WSARC
Affiliate Entity Annual Report

Dennis Andersh
WSRI Executive Director
WSARC CEO

WSARC BLUF

- WSARC Board of Directors consists of 3 internal WSU employees, 1 WSU Board of Trustees member, and 9 outside directors from across the US. There are two vacancies that we are recruiting nationally to fill.
- All Affiliated entities have been terminated or dissolved.
- The WSRI Executive Advisory Council and Research Advisory Council are fully operational.
  - WSARC released a campus wide call for Independent Research and Development Proposals Due January 4th, to promote collaboration and growth of WSU research portfolio.
- WSARC's BKD FY18 Audit was much improved over FY17 and there were no major deficiencies.
  - Separation of duties was only finding, but that is common in small organizations. We are putting additional improvements in place to ensure separation of duties. Overall very good report.
- We are meeting the expectations of the Third Frontier 2010 Research and Development Capitalization (RDCAP) grant and we will be able to recover all $5M.
- FY18 WSARC overall operational performance metrics were positive and the FY19 operational performance metrics have been reviewed and approved by the WSARC Board of Directors.

WSARC BLUF

- WSARC had positive cash flow, after depreciation in FY18 and continuing through FY19.
  - WSARC is making payments to WSU in less than 60 days.
  - WSARC recorded a bad debt of $1.32M in FY18 because ATIC sold the office condo and there was not enough equity to pay off the ATIC promissory note to WSARC.
    - WSARC is working with the ATIC Corporation to settle up this promissory note going forward.
    - WSARC as of Sept 30, 2018 owes WSU $580K due to the ATIC ($1.4M) promissory note to WSARC.
      - WSARC will continue to make these payments regardless to ATIC debt recovery until this obligation is paid off. WSARC is paying $50K quarterly.
      - WSARC will use Third Frontier RDCAP Funds (~$900K owed to WSARC) and / or will use Miami Valley Research Foundation (MVRF) funds ($300K) to offset this due bill ASAP. WSARC will use whatever fund source comes in first to accelerate payment of this debt.
    - FY19 financial performance is on track and the WSARC is living within their asserted FY19 rates.
- WSARC and WSU have completed a shared services agreement and it is effective July 1, 2018 and supports all of FY19.
  - WSARC/WSRI has covered and will continue to cover all employee salary and fringe benefits.
- WSARC is self sufficient today and we will continue to be financially self sufficient going forward.

WSRI and WSARC Corrective Actions Timeline

Reworked WSRI and WSARC structure and focus for compliance and transparency.

Eliminated named in grant Hiring Process.

WSARC/WSRI has covered and will continue to cover all employee salary and fringe benefits.

Hired outside Legal Counsel (TAFT).

WSARC Board :

- **Added to WSARC Board: Lt. Gen (Ret) C. D. Moore, WSU Board of Trustee Member.**
- **Added Vice President of Research and the Boonshoft School of Medicine Dean.**
- **Created board that now has 10 outside members.**

Developed budget utilizing actuals costs for rates.

Got approval of rates by DCAA.

Created SOP for all our operations to ensure compliance with University Policy and 501c.3 OMB 230 requirements.

Identified and Fixed 162 Compliance and Operational Issues.

Eliminated 47 positions over the past two years.

Reduced operating budget by 40%.

Created financial firewall between WSARC and WSU.

Eliminated or Dissolved all Affiliated Entities.

Billed Actual rates to Customers - FY16, FY17, and FY18.

Meeting all financial obligations to the University and paying University in < 60 days.

Returned ~$1.0M of F&A back to University in FY18 by transferring COP, CTRA, ATR programs back to campus.

Created WSARC/WSRI Standards of Ethics and Compliance.

Completed Shared Services Agreement.

Instituted New IRAD program for faculty and students.

Financially self sufficient since July 1, 2016.

WSARC research funding >$28M in FY18.

Understanding WSRI and WSARC

Wright State Research Institute

Wright State Research Institute provides innovative, customer-focused applied research solutions in the human performance and health sciences, by leveraging our university affiliation and community partnerships to facilitate technology development, job creation, and the economic revitalization of the region & state.

Wright State Applied Research Corporation

WSARC was established in 2011 as a separate 501(c)(3) nonprofit organization and was designed to provide efficient and effective contracting, security, and research administration services for Wright State Research Institute (WSRI), Wright State University (WSU), and the State of Ohio.

The major reasons for a separate entity are the abilities to perform classified contracts in classified facilities, contracts that required ITAR infrastructure, to perform applied research at the speed of business, and contracts that require FAR compliant total time accounting.

Our Vision:

WSARC is supporting WSRI, WSU and the State of Ohio to be national leaders in transformational applied research.

Our Mission:

WSARC is supporting WSRI, WSU, and the State of Ohio to deliver high-impact solutions for government, and industry sponsors through research, education and training.

WRIGHT STATE RESEARCH INSTITUTE

WSARC’sFocus

WSARC Support to WSRI Strategic View:

WSARC supports WSU’s mission to transform the lives of students and the communities we serve, and to support that mission by working with faculty, staff, students and external partners to enhance the research enterprise at WSU and the State of Ohio.

WSRI, through the WSARC, works with faculty and other campus units to catalyze strategic research and scholarly activities that lead to innovation and problem-solving to address critical challenges facing the nation. WSRI through WSARC aids in the expansion of the local talent pool to address the applied research challenges faced by industry, government, and the University.

WSARC’s contracts support and enhance commercialization programs at the University and the State of Ohio and support economic development throughout the region and state, improve human performance research regionally, and are a reliable and productive partner of key government and industry research sponsors.

WSARC Guiding Principles:

All activities will be performed in a manner that:

- Promotes transparency.
- Ensures compliance with University, state and federal regulations and policies.
- Supports research collaboration across our University and the State of Oho.
- Engages and cultivates our people as our greatest asset.
- Supports innovation across all technical, administrative and business divisions of WSU and WSRI.
- Promotes integrity and stewardship to ensure that all personnel act ethically at all times.
- Ensures financial self-sufficiency.

- ***GOAL 1:*** ***Accelerate basic scientific research into innovative solutions that address critical challenges.***
- ***GOAL 2:*** ***Enhance commercialization programs to expand University research.***
- ***GOAL 3:*** ***Provide a responsive, customer-focused, compliant, and transparent R for D process as the Ohio Federal Research Network Executive Agent.***
- ***GOAL 4:*** ***Act in the best interest by providing contracting services to federal and state research programs at Wright State University, Wright State Research Institute, and related entities.***
- ***GOAL 5:*** ***Create a positive and inclusive environment that values diversity, equity and inclusion throughout the workplace, across all roles, functions and operations.***

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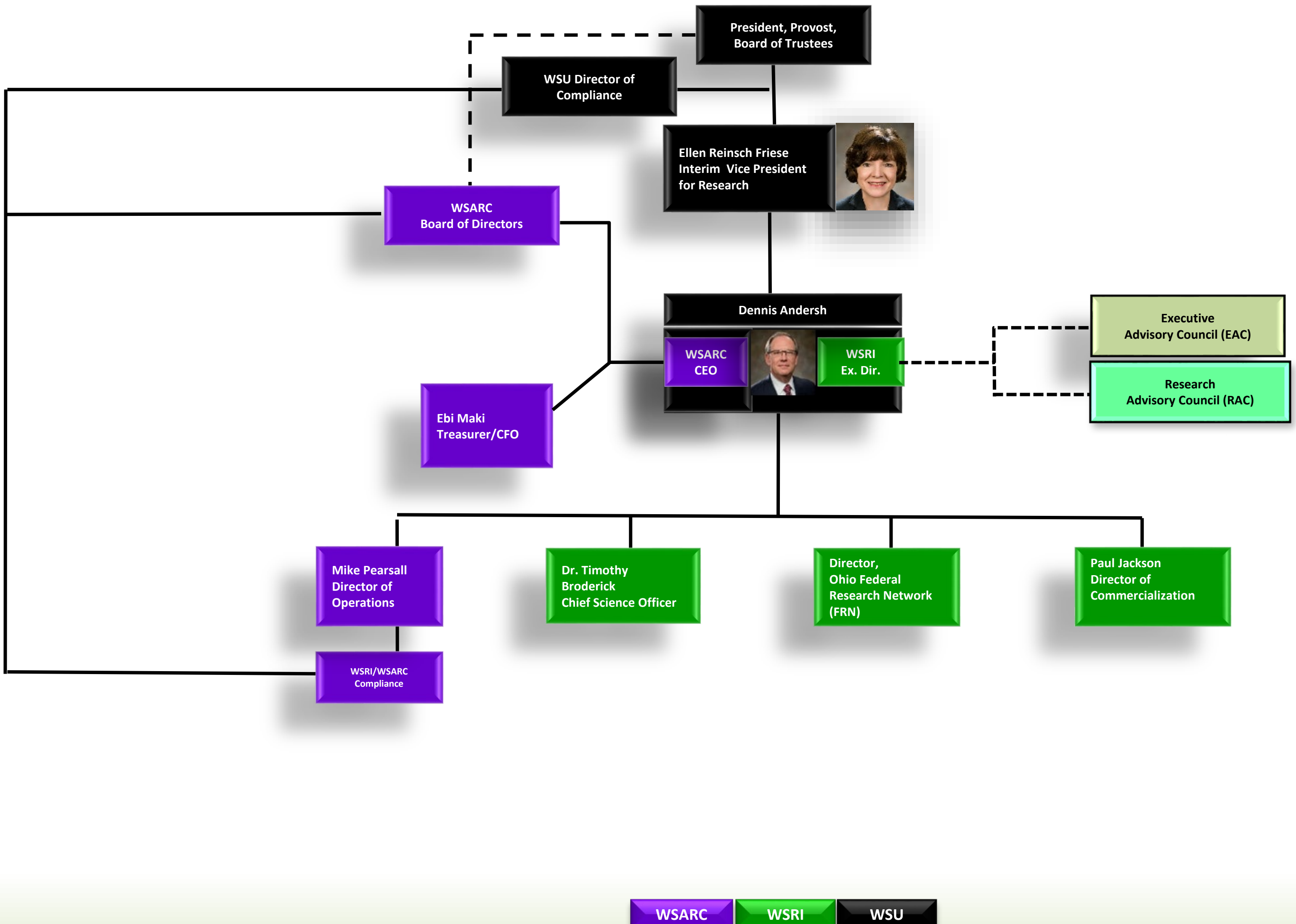
FY19 WSRI / WSARC Organization



Summary of Review Group Objectives

- **WSARC Board of Directors**
  - The Board of Directors shall have general supervision and charge of the property, affairs, and finances of the Corporation. Without limiting the generality of the foregoing, the Directors shall elect the officers of the Corporation.

- **WSRI Executive Advisory Council**
  - Ensure there is continuous focus and improvement in the working relationships between WSRI and the WSU Research Enterprise (RE) including review of business performance and processes;
  - Align WSRI and WSU RE efforts to become a world class research capability, with innovative ways of capturing research opportunities that meet the shared mission and are in full compliance with applicable state and federal regulations;
  - Help to share and provide a consistent message in communicating with customers, particularly the government research mission at Wright Patterson Air Force Base (WPAFB), other stakeholders across Ohio, and the RE notably the faculty, staff and students of WSU; and
  - Ensure that WSRI is working in accordance with the affiliation agreement between WSU and WSARC.

- **WSRI Research Advisory Council**
  - The RAC will operate and function as an advisory committee serving the needs of the WSU Research Enterprise (RE) by providing input and recommendations for joint WSU/WSRI research.
  - The RAC Team will work with the WSRI Chief Science Officer and the WSRI Executive Director (ED) to provide guidance regarding research opportunities within federal agencies, state organizations, and industry.
  - The RAC will review and recommend the pursuit of funding, the commercialization of developed technologies and the engagement of Wright State University (WSU) faculty, staff and students within the framework of the affiliation agreement between WSU and WSARC.

Note: The WSU Research Enterprise is defined as the faculty and staff that support the increase of externally funded research, scholarly activities, and other sponsored programs.

Current Customers

Air Force Research Laboratory

Air Force Office of Scientific Research

National Air and Space Intel Center

National Science Foundation

Office of Naval Research

DARPA

Army Research Office

Office of the Secretary of Defense

IARPA

Air Force Special Operations Command

Classified Customers

Research Focus Areas

Human Performance

Cognitive & Social Sciences

Autonomy/HMT

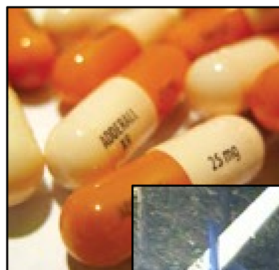
Live, Virtual and Constructive

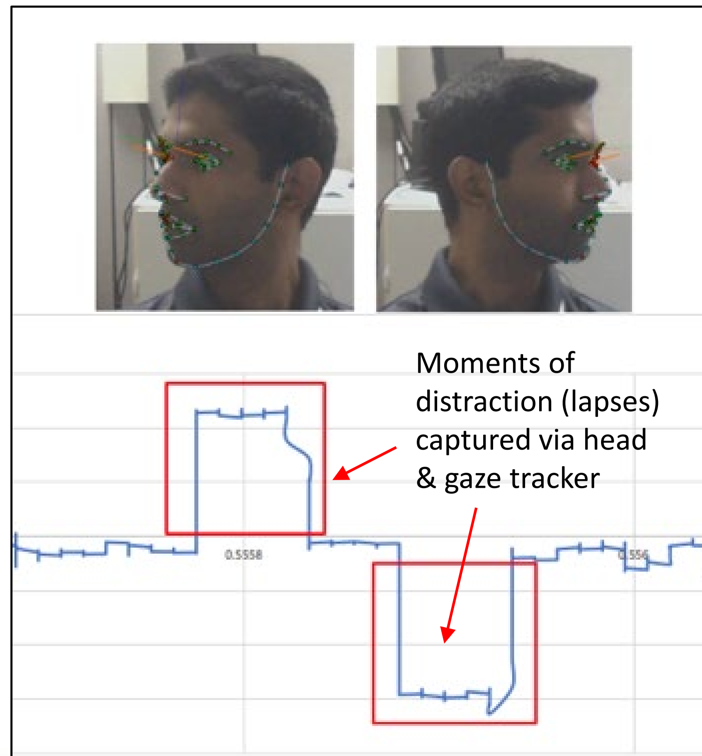
Embedded Systems

By expanding and diversifying our research portfolio through customer engagement, focused research proposals & partnering with faculty and students, we can attract talent to the region and University.

Project: Predicting Lapses of Attention (LAPSES)
Collaborators: Ion Juvina (Co-PI, Psych); Assaf Harel (Co-PI, Psych)
Sponsor: Office of Naval Research
Amount: $750K
Period of Performance: 11/15-11/18

Background: Attentional lapses can have devastating real-world consequences. Attention-related cognitive disorders cost the U.S. economy $143-266B/yr*
Goal: **(1)** Develop new measures for predicting individual differences in susceptibility to attentional lapses; **(2)** Develop new techniques for unobtrusively measuring attentional lapses in realistic task settings.





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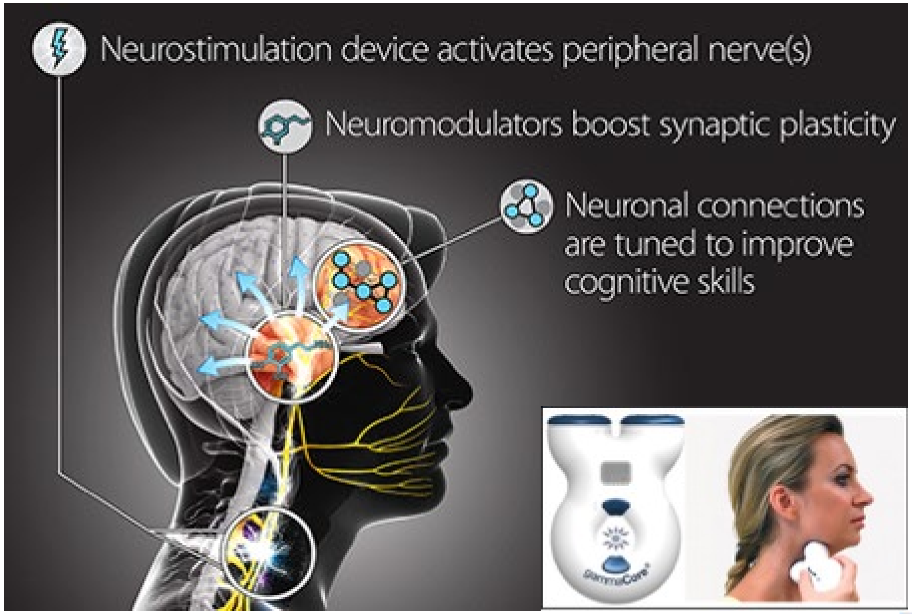
Learning through the Electrical Augmentation of Plasticity (LEAP)



DARPA DEFENSE ADVANCED RESEARCH PROJECTS AGENCY

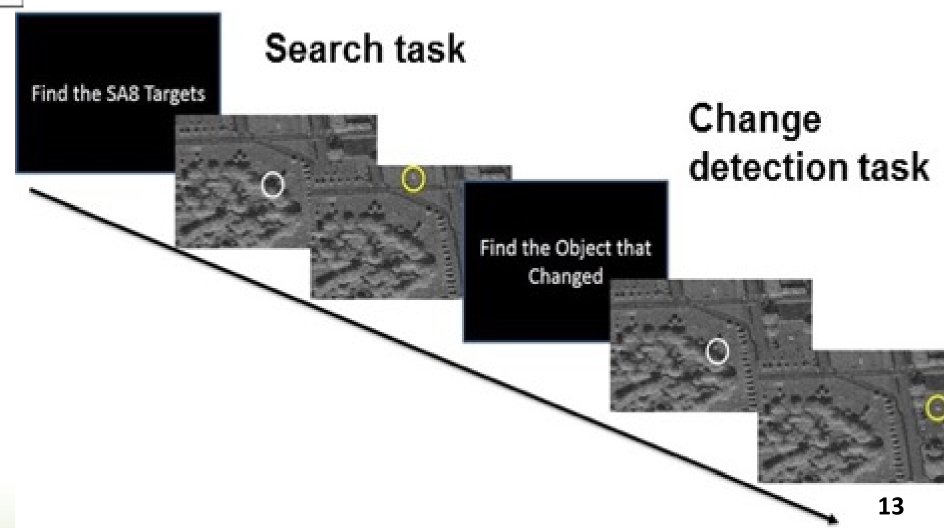
Defense Need:

- Unmanned ISR missions in the Air Force alone increased 1200% over a 10-year period while the Air Force ISR analyst workforce increased only 33% (RAND 2014).
- Initial AF ISR analyst technical training spans 110 days at a cost of $40k per analyst, with a washout rate of up to 33.7% (Manacapelli, USAF, 2012)
- Vagal nerve stimulation (VNS) has been shown to improve performance on cognitive tasks in humans—but ***evidence for VNS-induced enhancement on complex DoD-relevant tasks such as ISR analysis is lacking***.

WRIGHT STATE UNIVERSITY | VANDERBILT UNIVERSITY | electroCore The NeuroScience Company | J. Craig Venter INSTITUTE

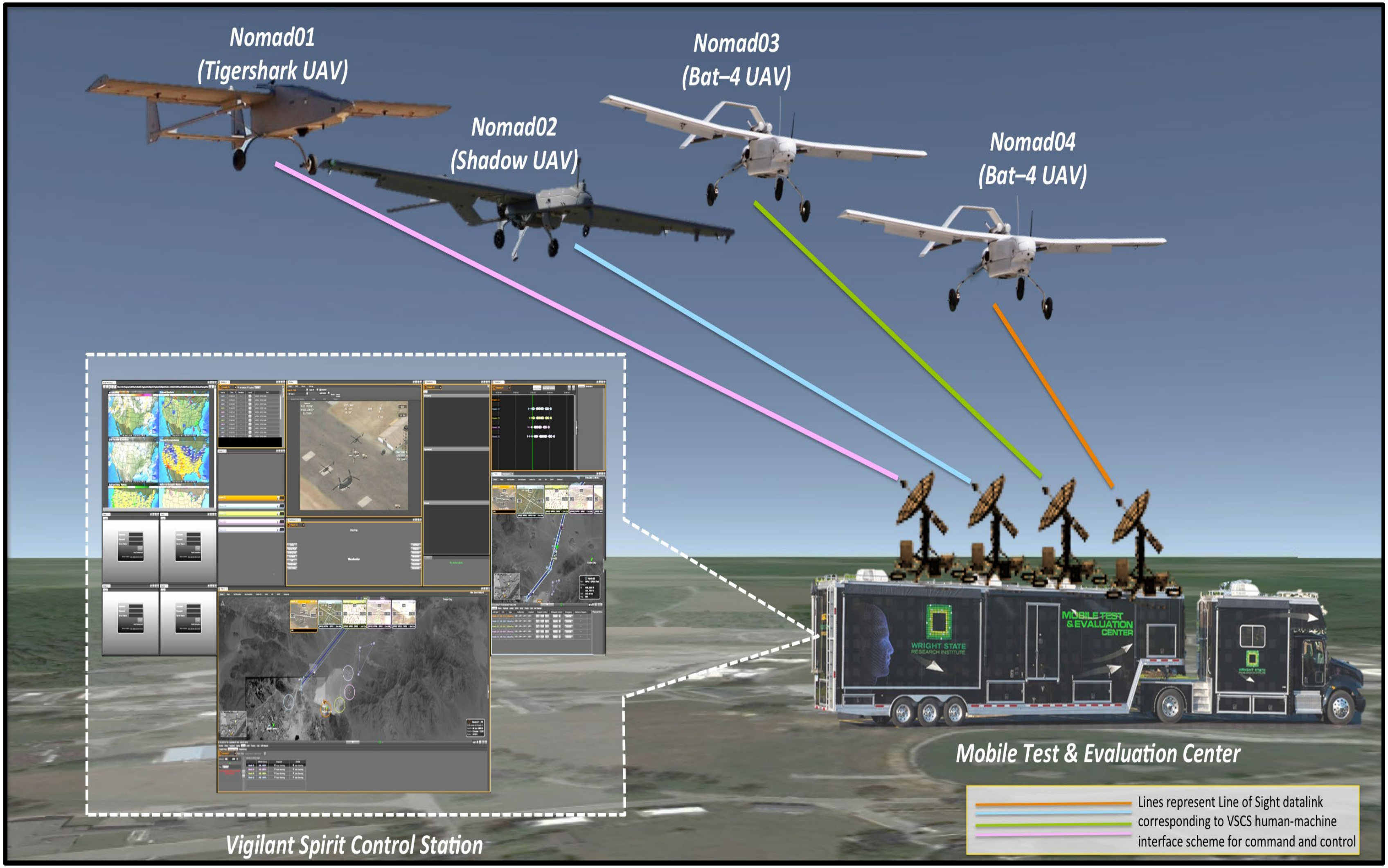
Technical Approach:

- Elucidate the epigenetic mechanisms of VNS-enhanced plasticity and learning.
- Using a rat model, improve understanding of VNS mechanism and enhance plasticity by 40% and learning by 80%.
- Develop ISR analyst skill training that uses transcutaneous electrical VNS (tVNS) to enhance plasticity and learning.
- Demonstrate tVNS augmentation of USAF ISR SAR analyst learning by at least 40%.



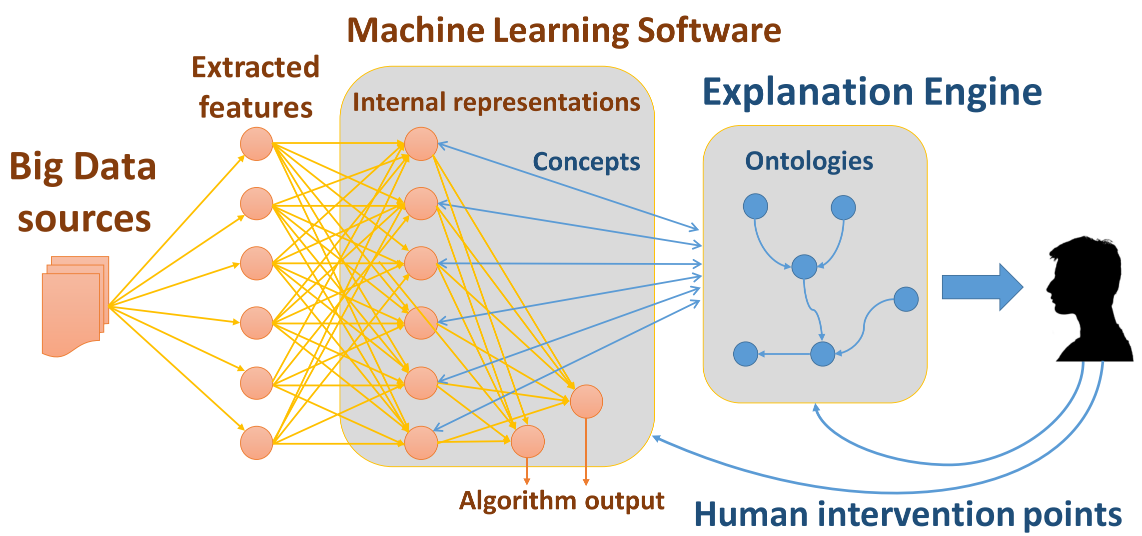
LEAP will demonstrate >40% improvement in ISR analyst training time, task performance, and skill retention

Latest AFRL / OSD HIVE Project
Focus is how to control multiple UAVs with one operator.



Project: Human-Centered Big Data (HCBD)
Collaborators: Michael Raymer (Co-PI, CSE); P. Hitzler, D. Doran, T. Wischgoll (Co-I's CSE)
Sponsor: Ohio Federal Research Network
Amount: $1.2M
Period of Performance: 9/16-1/19

Background: Despite increasingly impressive performance, many machine learning algorithms (such as deep neural networks) remain "black boxes" whose decision processes are opaque to human users.
Goal: Leverage the knowledge contained in ontologies (e.g. Semantic Web ontologies) to automatically generate *explanations* for *what* a machine learning algorithm has learned



Joint effort with two other Ohio universities (OSU and Case Western) & multiple industry partners

Audited Financial Results
as of June 30, 2018

Audited 2018 YTD Income Statement – June 30 2018

Consolidated Income Statement			
FOR 2018 ENDING June 30, 2018			
DIVISION	CONSOLIDATED FINAL	CONSOLIDATED Pre ATIC Bldg Sale	FY18 Budget
Revenue			
Contract & Grant Revenue	34,244,405	34,268,108	28,309,655
Commercial Revenue	295,267	295,267	0
Rental Revenue	320,088	320,088	401,704
Interest Revenue	103,188	104,348	58,000
	34,962,948	**34,987,811**	**28,769,358**
Expenses-Prgrm Svcs			
Direct Labor	5,313,569	5,313,957	7,015,022.40
Travel	319,297	319,104	416,530.80
Subcontract Costs	22,250,501	22,262,109	15,125,779.20
Other Direct Cost	1,270,504	1,271,958	936,648.00
Total Prgm Svcs	**29,153,871**	**29,167,128**	**23,493,980**
Support Services			
Overhead	3,600,918	3,600,918	2,875,130.40
G&A	2,269,241	2,279,687	1,675,749.60
Rent Expense	425,747	425,747	409,201.20
Other	128,562	158,770	300,296.40
Bad Debt Expense (ATIC)	1,320,126	0	0
Total Support Svcs	**7,744,594**	**6,465,122**	**5,260,378**
Total Expenses	**36,898,465**	**35,632,250**	**28,754,358**
Change in Net Assets	**(1,935,517)**	**(644,439)**	**15,000**
Depreciation Expense	**903,692**	**903,692**	**765,311**
Change in Net Assets (Excluding Depreciation)	**(1,031,825)**	**259,253**	**780,311**

ATIC Bad Debt Taken in FY18 of $1.32M. After ATIC Condo Sale in Sept 2018

2018 Major Loss Contributors

WSU Rent Costs that were Waived by WSARC $205K

- WSU MKT – $68K
- WSRI/RSP – $137K

WSARC Project Losses due to Increased depreciation

Balance Sheet as of June 30, 2018

Consolidation Balance Sheet -	
6/30/2018	
Current Assets	
Cash	5,486,607
Billed Receivables	3,528,688
Unbilled Receivables	3,218,726
Long Term Receivables	0
Prepaid Expenses	60,352
Other Receivable	3,396
Property & Equipment	4,066,854
Other Assets	300,000
Total Assets	16,664,623
Current	
Accounts Payable	8,031,900
Accrued Salaries	0
Accrued Leave Payable	0
Other Current Liabilities	5,462,760
	14,980,779
Long-Term Liabilities	
Other LT Liabilities	91,518
	91,518
Retained Earning	
Prior Year Retained Earnings	3,078,445
Total Liabilities and Assets	16,664,623

FY19 Performance to Date

WRIGHT STATE RESEARCH INSTITUTE

FY19 Budgeted Income Statement

WSRI Consolidated Income Statement			
FY2019 Proposed			
	WSARC	RSP	CONSOLIDATED
CONTRACT REVENUE			
Contract & Grant Revenue	$30,453,588	$713,694	$31,167,282
	30,453,588	**713,694**	**31,167,282**
DIRECT COSTS			
Direct Labor	6,123,469	554,990	6,678,459
Travel	516,531	0	516,531
Subcontract Costs	17,425,778	0	17,425,778
Other Direct Cost	1,136,098	0	1,136,098
Service Centers	80,672	0	80,672
	25,282,548	**554,990**	**25,837,537**
COST OF OPERATIONS			
Overhead	2,931,048	0	2,931,048
General & Admin	2,239,992	158,704	2,398,697
	5,171,040	**158,704**	**5,329,744**
GROSS PROFIT FROM OPERATIONS	**0**	**0**	**0**
OTHER INCOME			
Other Income*	100,000	0	100,000
Intrest Income	41,098		
Fee for Athena	186,950		186,950
Other Expenses	(100,000)	0	(100,000)
	228,048	**0**	**228,048**
OTHER EXPENSES			
Other Unallowable Exp**	69,343	0	69,343
WSRI Expenses not coverd by WSU	158,704		158,704
	228,048	**0**	**228,048**
NET INCOME BEFORE TAXES	**(0)**	**0**	**(0)**
Depreciation	488,585		488,585
Income excluding Depreciation	**488,585**		**488,585**
NET INCOME	**($0)**	**$0**	**($0)**

WRIGHT STATE RESEARCH INSTITUTE

2019 YTD Consolidated Income Statement

Consolidated Income Statement				
FOR 2019 PD4 ENDING Oct 31, 2018				
DIVISION	**WSARC**	**RSP**	**CONSOLIDATED**	**FY19 Budget**
Revenue				
Contract & Grant Revenue	10,252,547	1,162,692	11,415,239	9,723,082
Commercial Revenue	86,760	0	86,760	268,557
Rental Revenue	18,467	0	18,467	0
Interest Revenue	14,770	0	14,770	26,667
	10,372,544	**1,162,692**	**11,535,236**	**10,018,306**
Expenses-Prgrm Svcs				
Direct Labor	1,634,513	242,726	1,877,239	1,695,298
Travel	90,755	15,359	106,114	138,844
Subcontract Costs	5,334,306	819,695	6,154,001	4,970,040
Other Direct Cost	1,135,362	14,107	1,149,468	426,459
Total Prgm Svcs	**8,194,936**	**1,091,887**	**9,286,823**	**7,230,640**
Support Services Expenses				
Overhead	1,288,783	0	1,288,783	1,278,332
G&A	682,327	70,805	753,133	536,189
Facility (Rental)	46,852	0	46,852	26,667
Other	169,402	0	169,402	698,126
Bad Debt Expense	(8,000)	0	(8,000)	0
Total Support Svcs	**2,179,365**	**70,805**	**2,250,171**	**2,539,314**
Total Expenses	**10,374,301**	**1,162,692**	**11,536,993**	**9,769,954**
Operating Income	**(1,757)**	**0**	**(1,757)**	**0**
Depreciation Expense	**151,179**	**0**	**151,179**	**149,638**
Change in Net Assets (Excluding Depreciation)	**149,422**	**0**	**149,422**	**149,638**

WSARC Balance Sheet as of October 31, 2018

Consolidation Balance Sheet - 2019 YTD - PD4	
10/31/2018	
Current Assets	
Cash	4,775,067.79
Billed Receivables	5,419,401.86
Unbilled Receivables	939,601.41
Long Term Receivables	0.00
Prepaid Expenses	78,187.00
Other Receivable	3,053.72
Property & Equipment	3,944,045.50
Other Assets	300,000.00
Total Assets	15,459,357.28
Current	
Accounts Payable	7,383,335.96
Accrued Salaries	21,117.82
Accrued Leave Payable	56,629.42
Other Current Liabilities	4,921,586.65
Retained Earnings	3,076,687.43
Total Liabilities and Assets	15,459,357.28
	0.00

Ohio Federal and Military Jobs Commission (OFMJC) Support

Ohio Federal Research Network (OFRN)

Improving Ohio’s Economy Through R&D

WRIGHT STATE UNIVERSITY

THE OHIO STATE UNIVERSITY

WSU - Dennis Andersh

OSU - Marty Kress

https://ohiofrn.org/

Ohio Federal Research Network (OFRN) $31.9M of State Funding Total for FY16-19

Growing Ohio’s Economy by Leveraging Research and Development

$350 million in new federal research contracts over five years

WPAFB/NASA Glenn Priorities

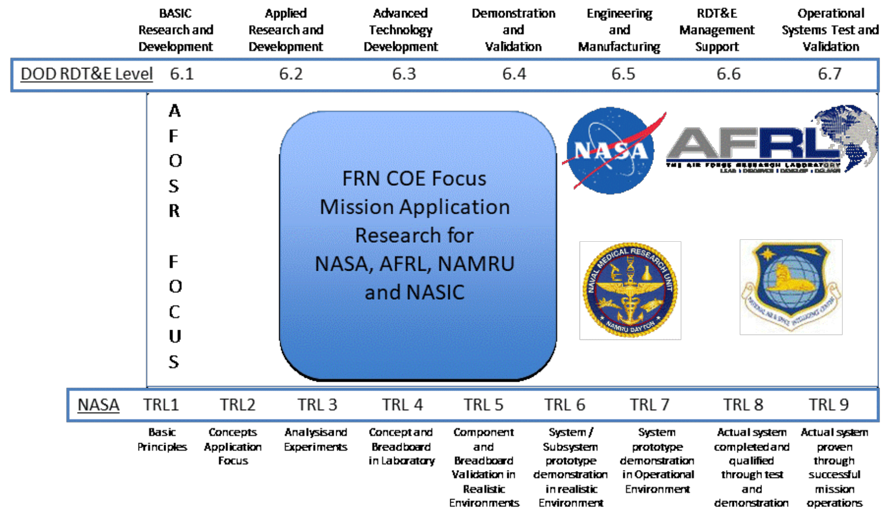
AFRL
- Human Performance/ Health Sciences
- Hypersonics
- Directed Energy Weapons (Lasers)
- Autonomy
- C4ISR
- LVC
- Materials/ Manufacturing
- Propulsion

Naval Medical Research Unit
- Human performance
- Human physiology
- Manned /Unmanned Aeromedical Ops
- Toxicology
- Risk assessment

NASA Glenn
- Hybrid Electric Propulsion
- Air-breathing Propulsion
- Advanced Communications
- Solar Electric Propulsion
- Power and Energy Storage
- Materials and Manufacturing

NASIC
- Cyber
- Data analytics
- C4ISR
- Modeling/Simulation/Analysis
- Hypersonics
- Directed Energy
- Space Systems

FRN Funding Focus



Impact to Date

- **Collaboration and proposal quality is increasing dramatically - yet requires continued support and focus**
  - Projects required a lead university, 2 partner universities, and at least one Industry sponsor and Federal sponsor.
- **11 of 13 Ohio research universities**
  - Won competitive funding from Round 1 and Round 2 - $18M in awards
  - Worked with universities to improve their success going forward.
- **57 business partners engaged**
  - Half are small businesses - $1.6M awarded to industry
  - Industry Days and regional meetings held throughout the state
- **Multiple universities across state pursuing joint efforts across DoD**
  - Joint Proposals in Excess of $350M are now in the pipeline across Ohio
  - Universities have won **$139M+ in new awards** from DARPA, ONR, AFRL, NASA, and IARPA

Next Steps

- **Ohio FY18-19 Budget included $3.45M / Yr for OFRN**
  - Have $1.9M remaining from previous budget cycle.
  - *Investing up to $8.8M in Round 3*
- **Submitted a $15M Federal Request in FY18 Defense Budget and Submitting in FY19 Defense Budget**
  - Working with entire Ohio Federal House and Senate legislative delegation.
  - Got $10M FY18 NDAA for AFRL.
  - Got $10M in FY19 NDAA for AFRL
- **Round 3 RFP process is ongoing--designed to foster integrated solutions**
  - OFRN will invest $7M in new projects

Ohio Federal Research Network (OFRN) $31.9M of State Funding Total for FY16-19

Growing Ohio's Economy by Leveraging Research and Development

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NASA Glenn Research Center (GRC) Priorities

Air Force Research Laboratory (AFRL) Priorities

State of Ohio

National Air & Space Intelligence Center (NASIC) Priorities

Naval Medical Research Unit (NAMRU) Priorities

Executive Review Board

Wright State University & The Ohio State University

Technical Review Council

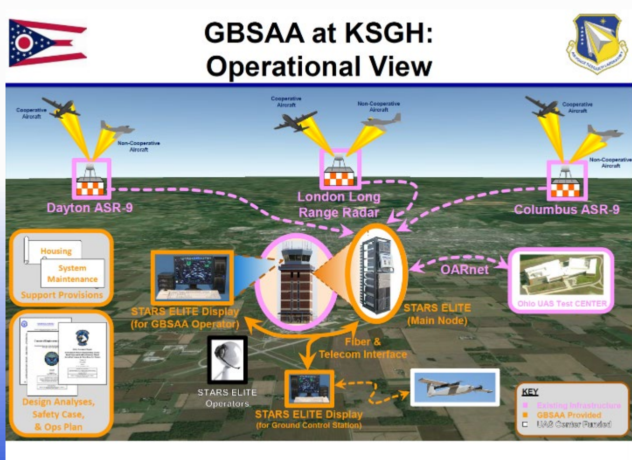
- Human Performance and Health Sciences
  Wright State Univ.
- Power and Propulsion
  Ohio State Univ.
- C4ISR & Data Analytics
  Wright State Univ.
  Ohio State Univ.
- Energy Storage and Integration
  Case Western Reserve Univ.
- Materials and Adv. Manufacturing
  Univ. of Dayton
- C2PNT
  Ohio Univ.

Outcomes: $20M in OFRN Funds leading to $139M in follow-on and $350M in process

OFRN 5 Year Strategy

***Vision:** Make Ohio the nexus for unmanned air systems (UASs), personal air vehicles (PAVs), and logistics delivery air vehicles (LDAVs) testing, integration, and manufacturing.*

- Short-term Strategy: Create OFRN air demo with NASA-AFRL assets for disaster response demonstration
- Long-term Strategy: Use staggered challenge programs to demo Ohio-based personal aircraft in 2022



Transition over time to Future PAV

WRIGHT STATE RESEARCH INSTITUTE

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- WSARC is self sufficient today will continue to be financially self sufficient going forward.