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Microelectronics Workforce Development: A Learning Partnership Case Study

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Parallax Advanced Research

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Microelectronics Workforce Development:

A Learning Partnership Case Study

August 18, 2022

Dr. Dave Rude
VP & Chief Talent Officer

Activity Session Objectives

- **Explore the Microelectronics Workforce Development Ecosystem Case Study**
- **In small groups, consider and apply case study techniques such as:**
 - Stakeholder analysis
 - Value proposition
 - Complementary contributions
 - Learning partnership sustainment
- **Out-brief key learnings/take-aways**

Microelectronics Workforce Development (ME WFD):

A Case Study

- **Microelectronics (ME) drives the U.S. economy** and the centerpiece of everything digital
- Trusted and assured ME is one of the **DoD's top technological priorities**
- The U.S. needs to be competitive in the global marketplace to **protect its national security and fuel its economy.**
- **Severe talent shortages and inadequate training/education** throughput for skilled ME professionals is an economic and national security concern
- **Learning partnerships had to be formed** to build and sustain an ecosystem of talent to meet demands noted above

**To address these
concerns, we
established the
ME WFD
ecosystem of
learning partners**

What is the opportunity?



Who is involved?
Who cares? Why?



How will they contribute?
Add value?



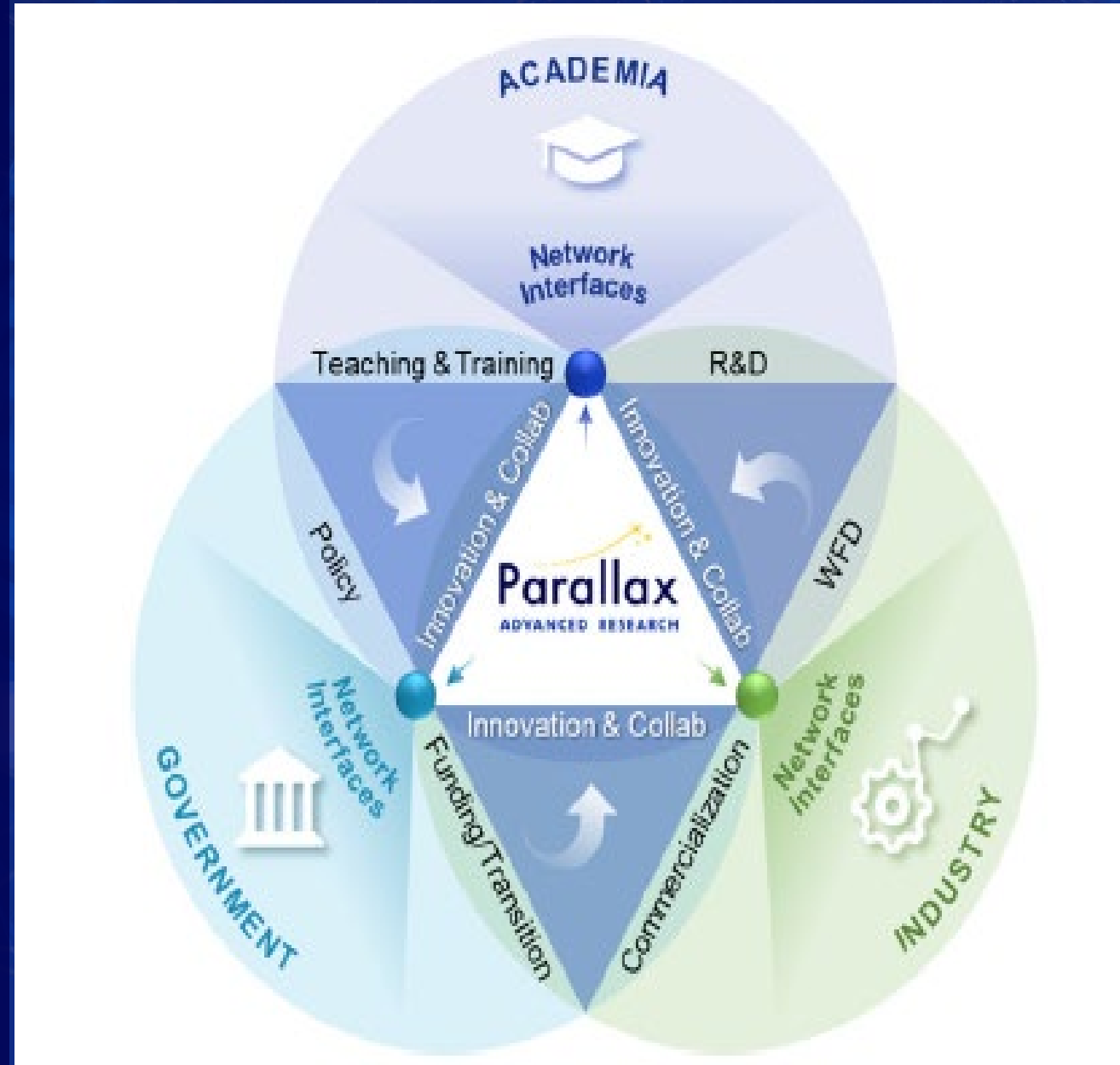
How can you maximize
synergy and minimize
unhealthy competition?



What is needed to
sustain the ecosystem of
learning partnerships?

Why a Learning Ecosystem? **

- competing and constantly changing systems
 - limited resources
 - broad capabilities
 - need for integration



** Adapted from:
Walcutt, J.J. & Schatz, S. (Eds.) (2019). *Modernizing Learning: Building the Future Learning Ecosystem*.
Washington, D.C.: Government Publishing Office.

What is the Opportunity?

And then: How might we solve this problem?

What We Did:

- Issued a needs analysis survey to initial stakeholders (this inventory grew considerably over 6 months) – see salient findings below
- Held a virtual 2-day ME WFD ecosystem forum to glean perspectives



FEATURED SPEAKERS

MICROELECTRONICS WORKFORCE STRATEGY FORUM

May 11-13

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APEX
ACADEMIC PARTNERSHIP ENGAGEMENT EXPERIMENT

Mike DeWine
Governor - State of Ohio

Kristen Baldwin
Deputy Assistant Secretary - Air Force for Science, Technology, and Engineering

Dr. Victoria Coleman
Chief Scientist of the U.S. Air Force - Department of the Air Force

Randy Gardner
Chancellor - Ohio Department of Higher Education

Mark E. Russell
Chief Technology Officer - Technology & Global Engineering Raytheon Technologies

Lt. Col (Ret) Elaine Bryant
Executive Vice President - Aerospace and Defense and JO/MIL Fed Managing Director

And, many other distinguished speakers from across academia, industry, and government.

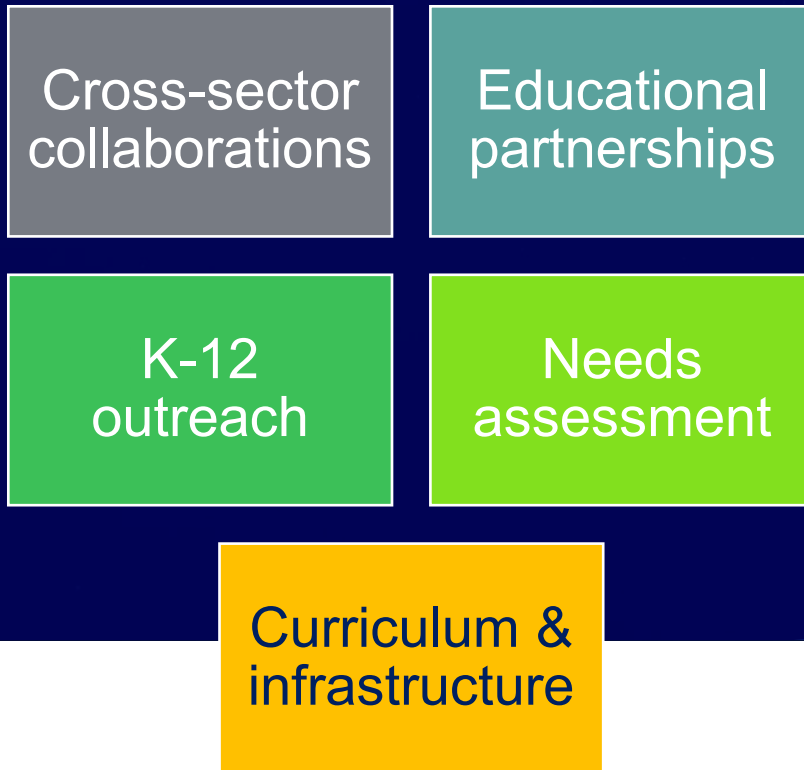
**The ME industry in the US doesn't have the skilled/educated labor it needs
ME related research must be increased in US colleges and universities
Increased K-12 student experiential learning in ME is critical for building the future pipeline**

Who Has Equities?

Stakeholder Analysis was Essential

What We Did:

Based on forum outcomes (see below), forged 1:1 and collective relationships with academia, industry, and government (see right)



How Will Partners Contribute?

Or: What is their unique value proposition?

What We Did:

Continual relationship building which surfaced stakeholders, their interests, and identified how they can provide unique solution-driven contributions

Entity	Roles/Responsibilities
Ohio Department of Higher Education	<ul style="list-style-type: none"> • Policy oversight • Political subdivision of the State of Ohio
Parallax Advanced Research	<ul style="list-style-type: none"> • Backbone organization • Needs assessment • Evaluation Assessment Impact
Ohio TechNet (OTN)	<ul style="list-style-type: none"> • Consortium <ul style="list-style-type: none"> • 23 Ohio community colleges • Career technical centers • Partner with manufacturing associates/institutes

Note: The table above reflects a sample of stakeholders (not all are listed)

How Will the Ecosystem Sustain?

Or: What's the WIIFM for staying engaged?

What We Did:

- Sustaining the learning partnerships involved initiatives such as:
 - ✓ Applying for grants together
 - ✓ Holding site visits to learn more about each other and build synergistic relationships
 - ✓ Having recurring ecosystem meetings

ME WFD Learning Partnerships Ecosystem

Network

Builds a WFD ecosystem designed around meeting employers needs and providing good jobs.

Work-to-Learn and ME Maker's Space

Provides job-centered locations for learning from K-12 to advanced degrees; reskilling and upskilling to fill labor shortages.

Growth of Ohio High-tech Sector

Attracts high-tech, high paying jobs in emerging industry sectors that result in better amenities and higher quality of life.

Growth of Ohio ME Cluster

Builds a high-tech cluster of ME employers and attractive education and skills programs for an industry of economic and national importance.

Work-based Learning and Education

Provides good jobs at every skill and education level for all communities.

Showcasing the value proposition is crucial to partner and prevail

In summary ... what we learned

Ask these questions

What is the opportunity?



Who is involved?
Who cares? Why?



How will they contribute?
Add value?



How can you maximize
synergy and minimize
unhealthy competition?



What is needed to
sustain the ecosystem of
learning partnerships?



How to
Achieve



Conduct needs analysis
(NA)



Conduct stakeholder
analysis and use NA
results



Build relationships to
discover their unique
value proposition



Showcase each
stakeholder's strengths
as complementary



Promote positive return
on investment for each
party and the collective

To partner and prevail



Activity

To Partner & Prevail: Stakeholders Are Essential!



Focus on the reality and importance of stakeholders



Explore who are your stakeholders



Diagnose health of your stakeholder relationships



Consider an action plan going forward

Definitions

Stakeholder:

- Anyone who is influenced by or could influence you and/or your project.
- Think of each stakeholder as a piece to the jigsaw puzzle for how you get your job done.



Stakeholder Analysis:

- The process of understanding of the motives, power base, alliances, goals, etc. of each stakeholder.

For this activity, think of a stakeholder that you would like to analyze during the next few minutes

Stakeholder Analysis

Consider these questions.

Conducting a thoughtful stakeholder analysis involves working through the questions in the graphic to the right.

- **Start with question 1** and work your way clock-wise.
- **Take your time** in answering these questions for each stakeholder in your network.

The answers matter.

The answer to each question will solidify your understanding of and appreciation for each stakeholder in your network.



It's imperative that each of us build & sustain healthy relationships with stakeholders.

Why Stakeholder Relationships Can Suffer

Relationships can go astray.

There are several reasons why this can happen. Above all, we are human! Dealing with another person can be challenging at times.

Activity:

For your stakeholder analysis,

- Think about any current stakeholder relationship that may suffer from any of the reasons shown in the blocks to the right.
- Then, consider how you could solve that obstacle with that stakeholder.

Negative consequences perceived to outweigh the benefits

Flawed communication process

Not convinced and thus not motivated

Lack of experience or locked into old habits

Prior negative experience with the WHAT

Prior negative experience with the WHO

Lack of trust

Unfair imposition

Negative emotions (fear, anxiety, etc.)

Stakeholder Mapping Activity

Instructions:

First, draw a map of your stakeholder network, with you in the middle

Second, draw lines in various configurations (**see legend box**) to indicate the current health of that stakeholder relationship

Third, reflect on your map. Consider questions such as:

- For those relationships that are **healthy**, what makes them so? How did that come about?
- For those that are a **mixed bag**, what can be done to get them to a healthier state?
- For those that are **new**, how can I build that relationship, and promote trust and credibility?
- For those that are **dysfunctional**, what are initial thoughts about how to fix that?
- Refer to “Why Stakeholder Relationships Can Suffer” and “Where Are Your Stakeholders” slides as you think about how to optimize each stakeholder relationship.

Legend:

Solid line: **healthy**

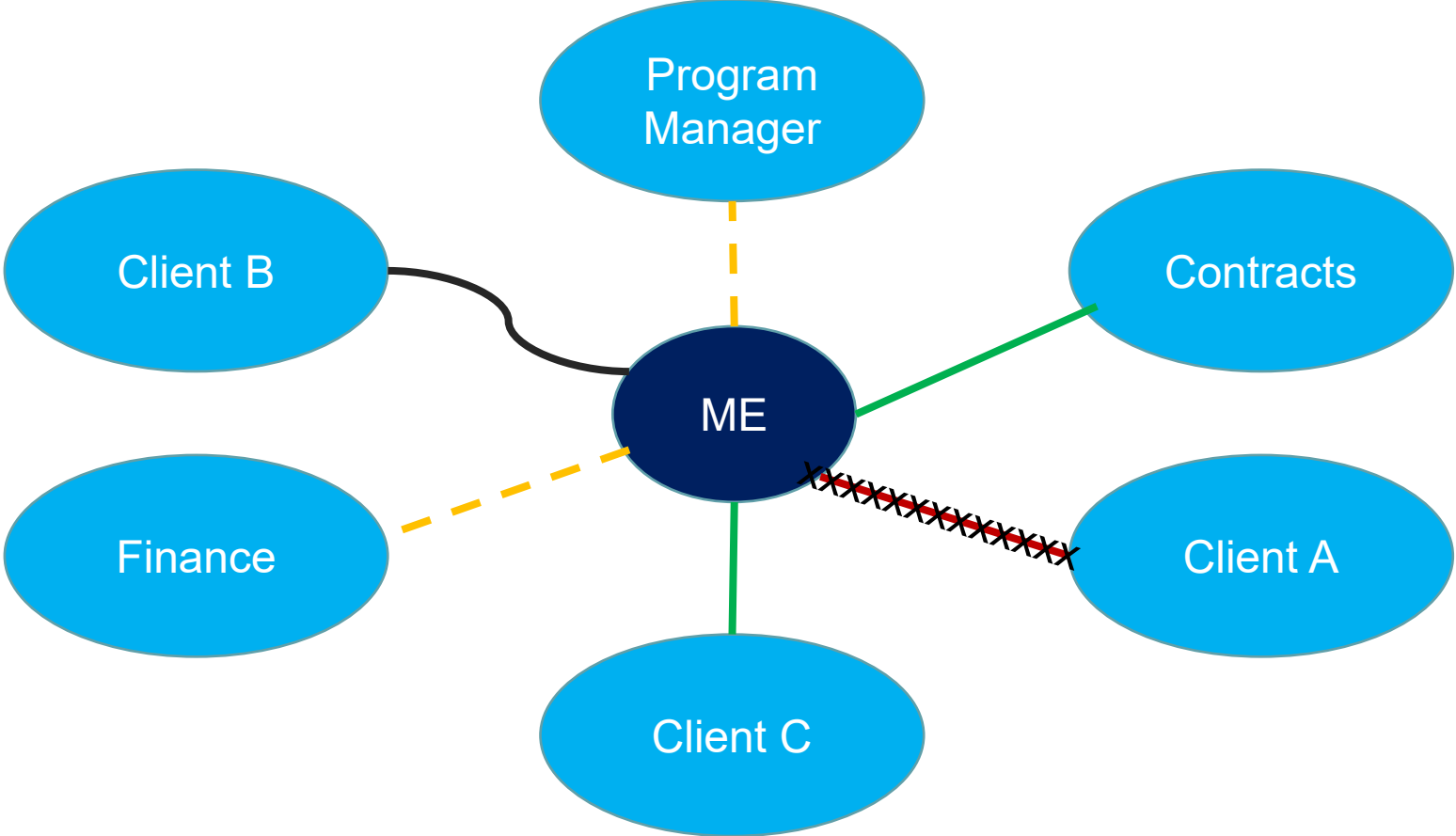
Dotted line: **mixed bag**

Zig-zag line: **new**

Line with Xs: **dysfunctional**

Stakeholder Mapping Example

Legend:
Solid line: **healthy**
Dotted line: **mixed bag**
Zig-zag line: **new**
Line with Xs: **dysfunctional**



Stakeholders can vary so please adapt this example to meet your environment

Small Group Activity

In your group, discuss:

- What's working well with a stakeholder and why
- Where you are having challenges and why
- How you are contributing to the situation
- **How can you optimize stakeholders to partner and prevail?**

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Thank You!!!

For More Information

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