

# Advanced Manufacturing: Microelectronics & Semiconductor

**UPCOMING SERIES:**

## Industries of the Future

**A Pathway Toward Economic Resiliency**

**June 21- September 27**

**Series Summary**  
The Economic Recovery Support function, in partnership with local, state, and federal partners, will be hosting a series of virtual sessions on Florida's Industries of the Future.

**Session Topics:**

- State of the Industry
- Industry Assets
- Industry Challenges
- Highlight of Industry Best Practices

<b>21</b> JUNE <i>Blue Economy Part I: What it Means for Florida</i>	<b>12</b> JULY <i>Blue Economy Part II: Best Practices</i>	<b>19</b> JULY <i>Advanced Manufacturing: Microelectronics &amp; Semiconductors</i>	<b>Why focus on Industries of the Future?</b> <ol style="list-style-type: none"><li>1. Diversify the economic base</li><li>2. Build a more resilient economy</li><li>3. Create more high-wage, high-skill employment opportunities</li></ol> <p>For more information, contact: Milton Cochran at <a href="mailto:mcochran@eda.gov">mcochran@eda.gov</a></p>
<b>16</b> AUGUST <i>Clean Energy / Cleantech</i>	<b>13</b> SEPTEMBER <i>Aerospace &amp; Aviation</i>	<b>27</b> SEPTEMBER <i>Agricultural &amp; Life Sciences</i>	



**OSCEOLA**  
COUNTY **be first**  
to what's next.



# WELCOME TO THE THIRD FASTEST GROWING COUNTY IN THE U.S.



2022 Estimate from Electrical Construction & Maintenance Magazine  
based on population growth and building permits



[osceola.org](https://osceola.org)



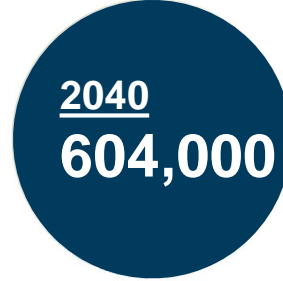
# 2020 CENSUS

Osceola saw the **biggest growth by a single county in Florida**, with its population **increasing** by about **45%**, going from about 269,000 people in 2010 to about **389,000 in 2020**.





Osceola  
County's  
population is  
expected to  
grow by more  
than 55%  
by 2040





# THE STORY OF NEOCITY





# The Florida Project

NEOCITY<sup>®</sup>

ideate > create > innovate without limits







# THE POWER OF COLLABORATION



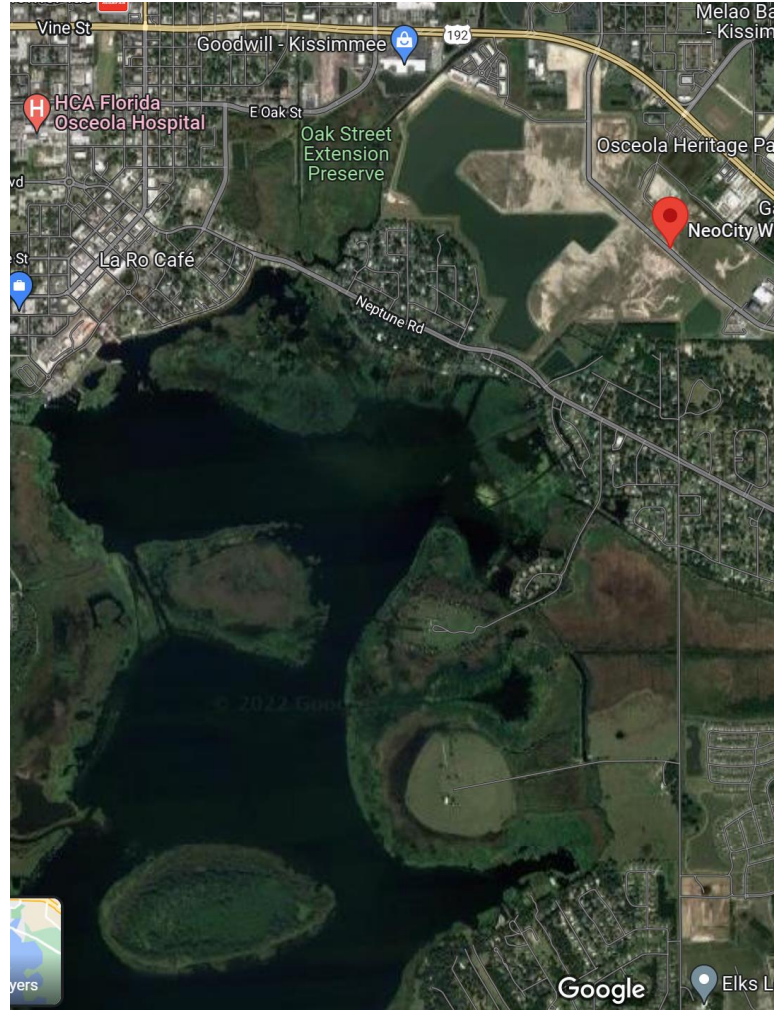
## 2012 - 10 years in the making

- Osceola County Commission Adopts Strategic Goal to Grow and Diversify the Economy
- UCF and Economic Development Commission Lead a Mission to discover how Austin Changed its economy
- President Plinski updates the Osceola County Commission on Valencia discovering that Osceola Ranks 61 out of 67 counties in high school seniors gaining access to postsecondary





# Lake Toho Water Restoration Project - \$40 million



► Center for Neovation - \$85 million + UCFs and FHTCC \$17 million







# NeoCity Academy - \$18 million





# Domingo Toro Electrical Substation - \$20 million







# The OC - \$26 million





## WHY?

### BETTER PAYING JOBS

Add a leg to the economy. Reliant on tourism, agriculture, and construction. NeoCity allows another opportunity for the future.



# What is NeoCity?

Master-planned campus that will serve as a global center of advanced research

**500**

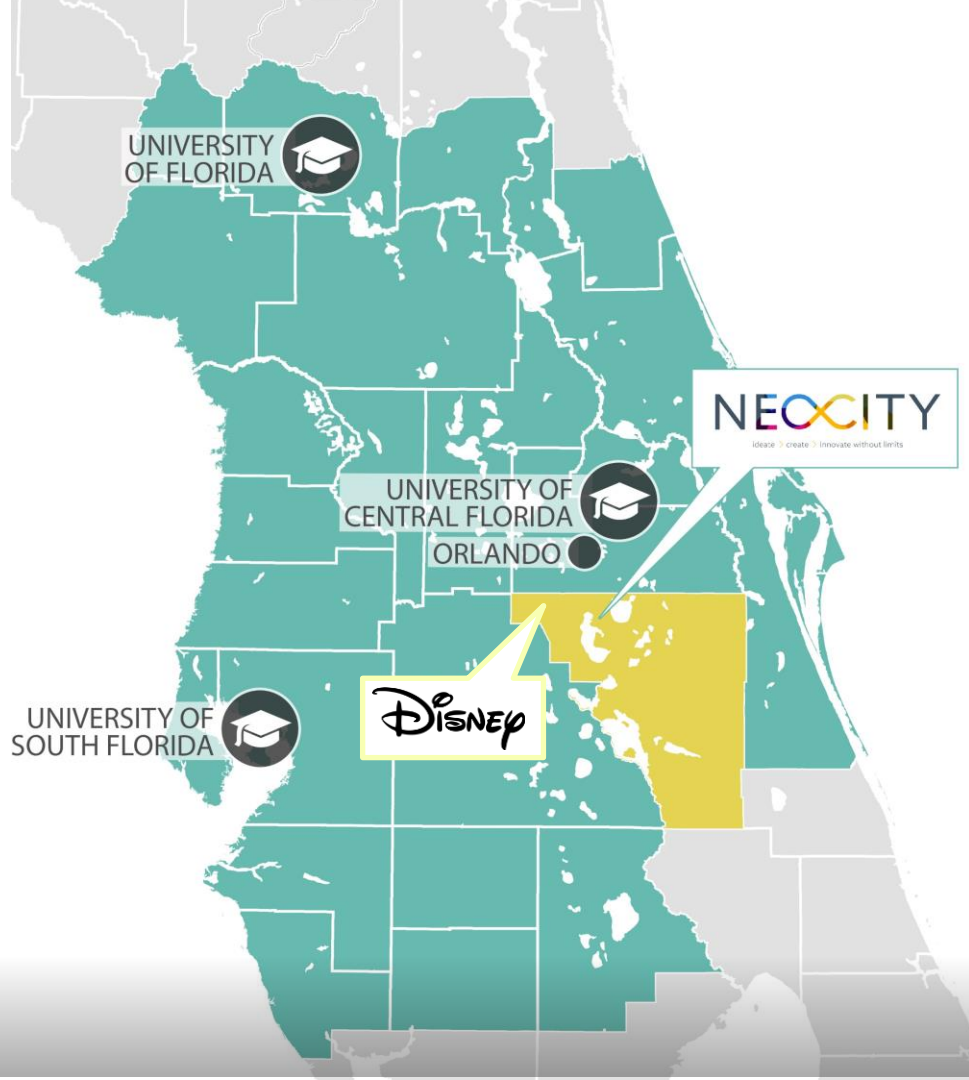
AVAILABLE ACRES AT  
NEOCITY

**100,000**

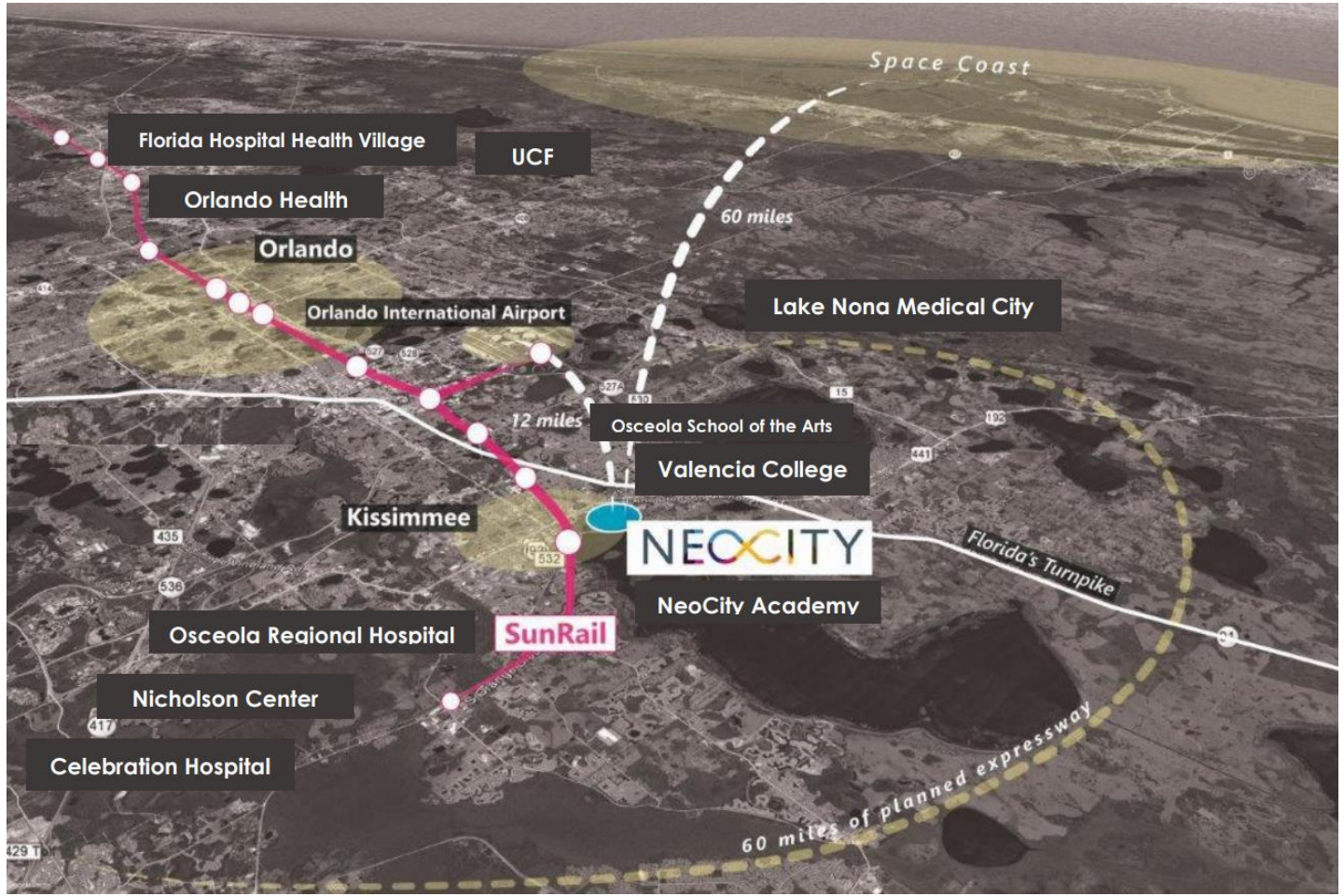
SQUARE FEET OF  
CLASS A OFFICE SPACE

**Pad Ready**

SITES IMMEDIATELY AVAILABLE









# Current Tenants



Map shows development plan at build-out



Center for Neovation



OC Building



skywater





PROGRESS



# ONSITE PARTNERS



- Bridg: Executing \$27 million in Industrial Base Analysis and Sustainment. Received \$7.5 million for Air Force Research Labs. State of Florida Appropriated \$3 million
- Imec: Currently focusing on super conducting and space wearables
- Skywater: Took over operations of Center for Neovation in February 2021. Currently fulling contracts including Bridg's IBAS work
- NeoCity Academy: Construction will begin late spring on the expansion, estimated completion 2024; est. \$18 million investment



# Florida Department of Economic Opportunity

## JOB GROWTH GRANT:

January 2022

- Osceola County received a **\$6 million grant** from the State of Florida for a key piece of transportation infrastructure – Neovation Way.
- Valencia College Received **\$3.7 million grant** for workforce development in robotics technology including a specialized semiconductor track.

March 2018

- Osceola County received a **\$5.8 million grant** from the State of Florida for a key piece of transportation infrastructure – NeoCity Way.







# NEOCITY City Center

# SCIAME / MINSKOFF Developing City Center

















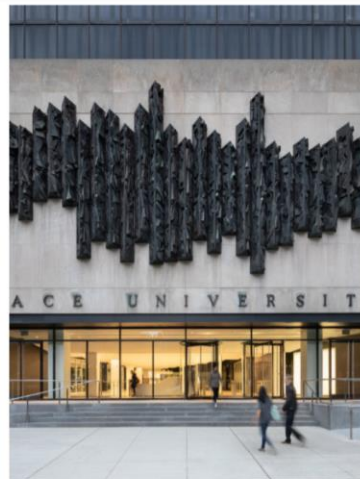
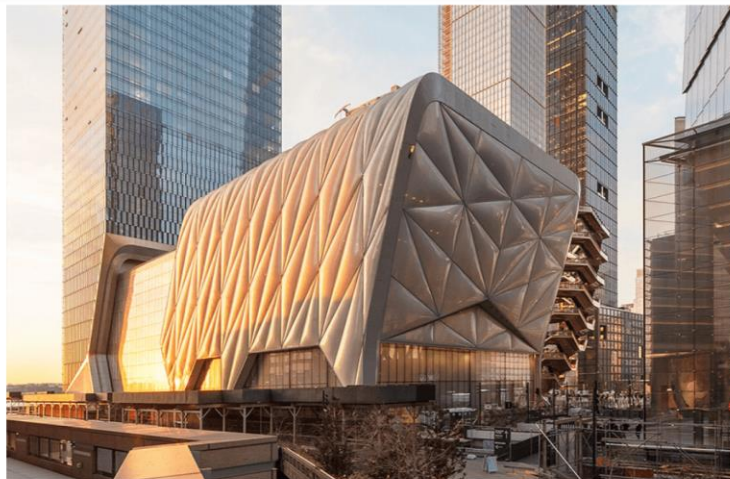












EJME

# Relevant Experience



**1166 Avenue of the Americas**  
New York, NY



**101 Warren Street**  
New York, NY



**51 Astor Place**  
New York, NY



**590 Madison Avenue (IBM Building)**  
New York, NY



**29 Jay Street**  
New York, NY



**The Bluffs**  
Playa Vista, CA



HISTORICAL

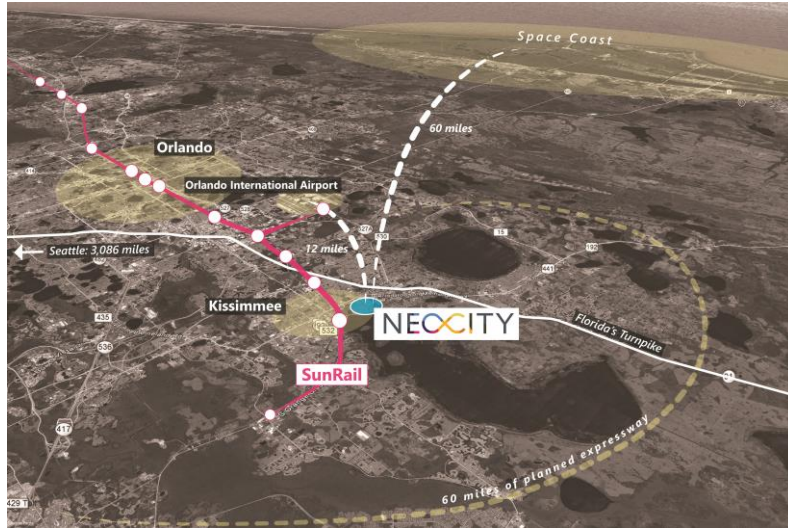
# World Financial Center





# Autonomous Shuttle

- Proposed Autonomous Shuttle to connect NeoCity to SunRail Amtrak Station in Downtown Kissimmee
- Feasibility Study Underway







# Osceola Prosper



# 2023

- 2 years for every graduating senior in **2022** and **2023** at Valencia or oTech
- Nearly half of all Osceola graduating seniors last year enrolled at Valencia College
- Osceola Prosper achieved highest fall-to-spring retention rate in Valencia College history
- Investment of more **\$20.4 million**, so far
- Interest to extend to 2024 graduating class





# Central Florida Semiconductor Coalition

NeoCity  
Osceola County



# Build Back Better Regional Challenge



Awarded \$500,000 for Phase 1.

Only organization in Florida.



President Biden will announce the **Building Central Florida’s Semiconductor Cluster for Broad-Based Prosperity** as one of **21 winners of the \$1 billion Build Back Better Regional Challenge**, the most impactful regional economic development competition in decades. Funded by President Biden’s American Rescue Plan and administered by the U.S. Department of Commerce’s Economic Development Administration (EDA), the Regional Challenge is awarding approximately **\$50.8 million** in grants to the Building Central Florida’s Semiconductor Cluster for Broad-Based Prosperity, led by the Osceola County Board of County Commissioners, to boost semiconductor industry in central Florida.





**ORLANDO  
ECONOMIC  
PARTNERSHIP**



# Coalition Members



**OSCEOLA  
COUNTY**





# Vision

Advance and accelerate existing investments in semiconductor research, development, and manufacturing at Osceola County's NeoCity, in Central Florida, and establish Central Florida as a regional semiconductor hub.



Medialorks Shenzhen Co. Ltd.

POWER LED

D1

R1

C4

C3

C5

U2

R24

R17

R20

R19

R18

C15

C18

C20

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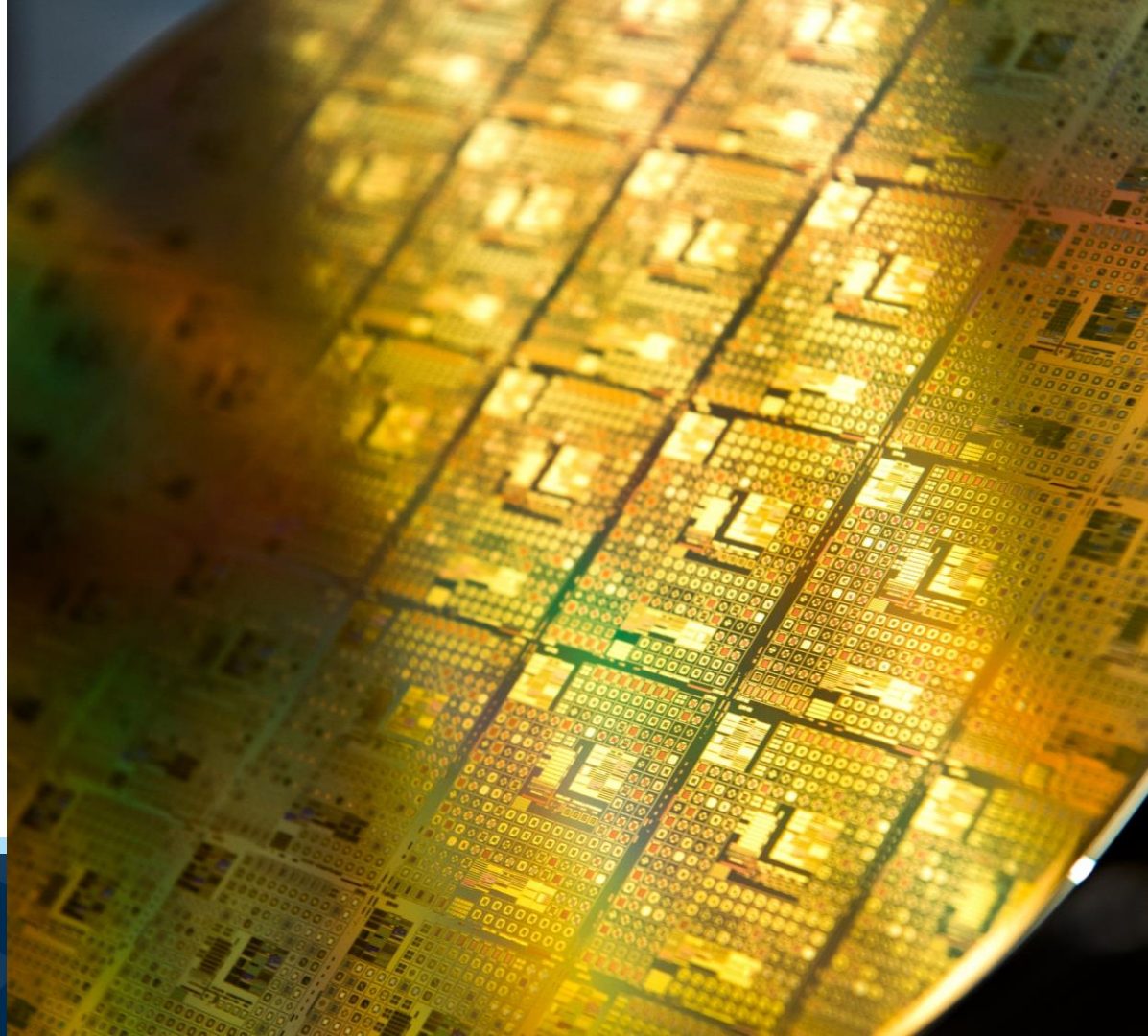
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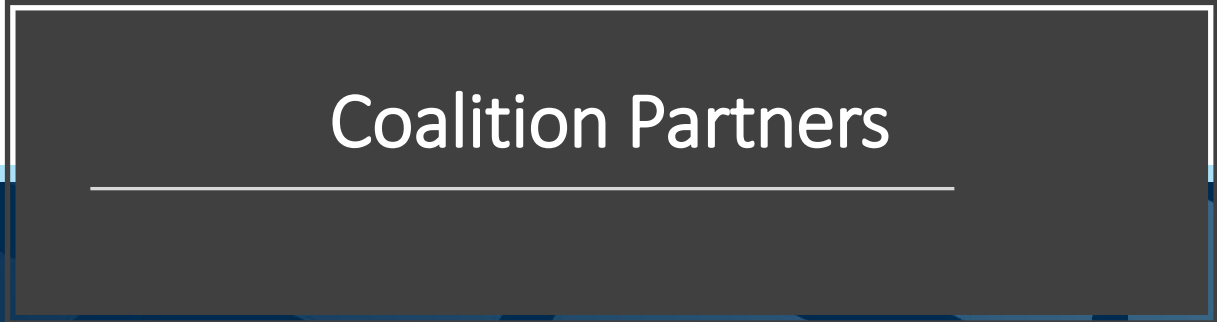
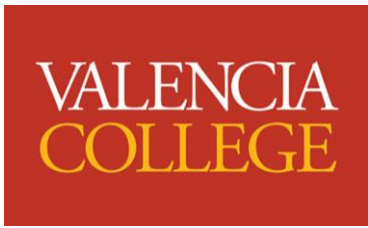
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# Projects

- Expansion of the Fab
- Advanced Packaging
- Digital Twin
- Upskill Workforce
- Cluster Management Organization
- Governance & Outreach







**Thank you for being of  
part what's next!**





BRIDG is a not-for-profit entity public-private partnership focused on NeoCity expansion and the evolution of Digital and RF silicon interposer technology coupled with Advanced Packaging solutions. BRIDG offers R&D expertise and a 200mm microelectronics fabrication facility, geared toward system miniaturization, device integration, hardware security, and product manufacturing key to aerospace, defense, automotive, telecommunications, medical and the IoT/AI revolution. ICAMR d/b/a BRIDG

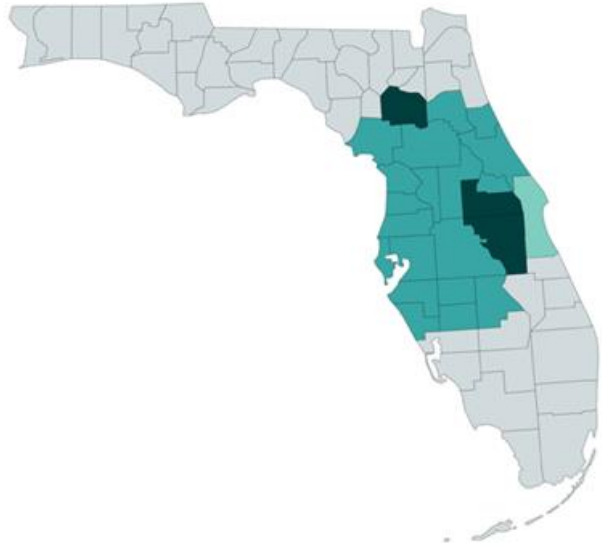


IN PARTNERSHIP WITH



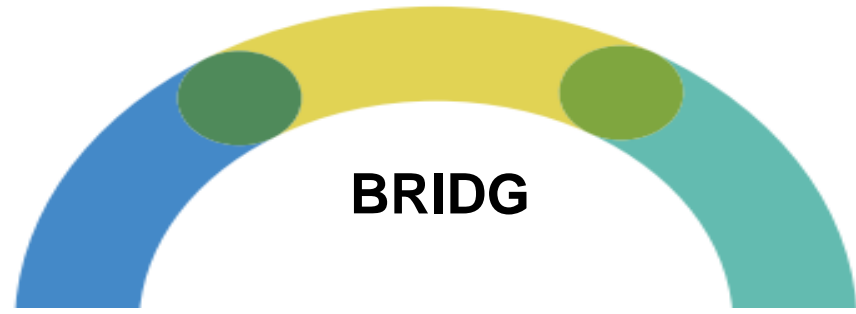
*Thank you for  
20% Match!*

**Osceola County Wins Generational Federal Investment in U.S. Semiconductor Manufacturing**



The NeoCity Semiconductor Technology Accelerator's purpose is to create **a new model of innovation** that will **integrate and accelerate** semiconductor research, development, industry application, workforce development, and manufacturing capabilities through active collaboration to contribute to the nation's semiconductor onshoring, reversing socio-economic inequities in the region, and establish central Florida as a regional semiconductor ecosystem.





## BRIDG

### NEOCITY

ideate > create > innovate without limits

Coalition Partners

Vendor Partners



### mec

the florida high tech corridor

VALENCIA COLLEGE



### TEL

TOKYO ELECTRON

### SÜSS

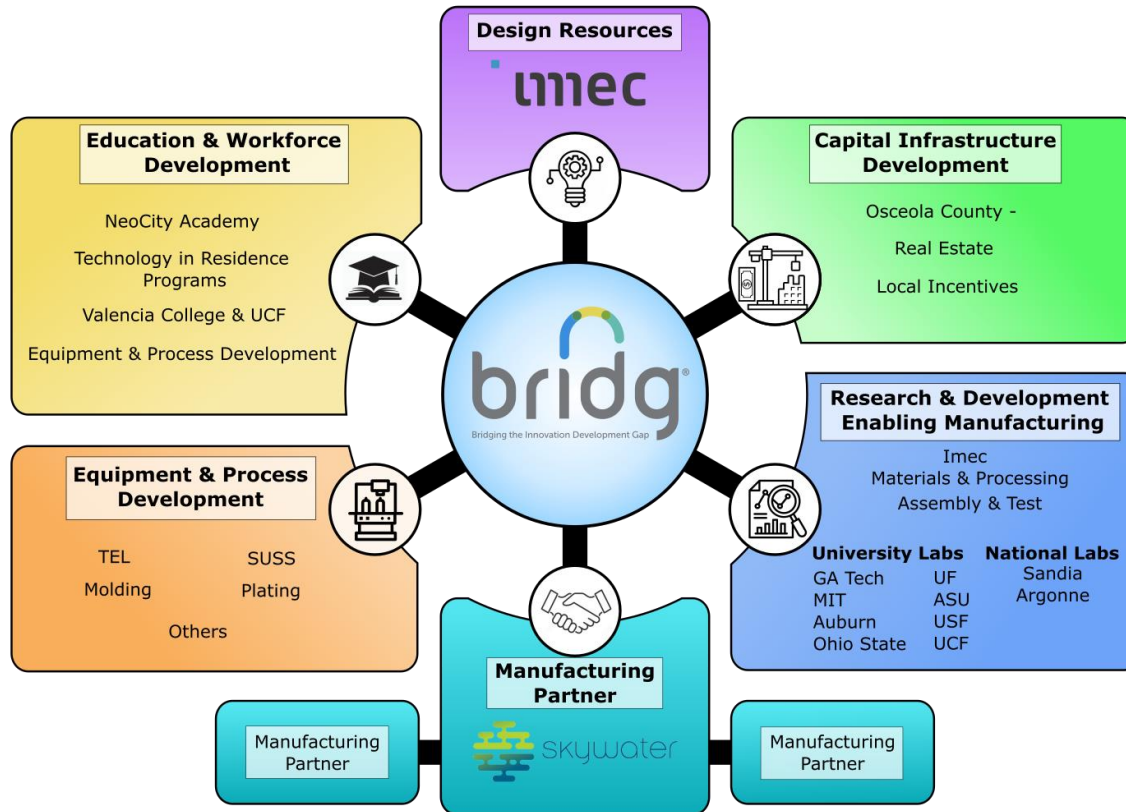
MicroTec

### SIEMENS

### cādence

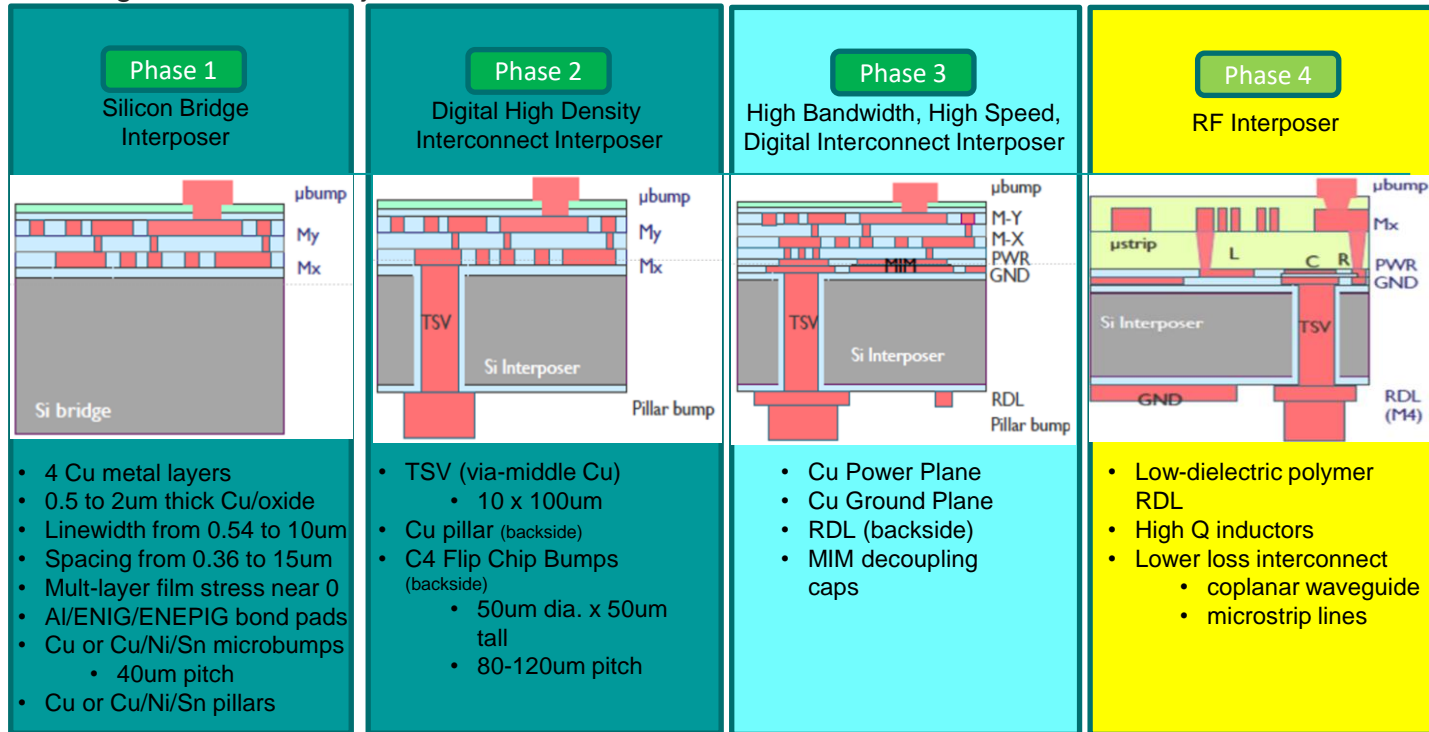
### Tektronix

### LUMINAR



## imec Silicon Interposer Technology Transfer

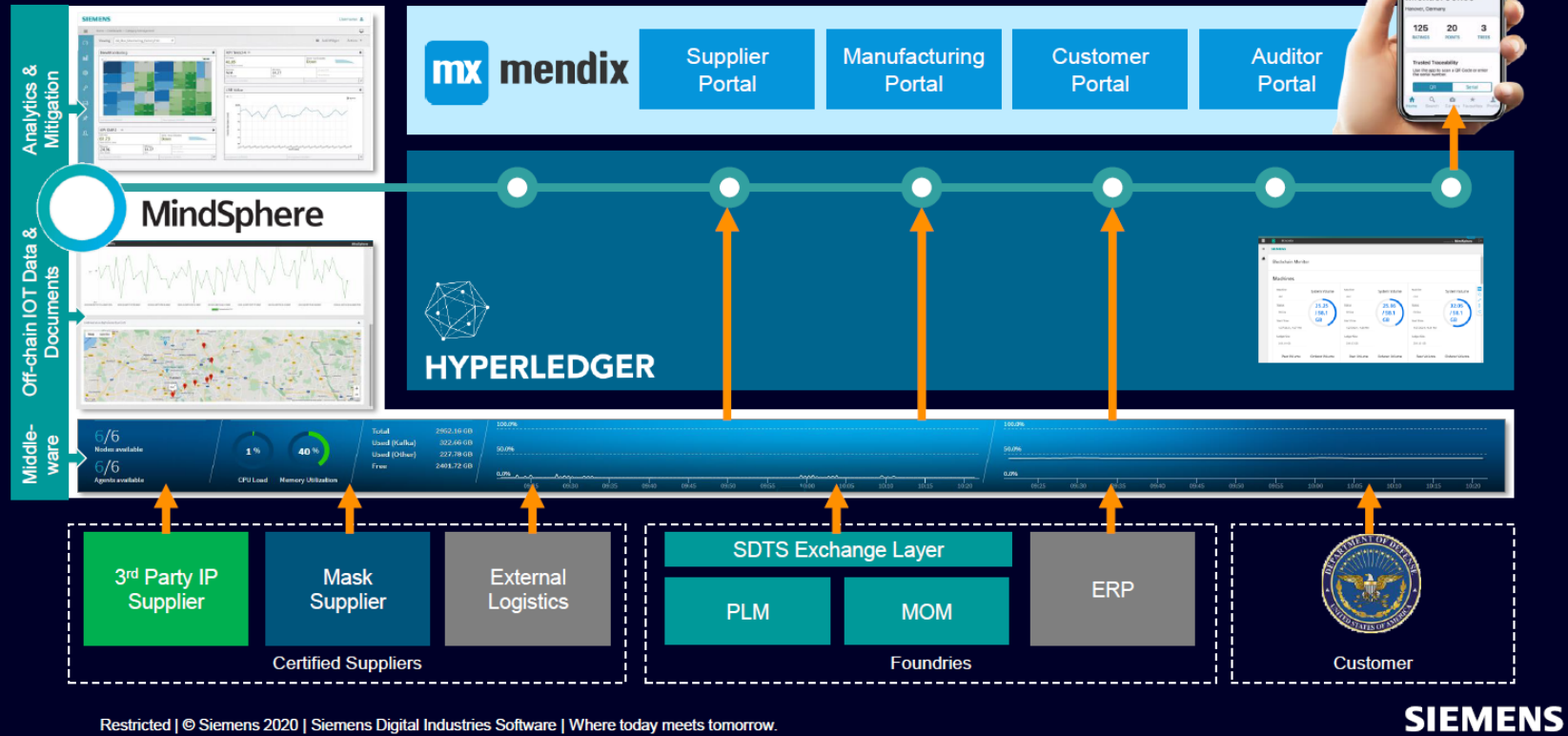
- Process technologies and Process Design Kits (PDKs) for setup at BRIDG
- Royalty-free, non-exclusive, non-transferable, worldwide, and perpetual license
- Aligned to IBAS Project



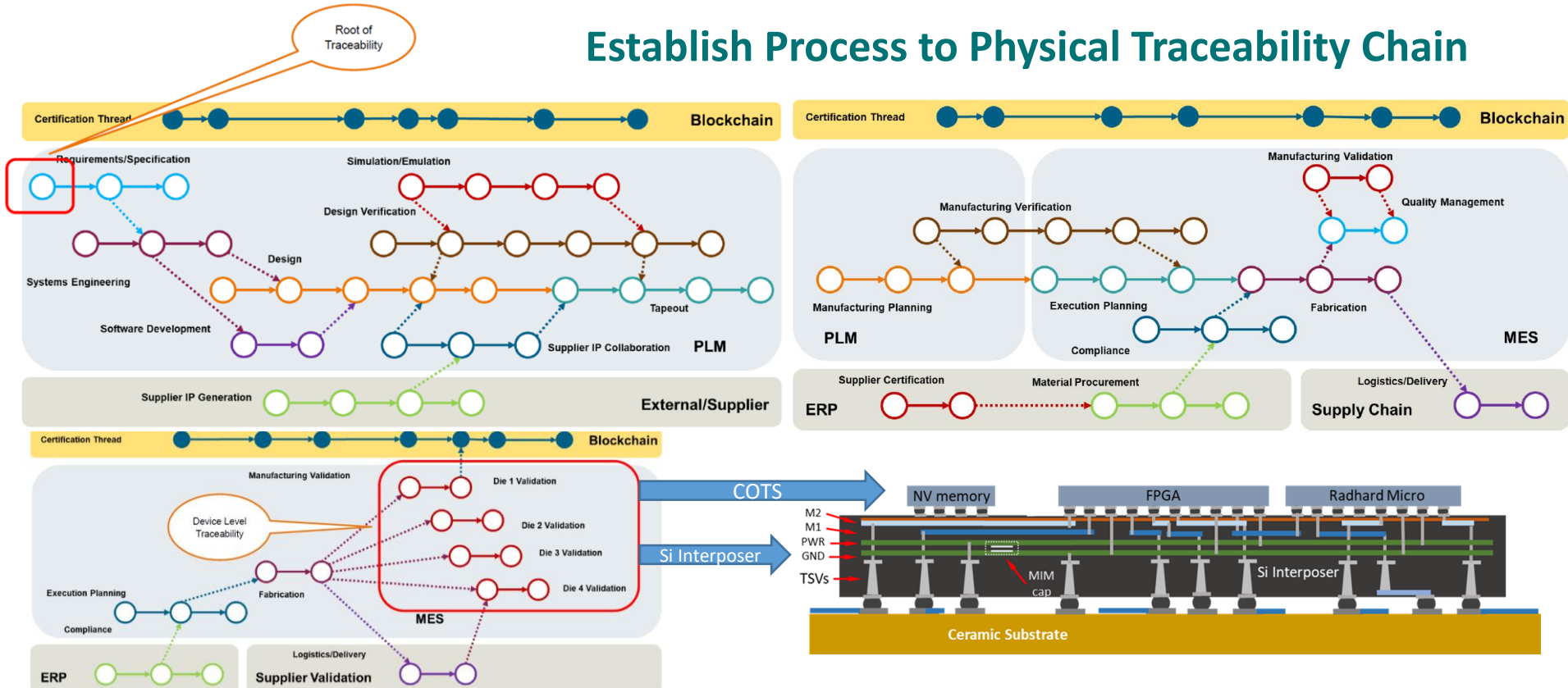




## Trusted Traceability Architecture



## Establish Process to Physical Traceability Chain



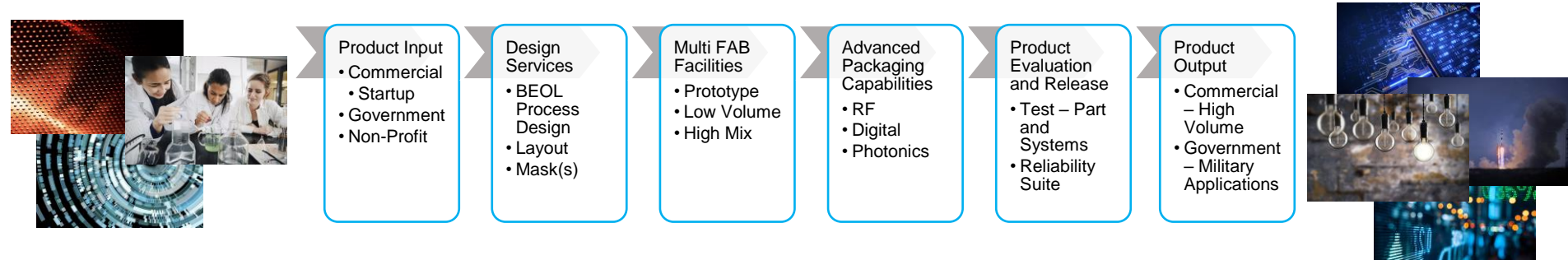




BRIDG's Vision is to Allow and Assist Universities, Startups and Other Non-Profits by Offering:

- Engineering and Design Support
- Access to BEOL 200mm Semiconductor Lines
- Access to Advanced Packaging Lines
- Future Access to BEOL 300 mm Semiconductor Lines
- Participation in AP Design Center of Excellence

All Services and Support offered at BRIDG's Cost, No Surcharge or Added Fees



BRIDG Recoups Cost on High Volume Product Releases By Charging a Recovery Royalty Charge

- Usually between 3 to 5 Percent On GA Release Orders
- Limit Length of Duration for Royalty Payments – Typical 3-5 years
- Partnerships with High Volume Semiconductor Performers
- Utilize Commercialization Partner for Product Scaling and Launch

- + STEM Magnet High School
- + Up to 500 students capacity with 125 students accepted per class
- + BioDesign / Cybersecurity / Engineering
- + UCF, BRIDG, and imec in the classroom / STEM Best Practices
- + Florida's first net-zero energy K-12 public school (650 solar panels)

#FullSTEMAhead  
#InquiringKnights



School District of  
**OSCEOLA COUNTY**  
FLORIDA  
Celebrating 130 Years of Academic Excellence!





# Join Us



Join us in the next evolution of innovation!

**BRIDG**  
194 NeoCity Way  
NeoCity, FL 34744

Jim Vandevere – [jvandevere@gobridg.com](mailto:jvandevere@gobridg.com)

Dr. John Allgair – [jallgair@gobridg.com](mailto:jallgair@gobridg.com)

Gloria LeQuang – [glequang@gobridg.com](mailto:glequang@gobridg.com)

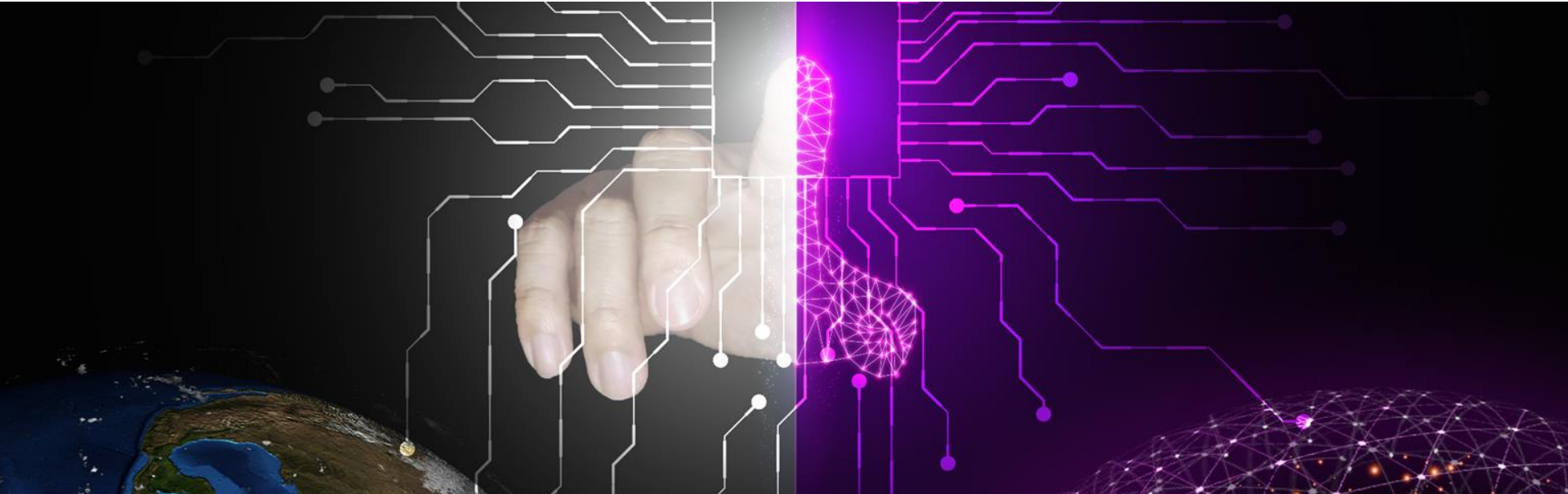


[GoBRIDG.com](http://GoBRIDG.com)



# School of Modeling Simulation and Training

UNIVERSITY OF CENTRAL FLORIDA

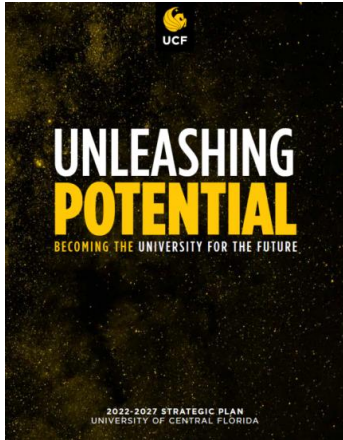


## ***Digital Twin Technology: A Semiconductor Industry Enabler***

EDA: Advanced Manufacturing

July 19, 2023

# UCF Strategy: Advancing Research, Delivering Impact



## AREAS OF FOCUS



UCF is the Academic Anchor of A  
**\$6B**  
Modeling and Simulation Industry in Neighboring Central Florida Research Park





# Why Digital Engineering Why are Digital Twins Important?

- Increasing system complexity
- Increasing need for speed and agility
- Increasing need for effectiveness and efficiency

+ ADVANCED  
COMPUTING

+ IOT

+ AI

+ SENSORS

+

MACHINE  
LEARNING

*“The nature of innovation is changing—becoming dramatically more interconnected, turbulent and fast-paced. . . The bottom-line is simple—to compete in the next economy requires playing a new innovation game, one whose goal is to boost U.S. innovation tenfold: 10x.”*

- Council on Competitiveness's 2020 report,  
“Competing in the Next Economy”

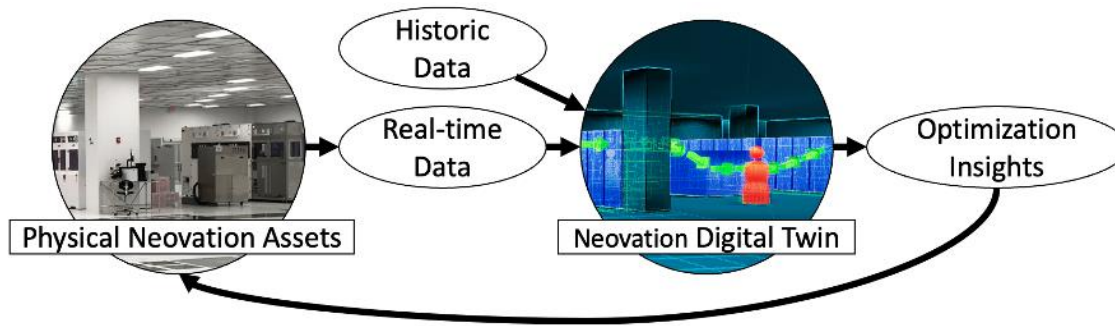


UCF

# Microelectronics Digital Twin (MeDT) ...Critical Technology Enabler

## “Building Central Florida’s Semiconductor Cluster for American Competitiveness”

A fully developed microelectronic *digital twin will accelerate the development of an emerging microelectronics cluster* in Central Florida and strengthen the region’s simulation technology sector which produces innovation with global impact.



- Increasing reliability and productivity for semiconductor fabrication
- Lowering maintenance costs
- Reducing risk
- Creating new businesses
- Increasing wages
- Improving supply and delivery chain efficiency
- Enabling cross-discipline collaboration to foster innovation

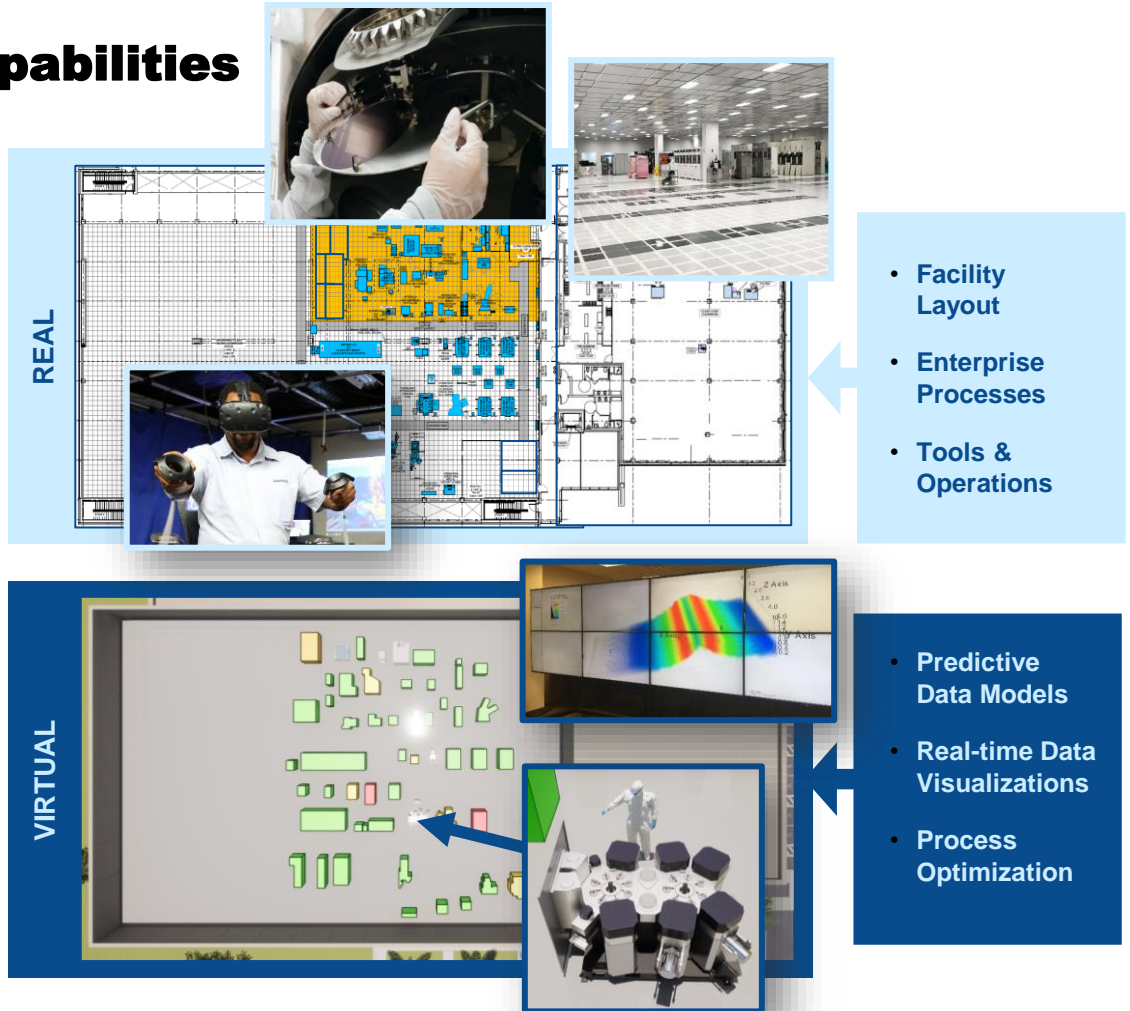
# MeDT Outcomes and Capabilities

## Outcomes:

- Intelligence Based Capacity planning for production optimization
- Algorithms for modeling equipment failures for predictive maintenance actions
- Cost savings and revenue enhancement with factory throughput maximization
- Reduced workforce training time

## Capabilities:

- Simulation, Prediction, and Analysis (data analytics)
- High Performance Computing
- Real-time Visualizations
- Multi-user interactive collaboration





# MeDT Capacity Planning for Production Optimization

## Intelligence-Based Capacity Planning

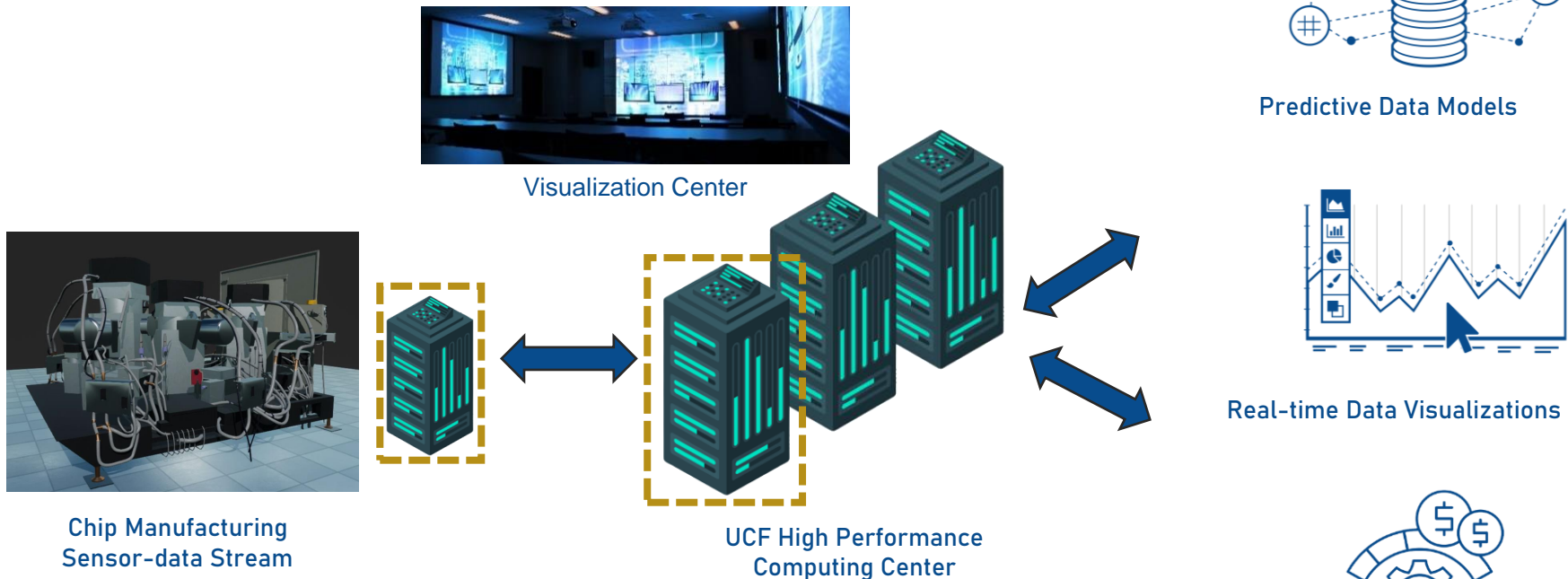
The MeDT will leverage real-time sensor data from the fabrication plant coupled with prediction and simulation models to enable:

- Increases in number of semiconductor wafers produced
- Efficient utilization of equipment, financial, and human resources



Digital Twin Dashboard – State of the Factory

# MeDT Data Architecture



bridg skywater



Advanced Research  
Computing Center (ARCC)

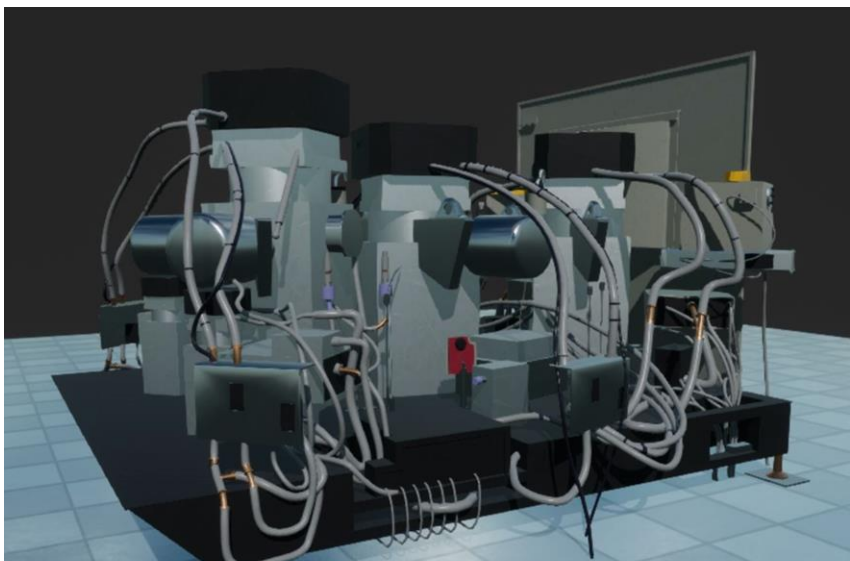
Process Optimization

# Opportunities to Scale MeDT to Regional Ecosystem

- Flexible system architecture to allow for sustainable re-use
- Scalable platform with ability to translate to other business verticals
- Utilize route planning capabilities in MeDT for traffic management and flow predictions
- Use MeDT scenario capability for supply chain logistics planning to include resource/workforce planning
- Dynamic and situated training environment









The image features a dark background with a network of white nodes and lines. In the foreground, there is a 3D model of a city with various buildings, some of which are highlighted in a golden-yellow color. The overall aesthetic is futuristic and technological.

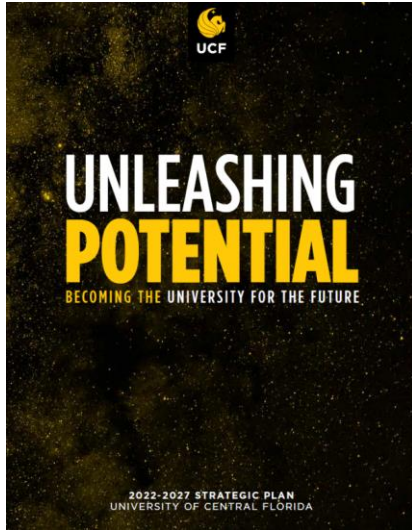
# IEEE DTPI 2023

**3<sup>rd</sup> Annual International Conference  
on Digital Twins and Parallel Intelligence**

IEEE DTPI 2023 will present the cutting-edge research and technical progress of the rapidly evolving field of digital twinning. DTPI's topics include standards, theory, practice, and various vertical applications of DTPI, including smart cities, transportation, energy, robotics, manufacturing, healthcare, spectrum management, etc.



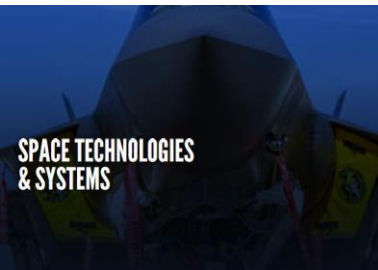
# UCF Strategy: Advancing Research Goals



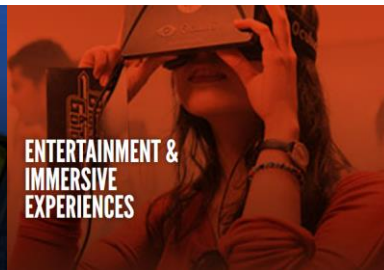
## 2027 GOALS & METRICS

- Increase focus on research by supporting basic, applied, clinical, and translational research activities
- Extend the impact, application, and commercialization of knowledge
  - Evaluate **development of an independent, applied, cooperative research institute**, part of regional innovation ecosystem
- Recruit and retain highly qualified faculty, post-doctoral appointees, and doctoral students to increase academic outcomes and support research activity

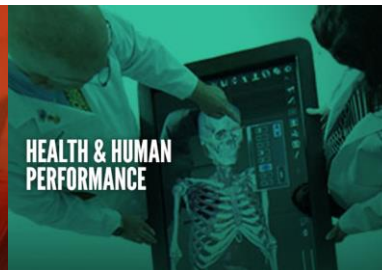
## AREAS OF FOCUS



SPACE TECHNOLOGIES  
& SYSTEMS



ENTERTAINMENT &  
IMMERSIVE  
EXPERIENCES



HEALTH & HUMAN  
PERFORMANCE



ENERGY &  
SUSTAINABILITY



TRANSFORMATIVE  
TECHNOLOGIES &  
NATIONAL SECURITY



**Grace Bochenek, Ph.D.**

*Director, UCF School of Modeling & Simulation /  
Institute for Simulation & Training*

**Phone:** 248.840.7410

**Email:** [Grace.Bochenek@ucf.edu](mailto:Grace.Bochenek@ucf.edu)





ORLANDO  
ECONOMIC  
PARTNERSHIP



*Advancing* **Broad-based Prosperity™**

We are leading the creation of a new model for economic and community development that challenges the status-quo and establishes a new path toward Broad-based Prosperity™.



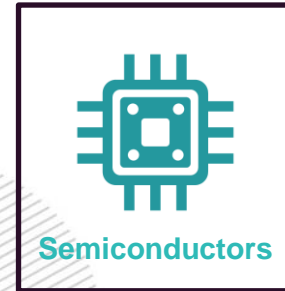
# Catalyst Osceola: Central Florida's Semiconductor Cluster Management Organization (CMO)

Jordan DeWitt



## Internationally Recognized Clusters

Cenfluence is driving the growth of emerging regional clusters that elevate **innovation**, **economic development** and **cross-cluster collaboration**.



# STRATEGIC PILLARS

Every service and activity that our Cluster Team performs directly supports one or more of the Cluster Initiative's Strategic Pillars.

## BUSINESS SUPPORT

Provide targeted business services that support the growth of Cluster Members.

## RESEARCH & DEVELOPMENT

Establish new opportunities for collaborative R&D between industry and the research community.

## COLLABORATION

Realize industry specific opportunities based on synergies and economies of scale.

## INNOVATION

Foster innovation between facilitators of innovation and industry.

## VISIBILITY

Build international awareness and alliances through cluster representation.



## Cluster Member Benefits

### CLUSTER COMMUNITY

#### BUSINESS SUPPORT

- ✓ Public funding access and guidance
- ✓ Regional assets utilization guidance
- ✓ Market studies
- ✓ Facilitate access to talent
- ✓ Business topic working groups
- ✓ Webinar training series

Small/Medium Enterprises (SMEs)  
Large Companies  
Institutions

#### RESEARCH & DEVELOPMENT

- ✓ University collaborative opportunities
- ✓ R&D cooperation guidance

### REGIONAL | NATIONAL | INTERNATIONAL

#### COLLABORATION

- ✓ Tailored connections
- ✓ Matchmaking opportunities
- ✓ Knowledge sharing events and working groups

#### INNOVATION

- ✓ Open innovation opportunities
- ✓ Partner building guidance

#### VISIBILITY

- ✓ Cluster website
- ✓ Cluster materials
- ✓ International platforms
- ✓ Trade shows
- ✓ Conferences

# UpSkill Osceola: A Semiconductor Skills-based Initiative

Jordan DeWitt

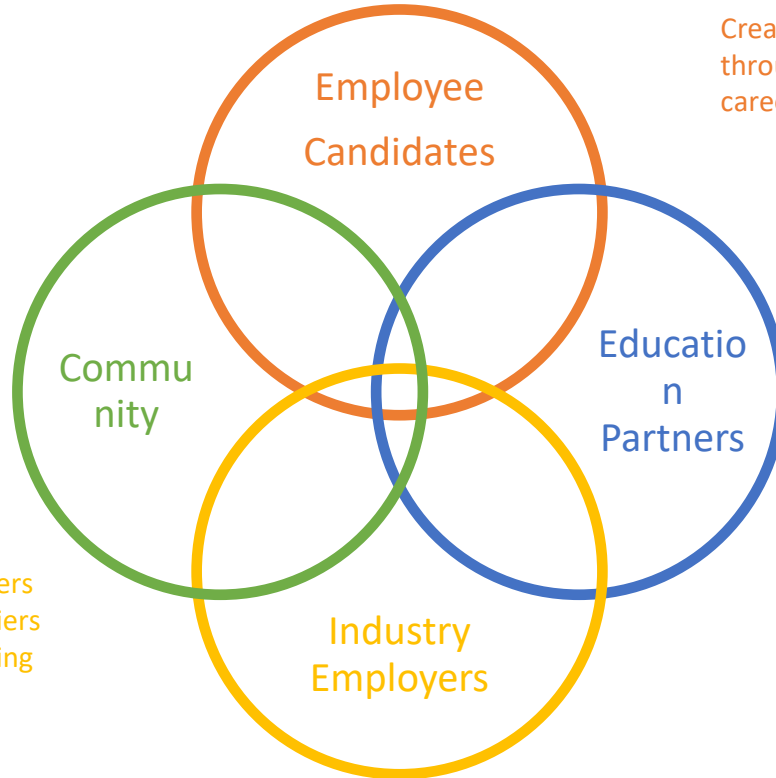


# Upskill Osceola Stakeholders

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Listening to Community Partners to assist in removing barriers to success

Educating local employers on how to remove barriers and use skills-based hiring to diversify their talent pipeline.



Creating upward mobility opportunities through the development of skills-based career pathways.

Collaborating with educational partners on skills-based upskilling programs that increase our workforce's capabilities



# Background

- In 2022, Central Florida employed 1,550 people in the semiconductor industry.
- To become self-sufficient, the U.S. will need to create over 300,000 fab jobs over the coming decades.
- This represents a tremendous opportunity to expand our industrial commons and directly create hundreds of thousands of high-wage jobs. However, this is a tall task and requires the rapid training and mobilization of talent to meet our nation's supply chain and national security objectives.
- While the semiconductor industry typically employs a higher share of workers with college degrees compared to traditional manufacturing, the Semiconductor Industry Association (SIA) reports that **one in five** workers have not attended university.



# What is Skills-Based Hiring?

Skills-based hiring involves identifying the specific skills a job requires for success, and screening candidates based on whether they possess those necessary skills or not.

# Key Elements of Skills-Based Hiring

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## Skills First

Remove credential requirements from hiring criteria when possible.

## Competencies

Use competencies specific to the job in the job description to define the hiring process.

## Reduce Bias

Reduce bias to remove barriers for qualified applicants.



# Skills-Based Hiring Benefits Employers

## 01

### Fill Jobs Quickly

- Skills-based hiring practices will streamline the hiring process through identifying qualified candidates and on-boarding quickly.

## 02

### Retain Talent

- “The Center for American Progress found that it can cost a business up to 21 percent of a person’s salary to replace them...Retention depends on how well the employee is equipped for the job and how realistic the job expectations are from the beginning.”

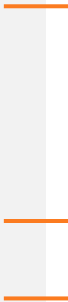
## 03

### Diversify the Talent Pipeline

- Of the adult (age 25+) population, 48 percent of Orlando’s White residents have some form of college degree. Meanwhile, only 37 percent of Orlando’s Hispanic or Latino population and 34 percent of Orlando’s Black population have the same credentials.

# Next Steps

- Skills-Based Hiring
  - Listening sessions with Catalyst/Cluster members to understand talent needs targeted for August.
  - Skills Based Hiring Workshops with Catalyst/Cluster members targeted September.
- Skills based resumes and candidate coaching
  - Training for CareerSource targeted October.



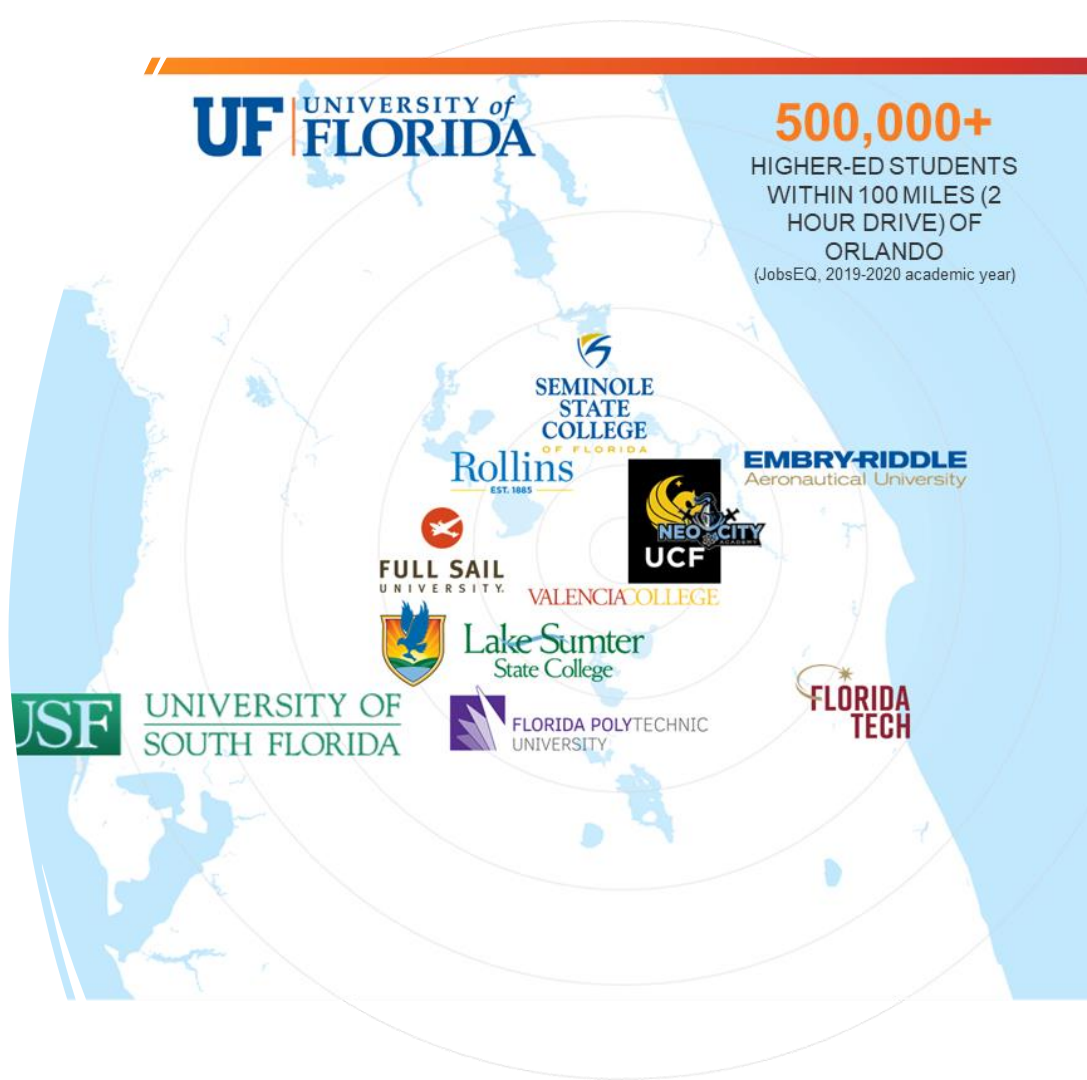
# Upskilling

Upskilling is the process of identifying an individual's existing skills and finding or creating training programs that will take him/her to the next level in their career. It can also be used to help individuals pivot into another career entirely and help meet employer demand for talent.



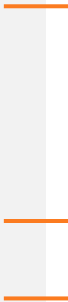
# Educational Ecosystem

- Skill-backed research will identify opportunities for credentialing programs and upskilling opportunities for Central Florida's workforce.
- Partnering with Catalyst Osceola Cluster members, we will lead a demand-driven conversation to create a common language amongst the industry and clearly communicate workforce needs to education providers.
- Partner with higher education on skillifying their courses so students know their marketable skills and can track their credentials.



# Next Steps

- UpSkilling
  - Developing first skill-backed research report on in-demand skills and occupations with transferable skills.
  - Continuing to work with the education ecosystem to skillify courses.
  - Aligning with national skills framework efforts.



# For More Information, Please Contact:

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**UPCOMING SERIES:**

## Industries of the Future

**A Pathway Toward Economic Resiliency**

**June 21- September 27**

**21 JUNE**  
*Blue Economy Part I: What it Means for Florida*

**12 JULY**  
*Blue Economy Part II: Best Practices*

**19 JULY**  
*Advanced Manufacturing: Microelectronics & Semiconductors*

**16 AUGUST**  
*Clean Energy / Cleantech*

**13 SEPTEMBER**  
*Aerospace & Aviation*

**27 SEPTEMBER**  
*Agricultural & Life Sciences*

**Series Summary**  
The Economic Recovery Support function, in partnership with local, state, and federal partners, will be hosting a series of virtual sessions on Florida's Industries of the Future.

**Session Topics:**

- State of the Industry
- Industry Assets
- Industry Challenges
- Highlight of Industry Best Practices

**Why focus on Industries of the Future?**

1. Diversify the economic base
2. Build a more resilient economy
3. Create more high-wage, high-skill employment opportunities

For more information, contact: Milton Cochran at [mcochran@eda.gov](mailto:mcochran@eda.gov)