Phase 1 Concept Proposal Narrative
Building Central Florida’s Semiconductor Cluster for Broad-Based Prosperity

Osceola County, the Orlando Economic Partnership (OEP), the University of Central Florida (UCF), and Bridging the Innovation Development Gap (BRIDG) comprise the Prosperity Coalition whose vision is to accelerate the emergence of a growth cluster anchored in semiconductor research, development, and manufacturing contributing to the resurgence of the nation’s economic security and reversing socio-economic inequities in Central Florida.

The United States is suffering from a shortage of semiconductors. Semiconductors are the foundation for nearly every facet of our modern life. The pandemic and its related supply chain issues have shown that reliance on foreign producers to innovate, manufacture, and assemble semiconductors not only creates a problem for consumers, but presents a national security issue. Having access to secure, domestically made semiconductors, is vital to both the security of the United States and the long-term prosperity of our economy.

Following the economic impacts of the great recession, Osceola County decided to make a long-term investment into a 500-acre technology district, known as NeoCity to diversify its economy, which is predominately hospitality or agriculture based. Strategically located near Orlando, inside America’s only Spaceport/Seaport/Airport/Rail grouping, NeoCity is uniquely positioned to lead our nation’s semiconductor renaissance.

A cornerstone for NeoCity is The Center for NeoVation, which has been developed with more than $200 million in state of Florida and Osceola County investments, is collocated with a new STEM-focused public high school known as NeoCity Academy; a 100,000 sq. ft. Class-A office building known as The OC, and a new electrical substation to support the future growth of the 500-acre technology district, shown below.

![NeoCity: Existing 500-Acre technology district, home to BRIDG and SkyWater](image)

The proposed regional growth cluster will build upon the initial success of NeoCity, by investing in infrastructure, workforce development, and community reinvestment that leverages new, high-demand production processes to propel Central Florida as a leading region for semiconductor R&D and manufacturing.
The initiative’s contribution to national economic stability promises to be far-reaching, particularly as in contributing to the reversal of a 30-year decline in the U.S. share of global semiconductor manufacturing capacity which has eroded from 37% in 1990 to 12% today. According to the Semiconductor Industry Association, 100% of the world’s most advanced logic semiconductors (<10 nm) were produced overseas in 2019. Furthermore, of the top 25 Semiconductor Assembly and Test Companies, there are no suppliers with US on-shore manufacturing facilities and there is only one US supplier in the top 25, Amkor, and this supplier does not have manufacturing facilities in the US. Our coalition’s proposal is a regional response answering the clarion call for the sector’s resurgence and evolution—in conjunction with federal action such as the CHIPS for America Act and the FABS Act—necessary to maintain global competitiveness spanning national imperatives such as economic resilience, homeland security, military/defense superiority, clean energy breakthroughs, climate change mitigation, among others. The findings of the National Research Council (US) Committee on Comparative National Innovation Policies in 2012 stand today: The country’s future economic prosperity and security depends on sustaining the nation’s capacity to innovate—that is, translate our investments in research into new products for the market and new solutions for national missions.

The following coalition members comprise the regional growth cluster and briefly describe their roles:

**Osceola County** – Lead coalition member and local unit of government will serve as the central coordinator for the regional growth cluster, establish a coordinated line of communication between the regional growth clusters and EDA, and ensure all awards are absorbed effectively within community. Osceola County will be the lead on the expansion of the Center for Neovation and the construction of Neovation Way road projects. A Key Member of the County Manager’s staff will serve as the Regional Economic Competitiveness Officer.

**Orlando Economic Partnership (OEP)** – Regional non-profit coalition member as a convener linking the collaborative engagement of the private (business), public, and non-profit sectors. Its work as a champion of broad-based prosperity (inclusive growth) is garnering national attention. OEP will be the lead on the Cornerstone Osceola and UpSkill Osceola projects.

**BRIDG** – Non-profit coalition member. Will lead the advanced packaging project and co-lead the Secured Digital Twin project with the University of Central Florida.

**University of Central Florida (UCF)** – A Research 1 University designated by the US Department of Education as a Hispanic Serving Institution and coalition member. Will co-lead the Secured Digital Twin Project with BRIDG.

The Central Florida’s Semiconductor Cluster for Broad-Based Prosperity is conceived as a hub and spoke model to drive economic growth and supported by a framework of supporting initiatives that translate innovation into inclusive growth. The model’s hub is the expansion of foundry services nurtured by a comprehensive design ecosystem. The social entrepreneurship and support services necessary to achieve broad-based prosperity are the metaphorical spokes. The Coalition Members, consistent with the collaborative culture defining the region, leverage shared board members and histories of prior partnerships creating professional and personal relationships.
The Coalition proposes six (6) component projects that EDA should fund to enable the cluster. Projects 1-4 are infrastructure projects; Projects 5 and 6 are workforce and community transformation projects. Each project, in alignment with our regional CEDS, are briefly described below:

**Project No. 1. Center for Neovation Expansion.** – Construction and expansion of the County owned Center for Neovation, an advanced manufacturing semiconductor fabrication lab located in NeoCity. Items would include installation of a new 25,000 sq. ft. cleanroom and ultra-pure water treatment utility. Design to be completed in Q4 of 2023 with construction to be completed by Q2 of 2024. Lead Coalition Partner: Osceola County Board of County Commissioners;

**Project No. 2 Neovation Way Road.** – Construction of a new road, called Neovation Way, that would provide a southern gateway entrance to NeoCity, which would help facilitate development of the technology district. PD&E is complete with NEPA type 1 categorical exclusion designation and is a shovel ready project with utilities, stormwater, and permits completed. Projected timeline for design to be completed in Q1 of 2023 with construction from Q2 of 2023 through end of 2026. Lead Coalition Partner: Osceola County Board of County Commissioners;

**Project No. 3 Advanced Packaging Institute.** – Invest in a new R&D prototype and commercialization program that can manufacture domestic, reliable next generation microelectronics utilizing advanced packaging technologies. Project will leverage existing capabilities and will include the purchase and installation of microelectronic packaging machinery and equipment enabling the center to convert ideas, research, and prototypes into viable products and services that can be brought to market by new and existing businesses in a financially manageable and rapid manner. Projected timeline includes design and prototyping in 2022, 50% capacity and initiation of equipment installation in 2023, with complete installation in 2024. Lead Coalition Partner: Bridging the Innovation Development Gap (BRIDG);

**Project No. 4 Digital Twin Institute for Microelectronic Design and Fabrication** – Building upon a DOD Trusted and Ensured Manufacturing program, invest in a new modelling and simulation research program to advance next generation semiconductor design and manufacturing, a process capable of creating what’s known as a digital twin. A Digital Twin is a virtual representation of microelectronics product and process design, development, manufacturing, and production augmented by real-time equipment sensors and machine learning allowing process data and analytics from manufacturing platforms and other business units and predictive outcomes to drive innovation and optimize asset performance and utilization. A fully developed microelectronic digital twin can increase reliability and productivity, lower maintenance costs, reduce risk, create new business, improve supply and delivery chain efficiency, and enable cross-discipline collaboration to foster innovation. Project would include workforce development, prototyping, and commercialization of new modeling and simulation technology, and timeline would mirror the timeline of the Advanced Packaging project. Lead Coalition Partner: University of Central Florida and BRIDG;

**Project No. 5 Upskill Osceola.** – Expand and scale a skills-based workforce development platform that expands the talent pipeline by aligning education and training with the specific skills
demanded of industry. Project will leverage unique analytics to help the cluster’s industry partners and their ancillary industries recognize those skills in candidates, particularly workers without traditional academic credentials, like a bachelor’s degree, who may otherwise be overlooked. Proposed timeline includes planning through March 2022, curriculum development completed by July 2022, and cohorts starting in August 2022. Lead Coalition Partner: Orlando Economic Partnership (OEP); and

**Project No. 6 Cornerstone Osceola.** – Expand and scale a highly successful, purpose-built community model used in nearby City of Orlando, based on a combination of research-based, best-practices for achieving measurable results in community transformation. It is a model for holistic neighborhood revitalization recognizing that a community’s most complex social problems also require the alignment of multiple resources through a collective impact initiative. Adaptations for achieving measurable results in community transformation include addressing the need for high-quality, mixed-income housing; establishing a cradle-to-career educational pipeline that aligns with the growth cluster’s creation of primary and ancillary economic opportunities; and improving community health and wellness for residents. Projected timeline includes neighborhoods need analysis, community engagement, and plan development by Feb. 2022 with implementation ready by March 2022. Lead Coalition Partner: Orlando Economic Partnership (OEP).

All parties commit to ensuring that the projects are completed by September 30, 2027. Preliminary proposed metrics of success for the projects include anticipated job creation and wage growth, anticipated regional GDP growth, reduced unemployment, workers placed in good quality jobs, and having industry expand into the NeoCity region. The coalition also proposes to integrate metrics from the OEP’s Prosperity Scorecard (developed in collaboration with the Brookings Institution) with alignment to the Sustainable Development Goals (SDGs).

Underscoring the national security impact, it is the intention of the coalition to align this effort with the Department of Defense (DOD)’s microelectronic industry strategy to ensure there is no duplicative efforts and that the coalition assists in enabling critical capabilities like global positioning systems, radar, and command and control. Additionally, the coalition intends to align these projects with the Department of Energy’s efforts to advance microelectronic research to power next-generation technologies to sustain energy efficiency. The following are potential sources of matching funds for Phase 2 and other complementary investments:

DOD’s Industrial Base and Sustainment program awarded BRIDG a contract in 2019 worth up to $20.4M to establish a silicon interposer technology. Similarly, the Air Force Research Lab, which awarded BRIDG a $7.6M contract in 2019 to develop a secure digital twin for semiconductors. The National Institute for Standards and Technology is likely to issue a NOFO for an Advanced Packaging Manufacturing USA Institute in early 2022 and part of the CHIPS for America program, but is dependent on Congress passing the funding at the end in December 2021.

Osceola County is applying to the State of Florida’s competitive Job Growth Grant for Neovation way road. BRIDG may also apply for a possible state appropriation, but the funds will be dependent on the legislative process. Osceola County would make in-kind contributions and provide land in NeoCity.
The University of Central Florida will provide in-kind contributions from accessing world-renown research faculty, preeminent research results, UCF’s Advanced Research Computing Center with high performance computing clusters, unique campus laboratories and equipment, and interdisciplinary collaborative teams. Valencia College, Orlando Economic Partnership, and imec will each provide in-kind contributions.

Our coalition’s private sector partners and existing relationships with philanthropic partners supporting projects similar to UpSkill Osceola and Cornerstone Osceola will supply most of the matching requirements for these projects, including in-kind and cash contributions.

There are numerous barriers to success for the advanced packaging and digital twin projects including supply chain issues, complexity of work, lack of trained workforce, and perhaps the most challenging is the lack of microelectronic equipment. Without the purchase and installation of the equipment necessary to process the advanced packing of the microelectronics, the advanced packaging project is impossible to achieve. The equipment necessary are large, complex, and expensive machines. Government assistance is necessary to re-shore this critical process that is going to be the cornerstone of the next generation of microelectronics. Strategies to mitigate this include working through the supply chain issues, training, prototyping the projects and the workers while establishing the advanced processes.

In terms of barriers to success for the UpSkill Osceola and Cornerstone Osceola project, the most difficult barrier will be community buy-in and trust. For the programs to work, the people who live in the communities must want to work with Cornerstone Osceola. Both projects are based on principles and processes already recognized nationally as best-practices to establish and sustain trust (social capital) with residents.

Osceola County suffered the third highest rate of unemployment during the first wave of the coronavirus, due to our economy depending heavily on hospitality. According to StatsAmerica, Osceola county’s 24-month unemployment rate is 9.59, which is higher than the U.S. Average of 6.56. Additionally, the 2019 per capita personal income was $35,528, lower than the national average of $56,490. Even today, Osceola County experiences higher unemployment rates than surrounding communities, some of the highest rates in the state1, and lags the State of Florida’s median recovery metrics – with Osceola County’s local county economic impact index score of 0.9368, below the state’s average score of 1.00132. Our residents need the social and economic development that these projects will help generate. These projects will help Osceola County build back better.

Osceola County as the Lead Applicant, and potential grant recipient, has many years of extensive experience in receiving, implementing, and successfully managing large Federal grants such as CARES Act, CRF, American Rescue Plan Act’s State of local fiscal recovery funds, and Emergency Rental Assistance Program. The County staff is uniquely suited to be the recipient of the EDA FY 2021 Building Back Better Regional Challenge funding.

1 Local Area Unemployment Statistics - FloridaJobs.org