-stage testing programs and capabilities**

- Create pilot programs to allow early-stage entrepreneurs to utilize government facilities for the testing and demonstration of novel technologies. Flexible testbeds to support industry scaling, prototypes, and demonstration (in both pre-competitive and competitive stages) will reduce time-to-market and financial risk. These programs also contribute to workforce development and help build capability at FFRDCs and universities.
- Universities and agencies like NIST are crucial for developing testbeds that connect capabilities and resources from academia, industry, and government. Targeted collaborations can create industry-specific or technology-specific testing clusters, even if partners are not geographically concentrated.
- Ensure testing programs provide access to manufacturing facilities to build the capabilities and workforce necessary to anchor intermediate manufacturing of novel technologies within the US.
- Pair testing facilities and tech transfer programs with pre-competitive research partnerships between universities, industry, and government. These public-private partnerships could place an increased emphasis on use-inspired research.
- Commit to sustained investments in modelling and simulation (MODSIM) tools, including the workforce and high-performance computing capabilities associated with the field. MODSIM rapidly accelerates and improves product development across a wide range of industries, and should be leveraged substantially in all technology sectors. As AI and digital twins further advance the field, MODSIM will only increase in importance.
- Democratize access to testing tools, including MODSIM and other digital tools, especially amongst high school and university students. Broadening access will

accelerate product development and testing, increase participation in innovation, and build talent pipelines.

### **Accelerating the development, commercialization, and scaling of novel technologies**

- Seek input and engagement from the national security community on accelerating the lab-to-market pipeline. Increased high-level coordination with entities like the DoD could help identify specific actions to accelerate nascent technologies with strong security-related value propositions.
- Countries like the UK, Spain, France, and China have successfully developed an effective approach to quickly identifying, scaling, and connecting successful start-ups. Not only catching up, but improving beyond the competition, is vital for winning out in nascent industries. Policymakers should examine these countries' supporting policies (e.g., regulatory sandboxes, tax relief, etc.) and adapt relevant actions within the US context.
- Achieving innovation at speed and scale requires international collaborators and partners, and sustained success can only be achieved if the US is seen as a trusted and reliable partner in global technology development. Supporting and engaging international colleagues in research, development, and deployment is critical, but should be pursued according to the risk profile of the technology or use case in question.
- Federal programs to support innovation (e.g., NSF Engines, SBIRs, EDA Tech Hubs, etc.) are crucial for developing and commercializing technology. However, these programs often move much too slowly, taking years to actualize any concrete action. Policymakers and other stakeholders must collaborate to determine how to responsibly yet substantially accelerate these programs.